

Search history

Search 1: FT=(WEAR~ AND MEMBER~ AND FOR~ AND EARTH~ AND WORKING~) (Results 19489)

Search 2: FT=(WEAR~ AND MEMBER~ AND WORKING~) (Results 282728)

Search 3: FT=(WEAR~ AND MEMBER~ AND WORKING~ AND EXCAVATION~ AND LOCK PIN) (Results 49)

Title: Power line pylon and lamp post

Abstract: A post construction kit for constructing a post implanted in a base terrain which includes a first post section adapted for implantation in the base terrain, at least one other post section adapted for interconnection with the post section to be implanted underground, and an interconnecting arrangement for interconnecting the underground section and at least one other post section.

Classifications:

International (IPC 8-9): E02D27/42 E04H12/08 E04H12/20 E04H12/22 E04H12/24 (Advanced/Invention)

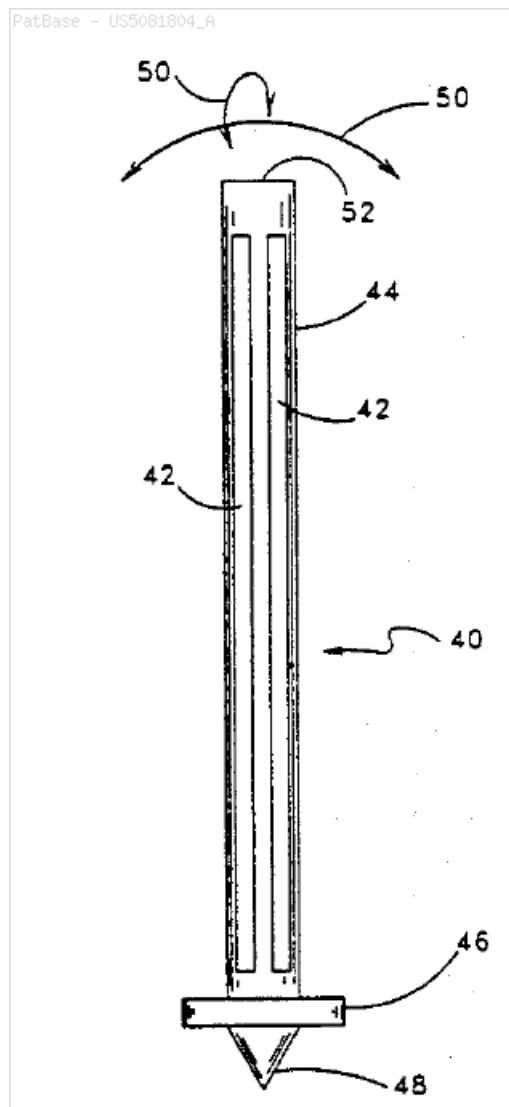
International (IPC 1-7): E04H12/08

CPC: E02D27/42 E04H12/08 E04H12/20 E04H12/2215 E04H12/2284 E04H12/24

European: E02D27/42 E04H12/08 E04H12/20 E04H12/22A1 E04H12/22D E04H12/24

US: 405/236 405/250 52/297 52/40 52/697 52/726 52/726.4

PatBase - US5081804_A



Family:

Publication number	Publication date	Application number	Application date
■ US5081804 A	19920121	US19890404779	19890908

Priority:

US19890404779 19890908

Probable Assignee: GUSTAVSBERG VVS AB

Assignee(s): (std): GUSTAVSBERG VVS AB

Assignee(s): GUSTAVSBERG VVS AKTIEBOLAG ; GUSTAVSBERG VVS AKTIEBOLAG PO BOX

Inventor(s): (std): ANDERSSON ERLAND ; SKOENVALL TAGE

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US5081804 A	19920121	LSGT	+	granted / extensions (spc, cpc, pte)	
US5081804 A	19890908	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GUSTAVSBERG VVS AKTIEBOLAG, SWEDEN

OLDPARTY : ASSIGNMENT OF
ASSIGNORS INTEREST.;
ASSIGNORS:ANDERSSON, ERLAND;
SKONVALL, TAGE;
REEL/FRAME:005135/0097
EFFECTIVE DATE : 19890822

US5081804 A	19920109	LSGT	PAT1	Patented Case	
US5081804 A	19960121	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US5081804 A	19960402	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 19960121
US5081804 A	20180128	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US5081804 A	20180128	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US5081804 A	20090908	PEXP		Calculated Patent Term Expiry	

Title: INSERT FOR LOCKING MECHANISM FOR GROUND ENGAGING TOOLS

Abstract: The present invention is directed to an insert for use with ground engaging tools. It allows newer-type locking mechanisms to be used to lock **wear members** to older-styled support structures. The insert is comprised of an elongated body for insertion into a passage in the support structure. At one end is a faceplate for engaging the inner surface of the **wear member**. At the other end is preferably an attachment means for connecting to corresponding attachments on the inner surface of the opposing leg of the **wear member**. The faceplate has a recess for receiving the end of a **lock pin** used to lock the **wear member** or adapter to the support structure. Alternatively, a **lock pin** may abut against the rear end of the faceplate.

Classifications:

International (IPC 8-9): E02F3/40 E02F9/00

E02F9/28 (Advanced/Invention);

E02F9/28 (Core/Invention)

International (IPC 1-7): E02F E02F3/40 E02F9/00 E02F9/28

CPC: E02F9/2833

European: E02F9/28A2C

US: 37/452 37/455

PatBase - US2005066555A



Family:

Publication number	Publication date	Application number	Application date
AU2004201389 BA	20050324	AU20040201389	20040402
CA2443168 AA	20041026	CA20032443168	20030926
CA2549274 AA	20041026	CA20032549274	20030926
US2005066555 AA	20050331	US20040760378	20040121
US2006236567 AA	20061026	US20060471246	20060620
ZA200402628 A	20041202	ZA20040002628	20040402

Priority:

CA20032443168 20030926 CA20032549274 20030926 US20040760378 20040121
US20060471246 20060620

Probable Assignee: QSF ACQUISITIONS INC

Assignee(s): (std): ADAMIC DWIGHT L ; QSF ACQUISITIONS INC ; QUALITY STEEL FOUNDRIES LTD

Assignee(s): QUALITY STEEL LTD

Inventor(s): (std): ADAMIC DWIGHT L

Inventor(s): DWIGHT L ADAMIC ; ADAMIC DWIGHT

Agent(s): GRIFFITH HACK; DIMOCK STRATTON LLP; BORDEN LADNER GERVAIS LLP; ESCO CORP

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2004201389 BA	20050324	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2004201389 BA	20050721	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2004201389 BA	20050721	LSAS	PC	ASSIGNMENT REGISTERED	PARTYTYPE : OWNER OWNER : QSF ACQUISITIONS, INC. OLDPARTY : FORMER OWNER WAS: QUALITY STEEL FOUNDRIES LTD
AU2004201389 BA	20061130	LSAS	PC	ASSIGNMENT REGISTERED	PARTYTYPE : OWNER OWNER : QUALITY STEEL LIMITED OLDPARTY : FORMER OWNER WAS: QSF AQUISITIONS, INC.
AU2004201389 BA	20091029	LSLE	-MK14	PATENT CEASED SECTION 143(A) (ANNUAL FEES NOT PAID) OR EXPIRED	
AU2004201389 BA	20240402	PEXP		Calculated Patent Term Expiry	
CA2443168 AA	20041026	LSPB	+	published / reissued	

CA2443168 AA	20040805	LSSES	+EEER	EXAMINATION REQUEST	
CA2443168 AA	20070621	LSLE	-FZDE	DEAD	
CA2549274 AA	20041026	LSPB	+	published / reissued	
CA2549274 AA	20090928	LSLE	-FZDE	DEAD	
US2005066555 AA	20050331	LSPB	+	published / reissued	
US2005066555 AA	20040625	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : QUALITY STEEL FOUNDRIES LTD., CANADA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:ADAMIC, DWIGHT L.; REEL/FRAME:014783/0519 EFFECTIVE DATE : 20040525
US2005066555 AA	20050701	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : QSF ACQUISITIONS INC., CANADA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:QUALITY STEEL FOUNDRIES LTD.; REEL/FRAME:016744/0942 EFFECTIVE DATE : 20050524
US2005066555 AA	20060913	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2005066555 AA	20060913	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO RESPOND TO AN OFFICE ACTION
US2006236567 AA	20061026	LSPB	+	published / reissued	
US2006236567 AA	20061018	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : QUALITY STEEL LIMITED, OREGON OLDPARTY : CHANGE OF NAME; ASSIGNOR:QSF ACQUISITIONS INC.; REEL/FRAME:018433/0631 EFFECTIVE DATE : 20060310
US2006236567 AA	20080317	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2006236567 AA	20080317	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO RESPOND TO AN OFFICE ACTION
ZA200402628 A	20041202	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA200402628 A	20240401	PEXP		Calculated Patent Term Expiry	

Title: DOOR LOCK WITH ROTARY LATCH AND LOCKING PAWL, FOR MOTOR VEHICLES

Abstract: The door lock is fitted to a motor vehicle, and has a rotary latch (1), a locking pawl (3), a release lever (4), and motor-assisted opening and closure actions. A fixed closure motor (7) is aligned with a closure drive (8). The locking pawl, release lever, opening motor (9) and opening drive (10) are arranged on a carousel support (11), which is coaxial to the rotary latch, and which has teeth which mesh with the closure drive. The opening motor and the pawl are arranged eccentrically on the carousel support, and the release lever has teeth (13) which mesh with the opening drive. The closure motor can be activated when the latch is in a position ready for closing, and the opening motor can be activated when the latch is in the closed position.

Classifications:

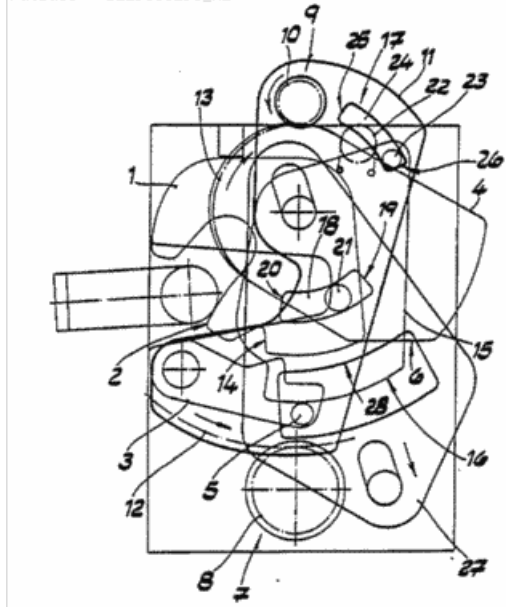
International (IPC 8-9): E05B65/12 E05B81/20 (Advanced/Invention);
E05B65/12 (Core/Invention)

International (IPC 1-7): E05B65/32

CPC: E05B81/20

European: E05B81/20

PatBase - DE19533196_R1



Family:

Publication number	Publication date	Application number	Application date
DE19533196 A1	19970313	DE19951033196	19950908

Priority:

DE19951033196 19950908

Probable Assignee: KIEKERT AG

Assignee(s): (std): KIEKERT AG

Assignee(s): KIEKERT AG 42579 HEILIGENHAUS DE ; KIEKERT 42579 HEILIGENHAUS DE AG

Inventor(s): (std): HUNDERTMARK DIRK DIPL ING

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
DE19533196 A1	19970313	LSPB	+	published / reissued	
DE19533196 A1	20021128	LSSES	+8110	REQUEST FOR EXAMINATION PARAGRAPH 44	
DE19533196 A1	20050714	LSLE	-8139	DISPOSAL/NON-PAYMENT OF THE ANNUAL FEE	

Title: RECHENMASCHINE MIT EINER EINRICHTUNG ZUR AUTOMATISCHEN MULTIPLIKATION SOWIE EINEM ALS WIEDERHOLWERK AUSGEBILDETEN SPEICHERWERK ABACUS WITH A DEVICE FOR AUTOMATICALLY MULTIPLICATION AND ONE AS WIEDERHOLWERK TRAINED STORAGE PLANT (Machine translation)

Abstract: Source: DE1574903A1 [DE] (Claim 1) 1.0g) abgearbeitet sind.

Machine translation: (Claim 1) 1.0g) are processed.

Classifications:

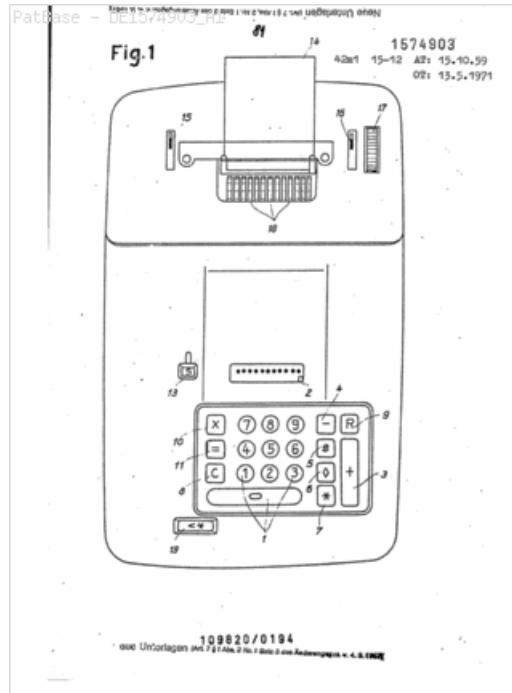
International (IPC 8-9): G06C15/24 G06C7/10 (Advanced/Invention);

G06C15/00 G06C7/00 (Core/Invention)

International (IPC 1-7): G06C15/12

CPC: G06C7/10 G06C15/24

European: G06C15/24 G06C7/10



Family:

Publication number	Publication date	Application number	Application date
DE1574903 A1	19710513	DE19591574903	19591015

Priority:

DE1959W026559 19591015

Probable Assignee: WALTHER BUEROMASCH GMBH

Assignee(s): (std): WALTHER BUEROMASCH GMBH

Assignee(s): WALTHER BUEROMASCHINEN GMBH

Inventor(s): (std): HABERKORN OTTO ; ROMPEL WALTER ; ROTH OTTO

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
DE1574903 A1	19710513	LSPB	+	published / reissued	

Title: Device for detachably mounting a **work member** to construction equipment

Abstract: Disclosed is a device for mounting an attachment to a heavy equipment or for detaching the attachment from the heavy equipment. The device can mount an attachment such as a bucket, and the like, to a **working** device of the heavy equipment, or can detach the attachment from the **working** device in accordance with an object to be processed. A circular bar is detachably mounted to a hook portion formed at a rear upper side of the bucket. A cover having a predetermined shape is fixed to a side plate which is formed downwards at the both sides of the circular bar. A housing receives a fixing pin which is installed in the both sides of the cover and is detachably mounted to the bucket. A hydraulic cylinder is supported by the fixing pin at its both ends. The hydraulic cylinder can mount the fixing pin to the bucket or can detach the fixing pin from the bucket.

Classifications:

International (IPC 8-9): E02F3/34 E02F3/36 E02F3/96

E02F9/24 (Advanced/Invention);

E02F3/96 (Advanced/Non-invention);

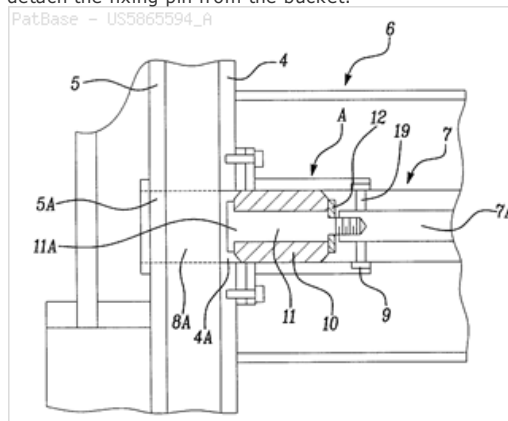
E02F3/04 E02F3/28 E02F3/36 E02F9/24 (Core/Invention)

International (IPC 1-7): E02F3/36 E02F3/40 E02F3/96 E02F9/00 E02F9/24

CPC: E02F3/3411 E02F3/3631 E02F3/3663

European: E02F3/34L4 E02F3/36C2J E02F3/36C2V

US: 37/468 414/723



Family:

Publication number	Publication date	Application number	Application date
DE19651507 A1	19970703	DE19961051507	19961211
GB2308839 A1	19970709	GB19960025713	19961211
GB9625713 A0	19970129	GB19960025713	19961211
JP9195303 A2	19970729	JP19960352210	19961212
KR100202087 B1	19990615	KR19950068499	19951230
KR100202088 B1	19990615	KR19950068498	19951230
KR19970043637 A	19970726	KR19950068498	19951230
KR19970043638 A	19970726	KR19950068499	19951230
KR19980002485 A	19980330	KR19960026072	19960629
KR970043637 A	19970726	KR19950068498	19951230
KR970043638 A	19970726	KR19950068499	19951230
US5865594 A	19990202	US19960762919	19961210

Priority:

KR19950068498 19951230 KR19950068499 19951230 KR19960026072 19960629

Probable Assignee: AB VOLVO

Assignee(s): (std): VOLVO CONSTRUCTION EQUIPMENT K ; SAMSUNG HEAVY IND ; VOLVO CONSTR EQUIP KOREA CO

Assignee(s): VOLVO CONSTRUCTION EQUIPMENT KOREA CO LTD ; SAMSUNG HEAVY INDUSTRIES CO ; SAMSUNG HEAVY IND CO ; SAMSUNG HEAVY IND CO LTD ; SAMSUNG HEAVY INDUSTRIES CO LIMITED ; SAMSUNG HEAVY INDUSTRIES CO LTD CHANGWON KR ; SAMUSUN HEBUII IND CO LTD ; VOLVO CONSTRUCTION EQUIPMENT KOREA CO ; AB VOLVO

Inventor(s): (std): KII YANGU KIMU ; KIM KEE YOUNG ; KIM KI YOUNG

Inventor(s): KEE YOUNG KIM ; KIM KEE YOUNG KOYANG KYUNGKI KR

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
DE19651507 A1	19970703	LSPB	+	published / reissued	
DE19651507 A1	20010201	LSAS	8127	NEW PERSON/NAME/ADDRESS OF THE APPLICANT	PARTYTYPE : OWNER OWNER : VOLVO CONSTRUCTION EQUIPMENT KOREA CO., LTD., CHAN
DE19651507 A1	20010208	LSLE	-8139	DISPOSAL/NON-PAYMENT OF THE ANNUAL FEE	
GB2308839 A1	19970709	LSPB	+	published / reissued	
GB2308839 A1	20001004	LSWD	-WAP	APPLICATION WITHDRAWN, TAKEN TO BE WITHDRAWN OR REFUSED ** AFTER PUBLICATION UNDER SECTION 16(1)	

JP9195303 A2	19970729	LSPB	+	published / reissued	
KR100202087 B1	19990615	LSGT	+	granted / extensions (spc, cpc, pte)	
KR100202087 B1	19951230	LSES	A201	REQUEST FOR EXAMINATION	
KR100202087 B1	19980707	LSES	-E902	NOTIFICATION OF REASON FOR REFUSAL	
KR100202087 B1	19980914	LSAS	N231	NOTIFICATION OF CHANGE OF APPLICANT	
KR100202087 B1	19981215	LSGT	+E701	DECISION TO GRANT OR REGISTRATION OF PATENT RIGHT	
KR100202087 B1	19990317	LSGT	+GRNT	WRITTEN DECISION TO GRANT	
KR100202087 B1	20020108	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20020108 YEAR OF FEE PAYMENT : 4
KR100202087 B1	20030318	LSLE	-LAPS	LAPSE DUE TO UNPAID ANNUAL FEE	
KR100202087 B1	20151230	PEXP		Calculated Patent Term Expiry	
KR100202088 B1	19990615	LSGT	+	granted / extensions (spc, cpc, pte)	
KR100202088 B1	19951230	LSES	A201	REQUEST FOR EXAMINATION	
KR100202088 B1	19980707	LSES	-E902	NOTIFICATION OF REASON FOR REFUSAL	
KR100202088 B1	19980914	LSAS	N231	NOTIFICATION OF CHANGE OF APPLICANT	
KR100202088 B1	19981215	LSGT	+E701	DECISION TO GRANT OR REGISTRATION OF PATENT RIGHT	
KR100202088 B1	19990317	LSGT	+GRNT	WRITTEN DECISION TO GRANT	
KR100202088 B1	20020108	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20020108 YEAR OF FEE PAYMENT : 4
KR100202088 B1	20030318	LSLE	-LAPS	LAPSE DUE TO UNPAID ANNUAL FEE	
KR100202088 B1	20151230	PEXP		Calculated Patent Term Expiry	
KR19970043637 A	19970726	LSPB	+	published / reissued	
KR19970043638 A	19970726	LSPB	+	published / reissued	
KR19980002485 A	19980330	LSPB	+	published / reissued	
KR970043637 A	19970726	LSPB	+	published / reissued	
KR970043638 A	19970726	LSPB	+	published / reissued	
US5865594 A	19990202	LSGT	+	granted / extensions (spc, cpc, pte)	
US5865594 A	19961210	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SAMSUNG HEAVY INDUSTRIES CO., LTD., KOREA, REPUBLI OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:KIM, KEE YOUNG; REEL/FRAME:008347/0406 EFFECTIVE DATE : 19961204
US5865594 A	19981109	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : VOLVO CONSTRUCTION EQUIPMENT KOREA CO., LTD., KORE OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:SAMSUNG HEAVY INDUSTRIES CO., LTD.; REEL/FRAME:009561/0648 EFFECTIVE DATE : 19981017
US5865594 A	19990107	LSGT	PAT1	Patented Case	
US5865594 A	20030203	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	

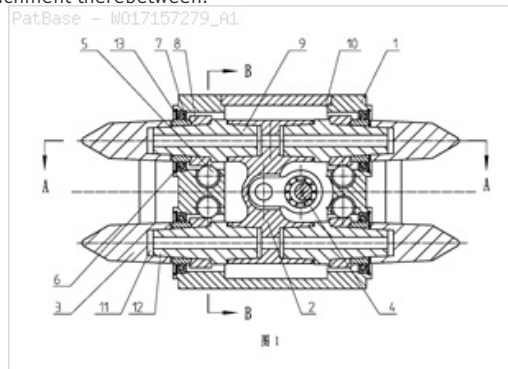
US5865594 A	20030401	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20030202
US5865594 A	20180124	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US5865594 A	20180124	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US5865594 A	20161210	PEXP		Calculated Patent Term Expiry	

Title: GUIDE METHOD FOR ADJUSTING MULTI-SURFACE GUIDE DEVICE AND SURFACES OF MULTIPLE WHEELS TO ACHIEVE ATTACHMENT THEREBETWEEN, AND SHOCKING GUIDE DEVICE FOR ADJUSTING MULTI-SURFACE GUIDE DEVICE AND SURFACES OF MULTIPLE WHEELS TO ACHIEVE ATTACHMENT THEREBETWEEN

Abstract: A shocking guide device for adjusting multi-surface guide device and surfaces of multiple wheels to achieve attachment therebetween comprises a multi-surface guide device, guide wheels (5), a reciprocating shocking box (1), a guide support rod (15), a transmission guide member (2), a reciprocating punch head (3), and a power member (4). The multi-surface guide device comprises a multi-surface guide device shaft rod (9) and a multi-surface shocking-resistant guide sleeve (8). The multi-surface shocking-resistant guide sleeve (8) comprises a multi-surface wear-resistant shocking-resistant guide sleeve (21) or a curved-surface wear-resistant shocking-resistant guide sleeve (23). A wear-resistant shocking-resistant surface (14) is disposed on the multi-surface wear-resistant shocking-resistant guide sleeve (21) and/or the curved-surface wear-resistant shocking-resistant guide sleeve (23). The multi-surface anti-shocking guide sleeve (8) and the multi-surface guide device shaft rod (9) are connected in an integrated or separated manner. The transmission guide member (2) drives the multi-surface guide device to make reciprocating movement, a wheel set guide positioning mechanism (16) and the multi-surface guide device guide the reciprocating punch head (3) in a rolling manner, and a reciprocating guide shocking frame drives the reciprocating punch head to shock falling materials. The device has a strong structure and a long service life. Disclosed is a guide method for adjusting a multi-surface guide device and surfaces of multiple wheels to achieve attachment therebetween.

Classifications:

International (IPC 8-9): E21C25/00 E21C25/02 E21C25/04 E21C25/08 E21C25/68 E21C27/00 E21C31/02 E21C35/00 E21C35/08 E21C35/16 E21C35/18 E21C35/183 E21C35/187 E21C35/19 E21C35/20 E21C35/22 E21D9/10 E21D9/12 E21F13/00 F16N11/00 (Advanced/Invention)
CPC: E21C25/00 E21C35/00 E21F13/00 E21C25/02 E21C31/02 E21C35/08 E21C35/18 E21C35/183 E21C35/187 E21C35/19 E21C25/04 E21C25/68 E21C35/20 E21C35/22 E21D9/106 E21D9/1086 E21D9/1093 E21D9/12 F16N11/00 E21C25/08 E21C35/16



Family:

Publication number	Publication date	Application number	Application date
AU2016228603 AA	20171102	AU20160228603	20160314
AU2016228603 AB	20171214	AU20160228603	20160314
AU2017234486 AA	20181108	AU20170234486	20170314
CN105971595 A	20160928	CN201610143076	20160314
CN105971596 A	20160928	CN201610143160	20160314
CN105971597 A	20160928	CN201610144324	20160314
CN105971598 A	20160928	CN201610144999	20160314
CN105971600 A	20160928	CN201610142608	20160314
CN106256990 A	20161228	CN201610453907	20160620
CN106368695 A	20170201	CN201610586862	20160722
CN106609671 A	20170503	CN201610970391	20161027
CN106869922 A	20170620	CN201611153334	20161214
CN106979009 A	20170725	CN201710029524	20170116
CN107191185 A	20170922	CN201710149664	20170314
CN107559004 A	20180109	CN201710526787	20170630
CN108457647 A	20180828	CN201810152995	20180221
CN205977212 U	20170222	CN201620608392U	20160620
CN206158743 U	20170510	CN201620783532U	20160722
EA201792035 A1	20180831	EA20170092035	20160314
EA201890107 A1	20180928	EA20180090107	20160816
IN201817038495 A	20190111	IN201817038495	20181010
WO16141894 A1	20160915	WO2016CN076298	20160314
WO16141895 A1	20160915	WO2016CN076299	20160314
WO16141896 A1	20160915	WO2016CN076309	20160314
WO16141897 A1	20160915	WO2016CN076310	20160314
WO16141898 A1	20160915	WO2016CN076311	20160314
WO16202309 A2	20161222	WO2016CN095461	20160816
WO16202309 A3	20170413	WO2016CN095461	20160816
WO17012590 A2	20170126	WO2016CN091074	20160722
WO17012590 A3	20170504	WO2016CN091074	20160722
WO17071608 A1	20170504	WO2016CN103526	20161027
WO17101888 A1	20170622	WO2017CN071636	20170119
WO17121407 A1	20170720	WO2017CN071325	20170116
WO17157279 A1	20170921	WO2017CN076591	20170314

Priority:

CN201510108652	20150312	CN201510109180	20150312	CN201510127699	20150323
CN201510128221	20150323	CN201510128257	20150323	CN201510128433	20150323
CN201510188551	20150420	CN201510345553	20150619	CN201510435700	20150722
CN201510708379	20151027	CN201510710412	20151027	CN201510708534	20151027
CN201510927005	20151214	CN201510930362	20151214	CN201610004869	20160105

CN201610028164	20160115	CN201610093782	20160220	CN201610143666	20160314
CN201610144321	20160314	CN201610144492	20160314	WO2016CN076310	20160314
CN201610285087	20160429	CN201610445309	20160620	CN201610511372	20160630
CN201610587328	20160722	WO2016CN095461	20160816	CN201611154172	20161214
CN201611154172	20161224	CN201710029349	20170116	CN201710088459	20170218
CN201710149310	20170314	WO2017CN076591	20170314	CN201710526756	20170630

Probable Assignee: LIU SUHUA

Assignee(s): (std): LIU SUHUA

Inventor(s): (std): LIU SUHUA

Agent(s): LIU SUHUA; K AND L GATES

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2016228603 AA	20171102	LSPB	+	published / reissued	
AU2016228603 AB	20171214	LSRE	DA3	AMENDMENTS MADE SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS AS SHOWN IN THE STATEMENT(S) FILED 12 OCT 2017
AU2017234486 AA	20181108	LSPB	+	published / reissued	
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CN105971595 A	20160928	LSPB	+C06	PUBLICATION	
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CN106609671 A	20170503	LSPB	+	published / reissued	
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CN106869922 A	20170620	LSPB	+	published / reissued	
CN106869922 A	20170620	LSPB	PB01	PUBLICATION	
CN106979009 A	20170725	LSPB	+	published / reissued	
CN106979009 A	20170725	LSPB	PB01	PUBLICATION	
CN107191185 A	20170922	LSPB	+	published / reissued	
CN107191185 A	20170922	LSPB	PB01	PUBLICATION	
CN107559004 A	20180109	LSPB	+	published / reissued	
CN107559004 A	20180109	LSPB	PB01	PUBLICATION	
CN108457647 A	20180828	LSPB	+	published / reissued	

CN108457647 A	20180828	LSPB	PB01	PUBLICATION	
CN205977212 U	20170222	LSGT	+	granted / extensions (spc, cpc, pte)	
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CN205977212 U	20260620	PEXP		Calculated Patent Term Expiry	
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EA201890107 A1	20180928	LSPB	+	published / reissued	
IN201817038495 A	20190111	LSPB	+	published / reissued	
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WO16141894 A1	20170913	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO16141894 A1	20180404	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 16761121 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A1 DESIGNATED STATE(S) :
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WO16141896 A1	20180404	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 16761123 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A1 DESIGNATED STATE(S) :
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WO16141898 A1	20170913	LSNE	NENP	NON-ENTRY INTO THE NATIONAL	REF COUNTRY CODE : DE

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WO17101888 A1	20190109	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 17730338 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A1 DESIGNATED STATE(S) :
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WO17121407 A1	20180717	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
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WO17157279 A1	20170921	LSPB	+	published / reissued	
WO17157279 A1	20180915	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO17157279 A1	20181108	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2017234486 COUNTRY OF REF DOCUMENT : AU DATE OF REF DOCUMENT : 20170314 KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO17157279 A1	20190410	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 17765821 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A1 DESIGNATED STATE(S) :

Title: TOOTH AND ADAPTOR ASSEMBLY FOR A DIPPER BUCKET

Abstract: A tooth and adaptor assembly is provided for a dipper bucket. The assembly includes an adaptor having a rear portion for attaching to a dipper bucket, a tooth capable of releasable attachment to the adaptor and a retainer pin for securing the tooth to the adaptor. The adaptor has a tapered intermediate portion that narrows to a rectangular front portion and a planar surface on a portion of its intermediate portion. A groove traverses the planar surface, and extends perpendicular to the horizontal longitudinal axis of the adaptor. The tooth has a tip at its front end for digging and a socket at its rear end that is configured to receive the front and intermediate portions of the adaptor. When the tooth is coupled to the adaptor, an opening on the rear end of the tooth aligns with the groove to define a passageway that terminates within the socket of the tooth. The retainer pin is inserted into the passageway to secure the tooth to the adaptor and complete the assembly.

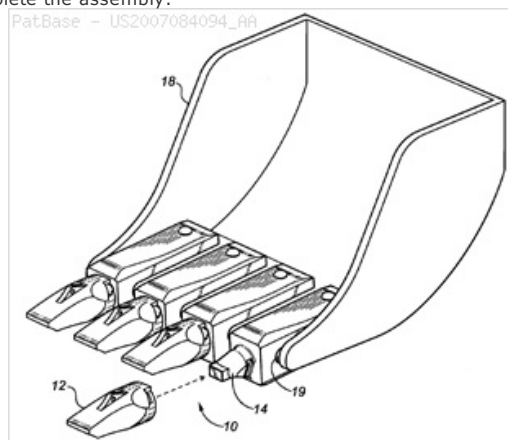
Classifications:

International (IPC 8-9): E02F9/28 (Advanced/Invention);
E02F9/28 (Core/Invention)

CPC: E02F9/2825 E02F9/2833 E02F9/2841

European: E02F9/28A2B E02F9/28A2C E02F9/28A2C2

US: 37/452 37/452P



Family:

Publication number	Publication date	Application number	Application date
CA2523513 AA	20070414	CA20052523513	20051014
US2007084094 AA	20070419	US20060278163	20060331

Priority:

CA20052523513 20051014

Probable Assignee: AMSCO CAST PRODUCTS CANADA INC

Assignee(s): (std): AMSCO CAST PRODUCTS CANADA INC

Assignee(s): AMSCO CAST PRODUCTS INC ; BENTLEY NEIL DOUGLAS ; AMSCO CAST PRODUCTS (CANADA) INC

Inventor(s): (std): BENTLEY NEIL D ; BENTLEY NEIL DOUGLAS

Inventor(s): BENTLEY NEIL

Agent(s): HAUGEN J JAY; DENNIS T GRIGGS

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
CA2523513 AA	20070414	LSPB	+	published / reissued	
CA2523513 AA	20051014	LSSES	+EEER	EXAMINATION REQUEST	
CA2523513 AA	20100621	LSLE	-FZDE	DEAD	
US2007084094 AA	20070419	LSPB	+	published / reissued	
US2007084094 AA	20060609	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMSCO CAST PRODUCTS (CANADA) INC., CANADA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BENTLEY, NEIL DOUGLAS; REEL/FRAME:017752/0592 EFFECTIVE DATE : 20060602
US2007084094 AA	20090706	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2007084094 AA	20090706	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO RESPOND TO AN OFFICE ACTION

Title: **EXCAVATING** ATTACHMENT WITH LATERALLY PIVOTABLE **WORKING** ARM FOR **EXCAVATING** BENEATH A BURIED UTILITY

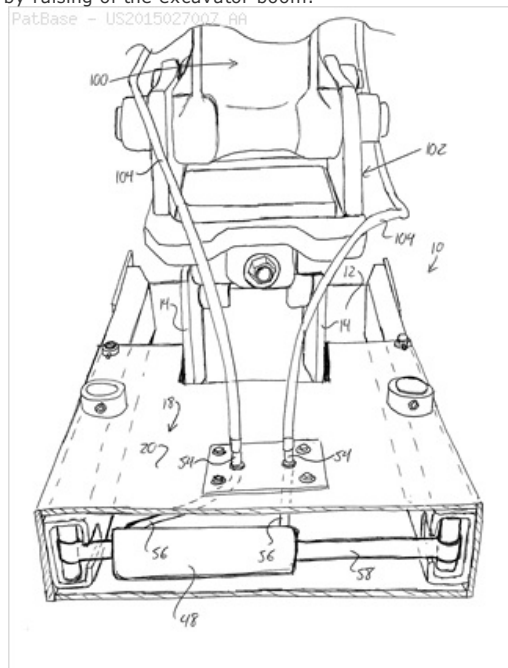
Abstract: An attachment is provided for use on an articulated boom of an excavator in order to **excavate** earth from beneath a buried pipeline or other utility. The attachment features at least one **working** arm pivotally mounted to a base plate for movement relative to the base plate about an axis passing therethrough. A **working** end of the arm is thereby movable between a retracted position overlying the base plate and a deployed position reaching laterally outward from an edge of the base plate. With the excavator facing in a longitudinal direction of the utility, and the attachment carried beside the utility at a short depth therebelow by the boom of the excavator, the arm can be deployed and retracted in order to sweep material out from under the pipeline and onto the base plate. The material is then lifted to the surface by raising of the excavator boom.

Classifications:

International (IPC 8-9): E02F3/36 E02F3/96 E02F5/00 E02F5/02 E02F5/18 (Advanced/Invention)

CPC: E02F5/18 E02F5/003 E02F3/963

US: 37/195 37/466



Family:

Publication number	Publication date	Application number	Application date
CA2857239 AA	20150125	CA20142857239	20140718
CA2857239 C	20170926	CA20142857239	20140718
US2015027007 AA	20150129	US20140334982	20140718
US9611622 BB	20170404	US20140334982	20140718

Priority:

US20130858302P 20130725 US20140334982 20140718

Probable Assignee: DOHERTY KELVIN R

Assignee(s): (std): DOHERTY KELVIN R

Inventor(s): (std): DOHERTY KELVIN R

Agent(s): ADE AND CO INC; RYAN W; KYLE R

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
CA2857239 AA	20150125	LSPB	+	published / reissued	
CA2857239 AA	20170225	LSSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20170223
CA2857239 C	20170926	LSGT	+	granted / extensions (spc, cpc, pte)	
CA2857239 C	20340718	PEXP		Calculated Patent Term Expiry	
US2015027007 AA	20150129	LSPB	+	published / reissued	
US2015027007 AA	20170315	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US9611622 BB	20170404	LSGT	+	granted / extensions (spc, cpc, pte)	
US9611622 BB	20170315	LSGT	PAT1	Patented Case	

Title: **LOCKING PIN** FOR **EXCAVATING** EQUIPMENT

Abstract: An improved **locking pin** for locking together two pieces of equipment through aligned locking apertures. The pin comprises a steel casing, a steel insert and an elastomer **member**. The two steel parts assemble together in a particular sequence and are adjusted so that when completely assembled, the insert is locked into the casing with the body of the casing and the insert being parallel and spaced from one another. The elastomer **member** is interposed in the space defined between the casing and insert, and fills the space between the steel parts. The assembled steel parts are firmly locked together by introduction of the elastomer **member** into that space. There is no adhesive joining the steel and elastomer **members** which makes the pin more amenable for use in corrosive environments and also eases manufacture of the pin components. A tightly constructed **locking pin** also avoids the problems of the components becoming loose or lost.

Classifications:

International (IPC 8-9): B25G3/28 E02F3/00 E02F9/28

F16B21/12 (Advanced/Invention);

B25G3/28 (Advanced/Non-invention);

B25G3/00 E02F9/28 F16B21/00 (Core/Invention)

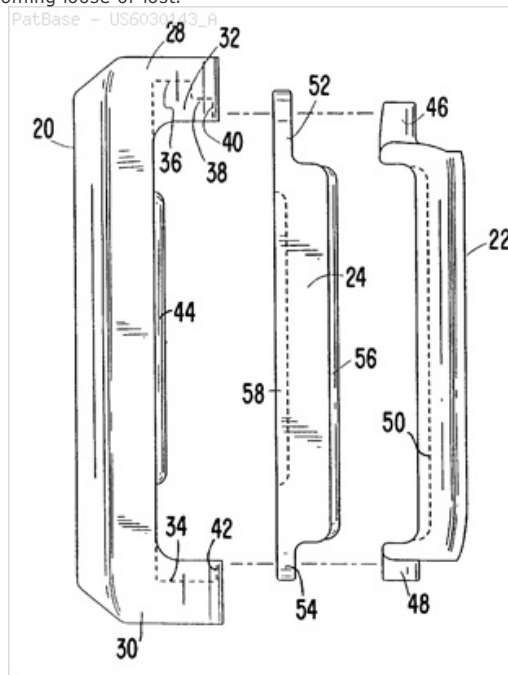
International (IPC 1-7): B25G3/20 B25G3/28 E02F9/28 F16B21/12

CPC: Y10T403/7018 Y10T403/7064 Y10T403/7086 Y10T403/7091

E02F9/2841

European: E02F9/28A2C2

US: 172/753 37/455 37/457 403/355 403/374.1 403/379.4 403/379.6



Family:

Publication number	Publication date	Application number	Application date
AT337139 E	20060915	AT19980963872T	19981211
AU199919109 A1	19990705	AU19990019109	19981211
AU748126 B2	20020530	AU19990019109	19981211
BRPI9813675 A	20011226	BR1998PI13675	19981211
CA2315098 AA	20000616	CA19982315098	19981211
CA2315098 C	20050524	CA19982315098	19981211
CL1998003058 A1	19990708	CL19980003058	19981217
CL45692 B	20090810	CL19980003058	19981217
CN1122128 C	20030924	CN19988013692	19981211
CN1286656 A	20010307	CN19988013692	19981211
DE69835698 D1	20061005	DE19986035698	19981211
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DE69835698 T2	20070816	DE19986035698T	19981211
DK1054755 T3	20070102	DK19980963872T	19981211
EP1054755 A1	20001129	EP19980963872	19981211
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EP1054755 B1	20060823	EP19980963872	19981211
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HK1034222 A1	20040416	HK20010105007	20010717
JP2002508482 T2	20020319	JP20000538833T	19981211
JP3839255 B2	20061101	JP20000538833T	19981211
KR100396169 B1	20030827	KR20007006715	20000617
KR20010033277 A	20010425	KR20007006715	19981211
MXPA00005975 A1	20020918	MX2000PA05975	19981211
NO20003134 A	20000731	NO20000003134	20000616
NO20003134 A0	20000616	NO20000003134	20000616
NO20003134 L	20000731	NO20000003134	20000616
NO20003187 A	20000726	NO20000003187	20000619
NO20003187 A0	20000619	NO20000003187	20000619
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NZ505229 A	20020328	NZ19980505229	19981211
PT1054755 T	20070131	PT19980963872T	19981211
TR200001930 T2	20001221	TR20000001930T	19981211

TW397882 B	20000711	TW19980121195	19981218
US6030143 A	20000229	US19970993173	19971218
WO9930875 A1	19990624	WO1998US26406	19981211

Priority:

US19970993173 19971218 WO1998US26406 19981211

Probable Assignee: ESCO GROUP LLC

Assignee(s): (std): ESCO CORP

Assignee(s): KREITZBERG JOHN S ; ESCO GROUP LLC ; BANK OF AMERICA NA ADMINISTRATIVE AGENT AS

Inventor(s): (std): KREITZBERG J S ; KREITZBERG JOHN S ; JOHN S KREITZBERG ; KREITZBERG S

Inventor(s): J S KREITZBERG ; JS KREITZBERG

Agent(s): CALLINANS; FISHER ADAMS KELLY CALLINANS; SPRUSON AND FERGUSON; FINLAYSON AND SINGLEHURST; PORZIO

Designated states: AL AM AT AU AZ BA BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CU CY CZ DE DK EE ES FI FR GA GB GD GE GH GM GN GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MC MD MG MK ML MN MR MW MX NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT UA UG UZ VN YU ZW

Legal status (INPADOC)

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AU748126 B2	20020530	LSGT	+	granted / extensions (spc, cpc, pte)	
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EP1054755 A1	20160129	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20151229 YEAR OF FEE PAYMENT : 18
EP1054755 A1	20160229	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20151217 YEAR OF FEE PAYMENT : 18
EP1054755 A1	20160229	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20151119 YEAR OF FEE PAYMENT : 18
EP1054755 A1	20160229	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20151123 YEAR OF FEE PAYMENT : 18
EP1054755 A1	20160229	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20151228 YEAR OF FEE PAYMENT : 18

				TO EPO]	
EP1054755 A1	20160229	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20151226 YEAR OF FEE PAYMENT : 18
EP1054755 A1	20160229	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20151230 YEAR OF FEE PAYMENT : 18
EP1054755 A1	20160429	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20151229 YEAR OF FEE PAYMENT : 18
EP1054755 A4	20010117	LSSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20001205
EP1054755 A4	20010117	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	TEXT : 7B 25G 3/28 A, 7E 02F 9/28 B
EP1054755 A4	20030611	LSSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20030428
EP1054755 B1	20060823	LSGT	+	granted / extensions (spc, cpc, pte)	
EP1054755 B1	20060823	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GB REF LEGAL EVENT CODE : FG4D
EP1054755 B1	20060915	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : EP
EP1054755 B1	20061218	LSRE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GR REF LEGAL EVENT CODE : EP REF DOCUMENT NUMBER : 20060404063 COUNTRY OF REF DOCUMENT : GR
EP1054755 B1	20070416	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : ES REF LEGAL EVENT CODE : FG2A REF DOCUMENT NUMBER : 2272016 COUNTRY OF REF DOCUMENT : ES KIND CODE OF REF DOCUMENT : T3 DESIGNATED STATE(S) :
EP1054755 B1	20070801	LSGT	+26N	NO OPPOSITION FILED	EFFECTIVE DATE : 20070524
EP1054755 B1	20080625	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : CH OWNER : ESCO CORPORATION REF LEGAL EVENT CODE : PFA OLDPARTY : ESCO CORPORATION#2141 N.W. 25TH AVENUE#PORTLAND OREGON 97210 (US) -TRANSFER TO- ESCO CORPORATION#2141 N.W. 25TH AVENUE#PORTLAND OREGON 97210 (US)
EP1054755 B1	20151217	LSFE	REG	REFERENCE TO A NATIONAL CODE	COUNTRY OF REF DOCUMENT : FR REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 18
EP1054755 B1	20161227	LSFE	REG	REFERENCE TO A NATIONAL CODE	COUNTRY OF REF DOCUMENT : FR REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 19
EP1054755 B1	20161230	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 20151211
EP1054755 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH PAYMENT DATE : 20161227 YEAR OF FEE PAYMENT : 19

EP1054755 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DK PAYMENT DATE : 20161227 YEAR OF FEE PAYMENT : 19
EP1054755 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20161229 YEAR OF FEE PAYMENT : 19
EP1054755 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20161228 YEAR OF FEE PAYMENT : 19
EP1054755 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20161226 YEAR OF FEE PAYMENT : 19
EP1054755 B1	20170228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20161129 YEAR OF FEE PAYMENT : 19
EP1054755 B1	20170228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20161227 YEAR OF FEE PAYMENT : 19
EP1054755 B1	20170228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20161121 YEAR OF FEE PAYMENT : 19
EP1054755 B1	20170228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20161227 YEAR OF FEE PAYMENT : 19
EP1054755 B1	20170228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR PAYMENT DATE : 20161229 YEAR OF FEE PAYMENT : 19
EP1054755 B1	20170228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20161123 YEAR OF FEE PAYMENT : 19
EP1054755 B1	20170428	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20161229 YEAR OF FEE PAYMENT : 19
EP1054755 B1	20170831	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT NOTIFICATION OF LAPSE : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 20151211
EP1054755 B1	20170831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20161222 YEAR OF FEE PAYMENT : 19
EP1054755 B1	20170831	LSRE	+PGRI	PATENT REINSTATED IN CONTRACTING STATE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT REINSTATED DATE : 20170710
EP1054755 B1	20171227	LSFE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 20
EP1054755 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20171227 YEAR OF FEE PAYMENT : 20
EP1054755 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20171227 YEAR OF FEE PAYMENT : 20

EP1054755 B1	20180131	LSFE	+PGFP	NATIONAL OFFICE TO EPO] ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DK PAYMENT DATE : 20171227 YEAR OF FEE PAYMENT : 20
EP1054755 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20171226 YEAR OF FEE PAYMENT : 20
EP1054755 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20171229 YEAR OF FEE PAYMENT : 20
EP1054755 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20171121 YEAR OF FEE PAYMENT : 20
EP1054755 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20171227 YEAR OF FEE PAYMENT : 20
EP1054755 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20171121 YEAR OF FEE PAYMENT : 20
EP1054755 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH PAYMENT DATE : 20171227 YEAR OF FEE PAYMENT : 20
EP1054755 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR PAYMENT DATE : 20171228 YEAR OF FEE PAYMENT : 20
EP1054755 B1	20180430	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20180102 YEAR OF FEE PAYMENT : 20
EP1054755 B1	20180430	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20171229 YEAR OF FEE PAYMENT : 20
EP1054755 B1	20180531	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20171221 YEAR OF FEE PAYMENT : 20
EP1054755 B1	20181211	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : R071 REF DOCUMENT NUMBER : 69835698 COUNTRY OF REF DOCUMENT : DE
EP1054755 B1	20181214	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : PL
EP1054755 B1	20181217	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : DK REF LEGAL EVENT CODE : EUP EFFECTIVE DATE : 20181211
EP1054755 B1	20190102	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GB REF LEGAL EVENT CODE : PE20 EXPIRY DATE : 20181210
EP1054755 B1	20190115	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : AT REF LEGAL EVENT CODE : MK07 REF DOCUMENT NUMBER : 337139 COUNTRY OF REF DOCUMENT : AT KIND CODE OF REF DOCUMENT : T DESIGNATED STATE(S) : EFFECTIVE DATE : 20181211
EP1054755 B1	20190129	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : SE REF LEGAL EVENT CODE : EUG

EP1054755 B1	20190228	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB NOTIFICATION OF LAPSE : LAPSE BECAUSE OF EXPIRATION OF PROTECTION LAPSED DATE : 20181210
EP1054755 B1	20181210	PEXP		Calculated Patent Term Expiry	
EP1054755 B1	20181211	PEXP		Calculated Patent Term Expiry	
ES2272016 T3	20070416	LSGT	+	granted / extensions (spc, cpc, pte)	
ES2272016 T3	20181211	PEXP		Calculated Patent Term Expiry	
HK1034222 A1	20040416	LSPB	+	published / reissued	
HK1034222 A1	20041215	LSFE	+PF	PATENT IN FORCE	
HK1034222 A1	20180706	LSLE	-PC	PATENT CEASED (I.E. PATENT HAS LAPSED DUE TO THE FAILURE TO PAY THE RENEWAL FEE)	EFFECTIVE DATE : 20171211
HK1034222 A1	20210717	PEXP		Calculated Patent Term Expiry	
JP2002508482 T2	20020319	LSPB	+	published / reissued	
JP2002508482 T2	20040510	LSSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20040507
JP2002508482 T2	20051019	LSRV	-A02	DECISION OF REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A02 EFFECTIVE DATE : 20051018
JP2002508482 T2	20060117	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20060116
JP2002508482 T2	20060317	LSAL	A911	TRANSFER OF RECONSIDERATION BY EXAMINER BEFORE APPEAL (ZENCHI)	TEXT : JAPANESE INTERMEDIATE CODE: A911 EFFECTIVE DATE : 20060316
JP2002508482 T2	20060629	LSGT	+TRDD	DECISION OF GRANT OR REJECTION WRITTEN	
JP2002508482 T2	20060706	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20060705
JP2002508482 T2	20060810	LSFE	+A61	FIRST PAYMENT OF ANNUAL FEES (DURING GRANT PROCEDURE)	TEXT : JAPANESE INTERMEDIATE CODE: A61 EFFECTIVE DATE : 20060802
JP2002508482 T2	20060811	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150
JP3839255 B2	20061101	LSGT	+	granted / extensions (spc, cpc, pte)	
JP3839255 B2	20060713	LSGT	+A01	特許査定書 Decision of patent grant	
JP3839255 B2	20060808	LSFE	R100	特許料納付書 Patent fee payment form	
JP3839255 B2	20090730	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 3
JP3839255 B2	20090804	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 4
JP3839255 B2	20100729	LSFE	R20	特許料納付書 Patent fee payment form	
JP3839255 B2	20100803	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 5

JP3839255 B2	20110728	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 5
JP3839255 B2	20110802	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 6
JP3839255 B2	20120726	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 6
JP3839255 B2	20120731	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 7
JP3839255 B2	20130725	LSFE	R20	特許料納付書 Patent fee payment form	
JP3839255 B2	20130730	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP3839255 B2	20140731	LSFE	R20	特許料納付書 Patent fee payment form	
JP3839255 B2	20140805	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP3839255 B2	20150730	LSFE	R20	特許料納付書 Patent fee payment form	
JP3839255 B2	20150804	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP3839255 B2	20160728	LSFE	R20	特許料納付書 Patent fee payment form	
JP3839255 B2	20160802	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP3839255 B2	20170727	LSFE	R20	特許料納付書 Patent fee payment form	
JP3839255 B2	20170801	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP3839255 B2	20180726	LSFE	R20	特許料納付書 Patent fee payment form	
JP3839255 B2	20180731	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP3839255 B2	20180918	LSAS	S111	REQUEST FOR CHANGE OF OWNERSHIP OR PART OF OWNERSHIP	TEXT : JAPANESE INTERMEDIATE CODE: R313111
JP3839255 B2	20181017	LSAS	R350	WRITTEN NOTIFICATION OF REGISTRATION OF TRANSFER	TEXT : JAPANESE INTERMEDIATE CODE: R350
JP3839255 B2	20181211	LSLE	-EXPY	CANCELLATION BECAUSE OF COMPLETION OF TERM	
JP3839255 B2	20181211	PEXP		Calculated Patent Term Expiry	
KR100396169 B1	20030827	LSGT	+	granted / extensions (spc, cpc, pte)	
KR100396169 B1	20010209	LSSES	A201	REQUEST FOR EXAMINATION	
KR100396169 B1	20030619	LSGT	+E701	DECISION TO GRANT OR REGISTRATION OF PATENT RIGHT	
KR100396169 B1	20030818	LSGT	+GRNT	WRITTEN DECISION TO GRANT	
KR100396169 B1	20120803	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20120806 YEAR OF FEE PAYMENT : 10
KR100396169 B1	20130807	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20130808 YEAR OF FEE PAYMENT : 11

KR100396169 B1	20140804	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20140805 YEAR OF FEE PAYMENT : 12
KR100396169 B1	20150804	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20150805 YEAR OF FEE PAYMENT : 13
KR100396169 B1	20160805	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20160808 YEAR OF FEE PAYMENT : 14
KR100396169 B1	20170808	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20170809 YEAR OF FEE PAYMENT : 15
KR100396169 B1	20180806	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20180807 YEAR OF FEE PAYMENT : 16
KR100396169 B1	20200617	PEXP		Calculated Patent Term Expiry	
KR20010033277 A	20010425	LSPB	+	published / reissued	
MXPA00005975 A1	20020918	LSPB	+	published / reissued	
MXPA00005975 A1	20040927	LSGT	+FG	GRANT OR REGISTRATION	
NO20003134 A	20000731	LSPB	+	published / reissued	
NO20003134 A	20050912	LSRV	-FC2A	WITHDRAWAL, REJECTION OR DISMISSAL OF LAID OPEN PATENT APPLICATION	
NO20003187 A	20000726	LSPB	+	published / reissued	
NZ505229 A	20020328	LSPB	+	published / reissued	
NZ505229 A	20020726	LSGT	+PSEA	PATENT SEALED	
NZ505229 A	20021220	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	
NZ505229 A	20051223	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	
NZ505229 A	20081224	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	
NZ505229 A	20120127	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	
NZ505229 A	20180928	LSAS	ASS	CHANGE OF OWNERSHIP	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, US EFFECTIVE DATE : 20180925
NZ505229 A	20181221	LSLE	-EXPY	PATENT EXPIRED	
PT1054755 T	20070131	LSGT	+	granted / extensions (spc, cpc, pte)	
PT1054755 T	20181211	PEXP		Calculated Patent Term Expiry	
TR200001930 T2	20001221	LSPB	+	published / reissued	
TW397882 B	20000711	LSGT	+	granted / extensions (spc, cpc, pte)	
TW397882 B	20001117	LSGT	+GD4A	ISSUE OF PATENT CERTIFICATE FOR GRANTED INVENTION PATENT	
TW397882 B	20100501	LSLE	-MM4A	ANNULMENT OR LAPSE OF PATENT DUE TO NON- PAYMENT OF FEES	
TW397882 B	20181218	PEXP		Calculated Patent Term Expiry	
US6030143 A	20000229	LSGT	+	granted / extensions (spc, cpc, pte)	
US6030143 A	19981112	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:KREITZBERG, JOHN S.; REEL/FRAME:009575/0633 EFFECTIVE DATE : 19981109
US6030143 A	20000217	LSGT	PAT1	Patented Case	

US6030143 A	20000217	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US6030143 A	20030805	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6030143 A	20070829	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6030143 A	20101129	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT, WA OLDPARTY : NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS; ASSIGNOR:ESCO CORPORATION; REEL/FRAME:025406/0714 EFFECTIVE DATE : 20101118
US6030143 A	20110829	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 12
US6030143 A	20180716	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF AMERICA, N.A.; REEL/FRAME:046551/0375 EFFECTIVE DATE : 20180711
US6030143 A	20180817	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, OREGON OLDPARTY : MERGER AND CHANGE OF NAME; ASSIGNORS:ESCO CORPORATION; ESCO GROUP LLC; REEL/FRAME:046848/0493 EFFECTIVE DATE : 20180711
US6030143 A	20171218	PEXP		Calculated Patent Term Expiry	
WO9930875 A1	19990624	LSPB	+	published / reissued	
WO9930875 A1	19981211	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 98813692.9 COUNTRY OF REF DOCUMENT : CN
WO9930875 A1	20000616	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2315098 COUNTRY OF REF DOCUMENT : CA KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO9930875 A1	20000616	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2315098 COUNTRY OF REF DOCUMENT : CA
WO9930875 A1	20000616	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : PA/A/2000/005975 COUNTRY OF REF DOCUMENT : MX
WO9930875 A1	20000616	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 505229 COUNTRY OF REF DOCUMENT : NZ
WO9930875 A1	20000617	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 1020007006715 COUNTRY OF REF DOCUMENT : KR
WO9930875 A1	20000619	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2000 538833 COUNTRY OF REF DOCUMENT : JP KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO9930875 A1	20000619	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2000/01930 COUNTRY OF REF DOCUMENT : TR
WO9930875 A1	20000622	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : IN/PCT/2000/00119/MU COUNTRY OF REF DOCUMENT : IN
WO9930875 A1	20000703	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 19109/99 COUNTRY OF REF DOCUMENT : AU
WO9930875 A1	20000711	LSNP	+WWE	WIPO	REF DOCUMENT NUMBER :

				INFORMATION: ENTRY INTO NATIONAL PHASE	1998963872 COUNTRY OF REF DOCUMENT : EP
WO9930875 A1	20001019	LSWD	REG	REFERENCE TO NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : 8642
WO9930875 A1	20001129	LSPB	+WWP	WIPO INFORMATION: PUBLISHED IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 1998963872 COUNTRY OF REF DOCUMENT : EP
WO9930875 A1	20010425	LSPB	+WWP	WIPO INFORMATION: PUBLISHED IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 1020007006715 COUNTRY OF REF DOCUMENT : KR
WO9930875 A1	20020912	LSGT	+WWG	WIPO INFORMATION: GRANT IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 19109/99 COUNTRY OF REF DOCUMENT : AU
WO9930875 A1	20030619	LSGT	+WWG	WIPO INFORMATION: GRANT IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 1020007006715 COUNTRY OF REF DOCUMENT : KR
WO9930875 A1	20060823	LSGT	+WWG	WIPO INFORMATION: GRANT IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 1998963872 COUNTRY OF REF DOCUMENT : EP

Title: APPARATUS AND METHOD FOR ATTACHING A DIGGING TOOTH TIP

Abstract: A digging tooth assembly has a base nose, a replaceable tooth tip mounted on the base nose and a pin securing the tip to the nose. The pin includes a locking head eccentric to the pin and a pad-like resilient **member** is placed between the head and the tooth tip. The locking head is rotated so that the resilient **member** is compressed to urge the tooth tip in a direction such that the tip is maintained in a nose-contacting position.

Classifications:

International (IPC 8-9): E02F3/36 E02F3/60

E02F9/28 (Advanced/Invention);

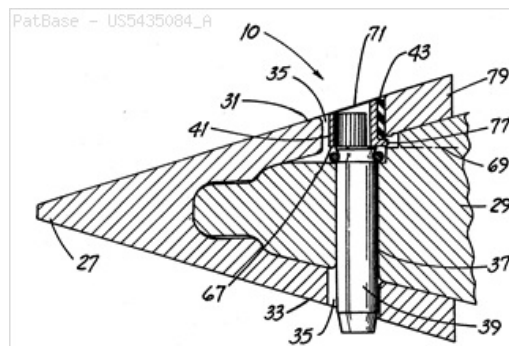
E02F9/28 (Core/Invention)

International (IPC 1-7): E02F3/36 E02F3/60 E02F9/28

CPC: Y10T403/589 E02F9/2841

European: E02F9/28A2C2

US: 172/713 172/772 37/398 37/452 37/457 403/320 411/941.1



Family:

Publication number	Publication date	Application number	Application date
AU199480405 A1	19950824	AU19940080405	19941213
AU675368 B2	19970130	AU19940080405	19941213
CA2120087 AA	19950818	CA19942120087	19940328
CA2120087 C	19970325	CA19942120087	19940328
US5435084 A	19950725	US19940197821	19940217
ZA9409759 A	19950818	ZA19940009759	19941207

Priority:

US19940197821 19940217 CA19942120087 19940328

Probable Assignee: HARNISCHFEGER TECHNOLOGIES INC

Assignee(s): (std): HARNISCHFEGER CORP

Assignee(s): HARNISCHFEGER TECHNOLOGIES INC ; IMMEL DARRYL R

Inventor(s): (std): IMMEL DARRYL R

Inventor(s): DARRYL R IMMEL

Agent(s): SPRUSON AND FERGUSON; ASPEN PHARMA PTY LTD; RIDOUT AND MAYBEE LLP

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU199480405 A1	19950824	LSPB	+	published / reissued	
AU675368 B2	19970130	LSGT	+	granted / extensions (spc, cpc, pte)	
AU675368 B2	20141213	PEXP		Calculated Patent Term Expiry	
CA2120087 AA	19950818	LSPB	+	published / reissued	
CA2120087 AA	19940328	LSES	+EEER	EXAMINATION REQUEST	
CA2120087 C	19970325	LSGT	+	granted / extensions (spc, cpc, pte)	
CA2120087 C	20080328	LSLE	-MKLA	LAPSED	
CA2120087 C	20140328	PEXP		Calculated Patent Term Expiry	
US5435084 A	19950725	LSGT	+	granted / extensions (spc, cpc, pte)	
US5435084 A	19940217	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : HARNISCHFEGER CORPORATION,

					WISCONSIN OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:IMMEL, DARRYL R.; REEL/FRAME:006884/0595 EFFECTIVE DATE : 19940209
US5435084 A	19950714	LSGT	PAT1	Patented Case	
US5435084 A	19950714	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US5435084 A	19980507	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : HARNISCHFEGER TECHNOLOGIES, INC., DELAWARE OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:HARNISCHFEGER CORPORATION; REEL/FRAME:009168/0359 EFFECTIVE DATE : 19980504
US5435084 A	19980904	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US5435084 A	20020916	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US5435084 A	20060906	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 12
US5435084 A	20140217	PEXP		Calculated Patent Term Expiry	
ZA9409759 A	19950818	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA9409759 A	20141206	PEXP		Calculated Patent Term Expiry	

Title: PIN-RETAINING STRUCTURE AND METHOD FOR RETAINING A PIN

Abstract: An apparatus such as a digging bucket has a clevis device pivotably connected thereto by a pin held in place by a pin-retaining structure. The clevis includes a plurality of arcuate, lip-like, outwardly-radially-projecting first retention **members** and the structure includes a cap portion having a plurality of arcuate, lip-like, inwardly-radially-projecting second retention **members**. Each second retention **member** engages and "locks" to a separate first retention **member**. The cap portion, which interferes with free axial travel of the pin, is well secured so that the pin is retained in engagement with the clevis without welding the pin. Avoiding pin welding permits using a substantially-harder pin, resulting in significantly better **wear** characteristics. A new method for retaining a pin is also disclosed.

Classifications:

International (IPC 8-9): E02F3/58 E02F9/00 F16C11/02 F16C11/04 F16G15/06 (Advanced/Invention);

E02F3/46 E02F9/00 F16C11/00 F16C11/04 F16G15/00 (Core/Invention)

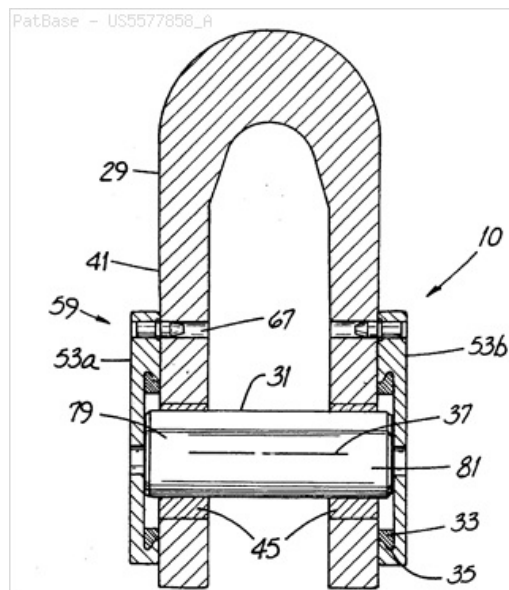
International (IPC 1-7): B25G3/00 E02F3/58 F16B F16C F16C11/00

F16C11/04 F16D1/12 F16D3/00

CPC: Y10T403/32221 Y10T403/32368 Y10T403/32918 Y10T403/581 Y10T403/7005 E02F9/006 E02F3/58 F16C11/02 F16C11/045 F16G15/06 F16C2350/26

European: E02F3/58 E02F9/00C F16C11/02 F16C11/04B F16G15/06

US: 403/157 403/316 403/348 403/79 403/97

**Family:**

Publication number	Publication date	Application number	Application date
CA2162440 AA	19961028	CA19952162440	19951108
GB2300223 A1	19961030	GB19960007340	19960409
GB9607340 A0	19960612	GB19960007340	19960409
US5577858 A	19961126	US19950429597	19950427
ZA9603066 A	19961024	ZA19960003066	19960417

Priority:

US19950429597 19950427 CA19952162440 19951108

Probable Assignee: HARNISCHFEGER TECHNOLOGIES INC

Assignee(s): (std): HARNISCHFEGER CORP

Assignee(s): HARNISCHFEGER TECHNOLOGIES INC ; IMMEL DARRYL R ; KASIM RIKOS A

Inventor(s): (std): KASIM RIKOS A ; IMMEL DARRYL R

Inventor(s): DARRYL R IMMEL ; RIKOS A KASIM

Agent(s): RIDOUT AND MAYBEE LLP

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
CA2162440 AA	19961028	LSPB	+	published / reissued	
CA2162440 AA	19951108	LSSES	+EEER	EXAMINATION REQUEST	
CA2162440 AA	19990721	LSLE	-FZDE	DEAD	
GB2300223 A1	19961030	LSPB	+	published / reissued	
GB2300223 A1	20000126	LSWD	-WAP	APPLICATION WITHDRAWN, TAKEN TO BE WITHDRAWN OR REFUSED ** AFTER PUBLICATION UNDER SECTION 16(1)	
US5577858 A	19961126	LSGT	+	granted / extensions (spc, cpc, pte)	
US5577858 A	19950427	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : HARNISCHFEGER CORPORATION, WISCONSIN OLDPARTY : ASSIGNMENT OF

					ASSIGNORS INTEREST; ASSIGNORS:KASIM, RIKOS A.; IMMEL, DARRYL R.; REEL/FRAME:007468/0440 EFFECTIVE DATE : 19950420
US5577858 A	19961115	LSGT	PAT1	Patented Case	
US5577858 A	19980507	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : HARNISCHFEGER TECHNOLOGIES, INC., DELAWARE OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:HARNISCHFEGER CORPORATION; REEL/FRAME:009168/0359 EFFECTIVE DATE : 19980504
US5577858 A	20001126	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US5577858 A	20010130	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20001126
US5577858 A	20180125	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US5577858 A	20180125	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US5577858 A	20150427	PEXP		Calculated Patent Term Expiry	
ZA9603066 A	19961024	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA9603066 A	20160416	PEXP		Calculated Patent Term Expiry	

Title: GROUND ENGAGING TOOL ASSEMBLY

Abstract: A ground engaging tool system comprising a ground engaging tip. The ground engaging tip includes an interior surface with a coupler pocket having an opening. The interior surface has a base wall and a first and second side wall. The tip defines a first and second coupler face walls having a planar portion and a curved portion. The planar portion is adjacent the base wall, and the curved portion adjacent the opening. The ground engaging tool system includes a coupler movably connected to the ground engaging tip between a nominal position and a maximum rotated pitch position. The coupler includes a mounting nose with a first and second exterior face surface and is within the coupler pocket. Between the nominal position and the maximum rotated pitch position, the curved portion coupler face walls are in non-contacting, spaced relationship with the coupler.

Classifications:

International (IPC 8-9): B28D1/18 E02F E02F9/28

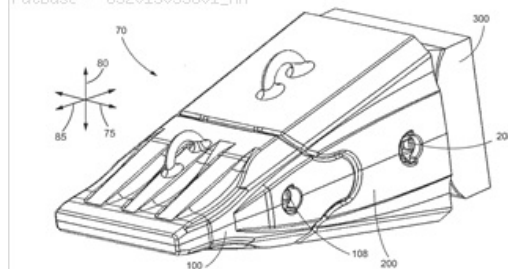
E21C35/18 (Advanced/Invention);

B28D1/18 (Advanced/Non-invention)

CPC: E02F9/2825 E02F9/2833 E02F9/2858 E02F9/2883 E02F9/2808

US: 1/1 37/455

PatBase - US2015033601_AA



Family:

Publication number	Publication date	Application number	Application date
AU2014296511 AA	20160310	AU20140296511	20140726
AU2014296511 BB	20180322	AU20140296511	20140726
BR112016001986 A2	20170801	BR20161101986	20140726
CA2918937 AA	20160120	CA20142918937	20140726
CN105531426 A	20160427	CN201480049881	20140726
CN105531426 B	20170922	CN201480049881	20140726
DE602014036173 D1	20181213	DE201460036173T	20140726
EP3027815 A1	20160608	EP20140831973	20140726
EP3027815 A4	20170315	EP20140831973	20140726
EP3027815 B1	20181114	EP20140831973	20140726
ES2702647 T3	20190304	ES20140831973T	20140726
ID201712867 A	20171130	ID2016P0001033	20140726
IN201617004062 A	20160729	IN201617004062	20160204
RU2016104828 A	20170817	RU20160104828	20140726
RU2016104828 A3	20180319	RU20160104828	20140726
RU2651730 C2	20180423	RU20160104828	20140726
TR201818941 T4	20190121	TR20180018941T	20140726
US2015033601 AA	20150205	US20130956569	20130801
US9290914 BB	20160322	US20130956569	20130801
WO15017290 A1	20150205	WO2014US48321	20140726
ZA201600921 A	20171220	ZA20160000921	20140726

Priority:

US20130956569 20130801 EP20140831973 20140726 RU20160104828 20140726
WO2014US48321 20140726

Probable Assignee: CATERPILLAR INC

Assignee(s): (std): CATERPILLAR INC ; CATERPILLAR INC

Assignee(s): KEJTERPILLAR INK ; CATERPILLAR INC PEORIA ; KUNZ PHILLIP J

Inventor(s): (std): KUNZ PHILLIP J ; KUNTS PHILLIP DZH ; KUNZ PHILLIP J ; PHILLIP J KUNZ

Inventor(s): KUNZ PHILLIP J MORTON

Agent(s): FREEHILLS PATENT ATTORNEYS; FPA PATENT ATTORNEYS PTY LTD; SMART AND BIGGAR; KRAMER BARSKE SCHMIDTCHEN PATENTANWAELTE PARTG MBB; BRP RENAUD AND PARTNER MBB RECHTSANWAELTE PATENTANWAELTE STEUERBERATER; IR YT WIDJOJO; OOO SOYUZPATENT; UGUR GUERSAD YALCINER; LEYDIG VOIT AND MAYER LTD; FISHER BART A ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2014296511 AA	20160310	LSPB	+	published / reissued	
AU2014296511 BB	20180322	LSGT	+	granted / extensions (spc, cpc, pte)	

AU2014296511 BB	20180719	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2014296511 BB	20340726	PEXP		Calculated Patent Term Expiry	
CA2918937 AA	20160120	LSPB	+	published / reissued	
CN105531426 A	20160427	LSPB	+	published / reissued	
CN105531426 A	20160427	LSPB	+C06	PUBLICATION	
CN105531426 A	20170922	LSGT	+GR01	PATENT GRANT	
CN105531426 B	20170922	LSGT	+	granted / extensions (spc, cpc, pte)	
CN105531426 B	20340726	PEXP		Calculated Patent Term Expiry	
EP3027815 A1	20160608	LSPB	+	published / reissued	
EP3027815 A1	20160608	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20160118
EP3027815 A4	20170315	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20170210
EP3027815 A4	20170315	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E02F 9/28 20060101AFI20170206BHEP
EP3027815 A4	20170315	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : B28D 1/18 20060101ALN20170206BHEP
EP3027815 A4	20170315	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21C 35/18 20060101ALI20170206BHEP
EP3027815 A4	20180613	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21C 35/18 20060101ALI20180507BHEP
EP3027815 A4	20180613	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E02F 9/28 20060101AFI20180507BHEP
EP3027815 A4	20180613	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : B28D 1/18 20060101ALN20180507BHEP
EP3027815 A4	20180627	LSGT	+INTG	INTENTION TO GRANT ANNOUNCED	EFFECTIVE DATE : 20180531
EP3027815 B1	20181114	LSGT	+	granted / extensions (spc, cpc, pte)	
EP3027815 B1	20181115	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : AT REF LEGAL EVENT CODE : REF REF DOCUMENT NUMBER : 1064977 COUNTRY OF REF DOCUMENT : AT KIND CODE OF REF DOCUMENT : T DESIGNATED STATE(S) : EFFECTIVE DATE : 20181115
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EP3027815 B1	20181212	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : IE REF LEGAL EVENT CODE : FG4D
EP3027815 B1	20181213	LSPB	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : R096 REF DOCUMENT NUMBER : 602014036173 COUNTRY OF REF DOCUMENT : DE
EP3027815 B1	20190304	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : ES REF LEGAL EVENT CODE : FG2A REF DOCUMENT NUMBER : 2702647 COUNTRY OF REF DOCUMENT : ES KIND CODE OF REF DOCUMENT : T3

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EP3027815 B1	20190415	LSRV	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : AT REF LEGAL EVENT CODE : MK05 REF DOCUMENT NUMBER : 1064977 COUNTRY OF REF DOCUMENT : AT KIND CODE OF REF DOCUMENT : T DESIGNATED STATE(S) : EFFECTIVE DATE : 20181114
EP3027815 B1	20190430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IS NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME- LIMIT LAPSED DATE : 20190314
EP3027815 B1	20190430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME- LIMIT LAPSED DATE : 20181114
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EP3027815 B1	20190430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NO NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME- LIMIT LAPSED DATE : 20190214
EP3027815 B1	20190430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BG NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME- LIMIT LAPSED DATE : 20190214

EP3027815 B1	20190531	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME- LIMIT LAPSED DATE : 20190314
EP3027815 B1	20190531	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME- LIMIT LAPSED DATE : 20190215
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EP3027815 B1	20190605	LSAS	RAP2	RIGHTS OF A PATENT TRANSFERRED	PARTYTYPE : OWNER OWNER : CATERPILLAR INC.
EP3027815 B1	20340726	PEXP		Calculated Patent Term Expiry	
ES2702647 T3	20190304	LSGT	+	granted / extensions (spc, cpc, pte)	
ES2702647 T3	20340726	PEXP		Calculated Patent Term Expiry	
ID201712867 A	20171130	LSPB	+	published / reissued	
IN201617004062 A	20160729	LSPB	+	published / reissued	
RU2016104828 A	20170817	LSPB	+	published / reissued	
RU2651730 C2	20180423	LSGT	+	granted / extensions (spc, cpc, pte)	
RU2651730 C2	20340726	PEXP		Calculated Patent Term Expiry	
TR201818941 T4	20190121	LSGT	+	granted / extensions (spc, cpc, pte)	
TR201818941 T4	20340726	PEXP		Calculated Patent Term Expiry	
US2015033601 AA	20150205	LSPB	+	published / reissued	
US2015033601 AA	20160302	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US9290914 BB	20160322	LSGT	+	granted / extensions (spc, cpc, pte)	

US9290914 BB	20130801	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CATERPILLAR INC., ILLINOIS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:KUNZ, PHILLIP J.; REEL/FRAME:030922/0846 EFFECTIVE DATE : 20130716
US9290914 BB	20151116	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US9290914 BB	20160302	LSGT	PAT1	Patented Case	
US9290914 BB	20340312	PEXP		Calculated Patent Term Expiry (PTA 223 days and a terminal disclaimer has been filed)	
WO15017290 A1	20150205	LSPB	+	published / reissued	
WO15017290 A1	20140726	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 201480049881.4 COUNTRY OF REF DOCUMENT : CN
WO15017290 A1	20160118	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2014831973 COUNTRY OF REF DOCUMENT : EP
WO15017290 A1	20160120	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2918937 COUNTRY OF REF DOCUMENT : CA
WO15017290 A1	20160201	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO15017290 A1	20160212	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2016104828 COUNTRY OF REF DOCUMENT : RU KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO15017290 A1	20160310	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2014296511 COUNTRY OF REF DOCUMENT : AU DATE OF REF DOCUMENT : 20140726 KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO15017290 A1	20170801	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 112016001986 COUNTRY OF REF DOCUMENT : BR KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) : EFFECTIVE DATE : 20160128
ZA201600921 A	20171220	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA201600921 A	20340725	PEXP		Calculated Patent Term Expiry	

Title: ADAPTER WITH CONCEALMENT PORTION AT BUCKET TIP END AND BUCKET MOUNTED ON **WORKING** MACHINE FOR **EXCAVATION** AND THE LIKE

Abstract: [Problem] The present invention provides an adapter with concealing portion at a bucket tip end having an existing adapter function in this type of adapters, that is, a function as an adapter tool when a tooth board or a point is attached to a bucket tip end portion, and if being used as an adapter when the tooth board is attached to the bucket tip end portion, by being configured to cover/conceal the bucket tip end portion (edge portion), abrasion at the bucket tip end portion is drastically reduced and a life of the bucket itself is drastically extended and thus, a replacement period/replacement **work** of a bucket can be drastically extended and as a result, cost reduction of this type of **working** machines can be realized. [Solution] An adapter 11 with concealing portion at a bucket tip end of the present invention is to be attached to an edge portion 2 of a bucket 1 for an operation performing **excavation** and the like and is configured to have an adapter main body 14 provided with an attachment portion 12 attached to the edge portion 2 of the bucket 1 and a projecting body 13 for attaching a point 31 or a tooth board 41, projected from this attachment portion 12; and a concealing portion 15 integrally formed in a state projecting sideward from the attachment portion 12 of the adapter main body 14, attached to this edge portion in a state covering the edge portion on the side of the attachment portion 12 and concealing the edge portion 2.

Classifications:

International (IPC 8-9): E02F E02F3/40 E02F9/00 E02F9/28

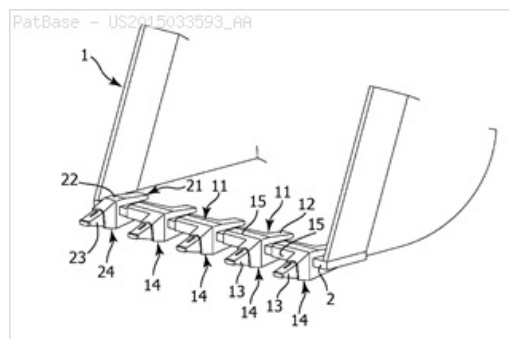
E21C35/18 (Advanced/Invention);

E02F9/28 (Core/Invention);

E02F (Subclass/Invention)

CPC: E02F9/2825 E02F3/40

US: 37/444 37/456



Family:

Publication number	Publication date	Application number	Application date
AU2014203193 AA	20150219	AU20140203193	20140612
CN104343146 A	20150211	CN201410337387	20140716
HK1206405 A1	20160108	HK20150106293	20150702
IN01974MU2014 A	20151002	IN2014MU01974	20140618
JP2015031039 A2	20150216	JP20130160746	20130801
JP6166121 B2	20170719	JP20130160746	20130801
KR20150016086 A	20150211	KR20140070609	20140611
TH160869 A	20170323	TH20141003668	20140625
US2015033593 AA	20150205	US20140333221	20140716

Priority:

JP20130160746 20130801

Probable Assignee: ECHIGO SHOJI CO LTD

Assignee(s): (std): ECHIGO SHOJI CO LTD ; ECHIGO SHOJI KK

Assignee(s): ECHIGO SHOJI CO

Inventor(s): (std): WATANABE KIYOSHI ; KIYOSHI WATANABE

Agent(s): SPRUSON AND FERGUSON; CLT PATENT AND TRADEMARK HK LTD

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2014203193 AA	20150219	LSPB	+	published / reissued	
AU2014203193 AA	20190117	LSLE	-MK5	APPLICATION Lapsed SECTION 142(2)(E) - PATENT REQUEST AND COMPL. SPECIFICATION NOT ACCEPTED	
CN104343146 A	20150211	LSPB	+	published / reissued	
CN104343146 A	20150211	LSPB	+C06	PUBLICATION	
CN104343146 A	20180601	LSDW	-WD01	INVENTION PATENT APPLICATION DEEMED WITHDRAWN AFTER PUBLICATION	
HK1206405 A1	20160108	LSPB	+	published / reissued	
HK1206405 A1	20350702	PEXP		Calculated Patent Term Expiry	
IN01974MU2014 A	20151002	LSPB	+	published / reissued	

JP2015031039 A2	20150216	LSPB	+	published / reissued	
JP2015031039 A2	20160212	LSES	+A621	WRITTEN REQUEST FOR APPLICATION EXAMINATION	TEXT : JAPANESE INTERMEDIATE CODE: A621 EFFECTIVE DATE : 20160212
JP2015031039 A2	20161206	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20161206
JP2015031039 A2	20170203	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20170203
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JP2015031039 A2	20170523	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20170523
JP2015031039 A2	20170629	LSFE	+A61	FIRST PAYMENT OF ANNUAL FEES (DURING GRANT PROCEDURE)	TEXT : JAPANESE INTERMEDIATE CODE: A61 EFFECTIVE DATE : 20170622
JP2015031039 A2	20170630	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150 REF DOCUMENT NUMBER : 6166121 COUNTRY OF REF DOCUMENT : JP
JP6166121 B2	20170719	LSGT	+	granted / extensions (spc, cpc, pte)	
JP6166121 B2	20170525	LSGT	+A01	特許査定書 Decision of patent grant	
JP6166121 B2	20170627	LSFE	R100	特許料納付書 Patent fee payment form	
JP6166121 B2	20170630	LSGT	+R150	特許証 Patent certificate	
JP6166121 B2	20330801	PEXP		Calculated Patent Term Expiry	
KR20150016086 A	20150211	LSPB	+	published / reissued	
TH160869 A	20170323	LSPB	+	published / reissued	
US2015033593 AA	20150205	LSPB	+	published / reissued	
US2015033593 AA	20140820	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ECHIGO SHOJI CO., LTD., JAPAN OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: WATANABE, KIYOSHI; REEL/FRAME: 033576/0227 EFFECTIVE DATE : 20140630
US2015033593 AA	20150908	LSES	NFA1	Non Final Action Mailed	
US2015033593 AA	20160403	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2015033593 AA	20160403	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO RESPOND TO AN OFFICE ACTION

Title: ROLLING TYPE **EXCAVATING** TOOL

Abstract: A rotating type **excavating** tool or cutter in which a cutter body is formed with a blind hole into which a spindle extends with antifriction bearings interposed between the spindle and the body with a clamp nut on the spindle at the bottom of the blind hole. Access is had to the nut for tightening the nut up during assembly, or for loosening the nut for disassembly purposes by at least one hole formed in the cutter body in the range of the bottom of the blind hole and which are plugged after the nut is tightened to prevent foreign matter from getting into the blind hole in the cutter body.

Classifications:

International (IPC 8-9): E21B10/22 F16C19/14

F16C35/06 (Advanced/Invention);

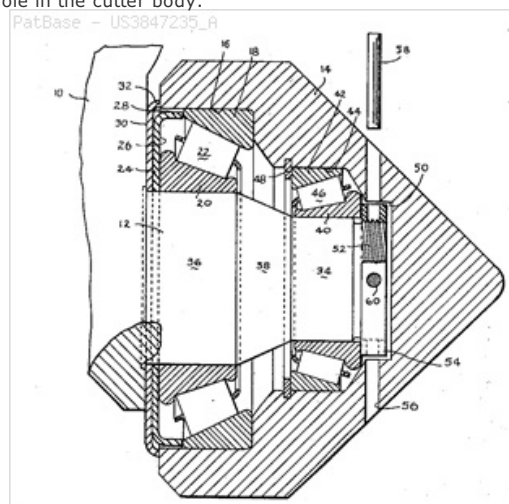
E21B10/08 F16C19/02 F16C35/04 (Core/Invention)

International (IPC 1-7): E02F5/08 E02F5/30 E21B9/08 E21B9/10
E21B9/35 E21C13/01 E21C25/00 F16C19/14

CPC: F16C19/548 F16C35/06 E21B10/22 F16C19/56 F16C2352/00

European: E21B10/22 F16C35/06

US: 175/37.2 175/372 175/374 384/94



Family:

Publication number	Publication date	Application number	Application date
AU197472647 A1	19760226	AU19740072647	19740823
CA999607 A1	19761109	CA19740207211	19740816
DE2440499 A1	19750417	DE19742440499	19740823
DE2440499 B2	19760805	DE19742440499	19740823
DE2440499 C3	19771027	DE19742440499	19740823
FR2247582 A1	19750509	FR19740033955	19741009
FR2247582 B1	19820430	FR19740033955	19741009
GB1452656 A	19761013	GB19740036088	19740816
US3847235 A	19741112	US19730405091	19731010
ZA7405218 A	19750827	ZA19740005218	19740814

Priority:

US19730405091 19731010

Probable Assignee: KENNAMETAL INC

Assignee(s): (std): KENNAMETAL INC

Assignee(s): KENNAMETAL INC LATROBE PA V ST A ; KENNAMETAL INC US ; GOODFELLOW ROBERT D

Inventor(s): (std): GODDFELLOW ROBERT D ; GOODFELLOW R ; GOODFELLOW ROBERT D

Inventor(s): ROBERT D GOODFELLOW ; GOODFELLOW R US ; GODDFELLOW ROBERT D BEDFORD PA V ST A

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU197472647 A1	19760226	LSPB	+	published / reissued	
DE2440499 A1	19750417	LSPB	+	published / reissued	
DE2440499 B2	19760805	LSPB	+	published / reissued	
DE2440499 B2	19771027	LSGT	+C3	GRANT AFTER TWO PUBLICATION STEPS (3RD PUBLICATION)	
DE2440499 B2	19840809	LSLE	-8339	CEASED/NON-PAYMENT OF THE ANNUAL FEE	
DE2440499 C3	19771027	LSGT	+	granted / extensions (spc, cpc, pte)	
FR2247582 A1	19750509	LSPB	+	published / reissued	
FR2247582 B1	19820430	LSGT	+	granted / extensions (spc, cpc, pte)	
FR2247582 B1	19830819	LSLE	-ST	NOTIFICATION OF LAPSE	
FR2247582 B1	19941009	PEXP		Calculated Patent Term Expiry	
GB1452656 A	19761013	LSGT	+	granted / extensions (spc, cpc, pte)	

GB1452656 A	19770223	LSGT	+PS	PATENT SEALED
GB1452656 A	19840418	LSLE	-PCNP	PATENT CEASED THROUGH NON-PAYMENT OF RENEWAL FEE
GB1452656 A	19940816	PEXP		Calculated Patent Term Expiry
US3847235 A	19741112	LSGT	+	granted / extensions (spc, cpc, pte)
ZA7405218 A	19750827	LSGT	+	granted / extensions (spc, cpc, pte)
ZA7405218 A	19900813	PEXP		Calculated Patent Term Expiry

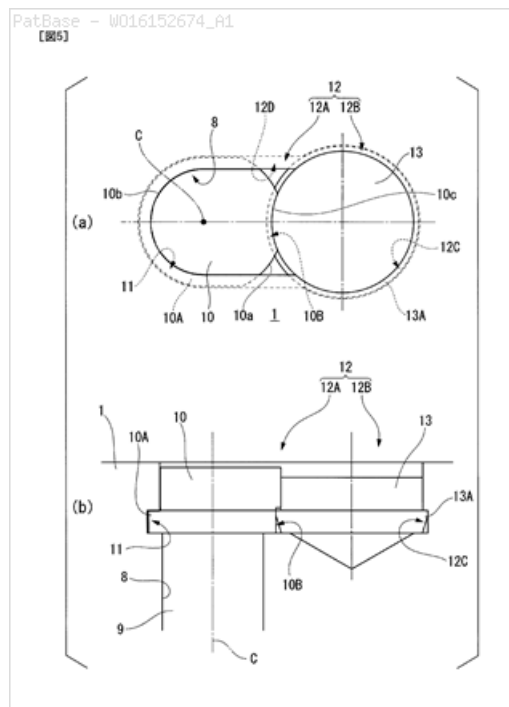
Title: DIGGING TOOL

Abstract: This digging tool has a tool body and a mounting **member** which has a mounting shaft section. The mounting shaft section has a groove formed therein. An engagement pin is inserted into a pin hole formed in the tool body and is engaged with the groove. An affixation **member** for retaining the engagement pin is mounted to an opening of the pin hole. An engagement section with which the affixation **member** is engaged is formed in the opening of the pin hole. An auxiliary **member** for maintaining the state of engagement between the affixation **member** and the engagement section is disposed in a recess in communication with the opening of the pin hole. Side surfaces of both the auxiliary **member** and the affixation **member**, the side surfaces being in contact with each other, are in linear contact with each other when viewed in the direction of the centerline of the pin hole.

Classifications:

International (IPC 8-9): E21B10/32 (Advanced/Invention)

CPC: E21B10/32



Family:

Publication number	Publication date	Application number	Application date
JP2016176300 A2	20161006	JP20150058939	20150323
JP6468024 B2	20190213	JP20150058939	20150323
WO16152674 A1	20160929	WO2016JP58307	20160316

Priority:

JP20150058939 20150323

Probable Assignee: MITSUBISHI MATERIALS CORP

Assignee(s): (std): MITSUBISHI MAT CORP ; MITSUBISHI MATERIALS CORP

Inventor(s): (std): NAKAMURA KAZUYOSHI ; TANAKA KUNIHIKO

Agent(s): SHIGA MASATAKE ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
JP2016176300 A2	20161006	LSPB	+	published / reissued	
JP2016176300 A2	20170926	LSES	+A621	WRITTEN REQUEST FOR APPLICATION EXAMINATION	TEXT : JAPANESE INTERMEDIATE CODE: A621 EFFECTIVE DATE : 20170926
JP2016176300 A2	20180821	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20180821

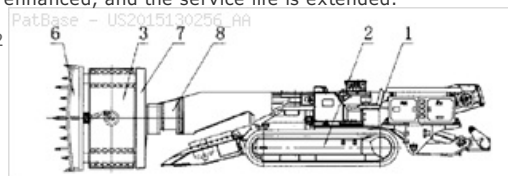
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JP2016176300 A2	20181218	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20181218
JP2016176300 A2	20190121	LSFE	+A61	FIRST PAYMENT OF ANNUAL FEES (DURING GRANT PROCEDURE)	TEXT : JAPANESE INTERMEDIATE CODE: A61 EFFECTIVE DATE : 20181231
JP2016176300 A2	20190125	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150 REF DOCUMENT NUMBER : 6468024 COUNTRY OF REF DOCUMENT : JP
JP6468024 B2	20190213	LSGT	+	granted / extensions (spc, cpc, pte)	
JP6468024 B2	20181220	LSGT	+A01	特許査定書 Decision of patent grant	
JP6468024 B2	20181220	LSFE	R1001	特許料納付書 (包括納付) Patent fee payment form (inclusive payment)	
JP6468024 B2	20190125	LSGT	+R150	特許証 Patent certificate	
JP6468024 B2	20350323	PEXP		Calculated Patent Term Expiry	
WO16152674 A1	20160929	LSPB	+	published / reissued	
WO16152674 A1	20170926	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO16152674 A1	20180418	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 16768577 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A1 DESIGNATED STATE(S) :

Title: ROLLING FRICTION OR SUSPENSION FRICTION IMPACT MINING METHOD AND **WEAR**-RESISTANT IMPACT MINING MACHINE USING SAID METHOD

Abstract: A rolling friction or suspension friction impact mining method and a **wear**-resistant impact mining machine using said method. The mining machine comprises a reciprocating impact part (3). The reciprocating impact part comprises an impact drive device (4), a rolling reciprocating device, and an impact head (6). The rolling reciprocating device comprises a rubbing body (38), a rubbing body support (39), an impact guiding element (5.1), and a position-limiting mechanism. The rubbing body (5.3) are disposed between the rubbing body support (39) and the impact guiding element (5.1), and inside of the position-limiting mechanism to form rolling guiding. The impact drive device is disposed with a damage-prevention mechanism, a rotary power buffer device, and a structural buffer device, such that the impact head reciprocatingly move and have rolling or suspending friction under the support of the impact guiding element, thereby preventing the damage-prevention force to damage a power drive device and a rolling channel guiding device, and preventing the impact vibration caused by the reciprocating impact part to affect the machine body and other parts. The overall stability is therefore enhanced, and the service life is extended.

Classifications:

International (IPC 8-9): A01B33/14 B66C23/687 E02F E02F3/18 E02F3/22 E02F3/24 E02F3/28 E02F3/36 E02F3/38 E02F3/39 E02F3/96 E02F5/08 E02F5/30 E02F9/20 E21B E21B1/02 E21B1/14 E21B10/36 E21C E21C25/00 E21C25/02 E21C25/04 E21C25/08 E21C27/00 E21C27/01 E21C27/02 E21C27/12 E21C27/14 E21C27/20 E21C27/24 E21C27/28 E21C27/30 E21C27/46 E21C29/22 E21C31/00 E21C31/02 E21C31/04 E21C31/08 E21C31/10 E21C31/12 E21C35/00 E21C35/02 E21C35/04 E21C35/08 E21C35/18 E21C35/183 E21C35/19 E21C35/193 E21C35/197 E21C35/20 E21C35/22 E21C37/00 E21C47/06 E21D9/10 E21D9/12 E21F5/04 F02B65/00 F02B75/00 F02B75/40 F02F1/00 F02F1/18 F02F11/00 F02F3/00 F02F5/00 F03C1/28 F03C1/32 F04B17/04 F04B39/00 F04B39/12 F04B53/00 F04B53/14 F04B53/16 F15B15/14 F15B15/20 F16C19/54 F16C29/04 F16C3/18 F16C32/04 F16C32/06 F16C33/30 F16C33/32 F16C33/34 F16C33/38 F16C33/46 F16C33/58 F16C33/78 F16C7/02 F16F15/04 F16H1/04 F16J1/00 F16J1/08 F16J10/02 F16J15/16 F16J15/32 F16J15/3276 F16J15/44 F16J15/56 F16N1/00 (Advanced/Invention); E21C27/12 E21C27/14 E21C31/10 (Core/Invention); E21C (Subclass/Invention)



International (IPC 1-7): E21C27/12 E21C27/14

CP: E21B10/36 E21C27/02 E21D9/106 E21D9/1086 E21C35/04 E21C27/46 E21C35/193 E21C35/197 E21C2035/1826 E21D9/1026 E21C27/01 E02F3/964 F16J1/02 B25D2250/275 F16J15/3208 F16J15/3224 F16J15/3252 F16J15/56 E21C27/24 Y10T29/49842 E21C31/10 E21C35/19 E21C27/14 E21C27/12 E21C35/18 E21C35/1936 E21D9/12 E02F3/245 E02F5/08 E21C27/00 E21C35/20 F16J15/441 E21C35/00 E21C31/04 F16C3/18 E21C25/02 E21C27/28 E21C31/02 E21B1/02 F16J15/3276 F16C19/54 E21C31/12 F16C9/02 F16C9/04 F16J15/16 E21C35/183 E21C35/08 A01B33/144 E02F3/181 E02F3/966 E02F5/305

US: 277/305 29/434 299/10 299/113 299/18 299/39.2 299/56 299/69 37/189 74/11

Family:

Publication number	Publication date	Application number	Application date
AP201408131 A0	20141231	AP20140008131	20130510
AP201408132 A0	20141231	AP20140008132	20130510
AP201508300 A0	20150331	AP20150008300	20131008
AP201508301 A0	20150331	AP20150008301	20131008
AP201508627 A0	20150831	AP20150008627	20140106
AU2012331962 AA	20130510	AU20120331962	20121107
AU2013224569 AA	20130829	AU20130224569	20130222
AU2013262354 AA	20131121	AU20130262354	20130510
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AU2014204385 AA	20150820	AU20140204385	20140106
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AU2015210534 AB	20161006	AU20150210534	20150129
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AU2016269516 BB	20181206	AU20160269516	20161208
AU2018202775 AA	20180510	AU20180202775	20180420
AU2018256623 AA	20181122	AU20180256623	20181101
CA2865005 AA	20140820	CA20132865005	20130222
CA2873246 AA	20141112	CA20132873246	20130510
CA2873251 AA	20141112	CA20132873251	20130510
CA2873253 AA	20141112	CA20132873253	20130510
CA2892409 AA	20150525	CA20132892409	20131126
CA2897515 AA	20150703	CA20142897515	20140106
CA2909281 AA	20151009	CA20142909281	20140411
CA2928285 AA	20160421	CA20142928285	20141021
CA2928289 AA	20160421	CA20142928289	20141021
CA2935869 AA	20160704	CA20152935869	20150104
CA2938340 AA	20160729	CA20152938340	20150129
CA2938342 AA	20160729	CA20152938342	20150129
CN102954149 A	20130306	CN201110254518	20110831
CN102996123 A	20130327	CN201210346368	20120911
CN103016003 A	20130403	CN201210293107	20120813
CN103016003 B	20171103	CN201210293107	20120813
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Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2012331962 AA	20130510	LSPB	+	published / reissued	
AU2012331962 AA	20160811	LSLE	-MK5	APPLICATION LAPSED SECTION 142(2)(E) - PATENT REQUEST AND COMPL. SPECIFICATION NOT ACCEPTED	
AU2013224569 AA	20130829	LSPB	+	published / reissued	
AU2013224569 AA	20160908	LSLE	-MK5	APPLICATION LAPSED SECTION 142(2)(E) - PATENT REQUEST AND COMPL. SPECIFICATION NOT ACCEPTED	
AU2013262354 AA	20131121	LSPB	+	published / reissued	
AU2013262354 BB	20160728	LSGT	+	granted / extensions (spc, cpc, pte)	

AU2013262354 BB	20161124	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2013262354 BB	20330510	PEXP		Calculated Patent Term Expiry	
AU2013262355 AA	20131121	LSPB	+	published / reissued	
AU2013262355 AA	20170105	LSLE	-MK5	APPLICATION LAPSED SECTION 142(2)(E) - PATENT REQUEST AND COMPL. SPECIFICATION NOT ACCEPTED	
AU2013262356 AA	20131121	LSPB	+	published / reissued	
AU2013262356 BB	20160707	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2013262356 BB	20161103	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2013262356 BB	20330510	PEXP		Calculated Patent Term Expiry	
AU2013302125 AA	20140213	LSPB	+	published / reissued	
AU2013302125 AB	20150507	LSRE	DA3	AMENDMENTS MADE SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS AS SHOWN IN THE STATEMENT(S) FILED 23 MAR 2015
AU2013302125 BB	20170223	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2013302125 BB	20170622	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2013302125 BB	20180510	LSLE	-MK14	PATENT CEASED SECTION 143(A) (ANNUAL FEES NOT PAID) OR EXPIRED	
AU2013302125 BB	20331008	PEXP		Calculated Patent Term Expiry	
AU2013302126 AA	20140213	LSPB	+	published / reissued	
AU2013302126 AA	20150430	LSRE	DA3	AMENDMENTS MADE SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS AS SHOWN IN THE STATEMENT(S) FILED 20 MAR 2015
AU2013302126 BB	20170629	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2013302126 BB	20171026	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2013302126 BB	20331008	PEXP		Calculated Patent Term Expiry	
AU2013351848 AA	20140605	LSPB	+	published / reissued	
AU2013351848 AB	20150827	LSRE	DA3	AMENDMENTS MADE SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS AS SHOWN IN THE STATEMENT(S) FILED 24 JUL 2015
AU2013351848 AB	20181129	LSLE	-MK5	APPLICATION LAPSED SECTION 142(2)(E) - PATENT REQUEST AND COMPL. SPECIFICATION NOT ACCEPTED	
AU2014204385 AA	20150820	LSPB	+	published / reissued	

AU2014204385 AB	20151008	LSRE	DA3	AMENDMENTS MADE SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS AS SHOWN IN THE STATEMENT(S) FILED 04 AUG 2015
AU2014204385 AB	20180510	LSLE	-MK5	APPLICATION LAPSED SECTION 142(2)(E) - PATENT REQUEST AND COMPL. SPECIFICATION NOT ACCEPTED	
AU2014252633 AA	20151126	LSPB	+	published / reissued	
AU2014252633 AA	20160107	LSRE	DA3	AMENDMENTS MADE SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS AS SHOWN IN THE STATEMENT(S) FILED 20 NOV 2015
AU2014252633 AA	20160107	LSRE	DA3	AMENDMENTS MADE SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS: AMEND THE INVENTION TITLE TO READ ANTI-DAMAGE DRIVING PART DEVICE
AU2014252633 AA	20171019	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2014252633 BB	20170622	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2014252633 BB	20340411	PEXP		Calculated Patent Term Expiry	
AU2014273757 AA	20160128	LSPB	+	published / reissued	
AU2014273757 AA	20160128	LSRE	DA3	AMENDMENTS MADE SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS: AMEND THE INVENTION TITLE TO READ RECIPROCATING IMPACT MINING PART WITH BUILT-IN CONNECTING ROD FOR MINING MACHINE
AU2014273757 AB	20160901	LSRE	DA3	AMENDMENTS MADE SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS AS SHOWN IN THE STATEMENT(S) FILED 30 DEC 2015 AND 27 JUL 2016
AU2014273757 BB	20171123	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2014273757 BB	20180322	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2014273757 BB	20340801	PEXP		Calculated Patent Term Expiry	
AU2014339658 AA	20160609	LSPB	+	published / reissued	
AU2014339658 BB	20171221	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2014339658 BB	20180419	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2014339658 BB	20341021	PEXP		Calculated Patent Term Expiry	
AU2014339659 AA	20160609	LSPB	+	published / reissued	
AU2014339659 AB	20160818	LSRE	DA3	AMENDMENTS MADE SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS AS SHOWN IN THE STATEMENT(S) FILED 22 MAY 2016 AND 27 JULY 2016
AU2014339659 BB	20180329	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2014339659 BB	20180726	LSGT	+FGA	LETTERS PATENT SEALED OR	

				GRANTED (STANDARD PATENT)	
AU2014339659 BB	20341021	PEXP		Calculated Patent Term Expiry	
AU2014339660 AA	20160609	LSPB	+	published / reissued	
AU2014339660 AB	20160811	LSRE	DA3	AMENDMENTS MADE SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS AS SHOWN IN THE STATEMENT(S) FILED 22 MAY AND 27 JUL 2016
AU2014339660 BB	20170810	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2014339660 BB	20171207	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2014339660 BB	20341021	PEXP		Calculated Patent Term Expiry	
AU2015204250 AA	20160818	LSPB	+	published / reissued	
AU2015204250 AA	20160825	LSRE	DA3	AMENDMENTS MADE SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS AS SHOWN IN THE STATEMENT(S) FILED 03 AUG 2016
AU2015204250 AA	20170330	LSLE	-MK1	APPLICATION LAPSED SECTION 142(2)(A) - NO REQUEST FOR EXAMINATION IN RELEVANT PERIOD	
AU2015210534 AA	20160915	LSPB	+	published / reissued	
AU2015210534 AB	20161006	LSRE	DA3	AMENDMENTS MADE SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS AS SHOWN IN THE STATEMENT(S) FILED 29 AUG 2016
AU2015210534 AB	20170921	LSLE	-MK1	APPLICATION LAPSED SECTION 142(2)(A) - NO REQUEST FOR EXAMINATION IN RELEVANT PERIOD	
AU2015210535 AA	20160915	LSPB	+	published / reissued	
AU2015210535 AA	20160915	LSRE	DA3	AMENDMENTS MADE SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS AS SHOWN IN THE STATEMENT(S) FILED 29 AUG 2016
AU2015210535 AA	20170921	LSLE	-MK1	APPLICATION LAPSED SECTION 142(2)(A) - NO REQUEST FOR EXAMINATION IN RELEVANT PERIOD	
AU2015210535 BB	20180726	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2015210535 BB	20181122	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2015210535 BB	20350129	PEXP		Calculated Patent Term Expiry	
AU2016204992 AA	20160804	LSPB	+	published / reissued	
AU2016204992 BB	20181206	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2016204992 BB	20190404	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2016204992 BB	20360715	PEXP		Calculated Patent Term Expiry	

AU2016213877 AA	20160901	LSPB	+	published / reissued	
AU2016213877 AA	20180517	LSLE	-MK5	APPLICATION LAPSED SECTION 142(2)(E) - PATENT REQUEST AND COMPL. SPECIFICATION NOT ACCEPTED	
AU2016269516 AA	20170105	LSPB	+	published / reissued	
AU2016269516 BB	20181206	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2016269516 BB	20190404	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2016269516 BB	20361208	PEXP		Calculated Patent Term Expiry	
AU2018202775 AA	20180510	LSPB	+	published / reissued	
AU2018256623 AA	20181122	LSPB	+	published / reissued	
CA2865005 AA	20140820	LSPB	+	published / reissued	
CA2865005 AA	20141002	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20140820
CA2865005 AA	20181121	LSLE	-FZDE	DEAD	EFFECTIVE DATE : 20181010
CA2873246 AA	20141112	LSPB	+	published / reissued	
CA2873246 AA	20150323	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20150303
CA2873246 AA	20171106	LSLE	-FZDE	DEAD	EFFECTIVE DATE : 20170922
CA2873251 AA	20141112	LSPB	+	published / reissued	
CA2873251 AA	20150324	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20150303
CA2873251 AA	20171106	LSLE	-FZDE	DEAD	EFFECTIVE DATE : 20170922
CA2873253 AA	20141112	LSPB	+	published / reissued	
CA2873253 AA	20150325	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20150303
CA2873253 AA	20171106	LSLE	-FZDE	DEAD	EFFECTIVE DATE : 20170922
CA2892409 AA	20150525	LSPB	+	published / reissued	
CA2892409 AA	20150531	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20150525
CA2897515 AA	20150703	LSPB	+	published / reissued	
CA2897515 AA	20150722	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20150703
CA2909281 AA	20151009	LSPB	+	published / reissued	
CA2909281 AA	20151027	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20151009
CA2909281 AA	20180722	LSLE	-FZDE	DEAD	EFFECTIVE DATE : 20180608
CA2928285 AA	20160421	LSPB	+	published / reissued	
CA2928285 AA	20160503	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20160421
CA2928289 AA	20160421	LSPB	+	published / reissued	
CA2928289 AA	20160514	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20160421

CA2935869 AA	20160704	LSPB	+	published / reissued	
CA2935869 AA	20160715	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20160704
CA2935869 AA	20190404	LSLE	-FZDE	DEAD	EFFECTIVE DATE : 20190221
CA2938340 AA	20160729	LSPB	+	published / reissued	
CA2938340 AA	20160816	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20160729
CA2938342 AA	20160729	LSPB	+	published / reissued	
CA2938342 AA	20160816	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20160729
CN102954149 A	20130306	LSPB	+	published / reissued	
CN102954149 A	20130306	LSPB	+C06	PUBLICATION	
CN102996123 A	20130327	LSPB	+	published / reissued	
CN102996123 A	20130327	LSPB	+C06	PUBLICATION	
CN102996123 A	20150429	LSDW	-C02	DEEMED WITHDRAWAL OF PATENT APPLICATION AFTER PUBLICATION (PATENT LAW 2001)	
CN103016003 A	20130403	LSPB	+	published / reissued	
CN103016003 A	20130403	LSPB	+C06	PUBLICATION	
CN103016003 B	20171103	LSGT	+	granted / extensions (spc, cpc, pte)	
CN103016003 B	20171103	LSGT	+GR01	PATENT GRANT	
CN103016003 B	20320813	PEXP		Calculated Patent Term Expiry	
CN103016004 A	20130403	LSPB	+	published / reissued	
CN103016004 A	20130403	LSPB	+C06	PUBLICATION	
CN103016004 B	20180413	LSGT	+	granted / extensions (spc, cpc, pte)	
CN103016004 B	20180413	LSGT	+GR01	PATENT GRANT	
CN103016004 B	20320813	PEXP		Calculated Patent Term Expiry	
CN103016624 A	20130403	LSPB	+	published / reissued	
CN103016624 A	20130403	LSPB	+C06	PUBLICATION	
CN103089259 A	20130508	LSPB	+	published / reissued	
CN103089259 A	20130508	LSPB	+C06	PUBLICATION	
CN103089259 B	20141217	LSGT	+	granted / extensions (spc, cpc, pte)	
CN103089259 B	20141217	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL	
CN103089259 B	20320911	PEXP		Calculated Patent Term Expiry	
CN103195420 A	20130710	LSPB	+	published / reissued	
CN103195420 A	20130710	LSPB	+C06	PUBLICATION	
CN103195420 B	20160921	LSGT	+	granted / extensions (spc, cpc, pte)	
CN103195420 B	20160921	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL	

CN103195420 B	20320813	PEXP		Calculated Patent Term Expiry
CN103195422 A	20130710	LSPB	+	published / reissued
CN103195422 A	20130710	LSPB	+C06	PUBLICATION
CN103195422 A	20170412	LSRV	-RJ01	REJECTION OF INVENTION PATENT APPLICATION AFTER PUBLICATION
CN103206213 A	20130717	LSPB	+	published / reissued
CN103206213 A	20130717	LSPB	+C06	PUBLICATION
CN103206213 A	20150429	LSDW	-C02	DEEMED WITHDRAWAL OF PATENT APPLICATION AFTER PUBLICATION (PATENT LAW 2001)
CN103291291 A	20130911	LSPB	+	published / reissued
CN103291291 A	20130911	LSPB	+C06	PUBLICATION
CN103291291 B	20150218	LSGT	+	granted / extensions (spc, cpc, pte)
CN103291291 B	20150218	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN103291291 B	20330222	PEXP		Calculated Patent Term Expiry
CN103291294 A	20130911	LSPB	+	published / reissued
CN103291294 A	20130911	LSPB	+C06	PUBLICATION
CN103291294 B	20160921	LSGT	+	granted / extensions (spc, cpc, pte)
CN103291294 B	20160921	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN103291294 B	20330222	PEXP		Calculated Patent Term Expiry
CN103291295 A	20130911	LSPB	+	published / reissued
CN103291295 A	20130911	LSPB	+C06	PUBLICATION
CN103291295 B	20180130	LSGT	+	granted / extensions (spc, cpc, pte)
CN103291295 B	20180130	LSGT	+GR01	PATENT GRANT
CN103291295 B	20330222	PEXP		Calculated Patent Term Expiry
CN103291450 A	20130911	LSPB	+	published / reissued
CN103291450 A	20130911	LSPB	+C06	PUBLICATION
CN103291450 A	20170926	LSGT	+GR01	PATENT GRANT
CN103291450 B	20170926	LSGT	+	granted / extensions (spc, cpc, pte)
CN103291450 B	20330222	PEXP		Calculated Patent Term Expiry
CN103291602 A	20130911	LSPB	+	published / reissued
CN103291602 A	20130911	LSPB	+C06	PUBLICATION
CN103291602 A	20190201	LSRV	-RJ01	REJECTION OF INVENTION PATENT APPLICATION AFTER PUBLICATION
CN103291683 A	20130911	LSPB	+	published / reissued

CN103291683 A	20130911	LSPB	+C06	PUBLICATION
CN103291683 A	20181207	LSRV	-RJ01	REJECTION OF INVENTION PATENT APPLICATION AFTER PUBLICATION
CN103334749 A	20131002	LSPB	+	published / reissued
CN103334749 A	20131002	LSPB	+C06	PUBLICATION
CN103334749 B	20180807	LSGT	+	granted / extensions (spc, cpc, pte)
CN103334749 B	20180807	LSGT	+GR01	PATENT GRANT
CN103334749 B	20330222	PEXP		Calculated Patent Term Expiry
CN103352697 A	20131016	LSPB	+	published / reissued
CN103352697 A	20131016	LSPB	+C06	PUBLICATION
CN103382839 A	20131106	LSPB	+	published / reissued
CN103382839 A	20131106	LSPB	+C06	PUBLICATION
CN103382839 A	20150902	LSDW	-C05	DEEMED WITHDRAWAL (PATENT LAW BEFORE 1993)
CN103382840 A	20131106	LSPB	+	published / reissued
CN103382840 A	20131106	LSPB	+C06	PUBLICATION
CN103382840 A	20150826	LSDW	-C05	DEEMED WITHDRAWAL (PATENT LAW BEFORE 1993)
CN103388345 A	20131113	LSPB	+	published / reissued
CN103388345 A	20131113	LSPB	+C06	PUBLICATION
CN103388345 B	20171208	LSGT	+	granted / extensions (spc, cpc, pte)
CN103388345 B	20171208	LSGT	+GR01	PATENT GRANT
CN103388345 B	20330510	PEXP		Calculated Patent Term Expiry
CN103388474 A	20131113	LSPB	+	published / reissued
CN103388474 A	20131113	LSPB	+C06	PUBLICATION
CN103388474 A	20161228	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN103388474 B	20161228	LSGT	+	granted / extensions (spc, cpc, pte)
CN103388474 B	20330510	PEXP		Calculated Patent Term Expiry
CN103388475 A	20131113	LSPB	+	published / reissued
CN103388475 A	20131113	LSPB	+C06	PUBLICATION
CN103388475 A	20170825	LSGT	+GR01	PATENT GRANT
CN103388475 B	20170825	LSGT	+	granted / extensions (spc, cpc, pte)
CN103388475 B	20330510	PEXP		Calculated Patent Term Expiry
CN103388476 A	20131113	LSPB	+	published / reissued
CN103388476 A	20131113	LSPB	+C06	PUBLICATION
CN103388476 B	20180619	LSGT	+	granted / extensions (spc, cpc, pte)
CN103388476 B	20180619	LSGT	+GR01	PATENT GRANT

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CN103388476 B	20330510	PEXP		Calculated Patent Term Expiry
CN103388620 A	20131113	LSPB	+	published / reissued
CN103388620 A	20131113	LSPB	+C06	PUBLICATION
CN103498671 A	20140108	LSPB	+	published / reissued
CN103498671 A	20140108	LSPB	+C06	PUBLICATION
CN103498671 B	20180928	LSGT	+	granted / extensions (spc, cpc, pte)
CN103498671 B	20180928	LSGT	+GR01	PATENT GRANT
CN103498671 B	20330510	PEXP		Calculated Patent Term Expiry
CN103498673 A	20140108	LSPB	+	published / reissued
CN103498673 A	20140108	LSPB	+C06	PUBLICATION
CN103498673 B	20171205	LSGT	+	granted / extensions (spc, cpc, pte)
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CN103498673 B	20330510	PEXP		Calculated Patent Term Expiry
CN103498869 A	20140108	LSPB	+	published / reissued
CN103498869 A	20140108	LSPB	+C06	PUBLICATION
CN103510953 A	20140115	LSPB	+	published / reissued
CN103510953 A	20140115	LSPB	+C06	PUBLICATION
CN103510953 B	20180130	LSGT	+	granted / extensions (spc, cpc, pte)
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CN103510953 B	20330624	PEXP		Calculated Patent Term Expiry
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CN103510954 A	20140115	LSPB	+C06	PUBLICATION
CN103510954 A	20161228	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN103510954 B	20161228	LSGT	+	granted / extensions (spc, cpc, pte)
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CN103573265 A	20140212	LSPB	+	published / reissued
CN103573265 A	20140212	LSPB	+C06	PUBLICATION
CN103573265 B	20180720	LSGT	+	granted / extensions (spc, cpc, pte)
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CN103573265 B	20330601	PEXP		Calculated Patent Term Expiry
CN103835325 A	20140604	LSPB	+	published / reissued
CN103835325 A	20140604	LSPB	+C06	PUBLICATION
CN103835325 A	20170118	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN103835325 B	20170118	LSGT	+	granted / extensions (spc, cpc, pte)

CN103835325 B	20331126	PEXP		Calculated Patent Term Expiry
CN103835326 A	20140604	LSPB	+	published / reissued
CN103835326 A	20140604	LSPB	+C06	PUBLICATION
CN103912273 A	20140709	LSPB	+	published / reissued
CN103912273 A	20140709	LSPB	+C06	PUBLICATION
CN103912273 B	20180522	LSGT	+	granted / extensions (spc, cpc, pte)
CN103912273 B	20180522	LSGT	+GR01	PATENT GRANT
CN103912273 B	20340106	PEXP		Calculated Patent Term Expiry
CN103953338 A	20140730	LSPB	+	published / reissued
CN103953338 A	20140730	LSPB	+C06	PUBLICATION
CN104005763 A	20140827	LSPB	+	published / reissued
CN104005763 A	20140827	LSPB	+C06	PUBLICATION
CN104005763 A	20170825	LSGT	+GR01	PATENT GRANT
CN104005763 B	20170825	LSGT	+	granted / extensions (spc, cpc, pte)
CN104005763 B	20340129	PEXP		Calculated Patent Term Expiry
CN104100265 A	20141015	LSPB	+	published / reissued
CN104100265 A	20141015	LSPB	+C06	PUBLICATION
CN104100265 B	20160518	LSGT	+	granted / extensions (spc, cpc, pte)
CN104100265 B	20160518	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN104100265 B	20340411	PEXP		Calculated Patent Term Expiry
CN104213915 A	20141217	LSPB	+	published / reissued
CN104213915 A	20141217	LSPB	+C06	PUBLICATION
CN104213915 A	20161214	LSDW	-C02	DEEMED WITHDRAWAL OF PATENT APPLICATION AFTER PUBLICATION (PATENT LAW 2001)
CN104213917 A	20141217	LSPB	+	published / reissued
CN104213917 A	20141217	LSPB	+C06	PUBLICATION
CN104213917 B	20171208	LSGT	+	granted / extensions (spc, cpc, pte)
CN104213917 B	20171208	LSGT	+GR01	PATENT GRANT
CN104213917 B	20340512	PEXP		Calculated Patent Term Expiry
CN104420870 A	20150318	LSPB	+	published / reissued
CN104420870 A	20150318	LSPB	+C06	PUBLICATION
CN104420870 B	20180302	LSGT	+	granted / extensions (spc, cpc, pte)
CN104420870 B	20180302	LSGT	+GR01	PATENT GRANT
CN104420870 B	20340901	PEXP		Calculated Patent Term Expiry
CN104420871 A	20150318	LSPB	+	published / reissued

CN104420871 A	20150318	LSPB	+C06	PUBLICATION
CN104420871 B	20180302	LSGT	+	granted / extensions (spc, cpc, pte)
CN104420871 B	20180302	LSGT	+GR01	PATENT GRANT
CN104420871 B	20340901	PEXP		Calculated Patent Term Expiry
CN104563173 A	20150429	LSPB	+	published / reissued
CN104563173 A	20150429	LSPB	+C06	PUBLICATION
CN104563173 B	20171208	LSGT	+	granted / extensions (spc, cpc, pte)
CN104563173 B	20171208	LSGT	+GR01	PATENT GRANT
CN104563173 B	20341021	PEXP		Calculated Patent Term Expiry
CN104564051 A	20150429	LSPB	+	published / reissued
CN104564051 A	20150429	LSPB	+C06	PUBLICATION
CN104564051 B	20180413	LSGT	+	granted / extensions (spc, cpc, pte)
CN104564051 B	20180413	LSGT	+GR01	PATENT GRANT
CN104564051 B	20340901	PEXP		Calculated Patent Term Expiry
CN104564052 A	20150429	LSPB	+	published / reissued
CN104564052 A	20150429	LSPB	+C06	PUBLICATION
CN104564052 B	20180130	LSGT	+	granted / extensions (spc, cpc, pte)
CN104564052 B	20180130	LSGT	+GR01	PATENT GRANT
CN104564052 B	20341021	PEXP		Calculated Patent Term Expiry
CN104695493 A	20150610	LSPB	+	published / reissued
CN104695493 A	20150610	LSPB	+C06	PUBLICATION
CN104695493 B	20171205	LSGT	+	granted / extensions (spc, cpc, pte)
CN104695493 B	20171205	LSGT	+GR01	PATENT GRANT
CN104695493 B	20341021	PEXP		Calculated Patent Term Expiry
CN104763416 A	20150708	LSPB	+	published / reissued
CN104763416 A	20150708	LSPB	+C06	PUBLICATION
CN104763416 B	20190329	LSGT	+	granted / extensions (spc, cpc, pte)
CN104763416 B	20190329	LSGT	+GR01	PATENT GRANT
CN104763416 B	20350104	PEXP		Calculated Patent Term Expiry
CN104806239 A	20150729	LSPB	+	published / reissued
CN104806239 A	20150729	LSPB	+C06	PUBLICATION
CN104806239 B	20190205	LSGT	+	granted / extensions (spc, cpc, pte)
CN104806239 B	20190205	LSGT	+GR01	PATENT GRANT
CN104806239 B	20350129	PEXP		Calculated Patent Term Expiry
CN104806624 A	20150729	LSPB	+	published / reissued
CN104806624 A	20150729	LSPB	+C06	PUBLICATION
CN104806624 B	20181218	LSGT	+	granted / extensions (spc,

CN104806624 B	20181218	LSGT	+GR01	cpc, pte) PATENT GRANT
CN104806624 B	20350129	PEXP		Calculated Patent Term Expiry
CN202251677 U	20120530	LSGT	+	granted / extensions (spc, cpc, pte)
CN202251677 U	20120530	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN202251677 U	20180821	LSLE	-CF01	TERMINATION OF PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE
CN202251677 U	20210831	PEXP		Calculated Patent Term Expiry
CN203050690 U	20130710	LSGT	+	granted / extensions (spc, cpc, pte)
CN203050690 U	20130710	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203050690 U	20180828	LSLE	-CF01	TERMINATION OF PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE
CN203050690 U	20220910	PEXP		Calculated Patent Term Expiry
CN203050691 U	20130710	LSGT	+	granted / extensions (spc, cpc, pte)
CN203050691 U	20130710	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203050691 U	20180828	LSLE	-CF01	TERMINATION OF PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE
CN203050691 U	20220911	PEXP		Calculated Patent Term Expiry
CN203214058 U	20130925	LSGT	+	granted / extensions (spc, cpc, pte)
CN203214058 U	20130925	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203214058 U	20171103	LSLE	-CF01	TERMINATION OF PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE
CN203214058 U	20220914	PEXP		Calculated Patent Term Expiry
CN203214232 U	20130925	LSGT	+	granted / extensions (spc, cpc, pte)
CN203214232 U	20130925	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203214232 U	20160113	LSAS	C41	TRANSFER OF PATENT APPLICATION OR PATENT RIGHT OR UTILITY MODEL
CN203214232 U	20190212	LSLE	-CF01	TERMINATION OF PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE
CN203214232 U	20230222	PEXP		Calculated Patent Term Expiry
CN203334327 U	20131211	LSGT	+	granted / extensions (spc, cpc, pte)
CN203334327 U	20131211	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203334327 U	20190423	LSLE	-CF01	TERMINATION OF

				PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE
CN203334327 U	20230510	PEXP		Calculated Patent Term Expiry
CN203335074 U	20131211	LSGT	+	granted / extensions (spc, cpc, pte)
CN203335074 U	20131211	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203335074 U	20180227	LSLE	-CF01	TERMINATION OF PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE
CN203335074 U	20220110	PEXP		Calculated Patent Term Expiry
CN203348320 U	20131218	LSGT	+	granted / extensions (spc, cpc, pte)
CN203348320 U	20131218	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203348320 U	20230510	PEXP		Calculated Patent Term Expiry
CN203531896 U	20140409	LSGT	+	granted / extensions (spc, cpc, pte)
CN203531896 U	20140409	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203531896 U	20190423	LSLE	-CF01	TERMINATION OF PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE
CN203531896 U	20230510	PEXP		Calculated Patent Term Expiry
CN203531897 U	20140409	LSGT	+	granted / extensions (spc, cpc, pte)
CN203531897 U	20140409	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203531897 U	20180731	LSWD	-AV01	PATENT RIGHT ACTIVELY ABANDONED
CN203531897 U	20230601	PEXP		Calculated Patent Term Expiry
CN203531903 U	20140409	LSGT	+	granted / extensions (spc, cpc, pte)
CN203531903 U	20140409	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203531903 U	20230222	PEXP		Calculated Patent Term Expiry
CN203532050 U	20140409	LSGT	+	granted / extensions (spc, cpc, pte)
CN203532050 U	20140409	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203532050 U	20190212	LSLE	-CF01	TERMINATION OF PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE
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CN203532524 U	20140409	LSGT	+	granted / extensions (spc, cpc, pte)
CN203532524 U	20140409	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203532524 U	20230510	PEXP		Calculated Patent Term Expiry

CN203584426 U	20140507	LSGT	+	granted / extensions (spc, cpc, pte)
CN203584426 U	20140507	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203584426 U	20170627	LSLE	-CF01	TERMINATION OF PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE
CN203584426 U	20230510	PEXP		Calculated Patent Term Expiry
CN203640730 U	20140611	LSGT	+	granted / extensions (spc, cpc, pte)
CN203640730 U	20140611	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203640730 U	20231008	PEXP		Calculated Patent Term Expiry
CN203641150 U	20140611	LSGT	+	granted / extensions (spc, cpc, pte)
CN203641150 U	20140611	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203641150 U	20230222	PEXP		Calculated Patent Term Expiry
CN203716962 U	20140716	LSGT	+	granted / extensions (spc, cpc, pte)
CN203716962 U	20140716	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203716962 U	20180601	LSWD	-AV01	PATENT RIGHT ACTIVELY ABANDONED
CN203716962 U	20240106	PEXP		Calculated Patent Term Expiry
CN203716963 U	20140716	LSGT	+	granted / extensions (spc, cpc, pte)
CN203716963 U	20140716	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203716963 U	20230222	PEXP		Calculated Patent Term Expiry
CN203905941 U	20141029	LSGT	+	granted / extensions (spc, cpc, pte)
CN203905941 U	20141029	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203905941 U	20180529	LSLE	-CF01	TERMINATION OF PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE
CN203905941 U	20240512	PEXP		Calculated Patent Term Expiry
CN203905943 U	20141029	LSGT	+	granted / extensions (spc, cpc, pte)
CN203905943 U	20141029	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN203905943 U	20171208	LSWD	-AV01	PATENT RIGHT ACTIVELY ABANDONED
CN203905943 U	20240512	PEXP		Calculated Patent Term Expiry
CN204000982 U	20141210	LSGT	+	granted / extensions (spc, cpc, pte)
CN204000982 U	20141210	LSGT	+C14	GRANT OF PATENT

CN204000982 U	20180112	LSLE	-CF01	OR UTILITY MODEL TERMINATION OF PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE
CN204000982 U	20231126	PEXP		Calculated Patent Term Expiry
CN204000983 U	20141210	LSGT	+	granted / extensions (spc, cpc, pte)
CN204000983 U	20141210	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN204000983 U	20231126	PEXP		Calculated Patent Term Expiry
CN204002782 U	20141210	LSGT	+	granted / extensions (spc, cpc, pte)
CN204002782 U	20141210	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN204002782 U	20190115	LSLE	-CF01	TERMINATION OF PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE
CN204002782 U	20240129	PEXP		Calculated Patent Term Expiry
CN204082138 U	20150107	LSGT	+	granted / extensions (spc, cpc, pte)
CN204082138 U	20150107	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN204082138 U	20160518	LSWD	-C25	ABANDONMENT OF PATENT RIGHT OR UTILITY MODEL TO AVOID DOUBLE PATENTING
CN204082138 U	20240411	PEXP		Calculated Patent Term Expiry
CN204225170 U	20150325	LSGT	+	granted / extensions (spc, cpc, pte)
CN204225170 U	20150325	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN204225170 U	20171205	LSWD	-AV01	PATENT RIGHT ACTIVELY ABANDONED
CN204225170 U	20241021	PEXP		Calculated Patent Term Expiry
CN204225879 U	20150325	LSGT	+	granted / extensions (spc, cpc, pte)
CN204225879 U	20150325	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN204225879 U	20180316	LSLE	-CF01	TERMINATION OF PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE
CN204225879 U	20230222	PEXP		Calculated Patent Term Expiry
CN204401666 U	20150617	LSGT	+	granted / extensions (spc, cpc, pte)
CN204401666 U	20150617	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN204401666 U	20171208	LSWD	-AV01	PATENT RIGHT ACTIVELY ABANDONED
CN204401666 U	20241021	PEXP		Calculated Patent Term Expiry
CN204402474 U	20150617	LSGT	+	granted /

CN204402474 U	20150617	LSGT	+C14	extensions (spc, cpc, pte) GRANT OF PATENT OR UTILITY MODEL
CN204402474 U	20180413	LSWD	-AV01	PATENT RIGHT ACTIVELY ABANDONED
CN204402474 U	20240901	PEXP		Calculated Patent Term Expiry
CN204402475 U	20150617	LSGT	+	granted / extensions (spc, cpc, pte)
CN204402475 U	20150617	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN204402475 U	20180302	LSWD	-AV01	PATENT RIGHT ACTIVELY ABANDONED
CN204402475 U	20240901	PEXP		Calculated Patent Term Expiry
CN204402476 U	20150617	LSGT	+	granted / extensions (spc, cpc, pte)
CN204402476 U	20150617	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN204402476 U	20241021	PEXP		Calculated Patent Term Expiry
CN204402478 U	20150617	LSGT	+	granted / extensions (spc, cpc, pte)
CN204402478 U	20150617	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN204402478 U	20180302	LSWD	-AV01	PATENT RIGHT ACTIVELY ABANDONED
CN204402478 U	20240901	PEXP		Calculated Patent Term Expiry
CN204511431 U	20150729	LSGT	+	granted / extensions (spc, cpc, pte)
CN204511431 U	20150729	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN204511431 U	20190329	LSWD	-AV01	PATENT RIGHT ACTIVELY ABANDONED
CN204511431 U	20250104	PEXP		Calculated Patent Term Expiry
CN204511438 U	20150729	LSGT	+	granted / extensions (spc, cpc, pte)
CN204511438 U	20150729	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN204511438 U	20250129	PEXP		Calculated Patent Term Expiry
CN204511440 U	20150729	LSGT	+	granted / extensions (spc, cpc, pte)
CN204511440 U	20150729	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL
CN204511440 U	20190212	LSLE	-CF01	TERMINATION OF PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE
CN204511440 U	20230222	PEXP		Calculated Patent Term Expiry
CN204512167 U	20150729	LSGT	+	granted / extensions (spc, cpc, pte)
CN204512167 U	20150729	LSGT	+C14	GRANT OF PATENT

CN204512167 U	20181218	LSWD	-AV01	OR UTILITY MODEL PATENT RIGHT ACTIVELY ABANDONED	
CN204512167 U	20250129	PEXP		Calculated Patent Term Expiry	
CO7230345 A2	20150331	LSPB	+	published / reissued	
CO7240406 A2	20150417	LSPB	+	published / reissued	
EA026928 B1	20170531	LSGT	+	granted / extensions (spc, cpc, pte)	
EA026928 B1	20181031	LSLE	-MM4A	LAPSE OF A EURASIAN PATENT DUE TO NON- PAYMENT OF RENEWAL FEES WITHIN THE TIME LIMIT IN THE FOLLOWING DESIGNATED STATE(S)	COUNTRY OF REF DOCUMENT : AM COUNTRY OF REF DOCUMENT : AZ COUNTRY OF REF DOCUMENT : KG COUNTRY OF REF DOCUMENT : TJ COUNTRY OF REF DOCUMENT : TM
EA026928 B1	20330222	PEXP		Calculated Patent Term Expiry	
EA030484 B1	20180831	LSGT	+	granted / extensions (spc, cpc, pte)	
EA030484 B1	20340411	PEXP		Calculated Patent Term Expiry	
EA030489 B1	20180831	LSGT	+	granted / extensions (spc, cpc, pte)	
EA030489 B1	20341021	PEXP		Calculated Patent Term Expiry	
EA031055 B1	20181130	LSGT	+	granted / extensions (spc, cpc, pte)	
EA031055 B1	20341021	PEXP		Calculated Patent Term Expiry	
EA201491588 A1	20150331	LSPB	+	published / reissued	
EA201492063 A1	20150430	LSPB	+	published / reissued	
EA201492065 A1	20150430	LSPB	+	published / reissued	
EA201501184 A1	20160630	LSPB	+	published / reissued	
EA201590336 A1	20150730	LSPB	+	published / reissued	
EA201590337 A1	20160129	LSPB	+	published / reissued	
EA201591037 A1	20151130	LSPB	+	published / reissued	
EA201591272 A1	20160429	LSPB	+	published / reissued	
EA201591972 A1	20160831	LSPB	+	published / reissued	
EA201690819 A1	20170130	LSPB	+	published / reissued	
EA201690821 A1	20160930	LSPB	+	published / reissued	
EA201690822 A1	20161031	LSPB	+	published / reissued	
EA201691382 A1	20161230	LSPB	+	published / reissued	
EA201691546 A1	20180629	LSPB	+	published / reissued	
EA201691547 A1	20170130	LSPB	+	published / reissued	
EP2818634 A1	20141231	LSPB	+	published / reissued	

EP2818634 A1	20141231	LSSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20140923
EP2818634 A4	20160817	LSSES	+RA4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED (CORRECTED)	EFFECTIVE DATE : 20160719
EP2818634 A4	20160817	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21C 27/28 20060101AFI20160713BHEP
EP2818634 A4	20160817	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21D 9/10 20060101ALI20160713BHEP
EP2818634 A4	20180905	LSSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20180801
EP2848767 A1	20150318	LSPB	+	published / reissued	
EP2848767 A1	20150318	LSSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20141212
EP2848767 A4	20160817	LSSES	+RA4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED (CORRECTED)	EFFECTIVE DATE : 20160718
EP2848767 A4	20160817	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21C 27/12 20060101AFI20160712BHEP
EP2848767 A4	20160817	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21C 35/193 20060101ALI20160712BHEP
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EP2848767 A4	20180725	LSSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20180622
EP2860345 A1	20150415	LSPB	+	published / reissued	
EP2860345 A1	20150415	LSSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20141212
EP2860345 A4	20161102	LSSES	+RA4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED (CORRECTED)	EFFECTIVE DATE : 20161005
EP2860345 A4	20161102	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21C 27/12 20060101AFI20160928BHEP
EP2860345 A4	20161102	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21B 1/02 20060101ALI20160928BHEP
EP2860345 A4	20180425	LSSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20180321
EP2927422 A1	20151007	LSPB	+	published / reissued	
EP2927422 A1	20151007	LSSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20150625
EP2927422 A4	20160817	LSSES	+RA4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND	EFFECTIVE DATE : 20160718

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EP2927422 A4	20160817	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21C 27/24 20060101AFI20160712BHEP
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EP2927422 A4	20180124	LSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20171220
EP2927422 A4	20190522	LSDW	-18D	APPLICATION DEEMED TO BE WITHDRAWN	EFFECTIVE DATE : 20181204
EP2942478 A1	20151111	LSPB	+	published / reissued	
EP2942478 A1	20151111	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20150804
EP2942478 A4	20160817	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20160718
EP2942478 A4	20160817	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21C 35/193 20060101ALI20160712BHEP
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EP2942478 A4	20180117	LSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20171219
EP2942478 A4	20181003	LSDW	-18D	APPLICATION DEEMED TO BE WITHDRAWN	EFFECTIVE DATE : 20180501
EP3061904 A1	20160831	LSPB	+	published / reissued	
EP3061904 A1	20160831	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20160520
EP3061904 A4	20170614	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20170517
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IN07949DN2014 A	20160831	LSPB	+	published / reissued	
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IN10622DN2014 A	20150911	LSPB	+	published / reissued	
IN10640DN2014 A	20150911	LSPB	+	published / reissued	
IN10644DN2014 A	20160831	LSPB	+	published / reissued	
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2015; STATUS: REJECTED; KIND
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SECTIONS IN PARALLEL, EXCAVATOR
EFFECTIVE DATE : 20170824

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TH157015 A	20161004	LSPB	+	published / reissued	
TH161008 A	20170323	LSPB	+	published / reissued	
UA110659 C2	20160125	LSGT	+	granted / extensions (spc, cpc, pte)	
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UA118958 C2	20190410	LSGT	+	granted / extensions (spc, cpc, pte)	
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US10180066 BB	20190115	LSGT	+	granted / extensions (spc, cpc, pte)	
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WO14106455 A1	20140710	LSPB	+	published / reissued	
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WO15113504 A1	20150806	LSPB	+	published / reissued	
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ZA201406879 A	20340918	PEXP		Calculated Patent Term Expiry	
ZA201409157 A	20160127	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA201409157 A	20341211	PEXP		Calculated Patent Term Expiry	
ZA201409158 A	20170426	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA201409158 A	20341211	PEXP		Calculated Patent Term Expiry	
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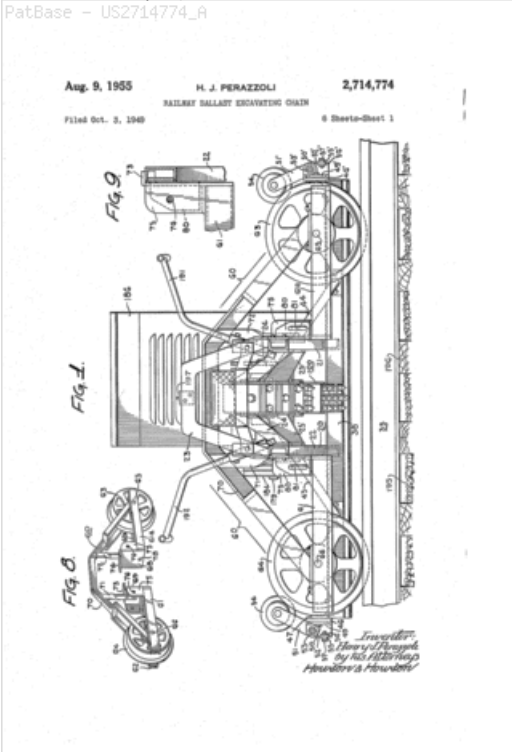
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ZA201605985 A	20360828	PEXP		Calculated Patent Term Expiry
ZA201605986 A	20180627	LSGT	+	granted / extensions (spc, cpc, pte)
ZA201605986 A	20360828	PEXP		Calculated Patent Term Expiry

Title: RAILWAY BALLAST **EXCAVATING** CHAIN

Abstract: (Claim 1) 1. In railway roadbed machinery, a cribber assembly comprisin- a frame, a cribber head supported at one end of said frame, power nicans mounted on the frame for driving said cribber head, a fixed truck rigidly attached to the frame in spaced relation from the cribber head, a detachable truck adapted to be secured to the frame adjacent the cribber head to support the cribber head and fraine in an elevated position when moving the cribber assembly along two parallel rails, a sub-frame adjustabli., mounted on the main frarne to form an adjustable longitudinal extension thereof, and connecting means on the subframe, _lor rnotinting the detachable truck thereon when operating the cribber assembly to, remove bahast.

Classifications:

International (IPC 8-9): E01B27/04 (Advanced/Invention);
E01B27/00 (Core/Invention)
CPC: E01B27/04
European: E01B27/04
US: 37/104



Family:

Publication number	Publication date	Application number	Application date
US2714774 A	19550809	US19490119289	19491003

Priority:

US19490119289 19491003

Probable Assignee:

PERAZZOLI HENRY J

Assignee(s): (std):

PERAZZOLI HENRY J

Inventor(s): (std):

PERAZZOLI HENRY J

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2714774 A	19550809	LSGT	+	granted / extensions (spc, cpc, pte)	

US6996926 BB	20060214	US20030601727	20030623
WO04001141 A1	20031231	WO2003US19869	20030623

Priority:

US20020391062P 20020624 US20020411181P 20020916 US20030601727 20030623
WO2003US19869 20030623 US20050314353 20051221

Probable Assignee: PALADIN BRANDS GROUP INC

Assignee(s): (std): JRB ATTACHMENTS LLC ; JRB CO INC

Assignee(s): PNC BANK NATIONAL ASSOCIATION COLLATERAL AGENT AS ; REGIMENT CAPITAL SPECIAL SITUATIONS FUND V LP COLLATERAL AGENT AS ; PENGOCORP ; JRB COMPANY INC ; PALADIN BRANDS GROUP INC ; REGIMENT CAPITAL SPECIAL SITUATIONS FUND V LP COLL ; KPS CAPITAL FINANCE MANAGEMENT LLC ; ANTARES CAPITAL AGENT AS CORP ; ANTARES CAPITAL CORP ; ATTACHMENT TECHNOLOGIES INC ; BANK OF AMERICA NA COLLATERAL AGENT AS ; CRENLO CAB PRODUCTS INC ; CWS IND MFG CORP ; EMCOR ENCLOSURES INC ; GENESIS ATTACHMENTS LLC

Inventor(s): (std): FATEMI RAY S ; RAY S FATEMI

Inventor(s): FATEMI RAY

Agent(s): STEVEN M HAAS FAY SHARPE FAGAN MINNICH AND MCKEE LLP; FAY SHARPE FAGAN MINNICH AND MCKEE LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SC SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2003249360 AA	20040106	LSPB	+	published / reissued	
AU2003249360 AA	20050407	LSLE	-MK6	APPLICATION LAPSED SECTION 142(2)(F)/REG. 8.3(3) - PCT APPLIC. NOT ENTERING NATIONAL PHASE	
US2004000077 AA	20040101	LSPB	+	published / reissued	
US2004000077 AA	20040901	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ANTARES CAPITAL CORPORATION, AS AGENT, ILLINOIS OLDPARTY : SECURITY AGREEMENT; ASSIGNOR:JRB ATTACHMENTS, LLC; REEL/FRAME:015722/0989 EFFECTIVE DATE : 20040823
US2004000077 AA	20040918	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : JRB ATTACHMENTS, LLC, IOWA OLDPARTY : MERGER/NAME CHANGE; ASSIGNOR:JRB COMPANY, INC.; REEL/FRAME:016116/0946 EFFECTIVE DATE : 20040831
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US2006107557 AA	20060505	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : JRB ATTACHMENTS, LLC, IOWA OLDPARTY : MERGER; ASSIGNOR:JRB COMPANY, INC.; REEL/FRAME:017581/0917 EFFECTIVE DATE : 20040823
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				to an Office Action	
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US6996926 BB	20030623	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : JRB COMPANY, INC., OHIO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:FATEMI, RAY S.; REEL/FRAME:014224/0899 EFFECTIVE DATE : 20030623
US6996926 BB	20060125	LSGT	PAT1	Patented Case	
US6996926 BB	20060928	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : JRB ATTACHMENTS, LLC, IOWA OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:ANTARES CAPITAL CORPORATION, AS AGENT; REEL/FRAME:018313/0971 EFFECTIVE DATE : 20060830
US6996926 BB	20090602	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6996926 BB	20100215	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ATTACHMENT TECHNOLOGIES, INC., IOWA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:JRB ATTACHMENTS, LLC; REEL/FRAME:023928/0980 EFFECTIVE DATE : 20100204
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US6996926 BB	20110202	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : PALADIN BRANDS GROUP, INC., IOWA OLDPARTY : CHANGE OF NAME; ASSIGNOR:ATTACHMENT TECHNOLOGIES, INC.; REEL/FRAME:025733/0676 EFFECTIVE DATE : 20110101
US6996926 BB	20110929	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : REGIMENT CAPITAL SPECIAL SITUATIONS FUND V, L.P., OLDPARTY : NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS; ASSIGNORS:PALADIN BRANDS GROUP, INC.; PENGU CORPORATION; GENESIS ATTACHMENTS, LLC; AND OTHERS; REEL/FRAME:026991/0784 EFFECTIVE DATE : 20110928
US6996926 BB	20111012	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : KPS CAPITAL FINANCE MANAGEMENT, LLC, NEW YORK OLDPARTY : NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS; ASSIGNORS:PALADIN BRANDS GROUP, INC.; PENGU CORPORATION; GENESIS ATTACHMENTS, LLC; AND OTHERS; REEL/FRAME:027051/0142 EFFECTIVE DATE : 20110928
US6996926 BB	20130805	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6996926 BB	20130819	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : PNC BANK, NATIONAL ASSOCIATION, AS COLLATERAL AGENT OLDPARTY : SECURITY AGREEMENT; ASSIGNORS:PENGU CORPORATION; PALADIN BRANDS GROUP, INC.; GENESIS ATTACHMENTS, LLC; AND OTHERS; REEL/FRAME:031039/0687 EFFECTIVE DATE : 20130816

US6996926 BB	20130819	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BANK OF AMERICA, N.A., AS COLLATERAL AGENT, NORTH OLDPARTY : SECURITY AGREEMENT; ASSIGNORS:PENGO CORPORATION; PALADIN BRANDS GROUP, INC.; GENESIS ATTACHMENTS, LLC; AND OTHERS; REEL/FRAME:031039/0664 EFFECTIVE DATE : 20130816
US6996926 BB	20130822	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CRENLO CAB PRODUCTS, INC., ILLINOIS OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:KPS CAPITAL FINANCE MANAGEMENT, LLC; REEL/FRAME:031074/0571 EFFECTIVE DATE : 20130816
US6996926 BB	20130822	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : PENGO CORPORATION, ILLINOIS OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:KPS CAPITAL FINANCE MANAGEMENT, LLC; REEL/FRAME:031074/0571 EFFECTIVE DATE : 20130816
US6996926 BB	20130822	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : EMCOR ENCLOSURES, INC., ILLINOIS OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:KPS CAPITAL FINANCE MANAGEMENT, LLC; REEL/FRAME:031074/0571 EFFECTIVE DATE : 20130816
US6996926 BB	20130822	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : PALADIN BRANDS GROUP, INC., ILLINOIS OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:KPS CAPITAL FINANCE MANAGEMENT, LLC; REEL/FRAME:031074/0571 EFFECTIVE DATE : 20130816
US6996926 BB	20130822	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENESIS ATTACHMENTS, LLC, ILLINOIS OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:KPS CAPITAL FINANCE MANAGEMENT, LLC; REEL/FRAME:031074/0571 EFFECTIVE DATE : 20130816
US6996926 BB	20130828	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : KPS CAPITAL FINANCE MANAGEMENT, LLC, NORTH CAROLIN OLDPARTY : SECURITY AGREEMENT; ASSIGNORS:PENGO CORPORATION; PALADIN BRANDS GROUP, INC.; GENESIS ATTACHMENTS, LLC; AND OTHERS; REEL/FRAME:031105/0470 EFFECTIVE DATE : 20130816
US6996926 BB	20130830	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : PENGO CORPORATION, ILLINOIS OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:REGIMENT CAPITAL SPECIAL SITUATIONS FUND V, L.P.; REEL/FRAME:031122/0139 EFFECTIVE DATE : 20130816
US6996926 BB	20130830	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : EMCOR ENCLOSURES, INC., ILLINOIS OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:REGIMENT CAPITAL SPECIAL SITUATIONS FUND V, L.P.; REEL/FRAME:031122/0139 EFFECTIVE DATE : 20130816
US6996926 BB	20130830	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : PALADIN BRANDS GROUP, INC., ILLINOIS OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:REGIMENT CAPITAL SPECIAL SITUATIONS FUND V, L.P.; REEL/FRAME:031122/0139 EFFECTIVE DATE : 20130816

US6996926 BB	20130830	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENESIS ATTACHMENTS, LLC, ILLINOIS OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:REGIMENT CAPITAL SPECIAL SITUATIONS FUND V, L.P.; REEL/FRAME:031122/0139 EFFECTIVE DATE : 20130816
US6996926 BB	20130830	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CRENO CAB PRODUCTS, INC., ILLINOIS OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:REGIMENT CAPITAL SPECIAL SITUATIONS FUND V, L.P.; REEL/FRAME:031122/0139 EFFECTIVE DATE : 20130816
US6996926 BB	20170925	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US6996926 BB	20180215	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : PALADIN BRANDS GROUP, INC., ILLINOIS OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:KPS CAPITAL FINANCE MANAGEMENT, LLC; REEL/FRAME:045349/0962 EFFECTIVE DATE : 20180212
US6996926 BB	20180312	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US6996926 BB	20180312	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6996926 BB	20180312	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6996926 BB	20180403	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180214
US6996926 BB	20190311	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : PALADIN BRANDS GROUP, INC., ILLINOIS OLDPARTY : TERMINATION AND RELEASE OF GRANT OF SECURITY INTEREST IN UNITED STATES PATENTS AND TRADEMARKS; ASSIGNOR:PNC BANK, NATIONAL ASSOCIATION; REEL/FRAME:048558/0592 EFFECTIVE DATE : 20190308
US6996926 BB	20190311	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : PENGU CORPORATION, ILLINOIS OLDPARTY : TERMINATION AND RELEASE OF GRANT OF SECURITY INTEREST IN UNITED STATES PATENTS AND TRADEMARKS; ASSIGNOR:PNC BANK, NATIONAL ASSOCIATION; REEL/FRAME:048558/0592 EFFECTIVE DATE : 20190308
US6996926 BB	20190311	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CWS INDUSTRIES (MFG) CORP., ILLINOIS OLDPARTY : TERMINATION AND RELEASE OF GRANT OF SECURITY INTEREST IN UNITED STATES PATENTS AND TRADEMARKS; ASSIGNOR:PNC BANK, NATIONAL ASSOCIATION; REEL/FRAME:048558/0592 EFFECTIVE DATE : 20190308
US6996926 BB	20190311	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : EMCOR ENCLOSURES, INC., ILLINOIS OLDPARTY : TERMINATION AND RELEASE OF GRANT OF SECURITY INTEREST IN UNITED STATES PATENTS AND TRADEMARKS; ASSIGNOR:PNC BANK, NATIONAL ASSOCIATION; REEL/FRAME:048558/0592 EFFECTIVE DATE : 20190308

US6996926 BB	20190311	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENESIS ATTACHMENTS, LLC, ILLINOIS OLDPARTY : TERMINATION AND RELEASE OF GRANT OF SECURITY INTEREST IN UNITED STATES PATENTS AND TRADEMARKS; ASSIGNOR:PNC BANK, NATIONAL ASSOCIATION; REEL/FRAME:048558/0592 EFFECTIVE DATE : 20190308
US6996926 BB	20190311	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CRENLO CAB PRODUCTS, INC., ILLINOIS OLDPARTY : TERMINATION AND RELEASE OF GRANT OF SECURITY INTEREST IN UNITED STATES PATENTS AND TRADEMARKS; ASSIGNOR:PNC BANK, NATIONAL ASSOCIATION; REEL/FRAME:048558/0592 EFFECTIVE DATE : 20190308
US6996926 BB	20230721	PEXP		Calculated Patent Term Expiry (PTA 28 days)	
WO04001141 A1	20031231	LSPB	+	published / reissued	
WO04001141 A1	20050914	LSNE	-122	EP: PCT APPLICATION NON- ENTRY IN EUROPEAN PHASE	REF COUNTRY CODE : WO
WO04001141 A1	20060713	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : JP
WO04001141 A1	20060713	LSWD	-WWW	WIPO INFORMATION: WITHDRAWN IN NATIONAL OFFICE	TEXT : JP

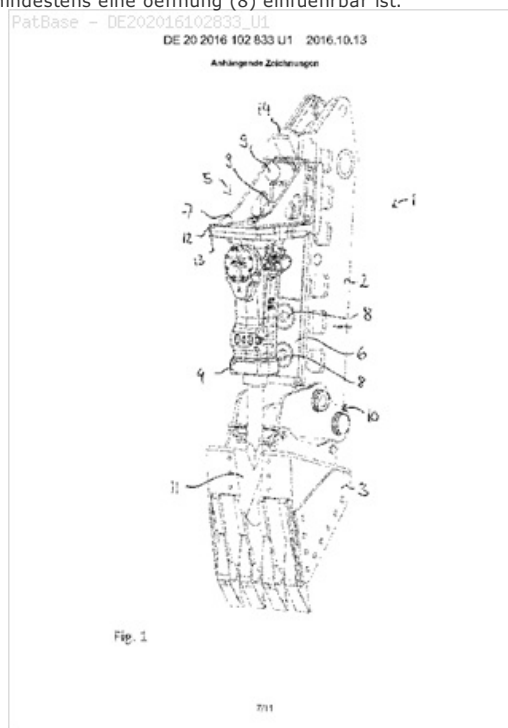
Title: BAGGERARM MIT WERKZEUGHALTERUNG

Abstract: Source: DE202016102833U1 [DE] Baggerarm (1), umfassend: einen an einem Ende des Baggerarms (1) angebrachten Baggerloeffel (3), und eine an dem Baggerarm (1) vorgesehene Werkzeughalterung (5), wobei die Werkzeughalterung (5) umfasst: eine Schiene (6), und einen Schlitten (7), der gleitend an der Schiene (6) angebracht ist, wobei der Schlitten (7) zur Befestigung eines Werkzeugs (4) daran angepasst ist, wobei die Schiene (6) mindestens eine oeffnung (8) umfasst und der Schlitten (7) mindestens einen Verriegelungsstift (9) umfasst, der in die mindestens eine oeffnung (8) einfuehrbar ist.

Classifications:

International (IPC 8-9): E02F3/36 E02F3/38 E02F3/96
E02F9/00 (Advanced/Invention)

CPC: E02F3/966 E02F3/962



Family:

Publication number	Publication date	Application number	Application date
■ CN206015771 U	20170315	CN201620809320U	20160728
■ DE202016102833 U1	20161013	DE201620102833U	20160527

Priority:

DE201620102833U 20160527

Probable Assignee: ATLAS COPCO AB

Assignee(s): (std): ATLAS COPCO AB ; ATLAS COPCO ROCK DRILLS AB

Inventor(s): (std): MIKAEL ADERVALL ; BENGT BORGSTROM

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
CN206015771 U	20170315	LSGT	+	granted / extensions (spc, cpc, pte)	
CN206015771 U	20170315	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL	
CN206015771 U	20180515	LSAS	CP01	CHANGE IN THE NAME OR TITLE OF A PATENT HOLDER	
CN206015771 U	20260728	PEXP		Calculated Patent Term Expiry	
DE202016102833 U1	20161013	LSGT	+	granted / extensions (spc, cpc, pte)	
DE202016102833 U1	20160602	LSAS	R081	CHANGE OF APPLICANT/PATENTEE	PARTYTYPE : OWNER OWNER : EPIROC ROCK DRILLS AB, SE OLDPARTY : FORMER OWNER: ATLAS COPCO ROCK DRILL AB, OEREBRO, SE
DE202016102833 U1	20161013	LSGT	R207	UTILITY MODEL	

				SPECIFICATION	
DE202016102833 U1	20181102	LSAS	R081	CHANGE OF APPLICANT/PATENTEE	PARTYTYPE : OWNER OWNER : EPIROC ROCK DRILLS AB, SE OLDPARTY : FORMER OWNER: ATLAS COPCO ROCK DRILLS AB, OEREBRO, SE
DE202016102833 U1	20260527	PEXP		Calculated Patent Term Expiry	

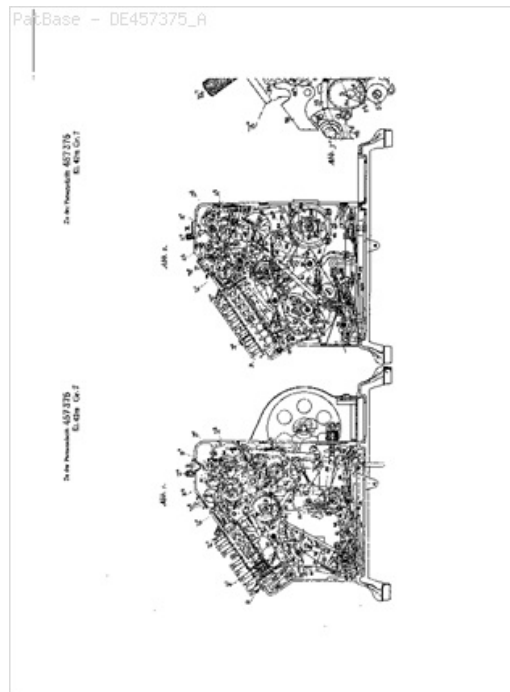
Title: VEREINIGTE DUPLEX-ADDIERMASCHINE UND REGISTRIERKASSE UNITED DUPLEX adding machine AND CASH REGISTER (Machine translation)

Abstract: Source: DE457375A [DE] (Claim 1) PATENTANSPRUECHE: i. Vereinigte Duplex-Addiermaschine und Registrierkasse mit zwei Rechenwerken und Kontrollstreifendruck, die sowohl als Registrierkasse als auch fuer reine Rechenarbeiten benutzt werden kann, dadurch gekennzeichnet, dass die Einstellung aller verschiedenen Wirkungsarten der Maschine, sei es fuer Registrierzwecke, sei es fuer reine Rechenarbeiten, durch nur zwei Schalthebel (U und Z) erfolgt, deren jeder in mehrere Arbeitslagen gebracht werden kann, wo bei durch die verschiedenen Schaltungen des ersten Schalthebels (U) die zwischen den beiden Rechenwerken (P und R) gelagerten Zwischentriebräder (73) entweder in das erste Rechenwerk (P) oder in das zweite Rechenwerk (R) geschaltet oder endlich aus der Antriebszahnung (34) ausgehoben werden, waehrend der zweite Schalthebel (Z) je nach seinen verschiedenen Schaltungen die Getriebe teile zur Loeschung der Rechenwerke und zur Uebertragung der Rechenwerke entsprechend beeinflusst, derart, dass durch die verschiedenen Schaltungskombinationen der beiden Schalthebel samtliche verschiedenen Betriebsarten der Maschine erreicht werden.

Machine translation: (claim 1) CLAIMS: plants i United duplex adding machine and cash register with two screens and strip printing, which can be used both as a cash register as well as for pure computing **works**, characterized in that the setting of all different we effect types of machine, except for Registrierzwecke, be it **work** for pure rake, by only two switching lever (U and Z) takes place, each of which can be brought into several layers, in which for different through the switching positions of the first shift lever (U) between the are two arithmetic units (P and R), GE-level intermediate drive wheels (73) corresponds neither to the first processing unit (P) or in the second arithmetic unit (R) switch, or finally from the Antriebszahnung (34) is lifted, while the second lever (Z) parts depending on its various switching positions, the transmission for the deletion of the arithmetic units and Uebertragung der Rechenwerke human influenced accordingly, such that through the various combinations of the shift lever Schaltungskom Saemtliche different operating modes of the machine can be achieved.

Classifications:

International (IPC 1-7): G06C15/10 G06C21/04 G06C7/06



Family:

Publication number	Publication date	Application number	Application date
DE457375 A	19280317	DE1926E033845D	19260320

Priority:

DE1926E033845 19260320

Probable Assignee: EKRON ADDING MACHINE AND CASH

Assignee(s): (std): EKRON ADDING MACHINE AND CASH

Assignee(s): EKRON ADDING MACHINE AND CASH REGISTER CORP

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
DE457375 A	19280317	LSGT	+	granted / extensions (spc, cpc, pte)	

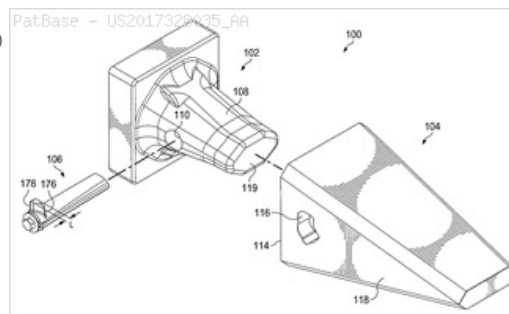
Title: CONNECTOR SYSTEMS IN EARTH ENGAGING **WEAR MEMBER** ASSEMBLIES

Abstract: A fastener includes an elongated shaft having a head at the end, the head comprising a lock fin extending radially outward from the shaft. The head includes an engagement cavity. The fastener further includes a cap having an engagement protrusion for insertion into the engagement cavity of the cap such that rotation of the cap causes corresponding rotation of the head, the cap further comprising a contact portion having a plurality of radially outward facing planar surfaces. The fastener further includes a rotation resisting element having inward facing planar surfaces that fit with the radially outward facing planar surfaces of the contact portion, the rotation resisting element further including an interference feature extending radially outward, the rotation resisting element being resilient so as to allow but resist rotation of the cap with respect to the rotation resisting element.

Classifications:

International (IPC 8-9): E02F1/00 E02F3/80 E02F9/00 E02F9/28 F16B1/00 F16B19/02 F16B2/22 F16B21/02 F16B21/06 F16B21/12 (Advanced/Invention)

CPC: E02F9/2808 E02F9/2825 E02F9/2833 E02F9/2841 E02F9/2816



Family:

Publication number	Publication date	Application number	Application date
AR108444 AA	20180822	AR2017P101242	20170511
AU2017264874 AA	20181220	AU20170264874	20170511
CA3032197 AA	20190125	CA20173032197	20170511
CL2017001198 A1	20171124	CL20170001198	20170511
CN107614805 A	20180119	CN201780001174	20170511
CO20180013341 A2	20181228	CO20180013341	20181210
EP3455418 A1	20190320	EP20170796871	20170511
ES2699696 AB	20190212	ES20180090065	20170511
ES2699696 R1	20190301	ES20180090065	20170511
ID201901193 A	20190215	ID2018P0010289	20170511
JP2017203365 A2	20171116	JP20170094585	20170511
KR20190020669 A	20190304	KR20187035926	20170511
MX2018013850 A1	20190228	MX20180013850	20170511
PE17792017 A1	20171227	PE20170001593	20170511
SE201851469 A1	20181127	SE20180051469	20170511
SE201851469 A2	20190122	SE20180051469	20170511
US2017328035 AA	20171116	US20170589439	20170508
UY37239 A1	20181130	UY20170037239	20170511
WO17197163 A1	20171116	WO2017US32235	20170511

Priority:

US20160335424P 20160512 US20170441756P 20170103 US20170589439 20170508
JP20170094585 20170511 WO2017US32235 20170511

Probable Assignee: HENSLEY IND INC

Assignee(s): (std): HENSLEY IND INC

Assignee(s): HENSLEY INDUSTRIES INC ; VEGUNTA VENKATA PRAKASH ; WAWERU LAWRENCE NGIGI ; BILAL MOHAMAD ; DIAZ ISAI

Inventor(s): (std): DIAZ ISAI ; LAWRENCE NGIGI WAWERU ; ISAI DIAZ ; VENKATA PRAKASH VEGUNTA ; MOHAMAD YOUSSEF BILAL ; MOHAMAD BILAL ; LSAI DIAZ ; BILAL MOHAMAD YOUSSEF ; BILAL MOHAMAD ; DIAZ LSAI ; VEGUNTA VENKATA PRAKASH ; WAWERU LAWRENCE NGIGI

Agent(s): SPRUSON AND FERGUSON; GOWLING WLG CANADA LLP; ESTUDIO TRANSGLOBO LTDA; HANNA MOORE AND CURLEY; CARVAJAL Y ISABEL; MELINDA SE SH; AOKI ATSUSHI; SHIMADA TETSURO; JOHNSON DUSTIN T ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KH KM KN KP KR KW KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AR108444 AA	20180822	LSPB	+	published / reissued	
AU2017264874 AA	20181220	LSPB	+	published / reissued	

CA3032197 AA	20190125	LSPB	+	published / reissued	
CA3032197 AA	20190207	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20190125
CL2017001198 A1	20171124	LSPB	+	published / reissued	
CN107614805 A	20180119	LSPB	+	published / reissued	
CN107614805 A	20180119	LSPB	PB01	PUBLICATION	
CO20180013341 A2	20181228	LSPB	+	published / reissued	
EP3455418 A1	20190320	LSPB	+	published / reissued	
EP3455418 A1	20190320	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20181207
ES2699696 AB	20190212	LSPB	+	published / reissued	
ES2699696 R1	20190301	LSES	+EC2A	SEARCH REPORT PUBLISHED	REF DOCUMENT NUMBER : 2699696 COUNTRY OF REF DOCUMENT : ES KIND CODE OF REF DOCUMENT : R1 DESIGNATED STATE(S) : EFFECTIVE DATE : 20190222
ID201901193 A	20190215	LSPB	+	published / reissued	
JP2017203365 A2	20171116	LSPB	+	published / reissued	
KR20190020669 A	20190304	LSPB	+	published / reissued	
KR20190020669 A	20190121	LSES	A201	REQUEST FOR EXAMINATION	
MX2018013850 A1	20190228	LSPB	+	published / reissued	
PE17792017 A1	20171227	LSPB	+	published / reissued	
SE201851469 A1	20181127	LSPB	+	published / reissued	
SE201851469 A2	20190122	LSRE	CORR	CORRECTIONS	TEXT : PRV HAS PUBLISHED INCOMPLETE DOCUMENT IN THE A1 DOCUMENT, THEREFORE, AN A2 DOCUMENT HAS BEEN PUBLISHED
US2017328035 AA	20171116	LSPB	+	published / reissued	
US2017328035 AA	20170508	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : HENSLEY INDUSTRIES, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BILAL, MOHAMAD; VEGUNTA, VENKATA PRAKASH; WAWERU, LAWRENCE NGIGI; AND OTHERS; REEL/FRAME:042279/0960 EFFECTIVE DATE : 20170505
US2017328035 AA	20190405	LSES	NFA1	Non Final Action Mailed	
UY37239 A1	20181130	LSPB	+	published / reissued	
WO17197163 A1	20171116	LSPB	+	published / reissued	
WO17197163 A1	20170925	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 001593-2017 COUNTRY OF REF DOCUMENT : PE
WO17197163 A1	20181106	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : P201890065 COUNTRY OF REF DOCUMENT : ES
WO17197163 A1	20181113	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE

WO17197163 A1	20181207	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 14951 COUNTRY OF REF DOCUMENT : GE
WO17197163 A1	20181211	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 20187035926 COUNTRY OF REF DOCUMENT : KR KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO17197163 A1	20181220	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2017264874 COUNTRY OF REF DOCUMENT : AU DATE OF REF DOCUMENT : 20170511 KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO17197163 A1	20181221	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2017796871 COUNTRY OF REF DOCUMENT : EP EFFECTIVE DATE : 20181212
WO17197163 A1	20190125	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 3032197 COUNTRY OF REF DOCUMENT : CA

Title: STABILIZING FEATURES IN A **WEAR MEMBER** ASSEMBLY

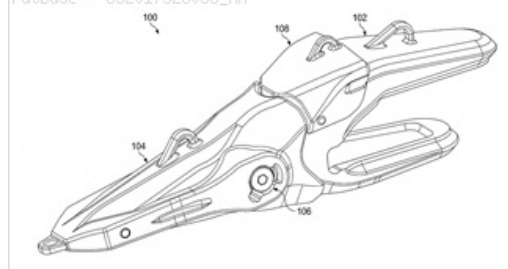
Abstract: A **wear member** assembly may include a nose attachable to a bucket lip. The nose may include a rear portion having a first set of substantially planar surfaces including a first, second, and third subset of surfaces. The third subset of surfaces may be angled and positioned between the first subset of surfaces and the second subset of surfaces. The nose may also include a forward portion positioned forwardly adjacent to the rear portion, the forward portion having a second set of substantially planar surfaces including a fourth, fifth, and sixth subset of surfaces. The sixth set of surfaces may be angled and positioned between the first subset of surfaces and the second subset of surfaces. The **wear member** assembly may also include a **wear member** having a cavity comprising rear and forward bearing surfaces corresponding to the third and sixth subset of surfaces.

Classifications:

International (IPC 8-9): E02F1/00 E02F3/28 E02F3/80 E02F9/00 E02F9/28 E02F9/2825 E21C35/183 (Advanced/Invention)

CPC: E02F9/2825 E02F9/2883 E02F9/2833 E02F9/2808 E02F9/2858

PatBase - US2017328036_AA



Family:

Publication number	Publication date	Application number	Application date
AR108443 AA	20180822	AR2017P101241	20170511
AU2017264880 AA	20181129	AU20170264880	20170511
BR102017010080 A2	20180306	BR20171010080	20170512
CA3023551 AA	20181107	CA20173023551	20170511
CL2017001219 A1	20171124	CL20170001219	20170512
CN107624139 A	20180123	CN201780001168	20170511
CO20180012477 A2	20181214	CO20180012477	20181121
DOP2018000248 A	20180430	DO20180000248	20181109
EP3455419 A1	20190320	EP20170796874	20170511
ID201901275 A	20190222	ID2018P0009100	20170511
JP2017203366 A2	20171116	JP20170094673	20170511
KR20190019939 A	20190227	KR20187036100	20170511
MX2018013887 A1	20190328	MX20180013887	20170511
PE17782017 A1	20171227	PE20170001592	20170511
US2017328036 AA	20171116	US20170589647	20170508
UY37242 A1	20181130	UY20170037242	20170512
WO17197169 A1	20171116	WO2017US32242	20170511

Priority:

US20160335789P 20160513 US20170441779P 20170103 US20170589647 20170508
JP20170094673 20170511 WO2017US32242 20170511

Probable Assignee: HENSLEY IND INC

Assignee(s): (std): HENSLEY IND INC

Assignee(s): HENSLEY INDUSTRIES INC ; BILAL MOHAMAD ; DIAZ ISAI

Inventor(s): (std): BILAL MOHAMAD ; DIAZ LSAI ; DIAZ ISAI ; ISAI DIAZ ; MOHAMAD YOUSEF BILAL ; BILAL MOHAMAD YOUSSEF ; MOHAMAD YOUSSEF BILAL ; LSAI DIAZ ; MOHAMAD BILAL

Agent(s): SPRUSON AND FERGUSON; GOWLING WLG CANADA LLP; ESTUDIO TRANSGLOBO LTDA Y O HUGO RUBIO G Y O ALEX SEVERIN S; HANNA MOORE AND CURLEY; INDAH HANDAYANI SFARM APT; AOKI ATSUSHI; SHIMADA TETSURO; JOHNSON DUSTIN T ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KH KM KN KP KR KW KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AR108443 AA	20180822	LSPB	+	published / reissued	
AU2017264880 AA	20181129	LSPB	+	published / reissued	
BR102017010080 A2	20180306	LSPB	B03A	PUBLICATION OF AN APPLICATION: PUBLICATION OF A PATENT APPLICATION OR OF A CERTIFICATE OF ADDITION OF INVENTION	
CA3023551 AA	20181107	LSPB	+	published / reissued	

CA3023551 AA	20181116	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20181107
CL2017001219 A1	20171124	LSPB	+	published / reissued	
CN107624139 A	20180123	LSPB	+	published / reissued	
CN107624139 A	20180123	LSPB	PB01	PUBLICATION	
CO20180012477 A2	20181214	LSPB	+	published / reissued	
DOP2018000248 A	20180430	LSPB	+	published / reissued	
EP3455419 A1	20190320	LSPB	+	published / reissued	
EP3455419 A1	20190320	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20181109
ID201901275 A	20190222	LSPB	+	published / reissued	
JP2017203366 A2	20171116	LSPB	+	published / reissued	
KR20190019939 A	20190227	LSPB	+	published / reissued	
KR20190019939 A	20181212	LSES	A201	REQUEST FOR EXAMINATION	
MX2018013887 A1	20190328	LSPB	+	published / reissued	
PE17782017 A1	20171227	LSPB	+	published / reissued	
US2017328036 AA	20171116	LSPB	+	published / reissued	
US2017328036 AA	20170508	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : HENSLEY INDUSTRIES, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS: BILAL, MOHAMAD; DIAZ, ISAI; REEL/FRAME:042281/0945 EFFECTIVE DATE : 20170508
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US2017328036 AA	20181130	LSES	NFA1	Non Final Action Mailed	
UY37242 A1	20181130	LSPB	+	published / reissued	
WO17197169 A1	20171116	LSPB	+	published / reissued	
WO17197169 A1	20170925	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 001592-2017 COUNTRY OF REF DOCUMENT : PE
WO17197169 A1	20181107	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 3023551 COUNTRY OF REF DOCUMENT : CA
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WO17197169 A1	20181214	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2017796874 COUNTRY OF REF DOCUMENT : EP EFFECTIVE DATE :

Title: IMPROVED **LOCKING PIN** FOR **EXCAVATING** EQUIPMENT.

Abstract: IMPROVED **LOCKING PIN** FOR **EXCAVATING** EQUIPMENT ABSTRACT OF THE DISCLOSURE An improved **locking pin** for locking together two pieces of equipment through aligned locking apertures. The pin comprises a steel casing, a steel insert and an elastomer **member**. The two steel parts assemble together in a particular sequence and are adjusted so that when completely assembled, the insert is locked into the casing with the body of the casing and the insert being parallel and spaced from one another. The elastomer **member** is interposed in the space defined between the casing and insert, so as to fill the space between the steel parts. The assembled steel parts are firmly locked together by introduction of the elastomer **member** into that space. There is no adhesive joining the steel and elastomer **members** which makes the pin more amenable for use in corrosive environments and also eases manufacture of the pin components. A tightly constructed **locking pin** also avoids the problems of the components becoming loose or lost.

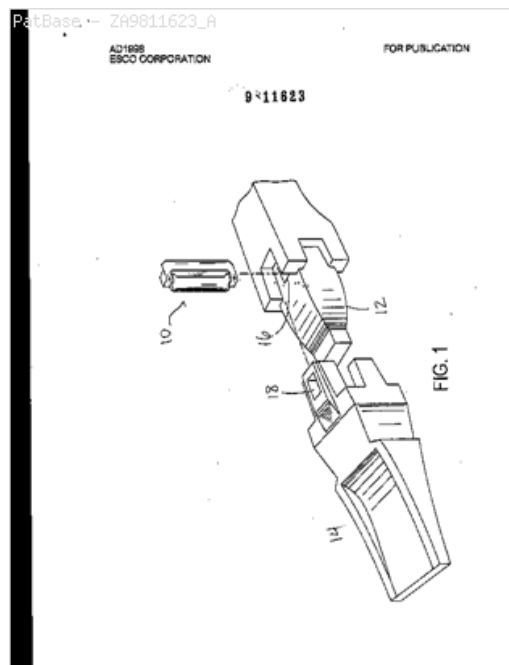
Classifications:

International (IPC 8-9): B25G3/28 (Advanced/Invention);

B25G3/00 (Core/Invention);

F16B (Subclass/Invention)

International (IPC 1-7): B25G3/28 F16B



Family:

Publication number	Publication date	Application number	Application date
ID25788 A	20001102	ID20000001387	19981211
ZA9811623 A	20000619	ZA19980011623	19981218

Priority:

US19980993173 19981218

Probable Assignee: ESCO CORP

Assignee(s): (std): ESCO CORP

Inventor(s): (std): KREITZBERG JOHN S ; JOHN S KREITZBERG

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
ID25788 A	20001102	LSPB	+	published / reissued	
ZA9811623 A	20000619	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA9811623 A	20181217	PEXP		Calculated Patent Term Expiry	

Title: LOCK ASSEMBLY FOR AN EXCAVATOR **WEAR MEMBER**

Abstract: A lock assembly for an excavator **wear** assembly, the lock assembly a **locking pin** having at least one dowel extending outwardly therefrom. The lock assembly also includes a retaining **member** having a seat and a cavity and a biasing **member** located within the cavity of the retaining **member**. The biasing **member** is adapted to exert a biasing force on the dowel to releasably retain the dowel within the seat of the retaining **member**.

Classifications:

International (IPC 8-9): E02F3/32 E02F9/00

E02F9/28 (Advanced/Invention);

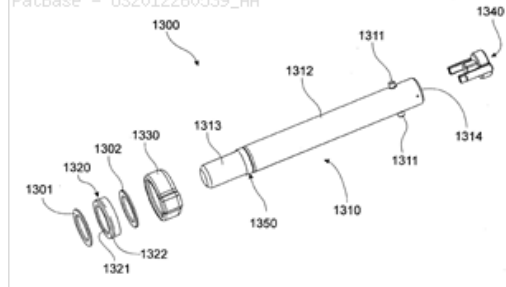
E02F3/32 (Advanced/Non-invention)

CPC: E02F9/2816 E02F3/32 E02F9/2833 E02F9/2825

European: E02F9/28A2B E02F9/28A2C

US: 1/1 37/452 37/453 37/455 37/456

PatBase - US2012260539_AA



Family:

Publication number	Publication date	Application number	Application date
AP201206342 A0	20120630	AP20120006342	20101119
AP201206355 A0	20120831	AP20120006355	20101213
AP3457 A	20151231	AP20120006342	20101119
AP3796 A	20160831	AP20120006355	20101213
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AU2010330673 BB	20130516	AU20100330673	20101119
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EP2510162 A4	20171115	EP20100835315	20101213
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US2016319519 AA	20161103	US20160209606	20160713
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US9834909 BB	20171205	US20160209606	20160713
WO11069183 A1	20110616	WO2010AU01556	20101119
WO11069215 A1	20110616	WO2010AU01682	20101213
ZA201204283 A	20160127	ZA20120004283	20120612

Priority:

AU20090906064	20091211	AU20100330673	20101119	CN201080060066	20101119
WO2010AU01556	20101119	AU20100330705	20101213	CN201080060376	20101213
WO2010AU01682	20101213	AU20120100453	20120419	AU20120100452	20120419
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US20120497892	20120628	AU20130205251	20130410	AU20130100565	20130412
AU20130100566	20130412	US20160209606	20160713		

Probable Assignee: CQMS RAZER PTY LTD

Assignee(s): (std): GUIMARAES MIGUEL ; NIENABER QUINTIN ; LILLEY BRUCE ; YOUNG TONY ; NIENABAR QUENTIN ; CQMS PTY LTD ; CQMS PTY LTD

Assignee(s): CQMS RAZER PTY LTD ; NIENABAR QUINTIN

Inventor(s): (std): NIENABER QUINTIN ; LILLEY BRUCE ; GUIMARAES MIGUEL ; YOUNG TONY ; NIENABAR QUINTIN ; QUENTIN NIENABAR ; NIENABER QUENTIN ; TONY YOUNG ; MIGUEL GUIMARAES ; QUINTIN NIENABER ; BRUCE LILLEY ; GUIMARES MIGUEL ; NIENABAR QUENTIN

Agent(s): FISHER ADAMS KELLY; FISHER ADAMS KELLY CALLINANS; SPRUSON AND FERGUSON; FISHER ADAMS KELLY PTY LTD; NORTON ROSE CANADA SENCRL SRL LLP; NORTON ROSE FULBRIGHT CANADA LLP SENCRL SRL; ESTUDIO SARGENT; BERGLUND STEFAN; JOHN; LEYDIG VOIT AND MAYER LTD

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AP3457 A	20151231	LSGT	+	granted / extensions (spc, cpc, pte)	
AP3457 A	20301119	PEXP		Calculated Patent Term Expiry	
AP3796 A	20160831	LSGT	+	granted / extensions (spc, cpc, pte)	
AP3796 A	20301213	PEXP		Calculated Patent Term Expiry	
AU2010330673 AA	20110616	LSPB	+	published / reissued	
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AU2010330673 BB	20130829	LSOP	-CB	OPPOSITION LODGED BY	PARTYTYPE : OPPONENT OPPONENT : ESCO CORPORATION
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AU2010330705 BB	20301213	PEXP		Calculated Patent Term Expiry	
AU2012100452 AD	20120517	LSGT	+	granted / extensions (spc,	

AU2012100452 AD	20120517	LSGT	+FGI	cpc, pte) LETTERS PATENT SEALED OR GRANTED (INNOVATION PATENT)
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BR112012014006 A2	20181023	LSLE	-B08K	LAPSE AS NO EVIDENCE OF PAYMENT OF THE ANNUAL FEE HAS BEEN FURNISHED TO INPI (ACC. ART. 87)	TEXT : EM VIRTUDE DO ARQUIVAMENTO PUBLICADO NA RPI 2475 DE 12-06-2018 E CONSIDERANDO AUSENCIA DE MANIFESTACAO DENTRO DOS PRAZOS LEGAIS, INFORMO QUE CABE SER MANTIDO O ARQUIVAMENTO DO PEDIDO DE PATENTE, CONFORME O DISPOSTO NO ARTIGO 12, DA RESOLUCAO 113/2013.
BR112012014006 A2	20181121	LSFE	B08H	APPLICATION FEES: DECISION CANCELLED	TEXT : ANULADA A PUBLICACAO CODIGO 8.6 NA RPI NO 2475 DE 12/06/2018 POR TER SIDO INDEVIDA.
BR112012014006 A2	20181127	LSFE	B08H	APPLICATION FEES: DECISION CANCELLED	TEXT : ANULADA A PUBLICACAO CODIGO 8.11 NA RPI NO 2494 DE 23/10/2018 POR TER SIDO INDEVIDA.
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CA2783709 AA	20110616	LSPB	+	published / reissued	
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					extensions (spc, cpc, pte)
CA2783709 C	20301213	PEXP		Calculated Patent Term Expiry	
CL2012001551 A1	20130125	LSPB	+	published / reissued	
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CL54179 B	20170512	LSGT	+	granted / extensions (spc, cpc, pte)	
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CN108118744 A	20180605	LSPB	PB01	PUBLICATION	
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EP2510160 A1	20121017	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20120706
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US2016319519 AA	20171115	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
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US9469974 BB	20120815	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CQMS RAZER PTY LTD, AUSTRALIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:GUIMARAES, MIGUEL; LILLEY, BRUCE; NIENABER, QUINTIN; AND OTHERS; SIGNING DATES FROM 20110830 TO 20110831; REEL/FRAME:028793/0472
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US9834909 BB	20360713	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
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ZA201204283 A	20160127	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA201204283 A	20320611	PEXP		Calculated Patent Term Expiry	

Title: **EXCAVATING** TOOTH ASSEMBLY WITH **LOCKING PIN** ASSEMBLY

Abstract: A **locking pin** assembly for securing a ground engaging element to a support structure may include a body portion and may include a shaft portion disposed within the body portion and rotatable between a first position that mechanically inhibits removal of a ground engaging element from a support structure and a second position that permits removal of the ground engaging element from the support structure. A camshaft may be rotatably disposed within the shaft portion and may be arranged to cooperate with the shaft portion to rotate through a first range of motion and to apply a rotational force on the shaft portion through a second range of motion. A radially extending locking element may be configured to selectively mechanically interfere with one of the shaft portion and the body portion to selectively prevent rotation of the shaft portion relative to the body portion.

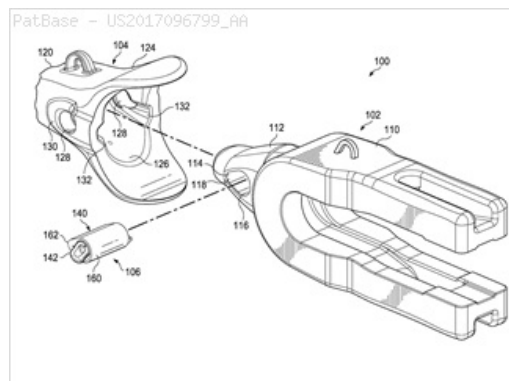
Classifications:

International (IPC 8-9): E02F9/28 E21C35/197 F16B1/00 F16B19/02 (Advanced/Invention)

International (IPC 1-7): E02F9/28 F16B1/00 F16B19/02

CPC: E02F9/2841 E02F9/2825 E02F9/2833 E21C2035/191

US: 403/322.1



Family:

Publication number	Publication date	Application number	Application date
AR106265 AA	20171227	AR2016P103050	20161005
AU2016333778 AA	20180329	AU20160333778	20161003
BR112018006906 A2	20181016	BR20181106906	20161003
CA2997682 AA	20180305	CA20162997682	20161003
CL2018000765 A1	20180817	CL20180000765	20180323
CN108138472 A	20180608	CN201680058025	20161003
CO20180003084 A2	20180531	CO20180003084	20180322
EA201890574 A1	20180928	EA20180090574	20161003
EP3334866 A1	20180620	EP20160854143	20161003
ID201810554 A	20180928	ID2018PID02209	20161003
IN201837008260 A	20180518	IN201837008260	20180306
JP2018530688 T2	20181018	JP20180517608T	20161003
KR20180063298 A	20180611	KR20187012958	20161003
MX2018004136 A1	20180906	MX20180004136	20161003
PE09062018 A1	20180530	PE20180000447	20161003
PH2018500654 A	20181001	PH20180500654	20180323
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RU2683464 C1	20190328	RU20180115700	20161003
US2017096799 AA	20170406	US20160282363	20160930
US2018328005 AA	20181115	US20180042724	20180723
US10030368 BB	20180724	US20160282363	20160930
US10287753 BB	20190514	US20180042724	20180723
UY36927 A1	20180430	UY20160036927	20161004
WO17062315 A1	20170413	WO2016US55198	20161003

Priority:

US20150237805P 20151006 US20160282363 20160930 WO2016US55198 20161003
US20180042724 20180723

Probable Assignee: HENSLEY IND INC

Assignee(s): (std): HENSLEY IND INC

Assignee(s): VEGUNTA VENKATA PRAKASH ; KHENSLI INDASTRIZ INK ; BILAL MOHAMAD YOUSSEF

Inventor(s): (std): VEGUNTA VENKATA PRAKASH ; MOHAMAD YOUSSEF BILAL ; VENKATA PRAKASH VEGUNTA ; MOHAMAD YOUSSEF BILAL ; BILAL MOHAMAD YOUSSEF

Inventor(s): BILAL MOKHAMAD YUSSEF

Agent(s): SPRUSON AND FERGUSON; GOWLING WLG CANADA LLP; ESTUDIO TRANSGLOBO LTDA; CARLOS ORLANDO MAYA RODRIGUEZ; HANNA MOORE AND CURLEY; RATU SANTI ERMAWATI ST; AOKI ATSUSHI; YURIDICHESKAYA GORODISSKIY I PARTNER OOO FA; HAYNES AND BOONE LLP; JOHNSON DUSTIN T ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KW KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Patent	Date recorded	Event group	Code	Event	Details
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AU2016333778 AA	20180329	LSPB	+	published / reissued	
CA2997682 AA	20180305	LSPB	+	published / reissued	
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CO20180003084 A2	20180531	LSPB	+	published / reissued	
EA201890574 A1	20180928	LSPB	+	published / reissued	
EP3334866 A1	20180620	LSPB	+	published / reissued	
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MX2018004136 A1	20180906	LSPB	+	published / reissued	
PE09062018 A1	20180530	LSPB	+	published / reissued	
PH2018500654 A	20181001	LSPB	+	published / reissued	
RU2019107621 A	20190416	LSPB	+	published / reissued	
RU2683464 C1	20190328	LSGT	+	granted / extensions (spc, cpc, pte)	
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US10030368 BB	20180704	LSGT	PAT1	Patented Case	
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US10287753 BB	20180723	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : HENSLEY INDUSTRIES, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VEGUNTA, VENKATA PRAKASH; BILAL, MOHAMAD YOUSSEF; SIGNING DATES FROM 20161005 TO 20161006; REEL/FRAME:046431/0746
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US2017096799 AA	20180313	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2017096799 AA	20180619	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US2017096799 AA	20180704	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2018328005 AA	20181115	LSPB	+	published / reissued	
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US2018328005 AA	20190228	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
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US2018328005 AA	20190404	LSFE	-AWA4	Awaiting TC Resp., Issue Fee Not Paid	
US2018328005 AA	20190424	LSGT	PAT1	Patented Case	
UY36927 A1	20180430	LSPB	+	published /	

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Title: TOOTH AND ADAPTOR ASSEMBLY

Abstract: A tooth and adaptor assembly is provided for a dipper bucket. The assembly can have an adaptor having a rear portion for attaching to the dipper bucket, a tooth capable of releasable attachment to the adaptor and a retainer pin for securing the tooth to the adaptor. The adaptor comprises a tapering intermediate portion that narrows to a rectangular front portion, and a wedge portion that extends perpendicularly therefrom. The adaptor further comprises at least one socket cavity for receiving a leg extension having an inwardly pointing hook disposed on the tooth. The tooth has a tip at its front end for digging and a socket at its rear end configured to receive the front and intermediate portions of the adaptor. A passageway is formed between the wedge portion and the leg hook for receiving a retainer pin to secure the tooth to the adaptor.

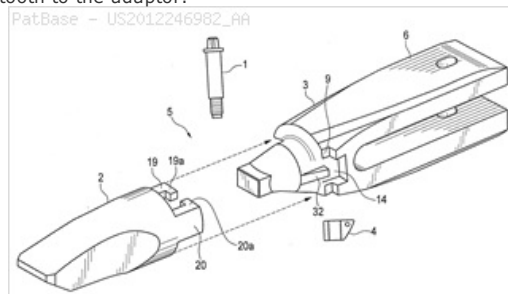
Classifications:

International (IPC 8-9): E02F9/28 (Advanced/Invention)

CPC: E02F9/2825 E02F9/2833 E02F9/2858

European: E02F9/28A2B E02F9/28A2C E02F9/28A6

US: 37/452 37/455 37/456



Family:

Publication number	Publication date	Application number	Application date
CA2772898 AA	20121004	CA20122772898	20120329
US2012246982 AA	20121004	US20120438474	20120403

Priority:

US20110471271P 20110404 CA20122772898 20120329 US20120438474 20120403

Probable Assignee: AMSCO CAST PRODUCTS CANADA INC

Assignee(s): (std): AMSCO CAST PRODUCTS CANADA INC ; BENTLEY NEIL DOUGLAS

Inventor(s): (std): BENTLEY NEIL DOUGLAS

Agent(s): PARLEE MCLAWS LLP

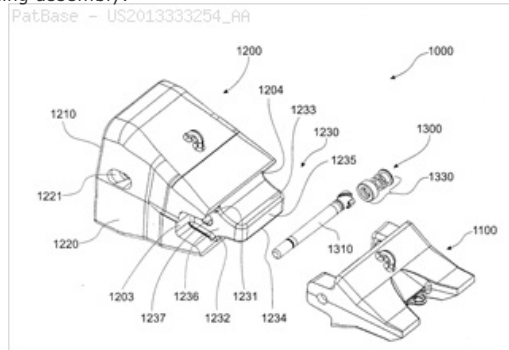
Legal status (INPADOC)

[View legal status timeline](#)

Patent	Date recorded	Event group	Code	Event	Details
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CA2772898 AA	20150526	LSLE	-FZDE	DEAD	EFFECTIVE DATE : 20150331
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US2012246982 AA	20130228	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMSCO CAST PRODUCTS (CANADA) INC., CANADA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BENTLEY, NEIL DOUGLAS; REEL/FRAME:029899/0814 EFFECTIVE DATE : 20120329
US2012246982 AA	20140827	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2012246982 AA	20140827	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO RESPOND TO AN OFFICE ACTION

Title: EXCAVATOR **WEAR** ASSEMBLY

Abstract: A lock assembly to lock two **members** together, typically an excavator **wear member**, such as a tooth, on to an adaptor. The lock assembly has a **locking pin** with a flange portion and a retaining assembly that receives the **locking pin**. The retaining assembly includes a locking **member**, in the form of a locking ring, which deforms radially when a tapered portion of the **locking pin** is inserted into the retaining assembly. In the locked position, the locking ring engages with the flange portion of the **locking pin** to prevent withdrawal of the **locking pin** from the retaining assembly.

Classifications:**International (IPC 8-9):** E02F E02F9/28 (Advanced/Invention)**CPC:** E02F9/2833 E02F9/2825 E02F9/2841 Y10T29/49947**US:** 1/1 29/525.01 37/456**Family:**

Publication number	Publication date	Application number	Application date
■ AP201407726 A0	20140630	AP20140007726	20121210
■ AU2012350166 AA	20130613	AU20120350166	20121210
■ AU2012350166 BB	20170216	AU20120350166	20121210
■ BR112014013827 A2	20170613	BR20141113827	20121210
■ BR112014013827 A8	20170613	BR20141113827	20121210
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■ CA2858626 AA	20140609	CA20122858626	20121210
■ CL2014001496 A1	20150227	CL20140001496	20140606
■ CL56472 B	20180903	CL20140001496	20140606
■ CN104105830 A	20141015	CN201280069292	20121210
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■ EP2788552 A1	20141015	EP20120855485	20121210
■ EP2788552 A4	20160420	EP20120855485	20121210
■ ID201600824 A	20160226	ID2014P0003903	20121210
■ IN01273KN2014 A	20151016	IN2014KN01273	20140613
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■ RU2014127694 A	20160127	RU20140127694	20121210
■ RU2621815 C2	20170607	RU20140127694	20121210
■ US2013333254 AA	20131219	US20120814707	20121210
■ US9476184 BB	20161025	US20120814707	20121210
■ WO13082678 A1	20130613	WO2012AU01511	20121210
■ ZA201404212 A	20181219	ZA20140004212	20140609

Priority:

AU20110905123 20111208 AU20120902643 20120622 AU20120350166 20121210
WO2012AU01511 20121210

Probable Assignee: CQMS PTY LTD**Assignee(s):** (std): GUIMARAES MIGUEL ; LILLEY BRUCE ; WALLIS DOUGLAS ; KIRSCH JOSUA ; CQMS PTY LTD ; SKMS PTI LTD**Assignee(s):** CQMS PTY LTD36 ENTERPRISE STREETQUEENSLAND4740MACKAYAU ; CQMS RAZER PTY LTD ; SCHUETZ EDWIN**Inventor(s):** (std): LILLEY BRUCE ; WALLIS DOUGLAS ; GUIMARAES MIGUEL ; KIRSCH JOSUA ; SCHUETZ EDWIN ; LILLI BRYUS ; GIMARAES MIGEL ; SHYUTTS EDVIN ; UOLLIS DUGLAS ; KIRSH DZHOSHUA ; JOSUA KIRSCH ; MIGUEL GUIMARAES ; BRUCE LILLEY ; DOUGLAS WALLIS**Inventor(s):** WALLIS DOUGLASAU ; GUIMARAES MIGUEL AU ; KIRSCH JOSUA AU ; LILLEY BRUCE AU ; SCHUETZ EDWIN AU**Agent(s):** FISHER ADAMS KELLY PTY LTD; FISHER ADAMS KELLY CALLINANS; SPRUSON AND FERGUSON; NORTON ROSE FULBRIGHT CANADA LLP SENCRL SRL; ESTUDIO SARGENT AND KRAHN; WILSON GUNN; ACHMAD FATCHY; JOHN; LEYDIG VOIT AND MAYER LTD; FISHER ADAMS KELLY**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY NZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW**Legal status (INPADOC)**

View legal status timeline

Patent	Date recorded	Event group	Code	Event	Details
AU2012350166 AA	20130613	LSPB	+	published / reissued	
AU2012350166 AA	20140626	LSRE	DA3	AMENDMENTS MADE SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS: AMEND THE NAME OF THE INVENTOR TO READ WALLIS, DOUGLAS; GUIMARAES, MIGUEL; LILLEY, BRUCE; KIRSCH, JOSUA AND SCHUETZ, EDWIN
AU2012350166 AA	20170615	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2012350166 BB	20170216	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2012350166 BB	20321210	PEXP		Calculated Patent Term Expiry	
CA2858626 AA	20140609	LSPB	+	published / reissued	
CA2858626 AA	20171208	LSSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20171204
CL2014001496 A1	20150227	LSPB	+	published / reissued	
CL56472 B	20180903	LSGT	+	granted / extensions (spc, cpc, pte)	
CL56472 B	20340606	PEXP		Calculated Patent Term Expiry	
CN104105830 A	20141015	LSPB	+	published / reissued	
CN104105830 A	20141015	LSPB	+C06	PUBLICATION	
CN104105830 B	20180112	LSGT	+	granted / extensions (spc, cpc, pte)	
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CN104105830 B	20321210	PEXP		Calculated Patent Term Expiry	
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EP2788552 A1	20141015	LSSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20140604
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ID201600824 A	20160226	LSPB	+	published / reissued	
IN01273KN2014 A	20151016	LSPB	+	published / reissued	
PE20502014 A1	20141216	LSPB	+	published / reissued	
RU2014127694 A	20160127	LSPB	+	published / reissued	
RU2621815 C2	20170607	LSGT	+	granted / extensions (spc, cpc, pte)	
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US2013333254 AA	20131219	LSPB	+	published / reissued	

US2013333254 AA	20140908	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CQMS PTY LTD, AUSTRALIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:CQMS RAZER PTY LTD; REEL/FRAME:033692/0092 EFFECTIVE DATE : 20111208	
US2013333254 AA	20140908	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CQMS RAZER PTY LTD, AUSTRALIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WALLIS, DOUGLAS; GUIMARAES, MIGUEL; LILLEY, BRUCE; AND OTHERS; REEL/FRAME:033691/0287 EFFECTIVE DATE : 20111208	
US2013333254 AA	20161005	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE	
US9476184 BB	20161025	LSGT	+	granted / extensions (spc, cpc, pte)		
US9476184 BB	20161005	LSGT	PAT1	Patented Case		
US9476184 BB	20321210	PEXP		Calculated Patent Term Expiry		
WO13082678 A1	20130613	LSPB	+	published / reissued		
WO13082678 A1	20130305	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 13814707 COUNTRY OF REF DOCUMENT : US	
WO13082678 A1	20140606	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 000917-2014 COUNTRY OF REF DOCUMENT : PE	
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WO13082678 A1	20170613	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 112014013827 COUNTRY OF REF DOCUMENT : BR KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) : EFFECTIVE DATE : 20140606	
ZA201404212 A	20181219	LSGT	+	granted / extensions (spc, cpc, pte)		
ZA201404212 A	20340608	PEXP		Calculated Patent Term Expiry		

Title: **WEAR MEMBER** FOR EARTH **WORKING** EQUIPMENT

Abstract: A **wear member** and fastener for securing the **wear member** to earth **working** equipment. The fastener can be installed and maintained from the top of the assembly. An eccentric retainer is received in a recess of the **wear member** and is rotated to shift the **wear member** rearward on the earth **working** equipment. A bolt passing through aligned openings of the earth **working** equipment and the **wear member** is received by the retainer to secure the **wear member** to the earth **working** equipment.

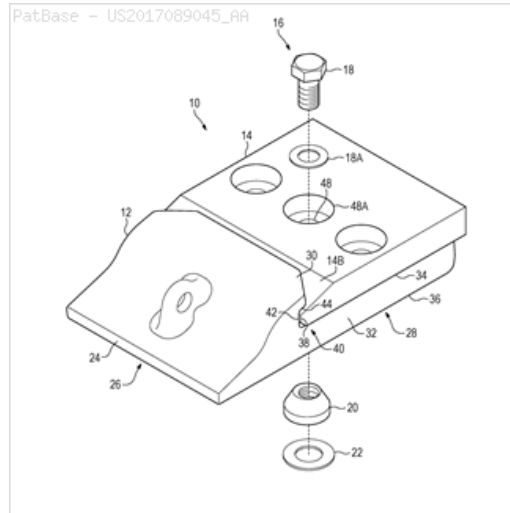
Classifications:

International (IPC 8-9): E02F3/40 E02F9/28 E21C35/00 E21C35/18 E21C35/19 F16B37/04 (Advanced/Invention)

International (IPC 1-7): E02F9/28

CPC: E02F9/2833 E02F9/2808 E02F3/40 E02F9/2883

US: 37/455



Family:

Publication number	Publication date	Application number	Application date
AU2016330932 AA	20180510	AU20160330932	20160929
BR112018005981 A2	20181009	BR20181105981	20160929
CA3000394 AA	20180328	CA20163000394	20160929
CL2018000769 A1	20180713	CL20180000769	20180323
CN108138471 A	20180608	CN201680056434	20160929
CO20180003014 A2	20180612	CO20180003014	20180321
EA201890839 A1	20180831	EA20180090839	20160929
EP3356609 A1	20180808	EP20160852555	20160929
EP3425130 A1	20190109	EP20180169915	20160929
ID201812475 A	20181130	ID2018PID02723	20160929
IN201817014228 A	20180907	IN201817014228	20180413
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PE07852018 A1	20180508	PE20180000436	20160929
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US2017089045 AA	20170330	US20160279806	20160929
US2019003156 AA	20190103	US20180039607	20180719
US10030367 BB	20180724	US20160279806	20160929
WO17059009 A1	20170406	WO2016US54333	20160929

Priority:

US20150234473P 20150929 EP20160852555 20160929 US20160279806 20160929
WO2016US54333 20160929 US20180039607 20180719

Probable Assignee: ESCO GROUP LLC

Assignee(s): (std): ESCO CORP ; ESCO GROUP LLC WAS ESCO CORP.. ; ESCO GROUP LLC

Assignee(s): ESCO GROUP LLC WAS ESCO CORPORATION ; QIAN JUNBO ; MOORE SEAN G ; DUNFORD MATTHEW J ; HODGES GEOFFREY R ; HANKLAND JOEL S ; AMES JARED R ; BANK OF AMERICA NA ADMINISTRATIVE AGENT AS ; CLARKE RODNEY K ; DARE MICHAEL C

Inventor(s): (std): MOORE SEAN G ; AMES JARED R ; CLARKE RODNEY K ; QIAN JUNBO ; DUNFORD MATTHEW J ; DARE MICHAEL C ; HANKLAND JOEL S ; HODGES GEOFF ; HODGES GEOFFREY R ; DARE C MICHAEL ; CLARKE K RODNEY ; DUNFORD J MATTHEW ; MOORE G SEAN ; HODGES R GEOFFREY ; HANKLAND S JOEL ; JUNBO QIAN ; SEAN G MOORE ; MATTHEW J DUNFORD ; JOEL S HANKLAND ; RODNEY K CLARKE ; GEOFFREY R HODGES ; MICHAEL C DARE ; DUNFORD MATTHEW J ; JARED R AMES

Inventor(s): JOEL HANKLAND S ; MATTHEW DUNFORD J ; SEAN MOORE G ; GEOFFREY HODGES R ; DARE C ; CLARKE K ; DUNFORD J ; MOORE G ; HODGES R ; HANKLAND S ; MICHAEL DARE C ; RODNEY CLARKE K

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Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KW KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)
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Patent	Date recorded	Event group	Code	Event	Details
AU2016330932 AA	20180510	LSPB	+	published / reissued	
AU2016330932 AA	20180927	LSAS	HB	ALTERATION OF NAME IN REGISTER	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC OLDPARTY : FORMER NAME(S): ESCO CORPORATION
CA3000394 AA	20180328	LSPB	+	published / reissued	
CL2018000769 A1	20180713	LSPB	+	published / reissued	
CN108138471 A	20180608	LSPB	+	published / reissued	
CN108138471 A	20180608	LSPB	PB01	PUBLICATION	
CN108138471 A	20181120	LSAS	TA01	TRANSFER OF PATENT APPLICATION RIGHT	
CN108138471 A	20190215	LSAS	CB02	CHANGE OF APPLICANT INFORMATION	
CO20180003014 A2	20180612	LSPB	+	published / reissued	
EA201890839 A1	20180831	LSPB	+	published / reissued	
EP3356609 A1	20180808	LSPB	+	published / reissued	
EP3356609 A1	20180808	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20180427
EP3356609 A1	20181114	LSAS	RAP1	RIGHTS OF AN APPLICATION TRANSFERRED	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC
EP3425130 A1	20190109	LSPB	+	published / reissued	
ID201812475 A	20181130	LSPB	+	published / reissued	
IN201817014228 A	20180907	LSPB	+	published / reissued	
JP2018534450 T2	20181122	LSPB	+	published / reissued	
JP2018534450 T2	20180911	LSAS	A711	NOTIFICATION OF CHANGE IN APPLICANT	TEXT : JAPANESE INTERMEDIATE CODE: A712 EFFECTIVE DATE : 20180911
JP2018534450 T2	20181001	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A821 EFFECTIVE DATE : 20180911
MX2018003794 A1	20180622	LSPB	+	published / reissued	
PE07852018 A1	20180508	LSPB	+	published / reissued	
PH2018500614 A	20181001	LSPB	+	published / reissued	
US10030367 BB	20180724	LSGT	+	granted / extensions (spc, cpc, pte)	
US10030367 BB	20170221	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:DARE, MICHAEL C.; CLARKE, RODNEY K; QIAN, JUNBO; AND OTHERS; SIGNING DATES FROM 20170103 TO 20170207; REEL/FRAME:041318/0630
US10030367 BB	20180704	LSGT	PAT1	Patented Case	

US10030367 BB	20180817	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, OREGON OLDPARTY : MERGER AND CHANGE OF NAME; ASSIGNORS:ESCO CORPORATION; ESCO GROUP LLC; REEL/FRAME:046848/0493 EFFECTIVE DATE : 20180711
US10030367 BB	20360929	PEXP		Calculated Patent Term Expiry	
US2017089045 AA	20170330	LSPB	+	published / reissued	
US2017089045 AA	20170630	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT, NO OLDPARTY : NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS; ASSIGNOR:ESCO CORPORATION; REEL/FRAME:043070/0413 EFFECTIVE DATE : 20170630
US2017089045 AA	20171105	LSES	-NFA2	Non Final Action Counted, Not Yet Mailed	
US2017089045 AA	20171106	LSES	NFA1	Non Final Action Mailed	
US2017089045 AA	20180305	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2017089045 AA	20180605	LSFE	+PPR1	Publications -- Issue Fee Payment Received	
US2017089045 AA	20180614	LSFE	+AWA3	Awaiting TC Resp, Issue Fee Payment Verified	
US2017089045 AA	20180614	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US2017089045 AA	20180704	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2017089045 AA	20180716	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF AMERICA, N.A.; REEL/FRAME:046355/0901 EFFECTIVE DATE : 20180711
US2019003156 AA	20190103	LSPB	+	published / reissued	
WO17059009 A1	20170406	LSPB	+	published / reissued	
WO17059009 A1	20180315	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2018513830 COUNTRY OF REF DOCUMENT : JP KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO17059009 A1	20180315	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2018513830 COUNTRY OF REF DOCUMENT : JP
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WO17059009 A1	20180322	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 000436-2018 COUNTRY OF REF DOCUMENT : PE
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				ENTRY INTO NATIONAL PHASE	COUNTRY OF REF DOCUMENT : MX
WO17059009 A1	20180328	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 3000394 COUNTRY OF REF DOCUMENT : CA
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Title: MOUNTING OF **WEAR MEMBERS**

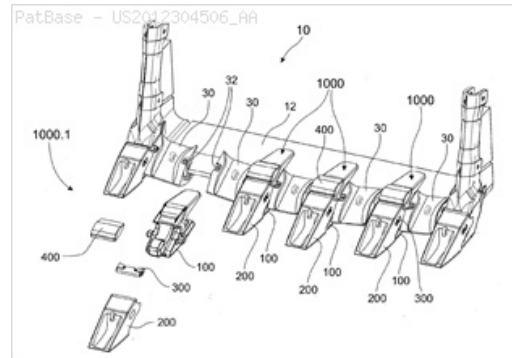
Abstract: An excavator tooth assembly comprises a first **wear member** and a second **wear member**. The second **wear member** is releasably mountable on the first **wear member**. The first **wear member** has a lock face. The second **wear member** also has a lock face. The lock face of the first **wear member** opposes the lock face of the second **wear member** to define a lock passage therebetween when the second **wear member** is mounted on the first **wear member**. The excavator tooth assembly includes a **lock pin** which is adapted to be received in the lock passage to releasably secure the second **wear member** to the first **wear member**.

Classifications:**International (IPC 8-9):** B23P11/00 E02F9/28

F16B2/04 (Advanced/Invention)

CPC: Y10T29/49826 Y10T29/49959 Y10T403/7069 E02F9/2825

E02F9/2833

European: E02F9/28A2B E02F9/28A2C**US:** 29/428 29/525.08 37/452 37/453 37/455 37/456 37/457 403/374.4**Family:**

Publication number	Publication date	Application number	Application date
AP201206335 A0	20120630	AP20120006335	20101210
AP201206341 A0	20120630	AP20120006341	20101210
AU2010330699 AA	20110616	AU20100330699	20101210
AU2010330700 AA	20110616	AU20100330700	20101210
BR112012014010 A2	20180605	BR20121114010	20101210
CA2783700 AA	20110616	CA20102783700	20101210
CA2783705 AA	20110616	CA20102783705	20101210
CL2012001552 A1	20130125	CL20120001552	20120611
CL2012001553 A1	20130125	CL20120001553	20120611
CN102713090 A	20121003	CN201080061675	20101210
CN102770607 A	20121107	CN201080061761	20101210
EP2507437 A1	20121010	EP20100835312	20101210
EP2507438 A1	20121010	EP20100835313	20101210
IN01416KN2012 A	20130201	IN2012KN01416	20120611
IN01417KN2012 A	20130201	IN2012KN01417	20120611
PE03302013 A1	20130403	PE20120000808	20101210
PE03312013 A1	20130403	PE20120000809	20101210
RU2012126820 A	20140120	RU20120126820	20101210
RU2012126822 A	20140120	RU20120126822	20101210
US2012304506 AA	20121206	US20100514874	20101210
US2012304508 AA	20121206	US20100514901	20101210
WO11069212 A1	20110616	WO2010AU01676	20101210
WO11069213 A1	20110616	WO2010AU01678	20101210

Priority:

AU20090906065 20091211	AU20100903142 20100714	AU20100330699 20101210
AU20100330700 20101210	WO2010AU01678 20101210	WO2010AU01676 20101210
CL20120001552 20120611	CL20120001553 20120611	

Probable Assignee: CQMS PTY LTD**Assignee(s):** (std): COMS PTY LTD ; CQMS PTY LTD ; GUIMARAES MIGUEL ; LILLEY BRUCE**Assignee(s):** CQMS RAZER PTY LTD**Inventor(s):** (std): LILLEY BRUCE ; GUIMARAES MIGUEL ; BRUCE LILLEY ; MIGUEL GUIMARAES**Agent(s):** FISHER ADAMS KELLY; FISHER ADAMS KELLY PTY LTD; FISHER ADAMS KELLY CALLINANS; SPRUSON AND FERGUSON; GOWLING LAFLEUR HENDERSON LLP; ESTUDIO SARGENT; SLINGSBY PHILIP ROY

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

View legal status timeline

Patent	Date recorded	Event group	Code	Event	Details
AU2010330699 AA	20110616	LSPB	+	published / reissued	

AU2010330699 AA	20150709	LSLE	-MK4	APPLICATION LAPSED SECTION 142(2)(D) - NO CONTINUATION FEE PAID FOR THE APPLICATION	
AU2010330700 AA	20110616	LSPB	+	published / reissued	
AU2010330700 AA	20150709	LSLE	-MK4	APPLICATION LAPSED SECTION 142(2)(D) - NO CONTINUATION FEE PAID FOR THE APPLICATION	
BR112012014010 A2	20180612	LSFE	-B08F	APPLICATION FEES: DISMISSAL - ARTICLE 86 OF INDUSTRIAL PROPERTY LAW	
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CA2783700 AA	20110616	LSPB	+	published / reissued	
CA2783700 AA	20150204	LSLE	-FZDE	DEAD	EFFECTIVE DATE : 20141210
CA2783705 AA	20110616	LSPB	+	published / reissued	
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CL2012001552 A1	20130125	LSPB	+	published / reissued	
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CN102713090 A	20121003	LSPB	+	published / reissued	
CN102713090 A	20121003	LSPB	+C06	PUBLICATION	
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EP2507438 A1	20121010	LSPB	+	published / reissued	
EP2507438 A1	20121010	LSSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20120705
EP2507438 A1	20141231	LSDW	-18D	APPLICATION DEEMED TO BE WITHDRAWN	EFFECTIVE DATE : 20140701
IN01416KN2012 A	20130201	LSPB	+	published / reissued	

IN01417KN2012 A	20130201	LSPB	+	published / reissued	
PE03302013 A1	20130403	LSPB	+	published / reissued	
PE03302013 A1	20131016	LSWD	-FA	ABANDONMENT OR WITHDRAWAL	
PE03312013 A1	20130403	LSPB	+	published / reissued	
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RU2012126820 A	20140120	LSPB	+	published / reissued	
RU2012126822 A	20140120	LSPB	+	published / reissued	
RU2012126822 A	20140210	LSWD	-FA93	ACKNOWLEDGEMENT OF APPLICATION WITHDRAWN (NO REQUEST FOR EXAMINATION)	EFFECTIVE DATE : 20131211
US2012304506 AA	20121206	LSPB	+	published / reissued	
US2012304506 AA	20120918	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CQMS PTY LTD, AUSTRALIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:CQMS RAZER PTY LTD.; REEL/FRA:028978/0039 EFFECTIVE DATE : 20091211
US2012304506 AA	20120918	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CQMS RAZER PTY LTD., AUSTRALIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:GUIMARAES, MIGUEL; LILLEY, BRUCE; REEL/FRA:028977/0928 EFFECTIVE DATE : 20091211
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WO11069212 A1	20101210	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 201080061761.8 COUNTRY OF REF DOCUMENT : CN

WO11069212 A1	20120608	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2783700 COUNTRY OF REF DOCUMENT : CA
WO11069212 A1	20120611	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
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WO11069213 A1	20180605	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 112012014010 COUNTRY OF REF DOCUMENT : BR KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) : EFFECTIVE DATE : 20120611
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Title: HARVESTER HEAD AND METHOD IN A HARVESTER HEAD

Abstract: The invention relates to a harvester head, which has a frame; tree processing **members** attached to the frame, which are arranged to define a longitudinal direction of the harvester head, i.e. a direction in which the tree trunks to be processed in the harvester head mainly are during the processing; a pivot means, such as a tilt arm, attached to the frame with detachable attaching means, via which pivot means the harvester head can be attached to a base machine using it, which pivot means is arranged to be turnable around a pivot axis in relation to the frame of the harvester head; power means arranged between the frame and the pivot means for turning the frame and the pivot means around the pivot axis in relation to each other. The harvester head is characterized in that the power means comprise a rotary actuator located on the pivot axis and in that the rotary actuator is arranged to turn the frame and the pivot means in relation to each other by over 90 degrees, or that the attaching means are arranged to allow an alteration of the location of the pivot axis of the pivot means in relation to the frame.

Classifications:

International (IPC 8-9): A01G23/083 A01G23/085 A01G23/095

A01G23/097 (Advanced/Invention);

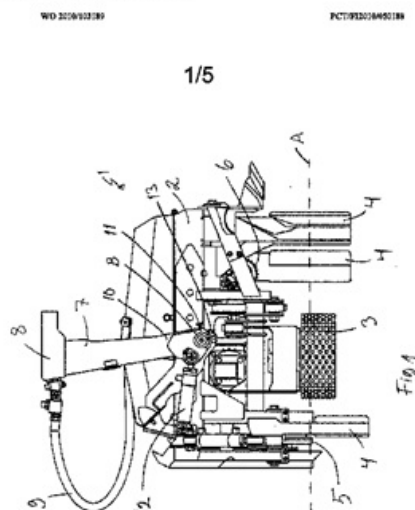
A01G23/00 (Core/Invention);

A01G (Subclass/Invention)

CPC: A01G23/095 A01G23/083 A01G23/097

European: A01G23/083 A01G23/095 A01G23/097

PatBase - WO10103189_A2



Family:

Publication number	Publication date	Application number	Application date
EP2405738 A2	20120118	EP20100717181	20100312
FI20095260 A	20100913	FI20090005260	20090312
FI20095260 A0	20090312	FI20090005260	20090312
FI20095261 A	20100913	FI20090005261	20090312
FI20095261 A0	20090312	FI20090005261	20090312
WO10103189 A2	20100916	WO2010FI50188	20100312
WO10103189 A3	20101223	WO2010FI50188	20100312

Priority:

FI20090005260 20090312 FI20090005261 20090312 WO2010FI50188 20100312

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Agent(s): MASKULA SILLA MARJATTA; TURUN PATENTTITOIMISTO OY

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
EP2405738 A2	20120118	LSPB	+	published / reissued	
EP2405738 A2	20120118	LSSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20110909

EP2405738 A2	20130828	LSDW	-18D	APPLICATION DEEMED TO BE WITHDRAWN	EFFECTIVE DATE : 20130303
FI20095260 A	20100913	LSPB	+	published / reissued	
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FI20095261 A	20100913	LSPB	+	published / reissued	
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WO10103189 A2	20100916	LSPB	+	published / reissued	
WO10103189 A3	20110909	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2010717181 COUNTRY OF REF DOCUMENT : EP
WO10103189 A3	20110912	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE

Title: **Excavating** tooth

Abstract: An **excavating** tooth wherein the coupling between the point and the adapter is achieved through generally helical thread means with an external lock to prevent removal by reverse rotation relative to the direction of the helical thread means.

Classifications:

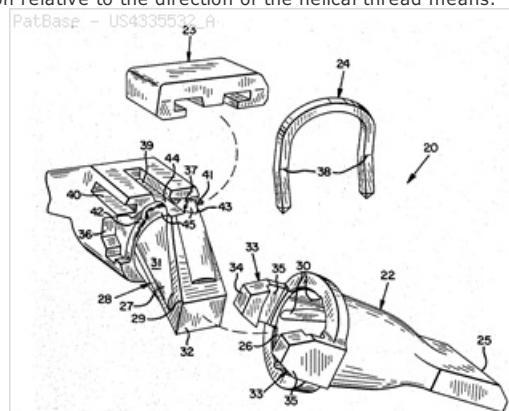
International (ipc 8-9): E02F9/28 E21B10/04 (Advanced/Invention);
E02F9/28 E21B10/00 (Core/Invention)

International (ipc 1-7): A01B35/20 E02F3/00 E02F3/60 E02F3/81
E02F9/28 E21B10/04 E21B10/16 E21C25/12

CPC: E02F9/2825 E02F9/2891 Y10T403/583

European: E02F9/28A2B E02F9/28L

US: 299/108 37/142R 37/459 403/317



Family:

Publication number	Publication date	Application number	Application date
AR228354 A1	19830228	AR19810285103	19810427
AT186781 A	19850715	AT19810001867	19810424
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ZA8101905 A	19820428	ZA19810001905	19810323

Priority:

US19800144368 19800428 US19810235771 19810225 CA19810376201 19810424
CA19810387435 19811006 FR19810022559 19811202 US19820351769 19820224

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HAMPEL D A ; HAMPEL DAVID A ; HAMPEL DAVID ALFRED ; HEMPEL DAVID ALFRED ; IR ; UILLYAM
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Agent(s): CALLINANS; FISHER ADAMS KELLY CALLINANS; SPRUSON AND FERGUSON; MEREDITH AND FINLAYSON

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AR228354 A1	19830228	LSGT	+	granted / extensions (spc, cpc, pte)	
AR228354 A1	20010427	PEXP		Calculated Patent Term Expiry	
AT186781 A	19850715	LSPB	+	published / reissued	
AT379839 B	19860310	LSGT	+	granted / extensions (spc, cpc, pte)	
AT379839 B	19890915	LSAS	EIH	CHANGE IN THE PERSON OF PATENT OWNER	
AT379839 B	19900215	LSAS	EFA	CHANGE IN THE COMPANY NAME	
AT379839 B	19950415	LSLE	-ELJ	CEASED DUE TO NON- PAYMENT OF THE ANNUAL FEE	
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BE888583 A	20010101	LSLE	-RE20	PATENT EXPIRED	PARTYTYPE : OWNER OWNER : ESCO CORP. EFFECTIVE DATE : 20010427

BR8102233 A	19820112	LSPB	+	published / reissued	
BR8102233 A	19961001	LSLE	-MK	PATENT EXPIRED	EFFECTIVE DATE : 19960413
CH651608 A	19850930	LSGT	+	granted / extensions (spc, cpc, pte)	
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JP1249756 C3	19850125	LSGT	+	granted / extensions (spc, cpc, pte)	
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JP59026760 B4	19840630	LSPB	+	published / reissued	
KR19830005457 A	19830813	LSPB	+	published / reissued	
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KR850001279 B1	19850904	LSGT	+	granted / extensions (spc, cpc, pte)	
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NL178343 C	19860303	LSGT	+	granted / extensions (spc, cpc, pte)	
NL178343 C	19890918	LSAS	SNR	ASSIGNMENTS OF PATENTS OR RIGHTS ARISING FROM EXAMINED PATENT APPLICATIONS	PARTYTYPE : OWNER OWNER : NEWESCO CORPORATION
NL178343 C	19891218	LSAS	TNT	MODIFICATIONS OF NAMES OF PROPRIETORS OF PATENTS OR APPLICANTS OF EXAMINED PATENT APPLICATIONS	PARTYTYPE : OWNER OWNER : ESCO CORPORATION
NL178343 C	19971201	LSLE	-V1	LAPSED BECAUSE OF NON-PAYMENT OF THE ANNUAL FEE	EFFECTIVE DATE : 19971001
NL178343 C	20010324	PEXP		Calculated Patent Term Expiry	
NL8101457 A	19811116	LSPB	+	published / reissued	
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NL8101457 A	19821001	LSES	BB	A SEARCH REPORT HAS BEEN DRAWN UP	
NL8101457 A	19830405	LSES	+BC	A REQUEST FOR EXAMINATION HAS BEEN FILED	
NO151127 B	19841105	LSPB	+	published / reissued	
NO151127 C	19850213	LSGT	+	granted / extensions (spc, cpc, pte)	
NO151127 C	20010427	PEXP		Calculated Patent Term Expiry	
NO811412 A	19811029	LSPB	+	published / reissued	
NZ196940 A	19840316	LSPB	+	published / reissued	

PH18240 A	19850503	LSGT	+	granted / extensions (spc, cpc, pte)	
PH18240 A	19970430	LSFE	AT	RECORD OF ANNUAL FEE PAYMENTS	YEAR OF FEE PAYMENT : 12
PH18240 A	20020503	PEXP		Calculated Patent Term Expiry	
SE445842 B	19860721	LSPB	+	published / reissued	
SE445842 B	19950131	LSFE	+NAL	PATENT IN FORCE	TEXT : 8102378-0
SE445842 B	20010618	LSLE	-NUG	PATENT HAS LAPSED	TEXT : 8102378-0
SE445842 C	19861030	LSGT	+	granted / extensions (spc, cpc, pte)	
SE445842 C	20010413	PEXP		Calculated Patent Term Expiry	
SE8102378 A	19811029	LSPB	+	published / reissued	
SU1195913 A3	19851130	LSGT	+	granted / extensions (spc, cpc, pte)	
US4335532 A	19820622	LSGT	+	granted / extensions (spc, cpc, pte)	
US4335532 A	19810520	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, 2141 N.W. 25TH AVE. PORTLAND, OR OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST.; ASSIGNORS:HAHN FREDERICK C.; BARBER WILLIAM R. JR.; HAMPEL DAVID A.; REEL/FRA:003854/0461 EFFECTIVE DATE : 19810224
US4335532 A	19820909	LSGT	PAT1	Patented Case	
US4335532 A	19820909	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US4335532 A	19851015	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US4335532 A	19891030	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US4335532 A	19900509	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION OLDPARTY : CHANGE OF NAME; ASSIGNOR:NEWESCO CORPORATION; REEL/FRA:005285/0284 EFFECTIVE DATE : 19890526
US4335532 A	19931122	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 12
US4404760 A	19830920	LSGT	+	granted / extensions (spc, cpc, pte)	
US4404760 A	19820521	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION,OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:HAHN, FREDERICK C.; BARBER, WILLIAM R. JR.; HAMPEL, DAVID A.; REEL/FRA:003992/0644 EFFECTIVE DATE : 19820219
US4404760 A	19820521	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, PORTLAND, OR A CORP. OF OR OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST.; ASSIGNORS:HAHN, FREDERICK C.; BARBER, WILLIAM R. JR.; HAMPEL, DAVID A.; REEL/FRA:003992/0644 EFFECTIVE DATE : 19820219
US4404760 A	19830721	LSGT	PAT1	Patented Case	
US4404760 A	19830721	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE

US4404760 A	19861114	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
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US4404760 A	19950216	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 12
ZA8101905 A	19820428	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA8101905 A	20010322	PEXP		Calculated Patent Term Expiry	

Title: **Excavating** tooth

Abstract: An **excavating** tooth for use on a wide variety of **excavating** equipment is comprised of a point, an adapter and a sandwich **lock pin**. The pin includes a rigid casing and a plurality of independently depressible protrusions. One of the protrusions resiliently engages a face defined on the nose of the adapter to tighten the connection of the point on the nose. One other of the protrusions extends into an opening defined by the point to secure the **lock pin** to the point. With respect to an external locking tooth, the opening defined in the point includes a pair of bosses which define a reduced portion of the opening. The reduced portion matingly receives and holds the ends of the rigid casing of the pin. The independent locking of the pin and the mating receipt of the casing in the point opening reduces the likelihood of pin loss due to overloading of the elastomeric material, **wearing** of the components or jacking forces.

Classifications:

International (IPC 8-9): E02F3/00 E02F3/60 E02F9/28 F16B7/02 F16B9/02 (Advanced/Invention);

E02F3/96 E02F9/28 (Advanced/Non-invention);

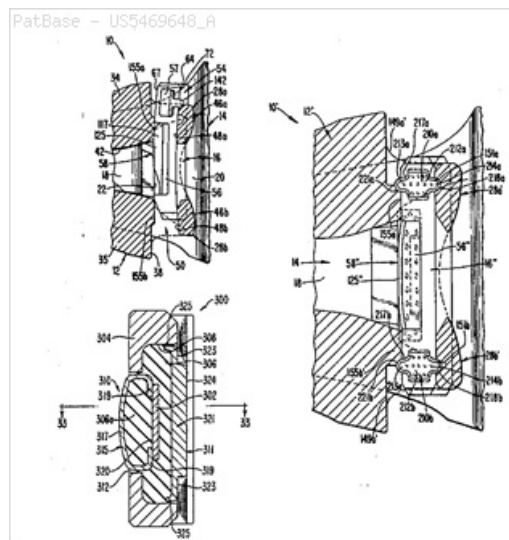
E02F3/46 E02F9/28 (Core/Invention)

International (IPC 1-7): C02F9/28 E02F3/60 E02F3/96 E02F9/28

CPC: E02F9/2825 E02F9/2841

European: E02F9/28A2B E02F9/28A2C2

US: 37/455 37/457



Family:

Publication number	Publication date	Application number	Application date
AT200539 E	20010415	AT19940907947T	19940202
AU199461319 A1	19940829	AU19940061319	19940202
AU199528563 A1	19951019	AU19950028563	19950815
AU199857380 A1	19980604	AU19980057380	19980305
AU678907 B2	19970612	AU19950028563	19950815
AU690539 B2	19980430	AU19940061319	19940202
AU699365 B2	19981203	AU19980057380	19980305
BRPI9405678 A	19951121	BR1994PI05678	19940202
CA2155012 AA	19950728	CA19942155012	19940202
CA2155012 C	19990511	CA19942155012	19940202
CL1994000166 A1	19950503	CL19940000166	19940202
CL2005002178 A1	20060623	CL20050002178	20050826
CL48377 B	20120327	CL19940000166	19940202
CN1091200 C	20020918	CN19941091076	19940202
CN1129024 A	19960814	CN19941091076	19940202
DE69427079 D1	20010517	DE19946027079	19940202
DE69427079 T2	20010802	DE19946027079T	19940202
DK0681630 T3	20010702	DK19940907947T	19940202
EP0681630 A1	19951115	EP19940907947	19940202
EP0681630 A4	19961211	EP19940907947	19940202
EP0681630 B1	20010411	EP19940907947	19940202
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FI111746 B	20030915	FI19950003667	19950801
FI953667 A	19950927	FI19950003667	19950801
FI953667 A0	19950801	FI19950003667	19950801
GR3036134 T3	20010928	GR20010400988T	20010627
JP2721043 B2	19980304	JP19940518176T	19940202
JP8509276 T2	19961001	JP19940518176T	19940202
KR100253438 B1	20000415	KR19950703195	19950802
KR19960700385 A	19960120	KR19950703195	19950802
KR19967000385 A	19960120	KR19957003195	19940202
NO953035 A	19950929	NO19950003035	19950801
NO953035 A0	19950801	NO19950003035	19950801
NO953035 L	19950929	NO19950003035	19950801
NZ262018 A	19961126	NZ19940262018	19940202
NZ272789 A	19961126	NZ19950272789	19950816
PT681630 T	20010830	PT19940907947T	19940202
US5469648 A	19951128	US19940291711	19940816

WO9418401 A1	19940818	WO1994US01169	19940202
ZA9400702 A	19950802	ZA19940000702	19940202

Priority:

US19930012467 19930202 AU19940061319 19940202 WO1994US01169 19940202
US19940291711 19940816 AU19950028563 19950815 AU19980057380 19980305

Probable Assignee: ESCO CORP

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Agent(s): CALLINANS; FISHER ADAMS KELLY CALLINANS; SPRUSON AND FERGUSON; FINLAYSON AND SINGLEHURST; PORZIO

Designated states: AT AU BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CZ DE DK ES FI FR GA GB GE GN GR HU IE IT JP KP KR KZ LI LK LU LV MC MG ML MN MR MW NE NL NO NZ PL PT RO RU SD SE SK SN TD TG UA UZ VN

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AT200539 E	20010415	LSGT	+	granted / extensions (spc, cpc, pte)	
AT200539 E	20010615	LSPB	+UEP	PUBLICATION OF TRANSLATION OF EUROPEAN PATENT SPECIFICATION	
AT200539 E	20140202	PEXP		Calculated Patent Term Expiry	
AU199461319 A1	19940829	LSPB	+	published / reissued	
AU199528563 A1	19951019	LSPB	+	published / reissued	
AU199857380 A1	19980604	LSPB	+	published / reissued	
AU678907 B2	19970612	LSGT	+	granted / extensions (spc, cpc, pte)	
AU678907 B2	20030220	LSLI	GD	LICENCE REGISTERED	PARTYTYPE : LICENSEE LICENSEE : BRADKEN MINING SPV PTY LTD
AU678907 B2	20150815	PEXP		Calculated Patent Term Expiry	
AU690539 B2	19980430	LSGT	+	granted / extensions (spc, cpc, pte)	
AU690539 B2	20030220	LSLI	GD	LICENCE REGISTERED	PARTYTYPE : LICENSEE LICENSEE : BRADKEN MINING SPV PTY LTD
AU690539 B2	20140202	PEXP		Calculated Patent Term Expiry	
AU699365 B2	19981203	LSGT	+	granted / extensions (spc, cpc, pte)	
AU699365 B2	20030220	LSLI	GD	LICENCE REGISTERED	PARTYTYPE : LICENSEE LICENSEE : BRADKEN MINING SPV PTY LTD
AU699365 B2	20180305	PEXP		Calculated Patent Term Expiry	
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BRPI9405678 A	20000620	LSGT	+FF	DECISION: INTENTION TO GRANT	
BRPI9405678 A	20001031	LSGT	+FG9A	PATENT OR CERTIFICATE OF ADDITION GRANTED	
BRPI9405678 A	20150616	LSLE	-B21A	EXPIRY ACC. ART. 78, ITEM I OF IPL- EXPIRY OF THE TERM OF PROTECTION	TEXT : PATENTE EXTINTA EM 02/02/2014
CA2155012 AA	19950728	LSPB	+	published / reissued	
CA2155012 AA	19960311	LSES	+EEER	EXAMINATION REQUEST	

CA2155012 C	19990511	LSGT	+	granted / extensions (spc, cpc, pte)	
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CL1994000166 A1	19950503	LSPB	+	published / reissued	
CL2005002178 A1	20060623	LSPB	+	published / reissued	
CL48377 B	20120327	LSGT	+	granted / extensions (spc, cpc, pte)	
CL48377 B	20270327	PEXP		Calculated Patent Term Expiry	
CN1091200 C	20020918	LSGT	+	granted / extensions (spc, cpc, pte)	
CN1091200 C	20020918	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL	
CN1091200 C	20140202	PEXP		Calculated Patent Term Expiry	
CN1129024 A	19960814	LSPB	+	published / reissued	
CN1129024 A	19960814	LSPB	+C06	PUBLICATION	
DE69427079 D1	20020508	LSGT	+8364	NO OPPOSITION DURING TERM OF OPPOSITION	
DE69427079 T2	20010802	LSGT	+	granted / extensions (spc, cpc, pte)	
DE69427079 T2	20140202	PEXP		Calculated Patent Term Expiry	
DK0681630 T3	20010702	LSGT	+	granted / extensions (spc, cpc, pte)	
DK0681630 T3	20140202	PEXP		Calculated Patent Term Expiry	
EP0681630 A1	19951115	LSPB	+	published / reissued	
EP0681630 A1	19951115	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 19950823
EP0681630 A4	19961211	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 19961022
EP0681630 A4	19980930	LSES	+17Q	FIRST EXAMINATION REPORT DESPACHED	EFFECTIVE DATE : 19980813
EP0681630 B1	20010411	LSGT	+	granted / extensions (spc, cpc, pte)	
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EP0681630 B1	20140204	LSLE	REG		REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : R071 REF DOCUMENT NUMBER : 69427079 COUNTRY OF REF DOCUMENT : DE
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EFFECTIVE DATE : 20140202					
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JP2721043 B2	20051108	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP2721043 B2	20061212	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
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KR19967000385 A	19960120	LSPB	+	published / reissued	
NO953035 A	19950929	LSPB	+	published / reissued	
NZ262018 A	19961126	LSPB	+	published / reissued	
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NZ262018 A	20070223	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	
NZ262018 A	20140228	LSLE	-EXPY	PATENT EXPIRED	
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PT681630 T	20160830	PEXP		Calculated Patent Term Expiry	
US5469648 A	19951128	LSGT	+	granted / extensions (spc, cpc, pte)	
US5469648 A	19941024	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS: JONES, LARREN F.; EMRICH, ROBERT K.; BINGHAM, IAN R.; REEL/FRAME: 007220/0218 EFFECTIVE DATE : 19941020

US5469648 A	19951116	LSGT	PAT1	Patented Case	
US5469648 A	19951116	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US5469648 A	19990503	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US5469648 A	20030506	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US5469648 A	20070529	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 12
US5469648 A	20101129	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT, WA OLDPARTY : NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS; ASSIGNOR:ESCO CORPORATION; REEL/FRAME:025406/0714 EFFECTIVE DATE : 20101118
US5469648 A	20180716	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF AMERICA, N.A.; REEL/FRAME:046551/0375 EFFECTIVE DATE : 20180711
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WO9418401 A1	19950816	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 262018 COUNTRY OF REF DOCUMENT : NZ
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ZA9400702 A	19950802	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA9400702 A	20140201	PEXP		Calculated Patent Term Expiry	

Title: **Wear** assembly for a digging edge of an excavator

Abstract: A **wear** assembly for attaching to a digging edge of an excavator includes a boss, a **wear member** and a lock. The boss is fixed to the excavator and defines a T-shaped coupling structure. The adapter includes a rearwardly extending mounting leg and a forwardly extending **working** end. The leg includes a T-shaped slot adapted to be received over the T-shaped structure of the boss. The adapter leg further includes an opening for receiving a lock. The lock includes an adjustment assembly for eliminating any looseness which may exist between the adapter and the boss.

Classifications:

International (IPC 8-9): E02F9/00 E02F9/28 (Advanced/Invention);

E02F9/28 (Advanced/Non-invention);

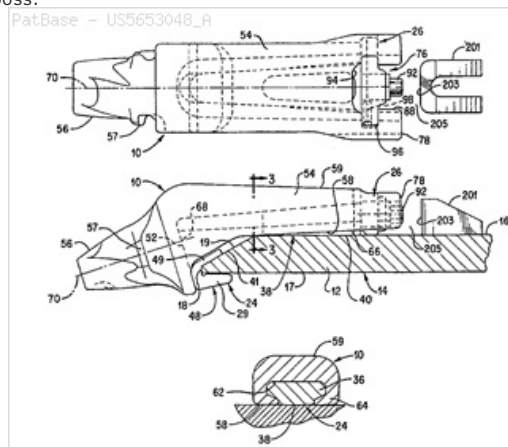
E02F09/28 E02F9/28 (Core/Invention)

International (IPC 1-7): E02F09/28 E02F9/00 E02F9/28

CPC: E02F9/2858 E02F9/2825 E02F9/2841

European: E02F9/28A2B E02F9/28A2C2 E02F9/28A6

US: 37/450 37/452 37/455



Family:

Publication number	Publication date	Application number	Application date
AP9801236 A0	19980630	AP19980001236	19961105
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AU199676105 A1	19970529	AU19960076105	19961105
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CL47048 B	20100924	CL19960001940	19961106
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DE69636251 D1	20060727	DE19966036251	19961105
DE69636251 T2	20070426	DE19966036251T	19961105
DK0859889 T3	20061023	DK19960938818T	19961105
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EP1626132 A2	20060215	EP20050023572	19961105
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ES2267113 T3	20070301	ES19960938818T	19961105
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IN03121DE2005 A	20071207	IN2005DE03121	20051122
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NO982040 A	19980702	NO19980002040	19980505
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TH27999 B	20100608	TH19961003772	19961105

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ZA9609279 A	19970602	ZA19960009279	19961105

Priority:

US19950554158 19951106 AU19960076105 19961105 EP19960938818 19961105
WO1996US17897 19961105 JP19970518333 19961105 AU19980096053 19981204
US19990368503 19990805

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Agent(s): CALLINANS; FISHER ADAMS KELLY CALLINANS; SPRUSON AND FERGUSON; FINLAYSON AND SINGLEHURST;
PORZIO; STEVEN P

Designated states: AL AM AT AU AZ BA BB BE BF BG BJ BR BY CA CF CG CH CI CN CU CZ DE DK EE ES FI FR GB GE GR HU IE
IL IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MC MD MG MK MN MW MX NL NO NZ PL PT RO RU SD
SE SG SI SK SZ TJ TM TR TT UA UG UZ VN

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AP993 A	20010806	LSGT	+	granted / extensions (spc, cpc, pte)	
AP993 A	20161105	PEXP		Calculated Patent Term Expiry	
AR004285 AA	19981104	LSPB	+	published / reissued	
AT330076 E	20060715	LSGT	+	granted / extensions (spc, cpc, pte)	
AT330076 E	20070115	LSPB	+UEP	PUBLICATION OF TRANSLATION OF EUROPEAN PATENT SPECIFICATION	REF DOCUMENT NUMBER : 0859889 COUNTRY OF REF DOCUMENT : EP
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AU199676105 A1	19970529	LSPB	+	published / reissued	
AU199896053 A1	19990204	LSPB	+	published / reissued	
AU696335 B2	19980910	LSGT	+	granted / extensions (spc, cpc, pte)	
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AU743348 B2	20020124	LSGT	+	granted / extensions (spc, cpc, pte)	
AU743348 B2	20020523	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
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				REGISTERED	LICENSEE : BRADKEN MINING SPV PTY LTD
AU743348 B2	20181204	PEXP		Calculated Patent Term Expiry	
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BRPI9611463 A	20020305	LSGT	+FG9A	PATENT OR CERTIFICATE OF ADDITION GRANTED	
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CN1073181 C	20161228	LSWD	-EXPY	TERMINATION OF PATENT RIGHT OR UTILITY MODEL	
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EP0859889 A1	19980826	LSPB	+	published / reissued	
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EP0859889 A1	19991006	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 19990824
EP0859889 A1	20020605	LSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20020419
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EP0859889 B1	20060614	LSGT	+	granted / extensions (spc, cpc, pte)	
EP0859889 B1	20161105	PEXP		Calculated Patent Term Expiry	
EP1626132 A2	20060215	LSPB	+	published / reissued	
EP1626132 A3	20061018	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20060904
EP1626132 A3	20061122	LSFE	+AKX	DESIGNATION FEES PAID	COUNTRY OF REF DOCUMENT : AT COUNTRY OF REF DOCUMENT : BE COUNTRY OF REF DOCUMENT : CH COUNTRY OF REF DOCUMENT : DE COUNTRY OF REF DOCUMENT : DK COUNTRY OF REF DOCUMENT : ES COUNTRY OF REF DOCUMENT : FI COUNTRY OF REF DOCUMENT : FR COUNTRY OF REF DOCUMENT : GB COUNTRY OF REF DOCUMENT : GR COUNTRY OF REF DOCUMENT : IT COUNTRY OF REF DOCUMENT : LI COUNTRY OF REF DOCUMENT : PT COUNTRY OF REF DOCUMENT : SE
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EP1626132 A3	20090128	LSDW	-18D	APPLICATION DEEMED TO BE WITHDRAWN	EFFECTIVE DATE : 20080603
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ES2267113 T3	20161105	PEXP		Calculated Patent Term Expiry	
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JP2002180506 A2	20040518	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20040517
JP2002180506 A2	20040901	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20040831
JP2002180506 A2	20050301	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20050228
JP2002180506 A2	20050525	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20050524
JP2002180506 A2	20050811	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20050810
JP2002180506 A2	20051005	LSRV	-A02	DECISION OF REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A02 EFFECTIVE DATE : 20051004

JP2002180506 A2	20060126	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20060125
JP2002180506 A2	20060201	LSAL	A911	TRANSFER OF RECONSIDERATION BY EXAMINER BEFORE APPEAL (ZENCHI)	TEXT : JAPANESE INTERMEDIATE CODE: A911 EFFECTIVE DATE : 20060131
JP2002180506 A2	20060412	LSSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20060411
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JP3461839 B2	20110728	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 8
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KR100306324 B1	20161105	PEXP		Calculated Patent Term Expiry
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KR19990067260 A	20000228	LSES	-E902	NOTIFICATION OF REASON FOR REFUSAL
KR19990067260 A	20010604	LSGT	+E701	DECISION TO GRANT OR REGISTRATION OF PATENT RIGHT
KR19990067260 A	20010808	LSGT	+GRNT	WRITTEN DECISION TO GRANT
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NO318687 B1	20180505	PEXP		Calculated Patent Term Expiry
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NZ322370 A	19990528	LSPB	+	published / reissued
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US5653048 A	19970805	LSGT	+	granted / extensions (spc, cpc, pte)	
US5653048 A	19960124	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:JONES, LARREN F.; MCCLANAHAN, ROBERT E.; HOLLAND, HEZEKIAH R.; REEL/FRAME:007777/0407; SIGNING DATES FROM 19960104 TO 19960115
US5653048 A	19970602	LSGT	PAT1	Patented Case	
US5653048 A	19970602	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US5653048 A	20010125	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US5653048 A	20050223	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US5653048 A	20090205	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 12
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US5653048 A	20180716	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF AMERICA, N.A.; REEL/FRAME:046551/0375 EFFECTIVE DATE : 20180711

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USRE42629 E	20110803	LSGT	PAT1	Patented Case	
USRE42629 E	20120703	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT, WA OLDPARTY : NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS; ASSIGNOR:ESCO CORPORATION; REEL/FRA:028496/0848 EFFECTIVE DATE : 20101118
USRE42629 E	20180716	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF AMERICA, N.A.; REEL/FRA:046355/0676 EFFECTIVE DATE : 20180711
WO9717499 A1	19970515	LSPB	+	published / reissued	
WO9717499 A1	19961105	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 96198109.1 COUNTRY OF REF DOCUMENT : CN
WO9717499 A1	19980421	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 322370 COUNTRY OF REF DOCUMENT : NZ
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WO9717499 A1	19980501	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 1019980703223 COUNTRY OF REF DOCUMENT : KR
WO9717499 A1	19980506	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 1997 518333 COUNTRY OF REF DOCUMENT : JP KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
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WO9717499 A1	20060614	LSGT	+WWG	WIPO INFORMATION: GRANT IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 1996938818 COUNTRY OF REF DOCUMENT : EP
ZA9609279 A	19970602	LSGT	+	granted / extensions (spc, cpc, pte)	

Title: ROCK MILLING CUTTER TONGUE AND SLOT CONNECTED

Abstract: A plurality of cutter tool holders are mounted to a milling cutter head by tongue and groove connections. Each connection comprises a groove formed in the cutter head and a tongue formed on the tool holder. The groove has an undercut portion and an enlargement at one end. The tongue includes a projection which can be inserted into the enlargement and then into the undercut to prevent, via wedging action, dislodgement of the tool holder. The groove and tongue each includes a side wall which is straight along its height.

Classifications:

International (IPC 8-9): B28D1/18 E01C23/08 E02F3/24 E02F3/76 E02F3/78 E02F9/28 E21C25/10 E21C35/18

E21C35/19 (Advanced/Invention);

E01C23/00 E02F3/76 E21C25/00 E21C35/00 (Core/Invention)

International (IPC 1-7): B23P11/02 E01C23/00 E01C23/08 E01C23/09 E02F3/18 E02F3/24 E02F3/76 E02F3/78 E02F3/80 E02F3/81 E02F9/28 E21B E21C25/00 E21C25/10 E21C25/12 E21C35/18 E21D9/00 F16B1/00

CPC: Y10T408/494 Y10T279/17846 Y10T407/192 Y10T407/1932

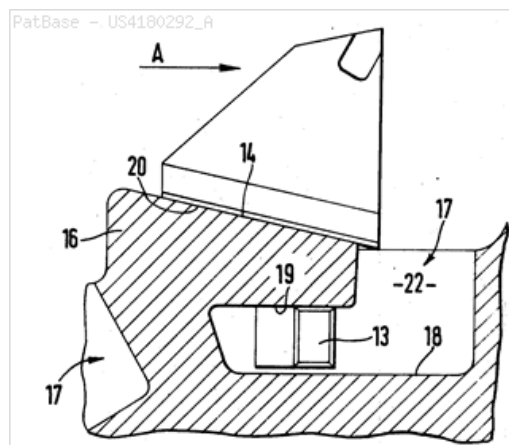
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E21C2035/191

European: B28D1/18E2 E02F3/78B E02F9/28B E21C35/19 P21C35/19B

US: 279/86 299/102 299/108 299/92 299/93 37/455 407/40 407/46

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Family:

Publication number	Publication date	Application number	Application date
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EP0025421 A3	19810415	EP19800850112	19800710
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Priority:

GB19770009074 19770303	GB19770049698 19771129	GB19800010911 19780227
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CA19800357750 19800807	CA19820412519 19820929	

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Inventor(s): (std): EA PERSSON ; ERIK ANDERS PERSSON ; ERIKU ANDERUSU PERUSON ; PERSSON A ; PERSSON ANDERS ;

PERSSON ANDERS E ; PERSSON E ; PERSSON E A ; PERSSON E ANDERS ; PERSSON ERIK A ; PERSSON ERIK ANDERS

Inventor(s): ANDERS PERSSON ERIK ; E A PERSSON

Agent(s): GRIFFITH HACK; GOWLING LAFLEUR HENDERSON LLP

Designated states: AT BE CH DE FR GB IT LI NL SE

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AR226565 A1	19820730	LSGT	+	granted / extensions (spc, cpc, pte)	
AR226565 A1	20000806	PEXP		Calculated Patent Term Expiry	
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AT10018 E	19850415	LSPB	+UEP	PUBLICATION OF TRANSLATION OF EUROPEAN PATENT SPECIFICATION	
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AU198060660 A1	19810212	LSPB	+	published / reissued	
AU514791 B2	19810226	LSGT	+	granted / extensions (spc, cpc, pte)	
AU538966 B2	19840906	LSGT	+	granted / extensions (spc, cpc, pte)	
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DE2807654 A1	19780907	LSPB	+	published / reissued	
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EP0025421 A3	19811007	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 19810728
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EP0025421 B1	19950131	LSLE	-EUG	SE: EUROPEAN PATENT HAS LAPSED	REF COUNTRY CODE : EP TEXT : 80850112.6 EFFECTIVE DATE : 19880831
ES8200736 A1	19811101	LSGT	+	granted / extensions (spc, cpc, pte)	
ES8200736 A1	20011101	PEXP		Calculated Patent Term Expiry	
FI802487 A	19810209	LSPB	+	published / reissued	
FI802487 A	20040831	LSWD	-FA	APPLICATION	PARTYTYPE : OWNER

WITHDRAWN					OWNER : SANDVIK AKTIEBOLAG
FR2382307 A1	19780929	LSPB	+	published / reissued	
FR2382307 B1	19821029	LSGT	+	granted / extensions (spc, cpc, pte)	
FR2382307 B1	19861226	LSLE	-ST	NOTIFICATION OF LAPSE	
FR2382307 B1	19980223	PEXP		Calculated Patent Term Expiry	
GB1604667 A	19811216	LSGT	+	granted / extensions (spc, cpc, pte)	
GB1604667 A	19820407	LSGT	+PS	PATENT SEALED	
GB1604667 A	19831207	LSLE	-PCNP	PATENT CEASED THROUGH NON-PAYMENT OF RENEWAL FEE	
GB1604667 A	19970303	PEXP		Calculated Patent Term Expiry	
GB1604668 A	19811216	LSGT	+	granted / extensions (spc, cpc, pte)	
GB1604668 A	19820407	LSGT	+PS	PATENT SEALED	
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GB1604668 A	19980227	PEXP		Calculated Patent Term Expiry	
IN149752 A	19820403	LSPB	+	published / reissued	
IN153482 A	19840721	LSPB	+	published / reissued	
JP56034807 A2	19810407	LSPB	+	published / reissued	
NO802354 A	19810209	LSPB	+	published / reissued	
PL110261 B1	19800731	LSGT	+	granted / extensions (spc, cpc, pte)	
PL204992 A1	19781120	LSPB	+	published / reissued	
US4180292 A	19791225	LSGT	+	granted / extensions (spc, cpc, pte)	
US4180292 A	19791225	LSGT	PAT1	Patented Case	
US4180292 A	19820914	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SANTRADE LTD., ALPENQUAI 12, CH-6002, LUCERNE, SWI OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST.; ASSIGNOR:SANDVIK AKTIEBOLAG, A CORP. OF SWEDEN; REEL/FRAME:004085/0132 EFFECTIVE DATE : 19820908
US4302055 A	19811124	LSGT	+	granted / extensions (spc, cpc, pte)	
US4302055 A	19811124	LSGT	PAT1	Patented Case	
US4302055 A	19811124	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US4302055 A	19820914	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SANTRADE LTD., ALPENQUAI 12, CH-6002, LUCERNE, SWI OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST.; ASSIGNOR:SANDVIK AKTIEBOLAG, A CORP. OF SWEDEN; REEL/FRAME:004085/0132 EFFECTIVE DATE : 19820908
ZA7801000 A	19790228	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA7801000 A	19940219	PEXP		Calculated Patent Term Expiry	
ZA8004300 A	19810729	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA8004300 A	20000715	PEXP		Calculated Patent Term Expiry	

Title: ASSEMBLY FOR SECURING A **WEAR**

Abstract: A **wear member** for **excavating** equipment and which is particularly suited for a dredge cutterhead that includes a curved abutting surface that abuts a complementary curved bearing surface on the base. The curved bearing surfaces are able to maintain substantially full contact with each other under transverse loading. The base and adapter further having a plurality of complementary stops for resisting relative movement between them.

Classifications:

International (IPC 8-9): E02F3/00 E02F3/36

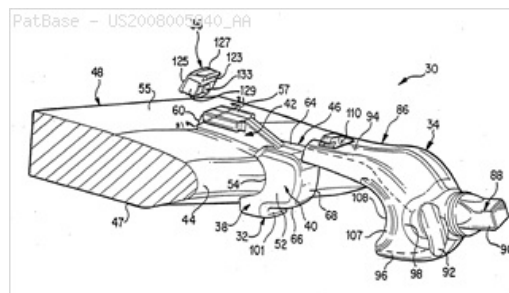
E02F9/28 (Advanced/Invention);

E02F9/28 (Core/Invention)

CPC: E02F9/2825 E02F9/2866

European: E02F9/28A2B E02F9/28B

US: 37/452 37/452P



Family:

Publication number	Publication date	Application number	Application date
US2008005940 AA	20080110	US20060483581	20060710
WO08008274 A2	20080117	WO2007US15534	20070705
WO08008274 A3	20081120	WO2007US15534	20070705

Priority:

US20060483581 20060710

Probable Assignee: ESCO CORP

Assignee(s): (std): ESCO CORP ; OLLINGER CHARLES G IV

Assignee(s): OLLINGER CHARLES G

Inventor(s): (std): OLLINGER CHARLES G IV ; OLLINGER CHARLES G

Agent(s): ESCO CORP; SCHAD STEVEN P

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2008005940 AA	20080110	LSPB	+	published / reissued	
US2008005940 AA	20060710	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:OLLINGER IV, CHARLES G.; REEL/FRAME:018056/0072 EFFECTIVE DATE : 20060710
US2008005940 AA	20090217	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2008005940 AA	20090217	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO RESPOND TO AN OFFICE ACTION
WO08008274 A2	20080117	LSPB	+	published / reissued	
WO08008274 A3	20090113	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO08008274 A3	20090210	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : RU
WO08008274 A3	20090805	LSNE	-122	EP: PCT APPLICATION NON- ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 07796700 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) :

Title: **Excavating** tooth assembly

Abstract: An **excavating** tooth assembly including an adapter, a point equipped with rearwardly projecting tongues, and locking means including a vertical pin external of the adapter nose held in place by a shrouded spring loaded plug disposed perpendicularly to the line of mounting the point on the adapter, the pin having arcuate front and back surfaces for wedging engagement with laterally projecting ears on the nose and a laterally projecting lug on a point tongue.

Classifications:

International (IPC 8-9): E02F3/40 E02F9/28

E21C37/18 (Advanced/Invention);

E02F3/40 E02F9/28 (Core/Invention);

E02F (Subclass/Invention)

International (IPC 1-7): A61C7/00 A61C8/00 E02F3/40 E02F3/58

E02F9/28 E21C37/18

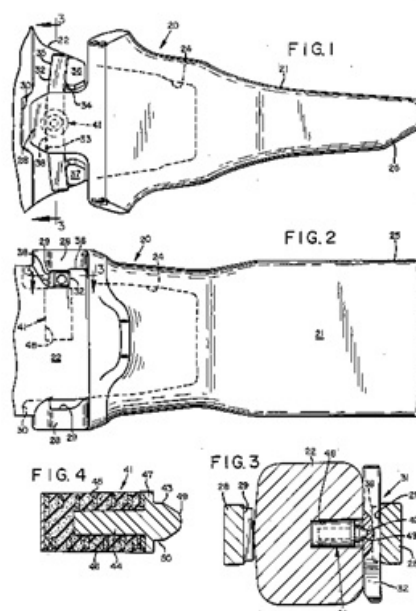
CPC: E02F3/40 E02F9/2841

European: E02F3/40 E02F9/28A2C2

US: 37/456 37/457 37/459

PatBase - US4761900_A

U.S. Patent Aug. 9, 1988 Sheet 1 of 2 4,761,900



Family:

Publication number	Publication date	Application number	Application date
AT60637 E	19910215	AT19870310531T	19871130
AU198782090 A1	19880609	AU19870082090	19871204
AU587734 B2	19890824	AU19870082090	19871204
BRPI8706543 A	19880712	BR1987PI06543	19871203
CA1279679 A1	19910129	CA19870553168	19871130
CN2030215 U	19890104	CN19872017497U	19871204
DE3767844 D1	19910307	DE19873767844	19871130
DK168092 B1	19940207	DK19870006367	19871203
DK636787 A	19880605	DK19870006367	19871203
DK636787 A0	19871203	DK19870006367	19871203
EP0270325 A1	19880608	EP19870310531	19871130
EP0270325 B1	19910130	EP19870310531	19871130
ES2020282 B3	19910801	ES19870310531T	19871130
FI875344 A	19880605	FI19870005344	19871203
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FI88531 B	19930215	FI19870005344	19871203
FI88531 C	19930525	FI19870005344	19871203
GR3001409 T3	19920925	GR19910400069T	19910131
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JP1897838 C3	19950123	JP19870304686	19871203
JP6019150 B4	19940316	JP19870304686	19871203
JP63142131 A2	19880614	JP19870304686	19871203
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NO174398 B	19940117	NO19870005042	19871203
NO174398 C	19940427	NO19870005042	19871203
NO875042 A	19880606	NO19870005042	19871203
NO875042 A0	19871203	NO19870005042	19871203
NO875042 L	19880606	NO19870005042	19871203
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PH26932 A	19921203	PH19870036176	19871204
PT86277 A	19890117	PT19870086277	19871203

PT86277 B	19930831	PT19870086277	19871203
SU1641197 A3	19910407	SU19874203880	19871203
TR24912 A	19920721	TR19890000676	19890821
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US4965945 A	19901030	US19890309309	19890210
USRE33042 E	19890905	US19880254259	19881006
ZA8709116 A	19880606	ZA19870009116	19871204

Priority:

US19860937982 19861204 CA19870553168 19871130 EP19870310531 19871130
US19880155892 19880216 US19880254259 19881006 US19890309309 19890210

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EMRICH ROBERT K ; ESCO A CORP OF OR CORP ; ESCO A CORP OF OREGON CORP

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ROBERT KENT EMRICH ; EMRIKH ROBERT K ; EMRICH ROBERT K ; EMERY ROBERT K

Inventor(s): ROBAATO KEI EMURITSUCHI ; ROBERT K EMRIKH US

Agent(s): CALLINANS; FISHER ADAMS KELLY CALLINANS; SPRUSON AND FERGUSON; FINLAYSON AND SINGLEHURST

Designated states: AT BE CH DE ES FR GB GR IT LI NL SE

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AT60637 E	19910215	LSGT	+	granted / extensions (spc, cpc, pte)	
AT60637 E	19911215	LSPB	+UEP	PUBLICATION OF TRANSLATION OF EUROPEAN PATENT SPECIFICATION	
AT60637 E	20080215	LSLE	-EELA	CANCELLED DUE TO LAPSE OF TIME	
AT60637 E	20071130	PEXP		Calculated Patent Term Expiry	
AU198782090 A1	19880609	LSPB	+	published / reissued	
AU587734 B2	19890824	LSGT	+	granted / extensions (spc, cpc, pte)	
AU587734 B2	20030220	LSLI	GD	LICENCE REGISTERED	PARTYTYPE : LICENSEE LICENSEE : BRADKEN MINING SPV PTY LTD
AU587734 B2	20071204	PEXP		Calculated Patent Term Expiry	
BRPI8706543 A	19880712	LSPB	+	published / reissued	
BRPI8706543 A	20080729	LSLE	-B21A	EXPIRY ACC. ART. 78, ITEM I OF IPL- EXPIRY OF THE TERM OF PROTECTION	TEXT : PATENTE EXTINTA EM 03/12/2002
CA1279679 A1	19910129	LSGT	+	granted / extensions (spc, cpc, pte)	
CA1279679 A1	20080129	LSLE	-MKLA	LAPSED	
CA1279679 A1	20121205	LSRE	+MKEC	EXPIRY (CORRECTION)	
CA1279679 A1	20080129	PEXP		Calculated Patent Term Expiry	
CN2030215 U	19890104	LSPB	+	published / reissued	
CN2030215 U	19890104	LSPB	+C06	PUBLICATION	
CN2030215 U	19891115	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL	
CN2030215 U	19960612	LSLE	-C17	CESSATION OF PATENT RIGHT	
DE3767844 D1	19920305	LSGT	+8364	NO OPPOSITION DURING TERM OF OPPOSITION	
DK168092 B1	19940207	LSGT	+	granted / extensions (spc, cpc, pte)	
DK168092 B1	19940207	LSGT	+B1	PATENT GRANTED (LAW 1993)	
DK168092 B1	20071227	LSLE	-PUP	PATENT EXPIRED	

DK168092 B1	20071203	PEXP		Calculated Patent Term Expiry	
DK636787 A	19880605	LSPB	+	published / reissued	
EP0270325 A1	19880608	LSPB	+	published / reissued	
EP0270325 A1	19880921	LSSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 19880722
EP0270325 A1	19890913	LSSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 19890728
EP0270325 A1	19901010	LSAS	RAP1	RIGHTS OF AN APPLICATION TRANSFERRED	PARTYTYPE : OWNER OWNER : ESCO CORPORATION
EP0270325 A1	19920122	LSGT	+26N	NO OPPOSITION FILED	
EP0270325 A1	19940716	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : ES OWNER : ESCO CORPORATION REF LEGAL EVENT CODE : PC2A
EP0270325 A1	19950131	LSGT	+EAL	SE: EUROPEAN PATENT IN FORCE IN SWEDEN	REF COUNTRY CODE : EP TEXT : 87310531.6
EP0270325 A1	19970919	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 19970919 YEAR OF FEE PAYMENT : 11
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EP0270325 A1	19990802	LSLE	-NLV4	NL: LAPSED OR ANULLED DUE TO NON-PAYMENT OF THE ANNUAL FEE	REF COUNTRY CODE : EP EFFECTIVE DATE : 19990601
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EP0270325 A1	20061124	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20061124 YEAR OF FEE PAYMENT : 20
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EP0270325 A1	20071231	LSLE	-BE20	BE: PATENT EXPIRED	PARTYTYPE : OWNER REF COUNTRY CODE : EP OWNER : *ESCO CORP. EFFECTIVE DATE : 20071130
EP0270325 A1	20071231	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : PL
EP0270325 A1	20080216	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : ES REF LEGAL EVENT CODE : FD2A EFFECTIVE DATE : 20071201
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EP0270325 B1	19910130	LSGT	+	granted / extensions (spc, cpc, pte)	
EP0270325 B1	20071130	PEXP		Calculated Patent Term Expiry	
ES2020282 B3	19910801	LSGT	+	granted / extensions (spc, cpc, pte)	
ES2020282 B3	20071130	PEXP		Calculated Patent Term Expiry	
FI875344 A	19880605	LSPB	+	published / reissued	
FI875344 A	19930118	LSPB	BB	PUBLICATION OF EXAMINED APPLICATION	
FI88531 B	19930215	LSPB	+	published / reissued	
FI88531 C	19930525	LSGT	+	granted / extensions (spc, cpc, pte)	
FI88531 C	19930621	LSAS	PC	TRANSFER OF ASSIGNMENT OF PATENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION
FI88531 C	20040831	LSGT	+FG	PATENT GRANTED	PARTYTYPE : OWNER OWNER : ESCO CORPORATION
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FI88531 C	20071203	PEXP		Calculated Patent Term Expiry	
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JP6019150 B4	20070316	LSLE	-LAPS	CANCELLATION BECAUSE OF NO PAYMENT OF ANNUAL FEES	
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KR19880007882 A	19880829	LSPB	+	published / reissued	
KR970001728 B1	19970214	LSGT	+	granted / extensions (spc, cpc, pte)	
KR970001728 B1	19920713	LSSES	A201	REQUEST FOR EXAMINATION	
KR970001728 B1	19960628	LSSES	-E902	NOTIFICATION OF REASON FOR REFUSAL	
KR970001728 B1	19970120	LSPB	G160	DECISION TO PUBLISH PATENT APPLICATION	
KR970001728 B1	19970428	LSGT	+E701	DECISION TO GRANT OR REGISTRATION OF PATENT RIGHT	
KR970001728 B1	19970611	LSGT	+GRNT	WRITTEN DECISION TO GRANT	
KR970001728 B1	20060210	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20060210 YEAR OF FEE PAYMENT : 10
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MX167672 B	20070405	PEXP		Calculated Patent Term Expiry	
NO174398 B	19940117	LSPB	+	published / reissued	
NO174398 C	19940427	LSGT	+	granted / extensions (spc, cpc, pte)	
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NO174398 C	20071203	PEXP		Calculated Patent Term Expiry	
NO875042 A	19880606	LSPB	+	published / reissued	
NZ222783 A	19890727	LSPB	+	published / reissued	
PH25655 A	19910821	LSGT	+	granted / extensions (spc, cpc, pte)	
PH25655 A	20080821	PEXP		Calculated Patent Term Expiry	
PH26932 A	19921203	LSGT	+	granted / extensions (spc, cpc, pte)	
PH26932 A	20091203	PEXP		Calculated Patent Term Expiry	
PT86277 A	19890117	LSPB	+	published / reissued	
PT86277 B	19930831	LSGT	+	granted / extensions (spc, cpc, pte)	
PT86277 B	19930831	LSGT	+FG3A	PATENT GRANTED, DATE OF GRANTING	EFFECTIVE DATE : 19930208

PT86277 B	19930930	LSAS	PD3A	CHANGE OF PROPRIETORSHIP	
PT86277 B	20070824	LSLE	-MM4A	ANNULMENT/LAPSE DUE TO NON-PAYMENT OF FEES, SEARCHED AND EXAMINED PATENT	TEXT : LAPSE DUE TO NON-PAYMENT OF FEES EFFECTIVE DATE : 20070808
PT86277 B	20080222	LSLE	-MM4A	ANNULMENT/LAPSE DUE TO NON-PAYMENT OF FEES, SEARCHED AND EXAMINED PATENT	TEXT : MAXIMUM VALIDITY LIMIT REACHED EFFECTIVE DATE : 20080208
PT86277 B	20080831	PEXP		Calculated Patent Term Expiry	
SU1641197 A3	19910407	LSGT	+	granted / extensions (spc, cpc, pte)	
TR24912 A	19920721	LSGT	+	granted / extensions (spc, cpc, pte)	
TR27127 A	19941109	LSGT	+	granted / extensions (spc, cpc, pte)	
US4761900 A	19880809	LSGT	+	granted / extensions (spc, cpc, pte)	
US4761900 A	19870128	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, PORTLAND, OR., A CORP OF OR. OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST.; ASSIGNOR:EMRICH, ROBERT K.; REEL/FRAME:004663/0913 EFFECTIVE DATE : 19861202
US4761900 A	19880607	LSGT	PAT1	Patented Case	
US4761900 A	19880607	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US4761900 A	19900509	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION OLDPARTY : CHANGE OF NAME; ASSIGNOR:NEWESCO CORPORATION; REEL/FRAME:005285/0284 EFFECTIVE DATE : 19890526
US4811505 A	19890314	LSGT	+	granted / extensions (spc, cpc, pte)	
US4811505 A	19881130	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, PORTLAND, OREGON A CORP. OF OREG OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST.; ASSIGNOR:EMRICH, ROBERT K.; REEL/FRAME:004978/0273 EFFECTIVE DATE : 19880211
US4811505 A	19881130	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, A CORP. OF OREGON, OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:EMRICH, ROBERT K.; REEL/FRAME:004978/0273 EFFECTIVE DATE : 19880211
US4811505 A	19890113	LSGT	PAT1	Patented Case	
US4811505 A	19900509	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION OLDPARTY : CHANGE OF NAME; ASSIGNOR:NEWESCO CORPORATION; REEL/FRAME:005285/0284 EFFECTIVE DATE : 19890526
US4811505 A	19920729	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US4811505 A	19970316	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US4811505 A	19970527	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 19970319

US4811505 A	20180130	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US4811505 A	20180130	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US4965945 A	19901030	LSGT	+	granted / extensions (spc, cpc, pte)	
US4965945 A	19890327	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, PORTLAND, OR, A CORP. OF OR OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST.; ASSIGNOR:EMRICH, ROBERT K.; REEL/FRAME:005032/0595 EFFECTIVE DATE : 19890202
US4965945 A	19900509	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION OLDPARTY : CHANGE OF NAME; ASSIGNOR:NEWESCO CORPORATION; REEL/FRAME:005285/0284 EFFECTIVE DATE : 19890526
US4965945 A	19900828	LSGT	PAT1	Patented Case	
US4965945 A	19900828	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US4965945 A	19940329	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US4965945 A	19980327	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US4965945 A	20020416	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 12
US4965945 A	20090210	PEXP		Calculated Patent Term Expiry	
USRE33042 E	19890522	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, A CORP. OF OREGON, OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST.; ASSIGNOR:EMRICH, ROBERT K.; REEL/FRAME:005077/0531 EFFECTIVE DATE : 19890517
USRE33042 E	19890725	LSGT	PAT1	Patented Case	
USRE33042 E	19900509	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION OLDPARTY : CHANGE OF NAME; ASSIGNOR:NEWESCO CORPORATION; REEL/FRAME:005285/0284 EFFECTIVE DATE : 19890526
USRE33042 E	19920617	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
USRE33042 E	19960119	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
USRE33042 E	20000127	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 12
ZA8709116 A	19880606	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA8709116 A	20071203	PEXP		Calculated Patent Term Expiry	

Title: TORQUE LOCKING SYSTEM FOR FASTENING A **WEAR MEMBER** TO A SUPPORT STRUCTURE

Abstract: The present invention is directed to a releasable locking assembly for attaching a **wear member** to a support structure. It may be used with **excavating** equipment for attaching ground-engaging teeth to adaptors, lip shrouds to bucket lips, or other analogous uses. The **wear member** includes at least one pin-retainer-receiving opening in one side. The opening is tapered, being narrower at its outer surface and wider at its inner surface. The support structure includes at least one pin-receiving recess which generally aligns with the opening in the **wear member** when the **wear member** and the support structure are operatively coupled. The pin retainer is a frustoconically shaped cylinder which is threaded internally. It is inserted into the opening in the **wear member**. The **wear member** is slidably mounted onto the support structure. The pin is an elongate body which is externally threaded. It is screwed into the pin retainer by the application of torque force from a standard ratchet tool. The pin extends through the **wear member** and into the recess in the support structure to lock the **wear member** to the support structure. The pin may be released using a ratchet tool and removed from the pin retainer. The **wear member** may then be removed from the support structure.

Classifications:

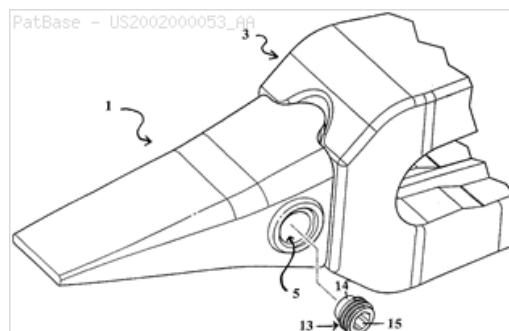
International (IPC 8-9): E02F9/28 F04B35/00 (Advanced/Invention);
E02F9/28 F04B35/00 (Core/Invention)

International (IPC 1-7): E02F9/28

CPC: Y10T403/7067 E02F9/2825 E02F9/2833

European: E02F9/28A2B E02F9/28A2C

US: 172/753 172/772.5 172/772.500S 37/456 37/456P 37/458 403/374.3 417/360 417/360P



Family:

Publication number	Publication date	Application number	Application date
AU200154094 A1	20020103	AU20010054094	20010627
AU200154094 A5	20020103	AU20010054094D	20010627
AU2004200257 AA	20040219	AU20040200257	20040123
AU2004200257 BB	20060608	AU20040200257	20040123
AU2006206066 AA	20060928	AU20060206066	20060904
AU2006206066 BB	20100603	AU20060206066	20060904
AU766917 B2	20031023	AU20010054094	20010627
CA2312550 AA	20011227	CA20002312550	20000627
CA2312550 C	20100105	CA20002312550	20000627
US2002000053 AA	20020103	US20010882825	20010616
US2006127239 AA	20060615	US20050263542	20051031
US6959506 BB	20051101	US20010882825	20010616
US7640684 BB	20100105	US20050263542	20051031

Priority:

CA20002312550 20000627 US20010882825 20010616 AU20010054094 20010627
AU20040200257 20040123 US20050263542 20051031 AU20060206066 20060904

Probable Assignee: ESCO CANADA LTD

Assignee(s): (std): ESCO CORP ; QSF ACQUISITIONS INC ; QUALITY STEEL FOUNDRIES LTD ; SMITH MURRAY ; QUALITY STEEL LTD ; ADAMIC DWIGHT L

Assignee(s): ESCO CANADA LTD ; QSF ACQUISITIONS INC ; QUALITY STEEL FOU

Inventor(s): (std): DWIGHT L ADAMIC ; MURRAY SMITH ; SMITH MURRAY ; ADAMIC DWIGHT L

Inventor(s): ADAMIC DWIGHT

Agent(s): SPRUSON AND FERGUSON; CULLENS PATENT AND TRADE MARK ATTORNEYS; CULLENS PTY LTD; DIMOCK STRATTON LLP; ESCO CORP; KOHN AND ASSOCIATES PLLC; STEVEN P

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU200154094 A1	20020103	LSPB	+	published / reissued	
AU2004200257 AA	20040219	LSPB	+	published / reissued	
AU2004200257 AA	20050721	LSAS	PC1	ASSIGNMENT BEFORE GRANT (SECT. 113)	PARTYTYPE : OWNER OWNER : QSF ACQUISITIONS, INC. OLDPARTY : FORMER APPLICANT(S): QUALITY STEEL FOUNDRIES LTD
AU2004200257 BB	20060608	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2004200257 BB	20061130	LSAS	PC1	ASSIGNMENT BEFORE	PARTYTYPE : OWNER

GRANT (SECT. 113)					OWNER : QUALITY STEEL LIMITED OLDPARTY : FORMER APPLICANT(S): QSF AQUISITIONS, INC.
AU2004200257 BB	20070208	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2004200257 BB	20240123	PEXP		Calculated Patent Term Expiry	
AU2006206066 AA	20060928	LSPB	+	published / reissued	
AU2006206066 AA	20061130	LSAS	PC1	ASSIGNMENT BEFORE GRANT (SECT. 113)	PARTYTYPE : OWNER OWNER : QUALITY STEEL LIMITED OLDPARTY : FORMER APPLICANT(S): QSF AQUISITIONS, INC.
AU2006206066 BB	20100603	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2006206066 BB	20100930	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2006206066 BB	20260904	PEXP		Calculated Patent Term Expiry	
AU766917 B2	20031023	LSGT	+	granted / extensions (spc, cpc, pte)	
AU766917 B2	20040219	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU766917 B2	20210627	PEXP		Calculated Patent Term Expiry	
CA2312550 AA	20011227	LSPB	+	published / reissued	
CA2312550 AA	20020122	LSES	+EEER	EXAMINATION REQUEST	
CA2312550 C	20100105	LSGT	+	granted / extensions (spc, cpc, pte)	
CA2312550 C	20200627	PEXP		Calculated Patent Term Expiry	
US2002000053 AA	20020103	LSPB	+	published / reissued	
US2002000053 AA	20050701	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : QSF ACQUISITIONS INC., CANADA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:QUALITY STEEL FOUNDRIES LTD.; REEL/FRAME:016744/0947 EFFECTIVE DATE : 20050524
US2002000053 AA	20051012	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2006127239 AA	20060615	LSPB	+	published / reissued	
US2006127239 AA	20061018	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : QUALITY STEEL LIMITED, OREGON OLDPARTY : CHANGE OF NAME; ASSIGNOR:QSF ACQUISITIONS INC.; REEL/FRAME:018433/0631 EFFECTIVE DATE : 20060310
US2006127239 AA	20090723	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CANADA LTD, OREGON OLDPARTY : CHANGE OF NAME; ASSIGNOR:QUALITY STEEL LIMITED; REEL/FRAME:022990/0822 EFFECTIVE DATE : 20090320
US2006127239 AA	20091216	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US6959506 BB	20051101	LSGT	+	granted / extensions (spc, cpc, pte)	
US6959506 BB	20010616	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : QUALITY STEEL FOUNDRIES LTD., CANADA OLDPARTY : ASSIGNMENT OF

ASSIGNORS INTEREST;
 ASSIGNORS:ADAMIC, DWIGHT;
 SMITH, MURRAY;
 REEL/FRAME:011943/0633
 EFFECTIVE DATE : 20000824

US6959506 BB	20051012	LSGT	PAT1	Patented Case	
US6959506 BB	20061018	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : QUALITY STEEL LIMITED, OREGON OLDPARTY : CHANGE OF NAME; ASSIGNOR:QSF ACQUISITIONS INC.; REEL/FRAME:018433/0631 EFFECTIVE DATE : 20060310
US6959506 BB	20090501	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6959506 BB	20090723	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CANADA LTD, OREGON OLDPARTY : CHANGE OF NAME; ASSIGNOR:QUALITY STEEL LIMITED; REEL/FRAME:022990/0822 EFFECTIVE DATE : 20090320
US6959506 BB	20130501	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6959506 BB	20170501	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 12
US6959506 BB	20210616	PEXP		Calculated Patent Term Expiry	
US7640684 BB	20100105	LSGT	+	granted / extensions (spc, cpc, pte)	
US7640684 BB	20091216	LSGT	PAT1	Patented Case	
US7640684 BB	20110222	LSRE	CC	CERTIFICATE OF CORRECTION	
US7640684 BB	20130705	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7640684 BB	20170705	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7640684 BB	20260929	PEXP		Calculated Patent Term Expiry (PTA 333 days and a terminal disclaimer has been filed)	

Title: ASSEMBLY FOR SECURING AN **EXCAVATING** TOOTH

Abstract: An assembly for mounting an **excavating** tooth particularly suited for a dredge cutterhead includes a base, an adapter, and a lock. The base includes a convex, curved bearing surface that abuts a concave, curved bearing surface on the adapter. The curved bearing surfaces are able to maintain substantially full contact with each other under transverse loading.

Classifications:

International (IPC 8-9): A01D1/00 E02F E02F3/92 E02F5/26

E02F9/28 (Advanced/Invention);

E02F9/28 (Advanced/Non-invention);

A01D1/00 E02F9/28 (Core/Invention);

A01D E02F (Subclass/Invention)

International (IPC 1-7): A01D0/00 A01D1/00 E02F09/28 E02F3/92

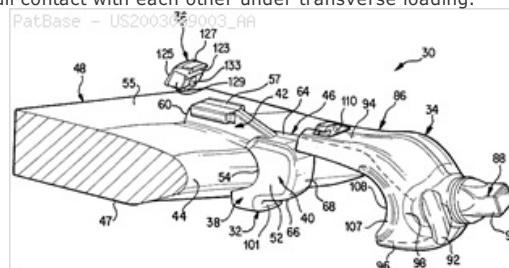
E02F5/26 E02F9/28

CPC: Y10T403/7069 E02F9/2825 E02F9/2833 E02F9/2841 E02F9/2866

European: E02F9/28A2B E02F9/28A2C E02F9/28A2C2 E02F9/28B

US: 299/102 299/87.1 37/326 37/328 37/343 37/45 37/450 37/450S

37/452 37/452P 37/453 37/455 37/457 37/457P 403/374.4



Family:

Publication number	Publication date	Application number	Application date
AU2002340419 AA	20030526	AU20020340419	20021108
AU2002340419 BB	20080807	AU20020340419	20021108
AU2008203030 AA	20080731	AU20080203030	20080709
AU2008203030 BB	20110609	AU20080203030	20080709
BRPI0214030 A	20050830	BR2002PI14030	20021108
BRPI0214030 B1	20131126	BR2002PI14030	20021108
CA2466353 AA	20040507	CA20022466353	20021108
CA2466353 C	20110315	CA20022466353	20021108
CL2002002574 A1	20031114	CL20020002574	20021108
CL48817 B	20121010	CL20020002574	20021108
CN100497846 C	20090610	CN20028025181	20021108
CN101302768 A	20081112	CN200810081262	20021108
CN101302768 B	20131204	CN200810081262	20021108
CN1604983 A	20050406	CN20028025181	20021108
CO5590977 A2	20051230	CO20040052682	20040604
CY1117775 T1	20170517	CY20161100422T	20160517
CY1119162 T1	20180214	CY20171100590T	20170606
DE60247796 D1	20160331	DE20026047796	20021108
DE60248725 D1	20170420	DE20026048725	20021108
DK1469713 T3	20160530	DK20020778782T	20021108
DK2799631 T3	20170703	DK20140179216T	20021108
EP1469713 A2	20041027	EP20020778782	20021108
EP1469713 A4	20090617	EP20020778782	20021108
EP1469713 B1	20160217	EP20020778782	20021108
EP2431539 A2	20120321	EP20110193294	20021108
EP2431539 A3	20140219	EP20110193294	20021108
EP2799631 A2	20141105	EP20140179216	20021108
EP2799631 A3	20141217	EP20140179216	20021108
EP2799631 B1	20170308	EP20140179216	20021108
ES2564292 T3	20160321	ES20020778782T	20021108
ES2620969 T3	20170630	ES20140179216T	20021108
HK1074657 A1	20051118	HK20050106923	20050811
HK1074657 A1	20091002	HK20050106923	20050811
HK1074657 A3	20051118	HK20050106923	20050811
HK1074657 B	20091002	HK20050106923	20050811
HK1125428 A1	20090807	HK20090104279	20050811
HK1125428 A1	20140808	HK20090104279	20050811
HK1125428 B	20140808	HK20090104279	20050811
IN01236DN2004 A	20061208	IN2004DN01236	20040507
JP2005509099 T2	20050407	JP20030543386T	20021108
JP2010248903 A2	20101104	JP20100156983	20100709
JP4597515 B2	20101215	JP20030543386T	20021108
KR100950406 B1	20100329	KR20047007091	20021108
KR20040065215 A	20040721	KR20047007091	20021108
MXPA04004392 A1	20050331	MX2004PA04392	20021108
PE05772003 A1	20030818	PE20020001089	20021108
PT2799631 T	20170622	PT20140179216T	20021108
TH33399 B	20120806	TH20021004171	20021108
TH57409 A	20030722	TH20021004171	20021108
TR201602852 T4	20160421	TR20160002852T	20021108
TR201704440 T4	20170421	TR20170004440T	20021108
US2003089003 AA	20030515	US20010986705	20011109
US2003121185 AA	20030703	US20020290472	20021108
US2004237355 AA	20041202	US20040889094	20040713

US6729052 BB	20040504	US20010986705	20011109
US7165347 BB	20070123	US20020290472	20021108
US7730645 BB	20100608	US20040889094	20040713
WO03041485 A2	20030522	WO2002US35835	20021108
WO03041485 A3	20040521	WO2002US35835	20021108
ZA200403427 A	20060628	ZA20040003427	20040506

Priority:

US20010986705 20011109	AU20020340419 20021108	JP20030543386 20021108
EP20020778782 20021108	EP20140179216 20021108	WO2002US35835 20021108
US20020290472 20021108	JP20030543386T 20021108	WO2002US35835 20040510
US20040889094 20040713	HK20050106923 20050811	AU20080203030 20080709

Probable Assignee: ESCO GROUP LLC

Assignee(s): (std): ESCO CORP

Assignee(s): ESCO GROUP LLC ; ESCO PORTLAND CORP ; OLLINGER CHARLES G ; OLLINGER CHARLES G IV ; BANK OF AMERICA NA ADMINISTRATIVE AGENT AS ; COWGILL NOAH D ; COWGILL NOAH DAVID ; ESCO 2141 N W 25TH AVENUE PORTLAND OR 97210 UNITED CORP

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Inventor(s): COWGILL NOHA D ; OLLINGER CHARLES G IV ALOHA ; COWGILL NOAH D PORTLAND ; OLLINGER CHARLES G COWGILL NOHA D ; OLLINGER IV CHARLES G PORTLAND ; IV CHARLES G ; CHARLES G OLLINGER ; CHARLES G OLLINGER IV

Agent(s): MINTER ELLISON; KING AND WOOD MALLESONS; MALLESONS STEPHEN JAQUES; FINLAYSON AND SINGLEHURST; PORZIO; RUSCHKE MADGWICK SEIDE AND KOLLEGEN PATENTANWAELTE PATENT ATTORNEY UK PARTG MBB; MADGWICK PAUL ROLAND; ISERN JORGE; LIU SHEN AND ASSOCIATES ROOM 3716 37TH FLOOR SUN HUNG KAI CENTRE 30; LIU SHEN AND ASSOCIATES; EVIN KAZMIRCI; HALISE BETUEL ATABAY VARLIK; STEVEN P

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2002340419 AA	20030526	LSPB	+	published / reissued	
AU2002340419 BB	20080807	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2002340419 BB	20081204	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2002340419 BB	20180927	LSAS	HB	ALTERATION OF NAME IN REGISTER	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC OLDPARTY : FORMER NAME(S): ESCO CORPORATION
AU2002340419 BB	20190606	LSLE	-MK14	PATENT CEASED SECTION 143(A) (ANNUAL FEES NOT PAID) OR EXPIRED	
AU2002340419 BB	20221108	PEXP		Calculated Patent Term Expiry	
AU2008203030 AA	20080731	LSPB	+	published / reissued	
AU2008203030 BB	20110609	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2008203030 BB	20111006	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2008203030 BB	20180927	LSAS	HB	ALTERATION OF NAME IN REGISTER	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC OLDPARTY : FORMER NAME(S): ESCO CORPORATION
AU2008203030 BB	20190606	LSLE	-MK14	PATENT CEASED SECTION 143(A) (ANNUAL FEES NOT PAID) OR EXPIRED	
AU2008203030 BB	20280709	PEXP		Calculated Patent Term Expiry	
BRPI0214030 A	20050830	LSPB	+	published / reissued	
BRPI0214030 A	20110222	LSES	B07A	TECHNICAL EXAMINATION (OPINION): PUBLICATION OF	

BRPI0214030 A	20130903	LSGT	B09A	TECHNICAL EXAMINATION (OPINION) DECISION: INTENTION TO GRANT	
BRPI0214030 B1	20131126	LSGT	+B16A	PATENT OR CERTIFICATE OF ADDITION OF INVENTION GRANTED	TEXT : PRAZO DE VALIDADE: 10 (DEZ) ANOS CONTADOS A PARTIR DE 26/11/2013, OBSERVADAS AS CONDICÖES LEGAIS.
BRPI0214030 B1	20231126	PEXP		Calculated Patent Term Expiry	
CA2466353 AA	20040507	LSPB	+	published / reissued	
CA2466353 AA	20071101	LSSES	+EEER	EXAMINATION REQUEST	
CA2466353 C	20110315	LSGT	+	granted / extensions (spc, cpc, pte)	
CA2466353 C	20221108	PEXP		Calculated Patent Term Expiry	
CL2002002574 A1	20031114	LSPB	+	published / reissued	
CL48817 B	20121010	LSGT	+	granted / extensions (spc, cpc, pte)	
CL48817 B	20271010	PEXP		Calculated Patent Term Expiry	
CN100497846 C	20090610	LSGT	+	granted / extensions (spc, cpc, pte)	
CN100497846 C	20090610	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL	
CN100497846 C	20091002	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : HK REF LEGAL EVENT CODE : GR REF DOCUMENT NUMBER : 1074657 COUNTRY OF REF DOCUMENT : HK
CN100497846 C	20181127	LSAS	TR01	TRANSFER OF PATENT RIGHT	
CN100497846 C	20221108	PEXP		Calculated Patent Term Expiry	
CN101302768 A	20081112	LSPB	+	published / reissued	
CN101302768 A	20081112	LSPB	+C06	PUBLICATION	
CN101302768 B	20131204	LSGT	+	granted / extensions (spc, cpc, pte)	
CN101302768 B	20131204	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL	
CN101302768 B	20140808	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : HK REF LEGAL EVENT CODE : GR REF DOCUMENT NUMBER : 1125428 COUNTRY OF REF DOCUMENT : HK
CN101302768 B	20181127	LSAS	TR01	TRANSFER OF PATENT RIGHT	
CN101302768 B	20221108	PEXP		Calculated Patent Term Expiry	
CN1604983 A	20050406	LSPB	+	published / reissued	
CN1604983 A	20050406	LSPB	+C06	PUBLICATION	
CO5590977 A2	20051230	LSPB	+	published / reissued	
CO5590977 A2	20090528	LSGT	+FG	APPLICATION GRANTED	
CY1117775 T1	20170517	LSGT	+	granted / extensions (spc, cpc, pte)	
CY1119162 T1	20180214	LSGT	+	granted / extensions (spc, cpc, pte)	
CY1119162 T1	20370606	PEXP		Calculated Patent Term Expiry	
DE60247796 D1	20160218	LSAS	R081	CHANGE OF APPLICANT/PATENTEE	PARTYTYPE : OWNER OLDPARTY : ESCO CORP., PORTLAND, OREG., US
DE60247796 D1	20190122	LSAS	R081	CHANGE OF APPLICANT/PATENTEE	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC (N.D.GES.D.STAATES DELAWARE),

					PORTLAND, OR, US OLDPARTY : ESCO CORPORATION, PORTLAND, OREG., US
DE60248725 D1	20190122	LSAS	R081	CHANGE OF APPLICANT/PATENTEE	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC (N.D.GES.D.STAATES DELAWARE), PORTLAND, OR, US OLDPARTY : ESCO CORPORATION, PORTLAND, OREG., US
DK1469713 T3	20160530	LSGT	+	granted / extensions (spc, cpc, pte)	
DK1469713 T3	20221108	PEXP		Calculated Patent Term Expiry	
DK2799631 T3	20170703	LSGT	+	granted / extensions (spc, cpc, pte)	
DK2799631 T3	20221108	PEXP		Calculated Patent Term Expiry	
EP1469713 A2	20041027	LSPB	+	published / reissued	
EP1469713 A2	20041027	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20040602
EP1469713 A2	20041222	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : 7E 02F 9/28 A
EP1469713 A4	20090617	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20090519
EP1469713 A4	20090617	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E02F 3/92 20060101ALI20090513BHEP
EP1469713 A4	20090617	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E02F 9/28 20060101AFI20041102BHEP
EP1469713 A4	20100120	LSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20091218
EP1469713 A4	20150311	LSGT	+INTG	INTENTION TO GRANT ANNOUNCED	EFFECTIVE DATE : 20150213
EP1469713 A4	20150826	LSGT	+INTG	INTENTION TO GRANT ANNOUNCED	EFFECTIVE DATE : 20150727
EP1469713 B1	20160217	LSGT	+	granted / extensions (spc, cpc, pte)	
EP1469713 B1	20160217	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GB REF LEGAL EVENT CODE : FG4D
EP1469713 B1	20160218	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : DE OWNER : ESCO GROUP LLC (N.D.GES.D.STAATES DELAWARE), P, US REF LEGAL EVENT CODE : R081 REF DOCUMENT NUMBER : 60247796 COUNTRY OF REF DOCUMENT : DE OLDPARTY : FORMER OWNER: ESCO CORP., PORTLAND, OREG., US
EP1469713 B1	20160229	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : EP
EP1469713 B1	20160309	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : IE REF LEGAL EVENT CODE : FG4D
EP1469713 B1	20160315	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : AT REF LEGAL EVENT CODE : REF REF DOCUMENT NUMBER : 775745 COUNTRY OF REF DOCUMENT : AT KIND CODE OF REF DOCUMENT : T DESIGNATED STATE(S) : EFFECTIVE DATE : 20160315
EP1469713 B1	20160321	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : ES REF LEGAL EVENT CODE : FG2A REF DOCUMENT NUMBER : 2564292 COUNTRY OF REF DOCUMENT : ES

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EP1469713 B1	20160331	LSPB	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : R096 REF DOCUMENT NUMBER : 60247796 COUNTRY OF REF DOCUMENT : DE
EP1469713 B1	20161003	LSRE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GR REF LEGAL EVENT CODE : EP REF DOCUMENT NUMBER : 20160400955 COUNTRY OF REF DOCUMENT : GR EFFECTIVE DATE : 20160628
EP1469713 B1	20161118	LSRE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : R097 REF DOCUMENT NUMBER : 60247796 COUNTRY OF REF DOCUMENT : DE
EP1469713 B1	20161123	LSFE	REG	REFERENCE TO A NATIONAL CODE	COUNTRY OF REF DOCUMENT : FR REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 15
EP1469713 B1	20161130	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SK NOTIFICATION OF LAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160217
EP1469713 B1	20170125	LSGT	+26N	NO OPPOSITION FILED	EFFECTIVE DATE : 20161118
EP1469713 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20161123 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : EE PAYMENT DATE : 20161024 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LU PAYMENT DATE : 20161129 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20161026 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20161126 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20161128 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IE PAYMENT DATE : 20161123 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20161123 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CY PAYMENT DATE : 20161020 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM	COUNTRY OF REF DOCUMENT : DK PAYMENT DATE : 20161123 YEAR OF FEE PAYMENT : 15

				NATIONAL OFFICE TO EPO]	
EP1469713 B1	20170131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20161123 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BG PAYMENT DATE : 20161129 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20161125 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20161128 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20161128 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20161020 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20161124 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20161019 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR PAYMENT DATE : 20161128 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170428	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20161024 YEAR OF FEE PAYMENT : 15
EP1469713 B1	20170630	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : PL
EP1469713 B1	20170731	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LI NOTIFICATION OF LAPSE : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 20161130
EP1469713 B1	20170731	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH NOTIFICATION OF LAPSE : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 20161130
EP1469713 B1	20171127	LSFE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 16
EP1469713 B1	20171229	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LU PAYMENT DATE : 20171127 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DK PAYMENT DATE : 20171127 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO	COUNTRY OF REF DOCUMENT : EE

				NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	PAYMENT DATE : 20171020 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20171030 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20171026 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20171129 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20171127 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20171126 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20171129 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BG PAYMENT DATE : 20171129 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20171123 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20171127 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20171201 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20171127 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20171019 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR PAYMENT DATE : 20171129 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20171019 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IE PAYMENT DATE : 20171129 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20171129 YEAR OF FEE PAYMENT : 16

EP1469713 B1	20180430	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CY PAYMENT DATE : 20171024 YEAR OF FEE PAYMENT : 16
EP1469713 B1	20180629	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : MC NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160217
EP1469713 B1	20181115	LSPB	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : AT REF LEGAL EVENT CODE : UEP REF DOCUMENT NUMBER : 775745 COUNTRY OF REF DOCUMENT : AT KIND CODE OF REF DOCUMENT : T DESIGNATED STATE(S) : EFFECTIVE DATE : 20160217
EP1469713 B1	20190122	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : DE OWNER : ESCO GROUP LLC (N.D.GES.D.STAATES DELAWARE), P, US REF LEGAL EVENT CODE : R081 REF DOCUMENT NUMBER : 60247796 COUNTRY OF REF DOCUMENT : DE OLDPARTY : FORMER OWNER: ESCO CORPORATION, PORTLAND, OREG., US
EP1469713 B1	20190124	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : ES OWNER : ESCO GROUP LLC REF LEGAL EVENT CODE : PC2A EFFECTIVE DATE : 20190118
EP1469713 B1	20190131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20181031 YEAR OF FEE PAYMENT : 17
EP1469713 B1	20190131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20181019 YEAR OF FEE PAYMENT : 17
EP1469713 B1	20190131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : EE PAYMENT DATE : 20181025 YEAR OF FEE PAYMENT : 17
EP1469713 B1	20190131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20181019 YEAR OF FEE PAYMENT : 17
EP1469713 B1	20190215	LSAS	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : EE REF LEGAL EVENT CODE : GB1A REF DOCUMENT NUMBER : E011844 COUNTRY OF REF DOCUMENT : EE
EP1469713 B1	20190228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BG PAYMENT DATE : 20181120 YEAR OF FEE PAYMENT : 17
EP1469713 B1	20190228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20181031 YEAR OF FEE PAYMENT : 17
EP1469713 B1	20190430	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CY PAYMENT DATE : 20181024 YEAR OF FEE PAYMENT : 17
EP1469713 B1	20221108	PEXP		Calculated Patent Term Expiry	
EP2431539 A2	20120321	LSPB	+	published / reissued	
EP2431539 A2	20140219	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E02F 9/28 20060101AFI20140116BHEP

EP2431539 A2	20140910	LSSES	+17P	BEFORE GRANT REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20140801
EP2431539 A2	20141008	LSSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20140909
EP2431539 A2	20170125	LSDW	-18D	APPLICATION DEEMED TO BE WITHDRAWN	EFFECTIVE DATE : 20160823
EP2799631 A2	20141105	LSPB	+	published / reissued	
EP2799631 A2	20141105	LSSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20140731
EP2799631 A3	20141217	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E02F 9/28 20060101AFI20141111BHEP
EP2799631 A3	20150513	LSSES	+R17P	REQUEST FOR EXAMINATION FILED (CORRECTED)	EFFECTIVE DATE : 20150327
EP2799631 A3	20160601	LSGT	+INTG	INTENTION TO GRANT ANNOUNCED	EFFECTIVE DATE : 20160504
EP2799631 A3	20161116	LSGT	+INTG	INTENTION TO GRANT ANNOUNCED	EFFECTIVE DATE : 20161018
EP2799631 B1	20170308	LSGT	+	granted / extensions (spc, cpc, pte)	
EP2799631 B1	20170308	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GB REF LEGAL EVENT CODE : FG4D
EP2799631 B1	20170315	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : AT REF LEGAL EVENT CODE : REF REF DOCUMENT NUMBER : 873653 COUNTRY OF REF DOCUMENT : AT KIND CODE OF REF DOCUMENT : T DESIGNATED STATE(S) : EFFECTIVE DATE : 20170315
EP2799631 B1	20170315	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : EP
EP2799631 B1	20170405	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : IE REF LEGAL EVENT CODE : FG4D
EP2799631 B1	20170420	LSPB	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : R096 REF DOCUMENT NUMBER : 60248725 COUNTRY OF REF DOCUMENT : DE
EP2799631 B1	20170630	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : ES REF LEGAL EVENT CODE : FG2A REF DOCUMENT NUMBER : 2620969 COUNTRY OF REF DOCUMENT : ES KIND CODE OF REF DOCUMENT : T3 DESIGNATED STATE(S) : EFFECTIVE DATE : 20170630
EP2799631 B1	20171102	LSRE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GR REF LEGAL EVENT CODE : EP REF DOCUMENT NUMBER : 20170401554 COUNTRY OF REF DOCUMENT : GR EFFECTIVE DATE : 20171023
EP2799631 B1	20171127	LSFE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 16
EP2799631 B1	20171211	LSRE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : R097 REF DOCUMENT NUMBER : 60248725 COUNTRY OF REF DOCUMENT : DE
EP2799631 B1	20171229	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LU PAYMENT DATE : 20171127 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20171129 YEAR OF FEE PAYMENT : 16

EP2799631 B1	20180131	LSFE	+PGFP	NATIONAL OFFICE TO EPO] ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20171126 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SK PAYMENT DATE : 20171019 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : EE PAYMENT DATE : 20171020 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20171026 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DK PAYMENT DATE : 20171127 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20171030 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20171129 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20171127 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180214	LSGT	+26N	NO OPPOSITION FILED	EFFECTIVE DATE : 20171211
EP2799631 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20171019 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20171201 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20171127 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IE PAYMENT DATE : 20171129 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR PAYMENT DATE : 20171129 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20171127 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20171019 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20171123 YEAR OF FEE PAYMENT : 16

EP2799631 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH PAYMENT DATE : 20171127 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20171129 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BG PAYMENT DATE : 20171129 YEAR OF FEE PAYMENT : 16
EP2799631 B1	20180629	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : MC NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20170308
EP2799631 B1	20180731	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CY NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 20171108
EP2799631 B1	20190115	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : CH OWNER : ESCO GROUP LLC, US REF LEGAL EVENT CODE : PFUS OLDPARTY : FORMER OWNER: ESCO CORPORATION, US
EP2799631 B1	20190122	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : DE OWNER : ESCO GROUP LLC (N.D.GES.D.STAATES DELAWARE), P, US REF LEGAL EVENT CODE : R081 REF DOCUMENT NUMBER : 60248725 COUNTRY OF REF DOCUMENT : DE OLDPARTY : FORMER OWNER: ESCO CORPORATION, PORTLAND, OREG., US
EP2799631 B1	20190124	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : ES OWNER : ESCO GROUP LLC REF LEGAL EVENT CODE : PC2A EFFECTIVE DATE : 20190118
EP2799631 B1	20190131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : EE PAYMENT DATE : 20181025 YEAR OF FEE PAYMENT : 17
EP2799631 B1	20190131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SK PAYMENT DATE : 20181018 YEAR OF FEE PAYMENT : 17
EP2799631 B1	20190131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20181019 YEAR OF FEE PAYMENT : 17
EP2799631 B1	20190131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20181031 YEAR OF FEE PAYMENT : 17
EP2799631 B1	20190131	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20181019 YEAR OF FEE PAYMENT : 17
EP2799631 B1	20190215	LSAS	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : EE REF LEGAL EVENT CODE : GB1A REF DOCUMENT NUMBER : E013805 COUNTRY OF REF DOCUMENT : EE
EP2799631 B1	20190228	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE	COUNTRY OF REF DOCUMENT : BG PAYMENT DATE : 20181120

EP2799631 B1	20190228	LSFE	+PGFP	[ANNOUNCED FROM NATIONAL OFFICE TO EPO] ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	YEAR OF FEE PAYMENT : 17 COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20181031 YEAR OF FEE PAYMENT : 17
EP2799631 B1	20190301	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : SK OWNER : ESCO GROUP LLC, PORTLAND OR, US REF LEGAL EVENT CODE : PC4A REF DOCUMENT NUMBER : E 23799 COUNTRY OF REF DOCUMENT : SK OLDPARTY : FORMER OWNER: ESCO CORPORATION, PORTLAND, OREGON, US EFFECTIVE DATE : 20190215
EP2799631 B1	20190515	LSPB	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : AT REF LEGAL EVENT CODE : UEP REF DOCUMENT NUMBER : 873653 COUNTRY OF REF DOCUMENT : AT KIND CODE OF REF DOCUMENT : T DESIGNATED STATE(S) : EFFECTIVE DATE : 20170308
EP2799631 B1	20221108	PEXP		Calculated Patent Term Expiry	
ES2564292 T3	20160321	LSGT	+	granted / extensions (spc, cpc, pte)	
ES2564292 T3	20221108	PEXP		Calculated Patent Term Expiry	
ES2620969 T3	20170630	LSGT	+	granted / extensions (spc, cpc, pte)	
ES2620969 T3	20221108	PEXP		Calculated Patent Term Expiry	
HK1074657 A1	20051118	LSPB	+	published / reissued	
HK1074657 A1	20091002	LSPB	+	published / reissued	
HK1074657 A1	20150605	LSLE	-PC	PATENT CEASED (I.E. PATENT HAS LAPSED DUE TO THE FAILURE TO PAY THE RENEWAL FEE)	EFFECTIVE DATE : 20141108
HK1074657 A1	20150605	LSLE	-PC	PATENT CEASED (I.E. PATENT HAS LAPSED DUE TO THE FAILURE TO PAY THE RENEWAL FEE)	EFFECTIVE DATE : 20141108
HK1074657 A1	20250811	PEXP		Calculated Patent Term Expiry	
HK1074657 A1	20250811	PEXP		Calculated Patent Term Expiry	
HK1074657 A3	20051118	LSPB	+	published / reissued	
HK1074657 B	20091002	LSGT	+	granted / extensions (spc, cpc, pte)	
HK1074657 B	20250811	PEXP		Calculated Patent Term Expiry	
HK1125428 A1	20090807	LSPB	+	published / reissued	
HK1125428 A1	20140808	LSPB	+	published / reissued	
HK1125428 A1	20180601	LSLE	-PC	PATENT CEASED (I.E. PATENT HAS LAPSED DUE TO THE FAILURE TO PAY THE RENEWAL FEE)	EFFECTIVE DATE : 20171108
HK1125428 A1	20180601	LSLE	-PC	PATENT CEASED (I.E. PATENT HAS LAPSED DUE TO THE FAILURE TO PAY THE RENEWAL FEE)	EFFECTIVE DATE : 20171108
HK1125428 A1	20250811	PEXP		Calculated Patent Term Expiry	
HK1125428 A1	20250811	PEXP		Calculated Patent Term Expiry	
HK1125428 B	20140808	LSGT	+	granted / extensions (spc, cpc, pte)	

HK1125428 B	20250811	PEXP		Calculated Patent Term Expiry	
IN01236DN2004 A	20061208	LSPB	+	published / reissued	
JP2005509099 T2	20050407	LSPB	+	published / reissued	
JP2005509099 T2	20051105	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20051104
JP2005509099 T2	20051105	LSES	+A621	WRITTEN REQUEST FOR APPLICATION EXAMINATION	TEXT : JAPANESE INTERMEDIATE CODE: A621 EFFECTIVE DATE : 20051104
JP2005509099 T2	20081105	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20081104
JP2005509099 T2	20090501	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20090430
JP2005509099 T2	20100310	LSRV	-A02	DECISION OF REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A02 EFFECTIVE DATE : 20100309
JP2005509099 T2	20100710	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20100709
JP2005509099 T2	20100728	LSAL	A911	TRANSFER OF RECONSIDERATION BY EXAMINER BEFORE APPEAL (ZENCHI)	TEXT : JAPANESE INTERMEDIATE CODE: A911 EFFECTIVE DATE : 20100727
JP2005509099 T2	20100817	LSGT	+TRDD	DECISION OF GRANT OR REJECTION WRITTEN	
JP2005509099 T2	20100825	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20100824
JP2005509099 T2	20100826	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01
JP2005509099 T2	20100930	LSFE	+A61	FIRST PAYMENT OF ANNUAL FEES (DURING GRANT PROCEDURE)	TEXT : JAPANESE INTERMEDIATE CODE: A61 EFFECTIVE DATE : 20100922
JP2005509099 T2	20101001	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150
JP2005509099 T2	20101004	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 3
JP2010248903 A2	20101104	LSPB	+	published / reissued	
JP2010248903 A2	20100810	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20100809
JP2010248903 A2	20100810	LSES	+A621	WRITTEN REQUEST FOR APPLICATION EXAMINATION	TEXT : JAPANESE INTERMEDIATE CODE: A621 EFFECTIVE DATE : 20100809
JP2010248903 A2	20120328	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20120327
JP2010248903 A2	20120829	LSRV	-A02	DECISION OF REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A02 EFFECTIVE DATE : 20120828
JP4597515 B2	20101215	LSGT	+	granted / extensions (spc, cpc, pte)	
JP4597515 B2	20100928	LSFE	R100	特許料納付書 Patent fee payment form	
JP4597515 B2	20130926	LSFE	R20	特許料納付書 Patent	

				fee payment form	
JP4597515 B2	20131001	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP4597515 B2	20141002	LSFE	R20	特許料納付書 Patent fee payment form	
JP4597515 B2	20141007	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP4597515 B2	20151001	LSFE	R20	特許料納付書 Patent fee payment form	
JP4597515 B2	20151006	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP4597515 B2	20160929	LSFE	R20	特許料納付書 Patent fee payment form	
JP4597515 B2	20161004	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP4597515 B2	20170928	LSFE	R20	特許料納付書 Patent fee payment form	
JP4597515 B2	20171003	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP4597515 B2	20180927	LSFE	R20	特許料納付書 Patent fee payment form	
JP4597515 B2	20181002	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP4597515 B2	20221108	PEXP		Calculated Patent Term Expiry	
KR100950406 B1	20100329	LSGT	+	granted / extensions (spc, cpc, pte)	
KR100950406 B1	20130308	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20130311 YEAR OF FEE PAYMENT : 4
KR100950406 B1	20140310	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20140311 YEAR OF FEE PAYMENT : 5
KR100950406 B1	20150306	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20150309 YEAR OF FEE PAYMENT : 6
KR100950406 B1	20160308	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20160309 YEAR OF FEE PAYMENT : 7
KR100950406 B1	20180307	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20180308 YEAR OF FEE PAYMENT : 9
KR100950406 B1	20221108	PEXP		Calculated Patent Term Expiry	
KR20040065215 A	20040721	LSPB	+	published / reissued	
KR20040065215 A	20071108	LSES	A201	REQUEST FOR EXAMINATION	
KR20040065215 A	20090819	LSES	-E902	NOTIFICATION OF REASON FOR REFUSAL	
KR20040065215 A	20100222	LSGT	+E701	DECISION TO GRANT OR REGISTRATION OF PATENT RIGHT	
KR20040065215 A	20100323	LSGT	+GRNT	WRITTEN DECISION TO GRANT	
MXPA04004392 A1	20050331	LSPB	+	published / reissued	
MXPA04004392 A1	20070831	LSGT	+FG	GRANT OR REGISTRATION	
PE05772003 A1	20030818	LSPB	+	published / reissued	
PE05772003 A1	20051128	LSGT	+FG	GRANT, REGISTRATION	
PT2799631 T	20170622	LSGT	+	granted / extensions (spc, cpc, pte)	
PT2799631 T	20221108	PEXP		Calculated Patent Term Expiry	

TH33399 B	20120806	LSGT	+	granted / extensions (spc, cpc, pte)	
TH33399 B	20221108	PEXP		Calculated Patent Term Expiry	
TH57409 A	20030722	LSPB	+	published / reissued	
TR201602852 T4	20160421	LSGT	+	granted / extensions (spc, cpc, pte)	
TR201602852 T4	20221108	PEXP		Calculated Patent Term Expiry	
TR201704440 T4	20170421	LSGT	+	granted / extensions (spc, cpc, pte)	
TR201704440 T4	20221108	PEXP		Calculated Patent Term Expiry	
US2003089003 AA	20030515	LSPB	+	published / reissued	
US2003089003 AA	20040415	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2003121185 AA	20030703	LSPB	+	published / reissued	
US2004237355 AA	20041202	LSPB	+	published / reissued	
US2004237355 AA	20100519	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US6729052 BB	20040504	LSGT	+	granted / extensions (spc, cpc, pte)	
US6729052 BB	20020117	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:OLLINGER, CHARLES G. IV; COWGILL, NOAH D.; REEL/FRAME:012497/0495 EFFECTIVE DATE : 20020102
US6729052 BB	20040415	LSGT	PAT1	Patented Case	
US6729052 BB	20060912	LSRE	CC	CERTIFICATE OF CORRECTION	
US6729052 BB	20071105	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6729052 BB	20101129	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT, WA OLDPARTY : NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS; ASSIGNOR:ESCO CORPORATION; REEL/FRAME:025406/0714 EFFECTIVE DATE : 20101118
US6729052 BB	20111104	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6729052 BB	20151104	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 12
US6729052 BB	20180716	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF AMERICA, N.A.; REEL/FRAME:046551/0375 EFFECTIVE DATE : 20180711
US6729052 BB	20180817	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, OREGON OLDPARTY : MERGER AND CHANGE OF NAME; ASSIGNORS:ESCO CORPORATION; ESCO GROUP LLC; REEL/FRAME:046848/0493 EFFECTIVE DATE : 20180711
US6729052 BB	20220319	PEXP		Calculated Patent Term Expiry (PTA 130 days)	
US7165347 BB	20070123	LSGT	+	granted / extensions (spc, cpc, pte)	
US7165347 BB	20030303	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON

					OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:OLLINGER IV., CHARLES G.; COWGILL, NOAH D.; REEL/FRAME:013814/0890; SIGNING DATES FROM 20030127 TO 20030128
US7165347 BB	20070103	LSGT	PAT1	Patented Case	
US7165347 BB	20081111	LSRE	CC	CERTIFICATE OF CORRECTION	
US7165347 BB	20100723	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7165347 BB	20101129	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT, WA OLDPARTY : NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS; ASSIGNOR:ESCO CORPORATION; REEL/FRAME:025406/0714 EFFECTIVE DATE : 20101118
US7165347 BB	20140723	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7165347 BB	20180716	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF AMERICA, N.A.; REEL/FRAME:046551/0375 EFFECTIVE DATE : 20180711
US7165347 BB	20180910	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US7165347 BB	20190225	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US7165347 BB	20190225	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7165347 BB	20190225	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7165347 BB	20190319	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20190123
US7165347 BB	20221108	PEXP		Calculated Patent Term Expiry	
US7730645 BB	20100608	LSGT	+	granted / extensions (spc, cpc, pte)	
US7730645 BB	20040713	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION,OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:OLLINGER, CHARLES G., IV.; REEL/FRAME:015567/0896 EFFECTIVE DATE : 20040709
US7730645 BB	20040713	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:OLLINGER, CHARLES G., IV.; REEL/FRAME:015567/0896 EFFECTIVE DATE : 20040709
US7730645 BB	20100519	LSGT	PAT1	Patented Case	
US7730645 BB	20101129	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT, WA OLDPARTY : NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS; ASSIGNOR:ESCO CORPORATION;

US7730645 BB	20131209	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7730645 BB	20171208	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7730645 BB	20180716	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF AMERICA, N.A.; REEL/FRAME:046551/0375 EFFECTIVE DATE : 20180711
US7730645 BB	20180817	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, OREGON OLDPARTY : MERGER AND CHANGE OF NAME; ASSIGNORS:ESCO CORPORATION; ESCO GROUP LLC; REEL/FRAME:046848/0493 EFFECTIVE DATE : 20180711
US7730645 BB	20250716	PEXP		Calculated Patent Term Expiry (PTA 368 days and a terminal disclaimer has been filed)	
WO03041485 A2	20030522	LSPB	+	published / reissued	
WO03041485 A2	20040506	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2002340419 COUNTRY OF REF DOCUMENT : AU
WO03041485 A2	20040506	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2004/03427 COUNTRY OF REF DOCUMENT : ZA
WO03041485 A2	20040506	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 200403427 COUNTRY OF REF DOCUMENT : ZA
WO03041485 A2	20040507	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 1236/DELNP/2004 COUNTRY OF REF DOCUMENT : IN
WO03041485 A2	20040507	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : PA/A/2004/004392 COUNTRY OF REF DOCUMENT : MX
WO03041485 A2	20040507	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2466353 COUNTRY OF REF DOCUMENT : CA
WO03041485 A2	20040507	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 01236/DELNP/2004 COUNTRY OF REF DOCUMENT : IN
WO03041485 A2	20040510	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 1020047007091 COUNTRY OF REF DOCUMENT : KR
WO03041485 A2	20040510	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2003543386 COUNTRY OF REF DOCUMENT : JP
WO03041485 A2	20040514	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2002778782 COUNTRY OF REF DOCUMENT : EP
WO03041485 A3	20040604	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 04052682 COUNTRY OF REF DOCUMENT : CO
WO03041485 A3	20040616	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 20028251814 COUNTRY OF REF DOCUMENT : CN
WO03041485 A3	20041027	LSPB	+WWP	WIPO INFORMATION: PUBLISHED IN	REF DOCUMENT NUMBER : 2002778782 COUNTRY OF REF DOCUMENT : EP

ZA200403427 A	20060628	LSGT	+	NATIONAL OFFICE granted / extensions (spc, cpc, pte)
ZA200403427 A	20240505	PEXP		Calculated Patent Term Expiry

Title: HAMMERLESS PIN ASSEMBLY

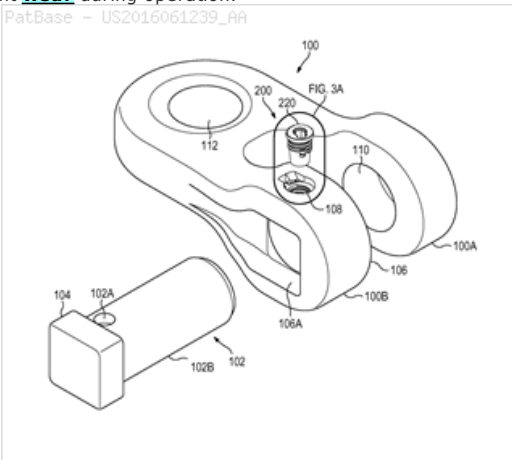
Abstract: A pinned rigging component providing relative movement for a connected rigging component includes an integrated hammerless lock. An integral lock is retained in the body of the rigging component and releasably retains the pin in the component. The lock is recessed in the body and is not subject to significant wear during operation.

Classifications:

International (IPC 8-9): E02F3/48 E02F3/58 E02F9/00 F16B17/00 F16B3/04 F16B35/00 (Advanced/Invention)

CPC: F16B3/04 E02F3/58 E02F3/48

US: 403/326



Family:

Publication number	Publication date	Application number	Application date
AU2015308757 AA	20170406	AU20150308757	20150828
CA2959614 AA	20170228	CA20152959614	20150828
US2016061239 AA	20160303	US20150838900	20150828
WO16033428 A1	20160303	WO2015US47382	20150828

Priority:

US20140043963P 20140829 US20150838900 20150828 WO2015US47382 20150828

Probable Assignee: ESCO CORP

Assignee(s): (std): ESCO CORP

Assignee(s): ESCO GROUP LLC ; QIAN JUNBO ; HEAPHY PAUL ; BANK OF AMERICA NA ADMINISTRATIVE AGENT AS ; DARE MICHAEL

Inventor(s): (std): QIAN JUNBO ; DARE MICHAEL ; HEAPHY PAUL

Agent(s): MINTER ELLISON; WILSON LUE LLP; SCHAD STEVEN P

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2015308757 AA	20170406	LSPB	+	published / reissued	
AU2015308757 AA	20180927	LSAS	HB	ALTERATION OF NAME IN REGISTER	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC OLDPARTY : FORMER NAME(S): ESCO CORPORATION
CA2959614 AA	20170228	LSPB	+	published / reissued	
US2016061239 AA	20160303	LSPB	+	published / reissued	
US2016061239 AA	20151008	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:HEAPHY, PAUL; DARE, MICHAEL; QIAN, JUNBO; REEL/FRAME:036759/0242 EFFECTIVE DATE : 20150828
US2016061239 AA	20160706	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT, TE OLDPARTY : NOTICE OF GRANT OF

					SECURITY INTEREST IN PATENTS; ASSIGNOR:ESCO CORPORATION; REEL/FRAME:039267/0771 EFFECTIVE DATE : 20101118
US2016061239 AA	20171128	LSES	NFA1	Non Final Action Mailed	
US2016061239 AA	20180716	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF AMERICA, N.A.; REEL/FRAME:046356/0064 EFFECTIVE DATE : 20180711
US2016061239 AA	20180817	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, OREGON OLDPARTY : MERGER AND CHANGE OF NAME; ASSIGNORS:ESCO CORPORATION; ESCO GROUP LLC; REEL/FRAME:046848/0493 EFFECTIVE DATE : 20180711
WO16033428 A1	20160303	LSPB	+	published / reissued	
WO16033428 A1	20170228	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2959614 COUNTRY OF REF DOCUMENT : CA
WO16033428 A1	20170228	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO16033428 A1	20170406	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2015308757 COUNTRY OF REF DOCUMENT : AU DATE OF REF DOCUMENT : 20150828 KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO16033428 A1	20170927	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 15835032 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A1 DESIGNATED STATE(S) :

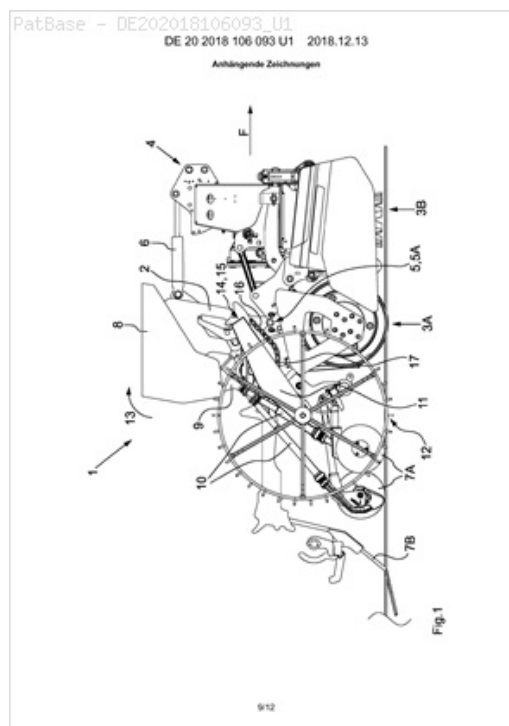
Title: VERTEILMASCHINE Dispersing machine (Machine translation)

Abstract: Source: DE202018106093U1 [DE] Verteilmaschine (1), insbesondere Saemaschine (1), mit einem auf zumindest einem Bodenbearbeitungsgeraet (3A, 3B), insbesondere einer Bodenwalze (3A), aufgesatteltem und gegenueber dem Bodenbearbeitungsgeraet (3A) mittels zumindest eines Gelenkelements (5) verkippbaren Rahmen (2), wobei der Rahmen (2) hinter dem Bodenbearbeitungsgeraet (3A) angeordnete Bodenbearbeitungswerkzeuge (7A, 7B), insbesondere Saeschare (7A) und/oder Saatstriege (7B), und einen Vorratsbehaelter (8) mit Dosier- (9) und Ausbringelementen (10) aufweist, und einem am hinteren Ende eines Tragarms (11) angeordnetem Antriebsrad (12) zum Antrieb der Dosierelemente (9), wobei der Tragarm (11) mit seiner dem hinteren Ende gegenueberliegenden Seite (14) in einem Drehpunkt (15) schwenkbar am Rahmen (2) angeordnet ist und diese Seite (14) ueber den Drehpunkt (15) zum Rahmen (2) hin hinausragt und/oder verlaengert ist, dadurch gekennzeichnet, dass an der dem hinteren Ende gegenueberliegenden Seite (14) des Tragarms (11) einerseits und an einem Befestigungspunkt (17) an dem Bodenbearbeitungsgeraet (3A) andererseits ein als Zugmittel auf den Tragarm (11) wirkendes Zwischenelement (16), welches im Verteilbetrieb der Verteilmaschine (1) eine Schwenkbewegung des Tragarms (11) um den Drehpunkt (15) gestattet, angeordnet ist. **Machine translation:** Dispersing machine (1), and in particular seeding machine (1), having a device on at least one tillage (3A, 3B), in particular a floor roll (3A), **worked** up and saturated item opposite to the bottom processing device (3A) by means of at least one articulation element (5) is tiltable frame (2), wherein the frame (2) behind the tillage device (3A) arranged tillage tools (7A, 7B), in particular Saeschare (7A) and/or (7B), and a seed striegel reservoir (8) to (9) and metering application elements (10), and a rear end of a support arm (11) arranged drive wheel (12) to drive the metering elements (9), wherein the support arm (11) with its rear end opposite side (14) in a pivot point (15) is pivotably disposed on the frame (2) is arranged and this page (14) via the pivot point (15) to the frame (2) protrudes toward and/or extended, characterized in that, at the Rear end opposite side (14) of the supporting arm (11) on the one hand and is secured at a fixing point (17) at the bottom processing device (3A), on the other hand, as a traction mechanism (11) on the support arm acting between element (16) which is arranged in the distribution operation of the distributor machine (1) is a pivotal movement of the support arm (11) around the pivot point (15) is arranged.

Classifications:

International (IPC 8-9): A01B49/06 (Advanced/Invention)

CPC: A01B49/065 A01C7/208 A01C19/045



Family:

Publication number	Publication date	Application number	Application date
DE202018106093 U1	20181213	DE201820106093U	20181025

Priority:

DE201820106093U 20181025

Probable Assignee: AMAZONEN WERKE DREYER H

Assignee(s): (std): AMAZONEN WERKE DREYER H ; AMAZONEN WERKE H DREYER GMBH AND CO KG

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
DE202018106093 U1	20181213	LSGT	+	granted / extensions (spc, cpc, pte)	
DE202018106093 U1	20181213	LSGT	R207	UTILITY MODEL SPECIFICATION	
DE202018106093 U1	20281025	PEXP		Calculated Patent Term Expiry	

Title: PALLET FOR PRESSURIZED GAS BOTTLES.

Abstract: 1. Transportation pallet for pressurized gas cylinders, having a rectangular bottom frame (11) and bottom angles (12) arranged above on supports (15, 16), in said bottom angles (12) a bottom plate (14) designed as pressure-welded grate being inserted, having at the corners vertical spars (21.1, 21.2) being connected at their upper ends and approximately at half their height on three sides by horizontal struts (22, 24), the upper horizontal struts (22) being provided on two opposite sides with load lugs (28) and with load distribution struts (27) arranged slopingly towards the bottom, whereas the forth side is intended as loading side, and being displaceable with a loading shutter (31) extending approximately to half its height and being swingable by an axle (33) arranged at its lower end and forming axle journals on both sides, and with a safety girder (41) arranged approximately at the height of the upper ends of the vertical spars (21.1), said safety girder (41) being swingable by a guide rod (44) of a pivot/sliding bearing (42), said guide rod (44) being provided at an adjacent, lateral, upper horizontal strut (22) and extending in parallel to it, and said safety girder (41) being lockable along said guide rod (44), whereby the opened-up loading shutter (31) and the swung-down safety girder (41), the latter particularly having a pendulum-type catch-hook (45), are locked releasably, and whereby the safety girder (41) further comprises means for locking in swung-up position, characterized by the following features: a) the axle journals (33) projecting at the lower loading shutter edge and being borne in sleeves (32) engage one each into an oblong hole (37) provided in the vertical spars (21.1) adjacent to the loading shutter (31) and extending in direction of the vertical spars (21.1); b) near the upper edge of the loading shutter (31), approximately rectangular recesses (35) are provided, cooperating with U-shaped projections (36) at said vertical spars (21.1); c) the safety means for locking the safety girder (41) in opened-up condition is an oblong hole (43) in the safety girder (41), said oblong hole embracing the guide rod (44) of the pivot/sliding bearing (42) and having its longitudinal axis in direction of the safety girder (41), whereby, with erected safety girder (41), its outer edge is supported on the inner side of the vertical leg of the lateral, upper horizontal strut (22) provided with the guide rod (44), and whereby the distance of the axis of the oblong hole (43) to the outer edge of the safety girder (41) is only insignificantly smaller than the distance of the axis of the guide rod (44) to the inner side of the vertical leg.

Classifications:

International (IPC 8-9): B65D19/08 B65D88/12 B65D90/00

F17C13/08 (Advanced/Invention);

B65D19/02 B65D88/00 B65D90/00 F17C13/08 (Core/Invention)

International (IPC 1-7): B65D19/08 B65D19/10 B65D19/44 F17C13/08

CPC: F17C2205/0107 B65D19/08 B65D88/12 B65D90/0033

B65D2519/00024 B65D2519/00059 B65D2519/00094 B65D2519/00164

B65D2519/00233 B65D2519/00298 B65D2519/00333 B65D2519/00373

B65D2519/00532 B65D2519/00626 B65D2519/00701 B65D2519/00786

B65D2519/00805 F17C13/084

European: B65D19/08 B65D88/12 B65D90/00D F17C13/08H

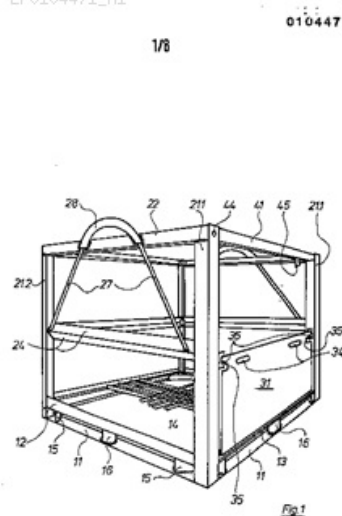
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L65D519/00Y1H2 L65D519/00Y2B5 L65D519/00Y2C4A L65D519/00Y2D1

L65D519/00Y2F9 L65D519/00Y3B2B L65D519/00Y3D2 L65D519/00Y4B2

L65D519/00Y4D L65D90/00D

PatBase - EP0104471_A1



Family:

Publication number	Publication date	Application number	Application date
AT26427 E	19870415	AT19830108515T	19830830
DE3232423 A1	19840308	DE19823232423	19820901
DE3232423 C2	19890720	DE19823232423	19820901
DE3232423 C3	19890720	DE19823232423	19820901
EP0104471 A1	19840404	EP19830108515	19830830
EP0104471 B1	19870408	EP19830108515	19830830

Priority:

DE19823232423 19820901 EP19830108515 19830830

Probable Assignee:

TEMPEL WULF

Assignee(s): (std):

TEMPEL WULF

Assignee(s):

TEMPEL WULF 4835 RIETBERG DE

Inventor(s): (std):

TEMPEL WULF

Inventor(s):

TEMPEL WULF 4835 RIETBERG DE

Designated states:

AT BE CH FR GB LI NL SE

Legal status (INPADOC)

View legal status timeline

Patent Date recorded Event group Code Event

Details

AT26427 E	19870415	LSGT	+	granted / extensions (spc, cpc, pte)	
AT26427 E	19930515	LSLE	-REN	CEASED DUE TO NON-PAYMENT OF THE ANNUAL FEE	
AT26427 E	20030830	PEXP		Calculated Patent Term Expiry	
DE3232423 A1	19840308	LSPB	+	published / reissued	
DE3232423 A1	19840308	LSES	+OM8	SEARCH REPORT AVAILABLE AS TO PARAGRAPH 43 LIT. 1 SENTENCE 1 PATENT LAW	
DE3232423 A1	19840308	LSES	+OP8	REQUEST FOR EXAMINATION AS TO PARAGRAPH 44 PATENT LAW	
DE3232423 A1	19860918	LSGT	+D2	GRANT AFTER EXAMINATION	
DE3232423 A1	19870226	LSOP	-8363	OPPOSITION AGAINST THE PATENT	
DE3232423 A1	19870611	LSAS	8327	CHANGE IN THE PERSON/NAME/ADDRESS OF THE PATENT OWNER	PARTYTYPE : OWNER OWNER : TEMPEL, WULF, 8671 SCHOENWALD, DE
DE3232423 A1	19890503	LSOP	+8366	RESTRICTED MAINTAINED AFTER OPPOSITION PROCEEDINGS	
DE3232423 C2	19890720	LSGT	+	granted / extensions (spc, cpc, pte)	
DE3232423 C2	19890720	LSRE	+D4	PATENT MAINTAINED RESTRICTED	
DE3232423 C2	19960912	LSLE	-8339	CEASED/NON-PAYMENT OF THE ANNUAL FEE	
DE3232423 C3	19890720	LSGT	+	granted / extensions (spc, cpc, pte)	
EP0104471 A1	19840404	LSPB	+	published / reissued	
EP0104471 A1	19841121	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 19840908
EP0104471 A1	19880323	LSGT	+26N	NO OPPOSITION FILED	
EP0104471 A1	19900822	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 19900822 YEAR OF FEE PAYMENT : 8
EP0104471 A1	19900829	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH PAYMENT DATE : 19900829 YEAR OF FEE PAYMENT : 8
EP0104471 A1	19900829	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 19900829 YEAR OF FEE PAYMENT : 8
EP0104471 A1	19900831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 19900831 YEAR OF FEE PAYMENT : 8
EP0104471 A1	19910830	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB LAPSED DATE : 19910830
EP0104471 A1	19910831	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH LAPSED DATE : 19910831
EP0104471 A1	19910831	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LI LAPSED DATE : 19910831
EP0104471 A1	19920224	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 19920224 YEAR OF FEE

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EP0104471 A1	19920312	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 19920312 YEAR OF FEE PAYMENT : 9
EP0104471 A1	19920416	LSLE	-NLV4	NL: LAPSED OR ANULLED DUE TO NON- PAYMENT OF THE ANNUAL FEE	REF COUNTRY CODE : EP
EP0104471 A1	19920429	LSLE	-GBPC	GB: EUROPEAN PATENT CEASED THROUGH NON-PAYMENT OF RENEWAL FEE	REF COUNTRY CODE : EP
EP0104471 A1	19920430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR LAPSED DATE : 19920430
EP0104471 A1	19920430	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : PL
EP0104471 A1	19920626	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : FR REF LEGAL EVENT CODE : ST
EP0104471 A1	19920830	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT LAPSED DATE : 19920830
EP0104471 A1	19920831	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE LAPSED DATE : 19920831
EP0104471 A1	19920831	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE LAPSED DATE : 19920831
EP0104471 A1	19930228	LSLE	-BERE	BE: LAPSED	PARTYTYPE : OWNER REF COUNTRY CODE : EP OWNER : TEMPEL WULF EFFECTIVE DATE : 19920831
EP0104471 A1	19950131	LSLE	-EUG	SE: EUROPEAN PATENT HAS LAPSED	REF COUNTRY CODE : EP TEXT : 83108515.4 EFFECTIVE DATE : 19930307
EP0104471 B1	19870408	LSGT	+	granted / extensions (spc, cpc, pte)	

Title: QUICK COUPLER SYSTEM

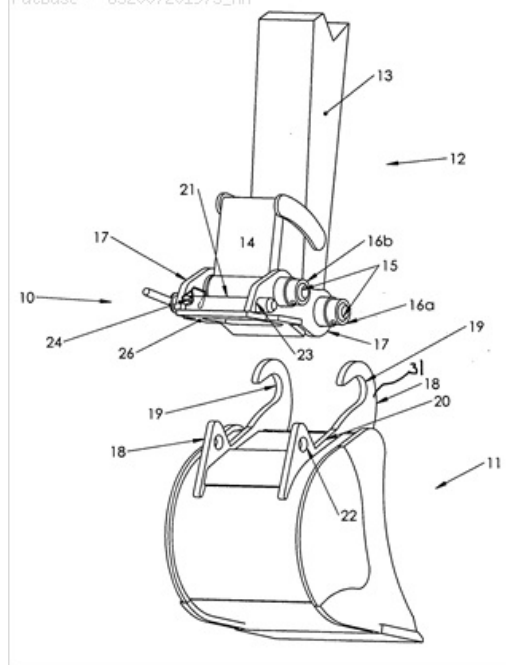
Abstract: A system for coupling an implement to a machine. A coupler body includes first and second opposed coupler sidewalls, each including a **lock pin** coupler receiving region therein, and at least one transverse **member** coupled to the first and second opposed side walls. An attachment **member** includes first and second opposed attachment **member** sidewalls. Each attachment sidewall includes a hook **member** at a first end thereof and a **lock pin** attachment receiving region at a second end thereof. The **lock pin** attachment receiving regions are configured to selectively align with the **lock pin** coupler receiving regions when the hook **members** have received a transverse **member**. A **lock pin** is sized to be accepted by each **lock pin** coupler receiving region and each **lock pin** attachment receiving region when aligned with each other.

Classifications:**International (IPC 8-9):** B66C23/00 (Advanced/Invention);

B66C23/00 (Core/Invention)

CPC: E02F3/3631**European:** E02F3/36C2J**US:** 414/723 414/723P

PatBase - US2007201973_AA

**Family:**

Publication number	Publication date	Application number	Application date
US2007201973 AA	20070830	US20060363600	20060228

Priority:

US20060363600 20060228

Probable Assignee: WOODS EQUIPMENT CO**Assignee(s):** (std): WOODS EQUIPMENT CO ; WOODS EQUIPMENT COMPANY**Assignee(s):** BANK OF AMERICA NA ADMINISTRATIVE AGENT AS ; BANK OF AMERICA NA AS ADMINISTRATIVE AGENT ; GENWOODS HOLDCO LLC**Inventor(s):** (std): LATOUR ROBERT N JR ; MCDERMOTT RONALD**Inventor(s):** LATOUR ROBERT N ; LATOUR ROBERT NJR**Agent(s):** FOLEY AND LARDNER LLP**Legal status (INPADOC)**[View legal status timeline](#)

Patent	Date recorded	Event group	Code	Event	Details
US2007201973 AA	20070830	LSPB	+	published / reissued	
US2007201973 AA	20060228	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : WOODS EQUIPMENT COMPANY, ILLINOIS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:MCDERMOTT, RONALD; LATOUR, JR., ROBERT N.; REEL/FRAME:017634/0364 EFFECTIVE DATE : 20060228
US2007201973 AA	20080314	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2007201973 AA	20080314	LSWD	-STCB	INFORMATION ON STATUS:	TEXT : ABANDONED -- FAILURE TO RESPOND TO AN OFFICE ACTION

APPLICATION DISCONTINUATION					
US2007201973 AA	20100927	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BANK OF AMERICA, N.A. AS ADMINISTRATIVE AGENT, ILL OLDPARTY : AMENDED AND RESTATED PATENT AND TRADEMARK SECURITY AGREEMENT; ASSIGNORS:WOODS EQUIPMENT COMPANY; GENWOODS HOLDCO, LLC; REEL/FRAME:025039/0335 EFFECTIVE DATE : 20100921
US2007201973 AA	20110907	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : WOODS EQUIPMENT COMPANY, ILLINOIS OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT; REEL/FRAME:026866/0241 EFFECTIVE DATE : 20110907
US2007201973 AA	20110907	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENWOODS HOLDCO, LLC, ILLINOIS OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT; REEL/FRAME:026866/0241 EFFECTIVE DATE : 20110907

Title: Post construction kit

Abstract: A post construction kit for constructing a post implanted in a base terrain which includes a first post section adapted for implantation in the base terrain, at least one other post section adapted for interconnection with the post section to be implanted underground, and an interconnecting arrangement for interconnecting the underground section and at least one other post section.

Classifications:

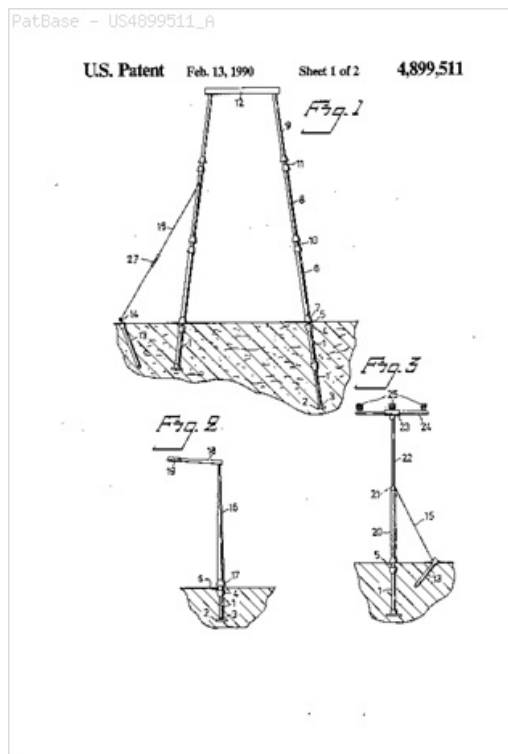
International (IPC 8-9): E02D27/42 E04H12/08 (Advanced/Invention);
E02D27/32 E04H12/00 (Core/Invention)

International (IPC 1-7): E04H12/00 E04H12/02 E04H12/08

CPC: E04H12/08

European: E04H12/08

US: 52/292 52/721 52/726 52/848



Family:

Publication number	Publication date	Application number	Application date
AT69853 E	19911215	AT19880850089T	19880316
DE3866398 D1	19920109	DE19883866398	19880316
DK173188 A	19881001	DK19880001731	19880329
DK173188 A0	19880329	DK19880001731	19880329
EP0285584 A2	19881005	EP19880850089	19880316
EP0285584 A3	19891004	EP19880850089	19880316
EP0285584 B1	19911127	EP19880850089	19880316
FI86755 B	19920630	FI19880001401	19880324
FI86755 C	19921012	FI19880001401	19880324
FI881401 A	19881001	FI19880001401	19880324
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JP63284375 A2	19881121	JP19880073491	19880329
NO164189 B	19900528	NO19880001356	19880325
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NO881356 A	19881003	NO19880001356	19880325
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SE460137 B	19890911	SE19870001331	19870330
SE460137 C	19900118	SE19870001331	19870330
SE8701331 A	19881001	SE19870001331	19870330
SE8701331 A0	19870330	SE19870001331	19870330
SE8701331 L	19881001	SE19870001331	19870330
US4899511 A	19900213	US19880174766	19880329

Priority:

SE19870001331 19870330 EP19880850089 19880316

Probable Assignee: AB GUSTAVSBERG

Assignee(s): (std): GUSTAVSBERG AB ; GUSTAVSBERG IND AB ; GUSTAVSBERG VVS AB

Assignee(s): GUSTAVSBERG VVS AKTIEBOLAG ; GUSUTABUSUBERUGU V V S AB ; GUSTAVSBERG INDUSTRI AKTIEBOLAG ; GUSTAVSBERG INDUSTRI AB ; AB GUSTAVSBERG ; AKTIEBOLAGET GUSTAVSBERG ; AKTIEBOLAGET GUSTAVSBERG GUSTAVSBERG SE

Inventor(s): (std): ANDERSSON ERLAND ; SKOENVALL TAGE

Inventor(s): E ANDERSSON ; T SKONVALL ; T SKOENVALL ; ERURANDO ANDERUSON ; TAGE SUKOONBAARU ;

Designated states: AT BE CH DE ES FR GB GR IT LI LU NL

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AT69853 E	19911215	LSGT	+	granted / extensions (spc, cpc, pte)	
AT69853 E	19920815	LSPB	+UEP	PUBLICATION OF TRANSLATION OF EUROPEAN PATENT SPECIFICATION	
AT69853 E	19931215	LSLE	-REN	CEASED DUE TO NON-PAYMENT OF THE ANNUAL FEE	
AT69853 E	20080316	PEXP		Calculated Patent Term Expiry	
DE3866398 D1	19921126	LSOP	-8363	OPPOSITION AGAINST THE PATENT	
DE3866398 D1	19940310	LSLE	-8339	CEASED/NON-PAYMENT OF THE ANNUAL FEE	
DK173188 A	19881001	LSPB	+	published / reissued	
DK173188 A	19931122	LSWD	-AHB	APPLICATION SHELVED DUE TO NON-PAYMENT	
DK173188 A	20000313	LSGT	+B1	PATENT GRANTED (LAW 1993)	
EP0285584 A2	19881005	LSPB	+	published / reissued	
EP0285584 A3	19900711	LSSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 19900323
EP0285584 A3	19901114	LSSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 19901002
EP0285584 A3	19911121	LSAS	RAP1	RIGHTS OF AN APPLICATION TRANSFERRED	PARTYTYPE : OWNER OWNER : AB GUSTAVSBERG
EP0285584 B1	19911127	LSGT	+	granted / extensions (spc, cpc, pte)	
EP0285584 B1	19911127	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE LAPSED DATE : 19911127
EP0285584 B1	19920228	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 19920228
EP0285584 B1	19920228	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 19920228
EP0285584 B1	19920311	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH PAYMENT DATE : 19920311 YEAR OF FEE PAYMENT : 5
EP0285584 B1	19920313	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 19920313 YEAR OF FEE PAYMENT : 5
EP0285584 B1	19920320	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 19920320 YEAR OF FEE PAYMENT : 5

EP0285584 B1	19920331	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 19920331 YEAR OF FEE PAYMENT : 5
EP0285584 B1	19920331	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 19920331 YEAR OF FEE PAYMENT : 5
EP0285584 B1	19920413	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LU PAYMENT DATE : 19920413 YEAR OF FEE PAYMENT : 5
EP0285584 B1	19920421	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 19920421 YEAR OF FEE PAYMENT : 5
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EP0285584 B1	19921028	LSFE	+EPTA	LU: LAST PAID ANNUAL FEE	REF COUNTRY CODE : EP
EP0285584 B1	19921216	LSOP	-NLR1	NL: OPPOSITION HAS BEEN FILED WITH THE EPO	PARTYTYPE : OPPONENT REF COUNTRY CODE : EP OPPONENT : TIROLER ROEHREN UND METALLWERKE AG
EP0285584 B1	19930316	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB LAPSED DATE : 19930316
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EP0285584 B1	19930331	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LI NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 19930331
EP0285584 B1	19930331	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 19930331
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EP0285584 B1	19931110	LSLE	-GBPC	GB: EUROPEAN PATENT CEASED THROUGH NON-PAYMENT OF RENEWAL FEE	REF COUNTRY CODE : EP EFFECTIVE DATE : 19930316
EP0285584 B1	19931116	LSLE	-NLV4	NL: LAPSED OR ANULLED DUE TO NON-PAYMENT OF THE ANNUAL FEE	REF COUNTRY CODE : EP
EP0285584 B1	19931130	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO	COUNTRY OF REF DOCUMENT : FR LAPSED DATE : 19931130

EPO]					
EP0285584 B1	19931130	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : PL
EP0285584 B1	19931201	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE LAPSED DATE : 19931201
EP0285584 B1	19940128	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : FR REF LEGAL EVENT CODE : ST
EP0285584 B1	19941026	LSRV	-27W	PATENT REVOKED	EFFECTIVE DATE : 19940606
EP0285584 B1	20080316	PEXP		Calculated Patent Term Expiry	
FI86755 B	19920630	LSPB	+	published / reissued	
FI86755 C	19921012	LSGT	+	granted / extensions (spc, cpc, pte)	
FI86755 C	19930324	LSLE	-MM	PATENT LAPSED	
FI86755 C	20040831	LSLE	-MM	PATENT LAPSED	PARTYTYPE : OWNER OWNER : AKTIEBOLAGET GUSTAVSBERG
FI86755 C	20080324	PEXP		Calculated Patent Term Expiry	
FI881401 A	19881001	LSPB	+	published / reissued	
JP63284375 A2	19881121	LSPB	+	published / reissued	
NO164189 B	19900528	LSPB	+	published / reissued	
NO164189 C	19900905	LSGT	+	granted / extensions (spc, cpc, pte)	
NO164189 C	20080325	PEXP		Calculated Patent Term Expiry	
NO881356 A	19881003	LSPB	+	published / reissued	
SE460137 B	19890911	LSPB	+	published / reissued	
SE460137 B	19950131	LSLE	-NUG	PATENT HAS LAPSED	TEXT : 8701331-4 EFFECTIVE DATE : 19931008
SE460137 C	19900118	LSGT	+	granted / extensions (spc, cpc, pte)	
SE460137 C	20070330	PEXP		Calculated Patent Term Expiry	
SE8701331 A	19881001	LSPB	+	published / reissued	
US4899511 A	19900213	LSGT	+	granted / extensions (spc, cpc, pte)	
US4899511 A	19880329	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GUSTAVSBERG VVS AKTIEBOLAG OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST.; ASSIGNORS:ANDERSSON, ERLAND; SKONVALL, TAGE; REEL/FRAME:004855/0567 EFFECTIVE DATE : 19880321
US4899511 A	19891207	LSGT	PAT1	Patented Case	
US4899511 A	19940213	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US4899511 A	19940426	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 19940213
US4899511 A	20180130	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US4899511 A	20180130	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US4899511 A	20080329	PEXP		Calculated Patent Term	

Title: TOOTH AND ADAPTOR ASSEMBLY

Abstract: A tooth and adaptor assembly for a dipper bucket includes an adaptor having a rear portion for attaching to the dipper bucket, a tooth capable of releasable attachment to the adaptor and a retainer pin for securing the tooth to the adaptor. The adaptor further includes a tapering intermediate portion that narrows to a rectangular front portion. The adaptor further includes a planar surface on a portion of its intermediate portion and a cavity on the planar surface for receiving the retainer pin. The tooth has a tip at its front end for digging and a socket at its rear end configured to receive the front and intermediate portions of the adaptor. A small opening on the rear end of the tooth aligns with the cavity when the tooth is seated on the adaptor. The retainer pin is urged outward of the cavity by a biasing element to engage the small opening on the tooth so as to secure the tooth to the adaptor.

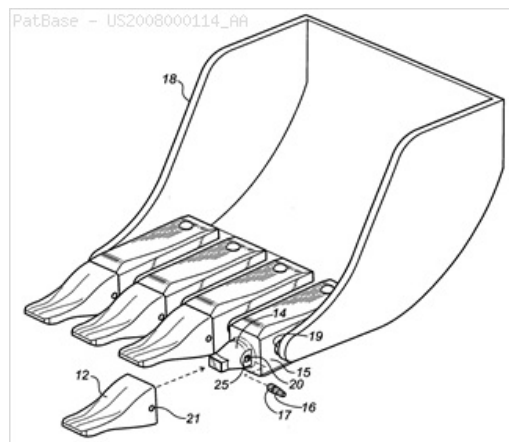
Classifications:

International (IPC 8-9): E02F3/40 E02F9/28 (Advanced/Invention); E02F9/28 (Core/Invention)

CPC: E02F9/2833 E02F9/2858 E02F9/2866

European: E02F9/28A2C E02F9/28A6 E02F9/28B

US: 37/457 37/457P

**Family:**

Publication number	Publication date	Application number	Application date
CA2551312 AA	20071228	CA20062551312	20060628
US2008000114 AA	20080103	US20070726267	20070321

Priority:

CA20062551312 20060628

Probable Assignee: AMSCO CAST ORODUCTS CANADA INC

Assignee(s): (std): AMSCO CAST PRODUCTS CANADA INC

Assignee(s): AMSCO CAST PRODUCTS INC ; BENTLEY NEIL DOUGLAS ; AMSCO CAST ORODUCTS (CANADA) INC ; AMSCO CAST ORODUCTS CANADA INC ; AMSCO CAST ORODUCTS INC ; AMSCO CAST PRODUCTS (CANADA) INC

Inventor(s): (std): BENTLEY NEIL DOUGLAS

Agent(s): HAUGEN J JAY; DENNIS T GRIGGS

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
CA2551312 AA	20071228	LSPB	+	published / reissued	
CA2551312 AA	20060628	LSER	+EEER	EXAMINATION REQUEST	
CA2551312 AA	20100628	LSLE	-FZDE	DEAD	
US2008000114 AA	20080103	LSPB	+	published / reissued	
US2008000114 AA	20070427	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMSCO CAST ORODUCTS (CANADA) INC., CANADA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BENTLEY, NEIL DOUGLAS; REEL/FRAME:019222/0963 EFFECTIVE DATE : 20070214
US2008000114 AA	20071019	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMSCO CAST PRODUCTS (CANADA) INC., CANADA OLDPARTY : CORRECTIVE ASSIGNMENT TO CORRECT THE ASSIGNEE NAME AND ASSIGNEE POSTAL CODE PREVIOUSLY RECORDED ON REEL 019222 FRAME 0963. ASSIGNOR(S) HEREBY CONFIRMS THE ASSIGNEE NAME AS

					AMSCO CAST PRODUCTS (CANADA) INC. AND ASSIGNEE POSTAL CODE AS T6E 5V1; ASSIGNOR:BENTLEY, NEIL DOUGLAS; REEL/FRAME:019990/0017 EFFECTIVE DATE : 20070214
US2008000114 AA	20071019	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMSCO CAST PRODUCTS (CANADA) INC., CANADA OLDPARTY : CORRECTIVE ASSIGNMENT TO CORRECT THE ASSIGNEE NAME AND ASSIGNEE POSTAL CODE PREVIOUSLY RECORDED ON REEL 019222 FRAME 0963; ASSIGNOR:BENTLEY, NEIL DOUGLAS; REEL/FRAME:019990/0017 EFFECTIVE DATE : 20070214
US2008000114 AA	20091228	LSWD	-ABD2	Abandoned -- Failure to Pay Issue Fee	
US2008000114 AA	20091228	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO PAY ISSUE FEE

Title: Backhoe scarifying apparatus

Abstract: A scarifying assembly mounted in a backhoe bucket is disclosed herein having a toothed roller operably carried between spaced-apart support arms which include bearings and a chain or geared drive coupled to a hydraulic power source. The attachments for assembling the opposite ends of the roller include splined fittings which revolve with the roller. Both the roller and splined fittings have outwardly projecting teeth angularly disposed with respect to each other and to the peripheral surface of the roller and the fittings. The roller attachments, fittings and hydraulic power source provide a readily convenient arrangement for rapid assembly or disassembly for service, maintenance and repair procedures. A wedge structure is carried on the power source having a terminating edge in close proximity to the projecting teeth for the purpose of breaking-up or fragmenting rocks carried between the teeth.

Classifications:

International (IPC 8-9): E02F3/20 E02F3/40 E02F3/96

E02F5/08 (Advanced/Invention);

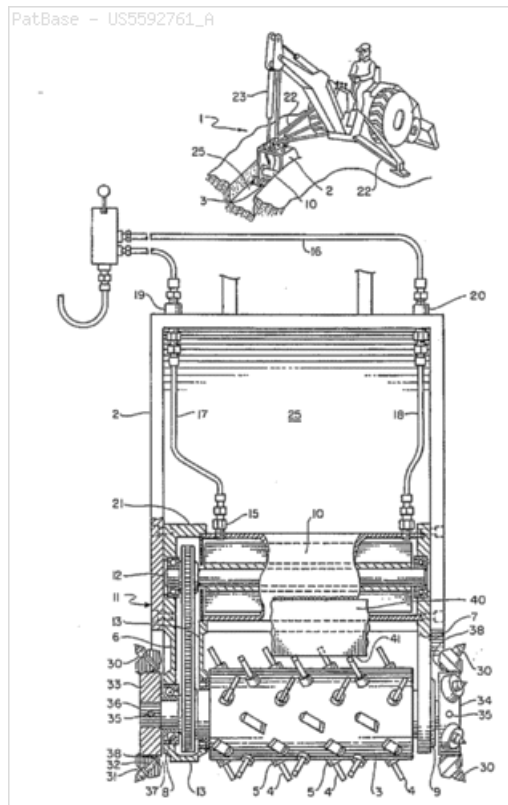
E02F3/04 E02F3/18 E02F3/40 E02F5/02 (Core/Invention)

International (IPC 1-7): E02F3/96

CPC: E02F3/20 E02F3/40 E02F3/962

European: E02F3/20 E02F3/40 E02F3/96C

US: 37/403 37/409 374/30 D15/32



Family:

Publication number	Publication date	Application number	Application date
US5592761 A	19970114	US19950511925	19950807

Priority:

US19950511925 19950807

Probable Assignee:

WARD ARTHUR A

Assignee(s): (std):

WARD ARTHUR A

Inventor(s): (std):

WARD ARTHUR A

Legal status (INPADOC)

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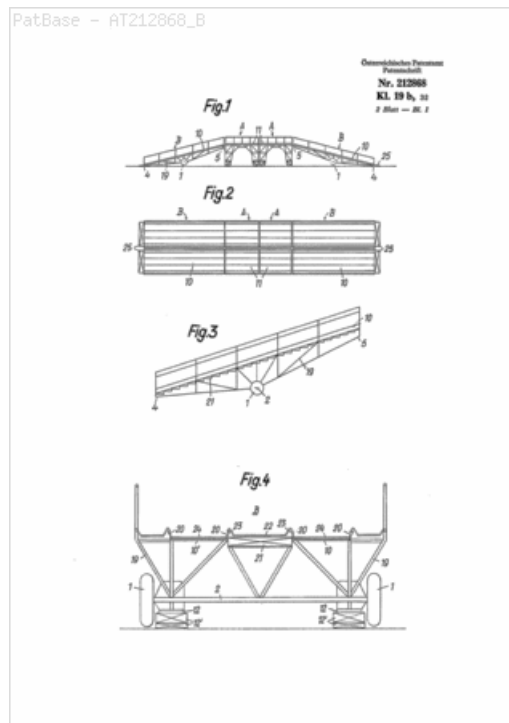
Patent	Date recorded	Event group	Code	Event	Details
US5592761 A	19970114	LSGT	+	granted / extensions (spc, cpc, pte)	
US5592761 A	20010111	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US5592761 A	20050114	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US5592761 A	20050216	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US5592761 A	20050216	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US5592761 A	20050315	LSLE	-FP	EXPIRED DUE TO FAILURE TO	EFFECTIVE DATE : 20050114

PAY MAINTENANCE FEE			
US5592761 A	20150807	PEXP	Calculated Patent Term Expiry

Title: TRANSPORTABLE FAHRBAHNUEBERBRUECKUNG PORTABLE ROAD BRIDGE (Machine translation)

Abstract: Source: AT212868B [DE] [Source: Claim 1] 1. Transportable Fahrbahnueberbrueckung mit an selbstaendig aufstellbare Brueckenelemente seitlich anschliessbaren, getrennt verfahrbaren Auffahrtsrampen, dadurch gekennzeichnet, dass an jeder Auffahrtsrampe (B) lediglich je ein annaehernd in Rampenlaengsmitte angeordnetes Radpaar (1) mit in bezug auf den Rampenkoerper ortsunveraenderlicher Radachse (2) vorgesehen ist, welches bei um die Radachse auf den Boden niedergeschwenktem einen Rampenende (4) das mit den selbstaendig aufstellbaren Brueckenelementen (A) verbindbare andere Rampenende (5) in einer bis annaehernd auf das Fahrbahnniveau (6) der Brueckenelemente (A) hochgeschwenkten Stellung haelt. **Machine translation:** [Source: claim 1] 1 portable road bridge with independently foldable bridge elements on the side that can be connected, disconnected movable ramps, characterised by the fact that there is only one wheel pair arranged approximately in Rampenlaengsmitte (1) with in relation to the place fixed axle ramp body (2) provided on each (B) ramps which holds with the independently-standing bridge elements (A) communicating other ramp end (5) to a position high pivoted close to the road level (6) of the bridge elements (A) with a ramp end low-swung around the wheel axle on the ground (4).

Classifications:



Family:

Publication number	Publication date	Application number	Application date
AT212868 B	19610110	AT19590002219	19590321

Priority:

AT19590002219 19590321

Probable Assignee:

FEHRENBACH EMIL

Assignee(s): (std):

FEHRENBACH EMIL

Assignee(s):

EMIL FEHRENBACH

Inventor(s): (std):

FEHRENBACH EMIL

Inventor(s):

EMIL FEHRENBACH

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AT212868 B	19610110	LSGT	+	granted / extensions (spc, cpc, pte)	
AT212868 B	19790321	PEXP		Calculated Patent Term Expiry	

Title: **WEAR** ASSEMBLY

Abstract: A **wear** assembly includes an adapter with a nose, a **wear member** with a socket to receive the nose, and a lock to secure the **wear member** to the adapter. The nose and socket include complementary rails and grooves that vertically diverge as they extend from the front of the nose. The lock can have a tapered construction.

Classifications:

International (IPC 8-9): A01B15/00 A01B15/10 A01B23/00 A01B31/00 E02F E02F1/00 E02F3/40 E02F9/00 E02F9/28 E21C35/183 F16D1/02 (Advanced/Invention);

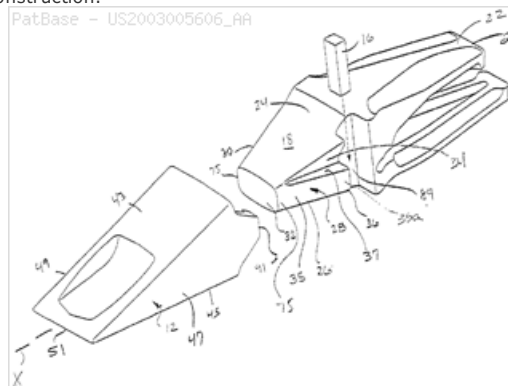
E02F9/00 E02F9/28 F16D1/02 (Advanced/Non-invention); A01B15/00 A01B15/10 A01B23/00 A01B31/00 B05C13/02 E02F1/00 E02F3/40 E02F9/00 E02F9/28 F16D1/02 (Core/Invention); E02F (Subclass/Invention)

International (IPC 1-7): B05C 13/02 B05C13/02 E02F 9/28 E02F0/00 E02F1/00 E02F3/00 E02F9/00 E02F9/28

CPC: Y10T403/595 Y10T403/7064 E02F9/2833 E02F9/2883 E02F9/2825 E02F9/2841 E21C35/183 Y10T403/587 Y10T403/7018 E02F9/28

European: E02F9/28 E02F9/28A2B E02F9/28A2C E02F9/28A2C2 E02F9/28F E21C35/183

US: 172/713 172/751 172/753 172/772 172/772.5 37/446 37/450 37/452 37/452P 37/453 37/454 37/456 37/456P 37/466 37/466P 403/319 403/322.4 403/355 403/374.1 403/374.100S



Family:

Publication number	Publication date	Application number	Application date
AR034737 AA	20040317	AR2002P102539	20020705
AR034738 AA	20040317	AR2002P102541	20020705
AR055828 AB	20070912	AR2005P105554	20051227
AR056635 AB	20071017	AR2005P105553	20051227
AR067394 AB	20091007	AR2008P102849	20080701
AT365249 E	20070715	AT20020749631T	20020703
AT450663 E	20091215	AT20020027594T	20020703
AT452248 E	20100115	AT20020749630T	20020703
AT462047 E	20100415	AT20020027595T	20020703
AU2002320130 AA	20030121	AU20020320130	20020703
AU2002320130 BB	20070614	AU20020320130	20020703
AU2002320131 AA	20030121	AU20020320131	20020703
AU2002320131 BB	20070607	AU20020320131	20020703
AU2007202035 AA	20070524	AU20070202035	20070507
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AU2007202390 AA	20070614	AU20070202390	20070525
AU2007202390 BB	20090528	AU20070202390	20070525
AU2007202390 CA	20131212	AU20070202390	20070525
AU2013205223 AA	20130502	AU20130205223	20130409
AU2013205223 BB	20160310	AU20130205223	20130409
BRPI0210755 A	20040720	BR2002PI10755	20020703
BRPI0210755 B1	20120626	BR2002PI10755	20020703
BRPI0210854 A	20040713	BR2002PI10854	20020703
BRPI0210854 B1	20130205	BR2002PI10854	20020703
BRPI0216017 B1	20130219	BR2002PI16017	20020703
BRPI0216099 B1	20131203	BR2002PI16099	20020703
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CA2451306 C	20100112	CA20022451306	20020703
CA2451309 AA	20031222	CA20022451309	20020703
CA2451309 C	20090421	CA20022451309	20020703
CL2002001501 A1	20030704	CL20020001501	20020705
CL2002001502 A1	20030704	CL20020001502	20020705
CL49308 B	20130807	CL20020001502	20020705
CL49525 B	20131105	CL20020001501	20020705
CN100338316 C	20070919	CN20028015460	20020703
CN1274917 C	20060913	CN20028013657	20020703
CN1524147 A	20040825	CN20028013657	20020703
CN1539047 A	20041020	CN20028015460	20020703
CN1800522 A	20060712	CN200510097064	20020703
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CN1837518 A	20060927	CN200610074056	20020703
CN1837518 B	20120118	CN200610074056	20020703
DE20221725 U1	20070419	DE20022021725U	20020703
DE60220795 D1	20070802	DE20026020795T	20020703
DE60220795 D1	20070802	DE20026020795	20020703
DE60220795 T2	20071018	DE20026020795T	20020703
DE60234652 D1	20100114	DE20026034652	20020703
DE60234771 D1	20100128	DE20026034771	20020703

DE60235777 D1	20100506	DE20026035777	20020703
DK1404925 T3	20100315	DK20020749630T	20020703
DK1637660 T3	20100412	DK20020027594T	20020703
DK1637661 T3	20100705	DK20020027595T	20020703
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Priority:

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Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW

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AR034737 AA	20110321	LSGT	+FG	GRANT, REGISTRATION	
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AR056635 AB	20071017	LSPB	+	published / reissued	
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BRPI0210755 B1	20220703	PEXP		Calculated Patent Term Expiry	
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BRPI0210854 B1	20230205	PEXP		Calculated Patent Term Expiry	
BRPI0216017 B1	20110104	LSES	B07A	TECHNICAL EXAMINATION (OPINION): PUBLICATION OF TECHNICAL EXAMINATION	

(OPINION)				
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EP1404925 A2	20151030	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20150727

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EP1404925 A2	20160930	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1404925 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1404925 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1404925 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20160722 YEAR OF FEE PAYMENT : 15
EP1404925 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1404925 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1404925 A2	20161130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1404925 A2	20161130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1404925 A2	20161230	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1404925 A4	20060315	LSSES	+A4	SUPPLEMENTARY SEARCH REPORT	EFFECTIVE DATE : 20060127

EP1404925 A4	20060823	LSSES	+17Q	DRAWN UP AND DESPATCHED FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20060724
EP1404925 B1	20091216	LSGT	+	granted / extensions (spc, cpc, pte)	
EP1404925 B1	20091216	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GB REF LEGAL EVENT CODE : FG4D
EP1404925 B1	20091231	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : EP
EP1404925 B1	20100120	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : IE REF LEGAL EVENT CODE : FG4D
EP1404925 B1	20100324	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : NL REF LEGAL EVENT CODE : T3
EP1404925 B1	20100419	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : ES REF LEGAL EVENT CODE : FG2A REF DOCUMENT NUMBER : 2336897 COUNTRY OF REF DOCUMENT : ES KIND CODE OF REF DOCUMENT : T3 DESIGNATED STATE(S) :
EP1404925 B1	20100421	LSRE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GR REF LEGAL EVENT CODE : EP REF DOCUMENT NUMBER : 20100400596 COUNTRY OF REF DOCUMENT : GR
EP1404925 B1	20100730	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : MC PAYMENT DATE : 20100618 YEAR OF FEE PAYMENT : 9
EP1404925 B1	20101029	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CY NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME- LIMIT LAPSED DATE : 20091216
EP1404925 B1	20101124	LSGT	+26N	NO OPPOSITION FILED	EFFECTIVE DATE : 20100917
EP1404925 B1	20120229	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : MC NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 20110731
EP1404925 B1	20160726	LSFE	REG	REFERENCE TO A NATIONAL CODE	COUNTRY OF REF DOCUMENT : FR REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 15
EP1404925 B1	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IE PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1404925 B1	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BG PAYMENT DATE : 20160728 YEAR OF FEE PAYMENT : 15
EP1404925 B1	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DK PAYMENT DATE : 20160725 YEAR OF FEE PAYMENT : 15
EP1404925 B1	20161130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20160621 YEAR OF FEE PAYMENT : 15
EP1404925 B1	20161130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15

EP1404925 B1	20161230	LSFE	+PGFP	NATIONAL OFFICE TO EPO] ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1404925 B1	20170726	LSFE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 16
EP1404925 B1	20170731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : EE PAYMENT DATE : 20170628 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20170731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20170627 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20170731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SK PAYMENT DATE : 20170621 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20170831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LU PAYMENT DATE : 20170725 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20170831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20170623 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20170929	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20170726 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20170929	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20170622 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20170725 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR PAYMENT DATE : 20170728 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20170726 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20170801 YEAR OF FEE PAYMENT : 16

EP1404925 B1	20171130	LSFE	+PGFP	NATIONAL OFFICE TO EPO] ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BG PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20170621 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DK PAYMENT DATE : 20170725 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IE PAYMENT DATE : 20170728 YEAR OF FEE PAYMENT : 16
EP1404925 B1	20180726	LSFE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 17
EP1404925 B1	20180731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SK PAYMENT DATE : 20180620 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20180731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20180620 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20180731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : EE PAYMENT DATE : 20180621 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20180731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20180626 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20180831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20180625 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20180831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LU PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20180801 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IE PAYMENT DATE : 20180726 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20180719 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17

EP1404925 B1	20181031	LSFE	+PGFP	EPO] ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20180726 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20180726 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BG PAYMENT DATE : 20180730 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DK PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20180620 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR PAYMENT DATE : 20180730 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH PAYMENT DATE : 20180801 YEAR OF FEE PAYMENT : 17
EP1404925 B1	20190315	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : CH OWNER : ESCO GROUP LLC, US REF LEGAL EVENT CODE : PFUS OLDPARTY : FORMER OWNER: ESCO CORPORATION, US
EP1404925 B1	20190404	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : ES OWNER : ESCO GROUP LLC REF LEGAL EVENT CODE : PC2A EFFECTIVE DATE : 20190329
EP1404925 B1	20190506	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : SK OWNER : ESCO GROUP LLC, PORTLAND OR, US REF LEGAL EVENT CODE : PC4A REF DOCUMENT NUMBER : E 6978 COUNTRY OF REF DOCUMENT : SK OLDPARTY : FORMER OWNER: ESCO CORPORATION, PORTLAND, OREGON, US EFFECTIVE DATE : 20190423
EP1404925 B1	20190515	LSAS	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : EE REF LEGAL EVENT CODE : GB1A REF DOCUMENT NUMBER : E004077 COUNTRY OF REF DOCUMENT : EE

EP1404925 B1	20220703	PEXP		Calculated Patent Term Expiry	
EP1404926 A2	20040407	LSPB	+	published / reissued	
EP1404926 A2	20040407	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20040107
EP1404926 A2	20151030	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20150727 YEAR OF FEE PAYMENT : 14
EP1404926 A2	20151130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20150727 YEAR OF FEE PAYMENT : 14
EP1404926 A2	20160729	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20160628 YEAR OF FEE PAYMENT : 15
EP1404926 A2	20160831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20160621 YEAR OF FEE PAYMENT : 15
EP1404926 A2	20160930	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1404926 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1404926 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1404926 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1404926 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20160722 YEAR OF FEE PAYMENT : 15
EP1404926 A2	20161130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1404926 A2	20161230	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1404926 A4	20060329	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20060209
EP1404926 A4	20060823	LSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20060719
EP1404926 B1	20070620	LSGT	+	granted / extensions (spc, cpc, pte)	
EP1404926 B1	20070620	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20070620
EP1404926 B1	20070620	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LI NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT

LAPSED DATE : 20070620					
EP1404926 B1	20070620	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GB REF LEGAL EVENT CODE : FG4D
EP1404926 B1	20070713	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : EP
EP1404926 B1	20070725	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : IE REF LEGAL EVENT CODE : FG4D
EP1404926 B1	20071124	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT NOTIFICATIONOFAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20070620
EP1404926 B1	20071216	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : ES REF LEGAL EVENT CODE : FG2A REF DOCUMENT NUMBER : 2287298 COUNTRY OF REF DOCUMENT : ES KIND CODE OF REF DOCUMENT : T3 DESIGNATED STATE(S) :
EP1404926 B1	20071231	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : PL
EP1404926 B1	20080131	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BG NOTIFICATIONOFAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20070920
EP1404926 B1	20080131	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT NOTIFICATIONOFAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20071120
EP1404926 B1	20080229	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SK NOTIFICATIONOFAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20070620
EP1404926 B1	20080430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : MC NOTIFICATIONOFAPSE : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 20070731
EP1404926 B1	20080430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DK NOTIFICATIONOFAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20070620
EP1404926 B1	20080430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR NOTIFICATIONOFAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20070921
EP1404926 B1	20080528	LSGT	+26N	NO OPPOSITION FILED	EFFECTIVE DATE : 20080325
EP1404926 B1	20081031	LSLE	-PG25	LAPSED IN A CONTRACTING STATE	COUNTRY OF REF DOCUMENT : IE NOTIFICATIONOFAPSE : LAPSE

				[ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 20070703
EP1404926 B1	20090130	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : EE NOTIFICATION OF LAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20070620
EP1404926 B1	20090731	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CY NOTIFICATION OF LAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20070620
EP1404926 B1	20090831	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LU NOTIFICATION OF LAPSE : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 20070703
EP1404926 B1	20160726	LSFE	REG	REFERENCE TO A NATIONAL CODE	COUNTRY OF REF DOCUMENT : FR REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 15
EP1404926 B1	20161130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1404926 B1	20161230	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1404926 B1	20170726	LSFE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 16
EP1404926 B1	20170731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20170627 YEAR OF FEE PAYMENT : 16
EP1404926 B1	20170929	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20170622 YEAR OF FEE PAYMENT : 16
EP1404926 B1	20170929	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20170726 YEAR OF FEE PAYMENT : 16
EP1404926 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20170725 YEAR OF FEE PAYMENT : 16
EP1404926 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1404926 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20170801 YEAR OF FEE PAYMENT : 16
EP1404926 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1404926 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20170727

EP1404926 B1	20171031	LSFE	+PGFP	[ANNOUNCED FROM NATIONAL OFFICE TO EPO] ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	YEAR OF FEE PAYMENT : 16 COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20170726 YEAR OF FEE PAYMENT : 16
EP1404926 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1404926 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1404926 B1	20180726	LSFE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 17
EP1404926 B1	20180731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20180626 YEAR OF FEE PAYMENT : 17
EP1404926 B1	20180831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20180625 YEAR OF FEE PAYMENT : 17
EP1404926 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20180719 YEAR OF FEE PAYMENT : 17
EP1404926 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1404926 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20180726 YEAR OF FEE PAYMENT : 17
EP1404926 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20180726 YEAR OF FEE PAYMENT : 17
EP1404926 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20180801 YEAR OF FEE PAYMENT : 17
EP1404926 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1404926 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1404926 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1404926 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1404926 B1	20190404	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : ES OWNER : ESCO GROUP LLC REF LEGAL EVENT CODE : PC2A EFFECTIVE DATE : 20190329
EP1404926 B1	20220703	PEXP		Calculated Patent Term Expiry	

EP1637660 A2	20060322	LSPB	+	published / reissued	
EP1637660 A2	20151030	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20150727 YEAR OF FEE PAYMENT : 14
EP1637660 A2	20151130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20150727 YEAR OF FEE PAYMENT : 14
EP1637660 A2	20160729	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20160628 YEAR OF FEE PAYMENT : 15
EP1637660 A2	20160831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20160623 YEAR OF FEE PAYMENT : 15
EP1637660 A2	20160831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LU PAYMENT DATE : 20160728 YEAR OF FEE PAYMENT : 15
EP1637660 A2	20160831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SK PAYMENT DATE : 20160620 YEAR OF FEE PAYMENT : 15
EP1637660 A2	20160831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20160621 YEAR OF FEE PAYMENT : 15
EP1637660 A2	20160831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : EE PAYMENT DATE : 20160627 YEAR OF FEE PAYMENT : 15
EP1637660 A2	20160930	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1637660 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1637660 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1637660 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1637660 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1637660 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20160722 YEAR OF FEE PAYMENT : 15
EP1637660 A2	20161130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1637660 A2	20161130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1637660 A2	20161230	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15

EP1637660 A3	20060913	LSSES	+17P	NATIONAL OFFICE TO EPO] REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20060803
EP1637660 A3	20061025	LSSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20060925
EP1637660 A3	20061213	LSFE	+AKX	DESIGNATION FEES PAID	COUNTRY OF REF DOCUMENT : AT COUNTRY OF REF DOCUMENT : BE COUNTRY OF REF DOCUMENT : BG COUNTRY OF REF DOCUMENT : CH COUNTRY OF REF DOCUMENT : CY COUNTRY OF REF DOCUMENT : CZ COUNTRY OF REF DOCUMENT : DE COUNTRY OF REF DOCUMENT : DK COUNTRY OF REF DOCUMENT : EE COUNTRY OF REF DOCUMENT : ES COUNTRY OF REF DOCUMENT : FI COUNTRY OF REF DOCUMENT : FR COUNTRY OF REF DOCUMENT : GB COUNTRY OF REF DOCUMENT : GR COUNTRY OF REF DOCUMENT : IE COUNTRY OF REF DOCUMENT : IT COUNTRY OF REF DOCUMENT : LI COUNTRY OF REF DOCUMENT : LU COUNTRY OF REF DOCUMENT : MC COUNTRY OF REF DOCUMENT : NL COUNTRY OF REF DOCUMENT : PT COUNTRY OF REF DOCUMENT : SE COUNTRY OF REF DOCUMENT : SK COUNTRY OF REF DOCUMENT : TR
EP1637660 B1	20091202	LSGT	+	granted / extensions (spc, cpc, pte)	
EP1637660 B1	20091202	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GB REF LEGAL EVENT CODE : FG4D
EP1637660 B1	20091215	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : EP
EP1637660 B1	20100106	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : IE REF LEGAL EVENT CODE : FG4D
EP1637660 B1	20100331	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : NL REF LEGAL EVENT CODE : T3
EP1637660 B1	20100421	LSRE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GR REF LEGAL EVENT CODE : EP REF DOCUMENT NUMBER : 20100400515 COUNTRY OF REF DOCUMENT : GR
EP1637660 B1	20100429	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : ES REF LEGAL EVENT CODE : FG2A REF DOCUMENT NUMBER : 2337798 COUNTRY OF REF DOCUMENT : ES KIND CODE OF REF DOCUMENT : T3 DESIGNATED STATE(S) :
EP1637660 B1	20100531	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CY NOTIFICATION OF LAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20091202
EP1637660 B1	20101110	LSGT	+26N	NO OPPOSITION FILED	EFFECTIVE DATE : 20100903
EP1637660 B1	20110228	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : MC NOTIFICATION OF LAPSE : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 20100731
EP1637660 B1	20160726	LSFE	REG	REFERENCE TO A NATIONAL CODE	COUNTRY OF REF DOCUMENT : FR REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 15
EP1637660 B1	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO	COUNTRY OF REF DOCUMENT : BG PAYMENT DATE : 20160728 YEAR OF FEE PAYMENT : 15

EP1637660 B1	20161031	LSFE	+PGFP	EPO] ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DK PAYMENT DATE : 20160725 YEAR OF FEE PAYMENT : 15
EP1637660 B1	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IE PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1637660 B1	20161130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20160621 YEAR OF FEE PAYMENT : 15
EP1637660 B1	20161130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1637660 B1	20161230	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1637660 B1	20170726	LSFE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 16
EP1637660 B1	20170731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SK PAYMENT DATE : 20170621 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20170731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : EE PAYMENT DATE : 20170628 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20170731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20170627 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20170831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LU PAYMENT DATE : 20170725 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20170831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20170623 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20170929	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20170726 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20170929	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20170622 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20170801 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16

EP1637660 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20170725 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR PAYMENT DATE : 20170728 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20170726 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BG PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20170621 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IE PAYMENT DATE : 20170728 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DK PAYMENT DATE : 20170725 YEAR OF FEE PAYMENT : 16
EP1637660 B1	20180726	LSFE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 17
EP1637660 B1	20180731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : EE PAYMENT DATE : 20180621 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20180731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SK PAYMENT DATE : 20180620 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20180731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20180626 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20180731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20180620 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20180831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LU PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20180831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20180625 YEAR OF FEE PAYMENT : 17

EP1637660 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20180801 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20180719 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20180726 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20180726 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IE PAYMENT DATE : 20180726 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BG PAYMENT DATE : 20180730 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DK PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH PAYMENT DATE : 20180801 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR PAYMENT DATE : 20180730 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20180620 YEAR OF FEE PAYMENT : 17
EP1637660 B1	20190315	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : CH OWNER : ESCO GROUP LLC, US REF LEGAL EVENT CODE : PFUS OLDPARTY : FORMER OWNER: ESCO CORPORATION, US
EP1637660 B1	20190404	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : ES OWNER : ESCO GROUP LLC

EP1637660 B1	20190506	LSAS	REG	REFERENCE TO A NATIONAL CODE	REF LEGAL EVENT CODE : PC2A EFFECTIVE DATE : 20190329
EP1637660 B1	20190515	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : SK OWNER : ESCO GROUP LLC, PORTLAND OR, US REF LEGAL EVENT CODE : PC4A REF DOCUMENT NUMBER : E 6938 COUNTRY OF REF DOCUMENT : SK OLDPARTY : FORMER OWNER: ESCO CORPORATION, PORTLAND, OREGON, US EFFECTIVE DATE : 20190423
EP1637660 B1	20220703	PEXP		Calculated Patent Term Expiry	
EP1637661 A2	20060322	LSPB	+	published / reissued	
EP1637661 A2	20151030	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20150727 YEAR OF FEE PAYMENT : 14
EP1637661 A2	20151130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20150727 YEAR OF FEE PAYMENT : 14
EP1637661 A2	20160729	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20160628 YEAR OF FEE PAYMENT : 15
EP1637661 A2	20160831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SK PAYMENT DATE : 20160620 YEAR OF FEE PAYMENT : 15
EP1637661 A2	20160831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : EE PAYMENT DATE : 20160627 YEAR OF FEE PAYMENT : 15
EP1637661 A2	20160831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20160623 YEAR OF FEE PAYMENT : 15
EP1637661 A2	20160831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20160621 YEAR OF FEE PAYMENT : 15
EP1637661 A2	20160831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LU PAYMENT DATE : 20160728 YEAR OF FEE PAYMENT : 15
EP1637661 A2	20160930	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1637661 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20160722 YEAR OF FEE PAYMENT : 15
EP1637661 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1637661 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1637661 A2	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20160727

EP1637661 A2	20161031	LSFE	+PGFP	[ANNOUNCED FROM NATIONAL OFFICE TO EPO] ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	YEAR OF FEE PAYMENT : 15 COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
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EP1637661 A2	20161130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1637661 A2	20161230	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1637661 A3	20060913	LSSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20060803
EP1637661 A3	20061011	LSSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20060911
EP1637661 A3	20061213	LSFE	+AKX	DESIGNATION FEES PAID	COUNTRY OF REF DOCUMENT : AT COUNTRY OF REF DOCUMENT : BE COUNTRY OF REF DOCUMENT : BG COUNTRY OF REF DOCUMENT : CH COUNTRY OF REF DOCUMENT : CY COUNTRY OF REF DOCUMENT : CZ COUNTRY OF REF DOCUMENT : DE COUNTRY OF REF DOCUMENT : DK COUNTRY OF REF DOCUMENT : EE COUNTRY OF REF DOCUMENT : ES COUNTRY OF REF DOCUMENT : FI COUNTRY OF REF DOCUMENT : FR COUNTRY OF REF DOCUMENT : GB COUNTRY OF REF DOCUMENT : GR COUNTRY OF REF DOCUMENT : IE COUNTRY OF REF DOCUMENT : IT COUNTRY OF REF DOCUMENT : LI COUNTRY OF REF DOCUMENT : LU COUNTRY OF REF DOCUMENT : MC COUNTRY OF REF DOCUMENT : NL COUNTRY OF REF DOCUMENT : PT COUNTRY OF REF DOCUMENT : SE COUNTRY OF REF DOCUMENT : SK COUNTRY OF REF DOCUMENT : TR
EP1637661 B1	20100324	LSGT	+	granted / extensions (spc, cpc, pte)	
EP1637661 B1	20100324	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GB REF LEGAL EVENT CODE : FG4D
EP1637661 B1	20100331	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : EP
EP1637661 B1	20100428	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : IE REF LEGAL EVENT CODE : FG4D
EP1637661 B1	20100623	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : NL REF LEGAL EVENT CODE : T3
EP1637661 B1	20100629	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : ES REF LEGAL EVENT CODE : FG2A REF DOCUMENT NUMBER : 2341868 COUNTRY OF REF DOCUMENT : ES KIND CODE OF REF DOCUMENT : T3 DESIGNATED STATE(S) :
EP1637661 B1	20100721	LSRE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GR REF LEGAL EVENT CODE : EP REF DOCUMENT NUMBER : 20100401294 COUNTRY OF REF DOCUMENT : GR
EP1637661 B1	20100730	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : MC PAYMENT DATE : 20100618 YEAR OF FEE PAYMENT : 9

EP1637661 B1	20110302	LSGT	+26N	NO OPPOSITION FILED	EFFECTIVE DATE : 20101228
EP1637661 B1	20120229	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : MC NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 20110731
EP1637661 B1	20120831	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CY NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME- LIMIT LAPSED DATE : 20100324
EP1637661 B1	20160726	LSFE	REG	REFERENCE TO A NATIONAL CODE	COUNTRY OF REF DOCUMENT : FR REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 15
EP1637661 B1	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BG PAYMENT DATE : 20160728 YEAR OF FEE PAYMENT : 15
EP1637661 B1	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DK PAYMENT DATE : 20160725 YEAR OF FEE PAYMENT : 15
EP1637661 B1	20161031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IE PAYMENT DATE : 20160726 YEAR OF FEE PAYMENT : 15
EP1637661 B1	20161130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1637661 B1	20161130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20160621 YEAR OF FEE PAYMENT : 15
EP1637661 B1	20161230	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20160727 YEAR OF FEE PAYMENT : 15
EP1637661 B1	20170726	LSFE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 16
EP1637661 B1	20170731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20170627 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20170731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : EE PAYMENT DATE : 20170628 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20170731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SK PAYMENT DATE : 20170621 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20170831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20170623 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20170831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LU PAYMENT DATE : 20170725 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20170929	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM	COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20170622 YEAR OF FEE PAYMENT : 16

EP1637661 B1	20170929	LSFE	+PGFP	NATIONAL OFFICE TO EPO] ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20170726 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20170725 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20170801 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR PAYMENT DATE : 20170728 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20171031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20170726 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IE PAYMENT DATE : 20170728 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DK PAYMENT DATE : 20170725 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BG PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20170727 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20171130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20170621 YEAR OF FEE PAYMENT : 16
EP1637661 B1	20180726	LSFE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 17
EP1637661 B1	20180731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM	COUNTRY OF REF DOCUMENT : EE PAYMENT DATE : 20180621 YEAR OF FEE PAYMENT : 17

EP1637661 B1	20180731	LSFE	+PGFP	NATIONAL OFFICE TO EPO] ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PT PAYMENT DATE : 20180620 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20180731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CZ PAYMENT DATE : 20180626 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20180731	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SK PAYMENT DATE : 20180620 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20180831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LU PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20180831	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : TR PAYMENT DATE : 20180625 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20180726 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES PAYMENT DATE : 20180801 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IE PAYMENT DATE : 20180726 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20180726 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20181031	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IT PAYMENT DATE : 20180719 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BG PAYMENT DATE : 20180730 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BE PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : SE PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM	COUNTRY OF REF DOCUMENT : DK PAYMENT DATE : 20180727 YEAR OF FEE PAYMENT : 17

EP1637661 B1	20181130	LSFE	+PGFP	NATIONAL OFFICE TO EPO]	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT PAYMENT DATE : 20180620 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GR PAYMENT DATE : 20180730 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20181130	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : CH PAYMENT DATE : 20180801 YEAR OF FEE PAYMENT : 17
EP1637661 B1	20190315	LSAS	REG	REFERENCE TO A NATIONAL CODE	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : CH OWNER : ESCO GROUP LLC, US REF LEGAL EVENT CODE : PFUS OLDPARTY : FORMER OWNER: ESCO CORPORATION, US
EP1637661 B1	20190404	LSAS	REG	REFERENCE TO A NATIONAL CODE	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : ES OWNER : ESCO GROUP LLC REF LEGAL EVENT CODE : PC2A EFFECTIVE DATE : 20190329
EP1637661 B1	20190506	LSAS	REG	REFERENCE TO A NATIONAL CODE	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : SK OWNER : ESCO GROUP LLC, PORTLAND OR, US REF LEGAL EVENT CODE : PC4A REF DOCUMENT NUMBER : E 7322 COUNTRY OF REF DOCUMENT : SK OLDPARTY : FORMER OWNER: ESCO CORPORATION, PORTLAND, OREGON, US EFFECTIVE DATE : 20190423
EP1637661 B1	20190515	LSAS	REG	REFERENCE TO A NATIONAL CODE	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : EE REF LEGAL EVENT CODE : GB1A REF DOCUMENT NUMBER : E004596 COUNTRY OF REF DOCUMENT : EE
EP1637661 B1	20220703	PEXP		Calculated Patent Term Expiry	Calculated Patent Term Expiry	
ES2287298 T3	20071216	LSGT	+	granted / extensions (spc, cpc, pte)	granted / extensions (spc, cpc, pte)	
ES2287298 T3	20220703	PEXP		Calculated Patent Term Expiry	Calculated Patent Term Expiry	
ES2336897 T3	20100419	LSGT	+	granted / extensions (spc, cpc, pte)	granted / extensions (spc, cpc, pte)	
ES2336897 T3	20220703	PEXP		Calculated Patent Term Expiry	Calculated Patent Term Expiry	
ES2337798 T3	20100429	LSGT	+	granted / extensions (spc, cpc, pte)	granted / extensions (spc, cpc, pte)	
ES2337798 T3	20220703	PEXP		Calculated Patent Term Expiry	Calculated Patent Term Expiry	
ES2341868 T3	20100629	LSGT	+	granted / extensions (spc, cpc, pte)	granted / extensions (spc, cpc, pte)	
ES2341868 T3	20220703	PEXP		Calculated Patent Term Expiry	Calculated Patent Term Expiry	
HK1068659 A1	20050429	LSPB	+	published / reissued	published / reissued	
HK1068659 A1	20070119	LSPB	+	published / reissued	published / reissued	
HK1068659 A1	20250204	PEXP		Calculated Patent Term Expiry	Calculated Patent Term Expiry	
HK1068659 A1	20250204	PEXP		Calculated Patent Term Expiry	Calculated Patent Term Expiry	
HK1068659 A3	20050429	LSPB	+	published / reissued	published / reissued	
HK1068659 B	20070119	LSGT	+	granted / extensions (spc, cpc, pte)	granted / extensions (spc, cpc, pte)	
HK1068659 B	20250204	PEXP		Calculated Patent Term Expiry	Calculated Patent Term Expiry	
HK1088371 A1	20061103	LSPB	+	published / reissued	published / reissued	

HK1088371 A1	20101217	LSPB	+	published / reissued	
HK1088371 A1	20260807	PEXP		Calculated Patent Term Expiry	
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HK1088371 A3	20061103	LSPB	+	published / reissued	
HK1088371 B	20101217	LSGT	+	granted / extensions (spc, cpc, pte)	
HK1088371 B	20260807	PEXP		Calculated Patent Term Expiry	
IN00008MN2004 A	20070810	LSPB	+	published / reissued	
IN01170MN2003 A	20050429	LSPB	+	published / reissued	
IN02584MN2010 A	20111202	LSPB	+	published / reissued	
IN220735 B	20080815	LSGT	+	granted / extensions (spc, cpc, pte)	
IN220735 B	20231224	PEXP		Calculated Patent Term Expiry	
IN246114 B	20110218	LSGT	+	granted / extensions (spc, cpc, pte)	
IN246114 B	20240105	PEXP		Calculated Patent Term Expiry	
JP2004522027 T2	20040722	LSPB	+	published / reissued	
JP2004522027 T2	20050704	LSES	+A621	WRITTEN REQUEST FOR APPLICATION EXAMINATION	TEXT : JAPANESE INTERMEDIATE CODE: A621 EFFECTIVE DATE : 20050701
JP2004522027 T2	20080702	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20080701
JP2004522027 T2	20080920	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20080919
JP2004522027 T2	20090325	LSRV	-A02	DECISION OF REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A02 EFFECTIVE DATE : 20090324
JP2004522027 T2	20090512	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20090511
JP2004522027 T2	20090529	LSAL	A911	TRANSFER OF RECONSIDERATION BY EXAMINER BEFORE APPEAL (ZENCHI)	TEXT : JAPANESE INTERMEDIATE CODE: A911 EFFECTIVE DATE : 20090528
JP2004522027 T2	20090706	LSAL	-A912	REMOVAL OF RECONSIDERATION BY EXAMINER BEFORE APPEAL (ZENCHI)	TEXT : JAPANESE INTERMEDIATE CODE: A912 EFFECTIVE DATE : 20090703
JP2004522027 T2	20110211	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20110210
JP2004522027 T2	20110421	LSFE	+A61	FIRST PAYMENT OF ANNUAL FEES (DURING GRANT PROCEDURE)	TEXT : JAPANESE INTERMEDIATE CODE: A61 EFFECTIVE DATE : 20110414
JP2004522027 T2	20110422	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150
JP2004522027 T2	20110425	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 3
JP2004522028 T2	20040722	LSPB	+	published / reissued	
JP2004522028 T2	20050705	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20050704
JP2004522028 T2	20050705	LSES	+A621	WRITTEN REQUEST FOR APPLICATION EXAMINATION	TEXT : JAPANESE INTERMEDIATE CODE: A621 EFFECTIVE DATE : 20050704

JP2004522028 T2	20051220	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20051219
JP2004522028 T2	20070727	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20070726
JP2004522028 T2	20080625	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20080624
JP2004522028 T2	20080911	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20080910
JP2004522028 T2	20090303	LSGT	+TRDD	DECISION OF GRANT OR REJECTION WRITTEN	
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JP2004522028 T2	20090417	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 3
JP2004522028 T2	20090417	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150
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JP2008303711 A2	20110613	LSGT	+TRDD	DECISION OF GRANT OR REJECTION WRITTEN	
JP2008303711 A2	20110622	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20110621
JP2008303711 A2	20110623	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01
JP2008303711 A2	20110728	LSFE	+A61	FIRST PAYMENT OF ANNUAL FEES (DURING GRANT PROCEDURE)	TEXT : JAPANESE INTERMEDIATE CODE: A61 EFFECTIVE DATE : 20110721
JP2008303711 A2	20110729	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 3
JP2008303711 A2	20110729	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150
JP2009007931 A2	20090115	LSPB	+	published / reissued	
JP2009007931 A2	20110613	LSGT	+TRDD	DECISION OF GRANT OR REJECTION WRITTEN	
JP2009007931 A2	20110622	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20110621
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				(UTILITY MODEL)	
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JP2009019498 A2	20110615	LSSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20110614
JP2009019498 A2	20111001	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20110930
JP2009019498 A2	20111117	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20111116
JP2009019498 A2	20120606	LSSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20120605
JP2009019498 A2	20130116	LSSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20130115
JP2009019498 A2	20130420	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20130419
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JP2009019498 A2	20130703	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20130702
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JP2009019498 A2	20130809	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150
JP2011122426 A2	20110623	LSPB	+	published / reissued	
JP2011122426 A2	20130304	LSGT	+TRDD	DECISION OF GRANT OR REJECTION WRITTEN	
JP2011122426 A2	20130313	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20130312
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JP2011122426 A2	20130419	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150
JP2011122426 A2	20130422	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 3
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JP4295085 B2	20090414	LSFE	R100	特許料納付書 Patent fee payment form	

JP4295085 B2	20120412	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 3
JP4295085 B2	20120417	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 4
JP4295085 B2	20130411	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 4
JP4295085 B2	20130416	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 5
JP4295085 B2	20140410	LSFE	R20	特許料納付書 Patent fee payment form	
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JP4295085 B2	20150414	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
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JP4295085 B2	20190514	LSAS	S111	REQUEST FOR CHANGE OF OWNERSHIP OR PART OF OWNERSHIP	TEXT : JAPANESE INTERMEDIATE CODE: R313111
JP4295085 B2	20190522	LSAS	R350	WRITTEN NOTIFICATION OF REGISTRATION OF TRANSFER	TEXT : JAPANESE INTERMEDIATE CODE: R350
JP4295085 B2	20220703	PEXP		Calculated Patent Term Expiry	
JP4727920 B2	20110720	LSGT	+	granted / extensions (spc, cpc, pte)	
JP4727920 B2	20110317	LSGT	+A01	特許査定書 Decision of patent grant	
JP4727920 B2	20110419	LSFE	R100	特許料納付書 Patent fee payment form	
JP4727920 B2	20140410	LSFE	R20	特許料納付書 Patent fee payment form	
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JP4727920 B2	20190416	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP4727920 B2	20190514	LSAS	S111	REQUEST FOR CHANGE OF OWNERSHIP OR PART OF OWNERSHIP	TEXT : JAPANESE INTERMEDIATE CODE: R313111
JP4727920 B2	20190522	LSAS	R350	WRITTEN NOTIFICATION OF REGISTRATION OF TRANSFER	TEXT : JAPANESE INTERMEDIATE CODE: R350
JP4727920 B2	20220703	PEXP		Calculated Patent Term Expiry	
JP4791516 B2	20111012	LSGT	+	granted / extensions (spc, cpc, pte)	
JP4791516 B2	20110726	LSFE	R100	特許料納付書 Patent fee payment form	
JP4791516 B2	20140710	LSFE	R20	特許料納付書 Patent fee payment form	
JP4791516 B2	20140715	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
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JP4791516 B2	20160719	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP4791516 B2	20170713	LSFE	R20	特許料納付書 Patent fee payment form	
JP4791516 B2	20170718	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP4791516 B2	20180712	LSFE	R20	特許料納付書 Patent fee payment form	
JP4791516 B2	20180717	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP4791516 B2	20190514	LSAS	S111	REQUEST FOR CHANGE OF OWNERSHIP OR PART OF OWNERSHIP	TEXT : JAPANESE INTERMEDIATE CODE: R313111
JP4791516 B2	20190522	LSAS	R350	WRITTEN NOTIFICATION OF REGISTRATION OF TRANSFER	TEXT : JAPANESE INTERMEDIATE CODE: R350
JP4791516 B2	20280910	PEXP		Calculated Patent Term Expiry	
JP4791517 B2	20111012	LSGT	+	granted / extensions (spc, cpc, pte)	
JP4791517 B2	20080920	LSSES	+A621	WRITTEN REQUEST FOR APPLICATION EXAMINATION	TEXT : JAPANESE INTERMEDIATE CODE: A621 EFFECTIVE DATE : 20080919
JP4791517 B2	20110726	LSFE	R100	特許料納付書 Patent fee payment form	
JP4791517 B2	20140710	LSFE	R20	特許料納付書 Patent fee payment form	

JP4791517 B2	20140715	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP4791517 B2	20150709	LSFE	R20	特許料納付書 Patent fee payment form	
JP4791517 B2	20150714	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP4791517 B2	20160714	LSFE	R20	特許料納付書 Patent fee payment form	
JP4791517 B2	20160719	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
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JP4791517 B2	20190514	LSAS	S111	REQUEST FOR CHANGE OF OWNERSHIP OR PART OF OWNERSHIP	TEXT : JAPANESE INTERMEDIATE CODE: R313111
JP4791517 B2	20190522	LSAS	R350	WRITTEN NOTIFICATION OF REGISTRATION OF TRANSFER	TEXT : JAPANESE INTERMEDIATE CODE: R350
JP4791517 B2	20280919	PEXP		Calculated Patent Term Expiry	
JP5248638 B2	20130731	LSGT	+	granted / extensions (spc, cpc, pte)	
JP5248638 B2	20110312	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20110311
JP5248638 B2	20110312	LSSES	+A621	WRITTEN REQUEST FOR APPLICATION EXAMINATION	TEXT : JAPANESE INTERMEDIATE CODE: A621 EFFECTIVE DATE : 20110311
JP5248638 B2	20130314	LSGT	+A01	特許査定書 Decision of patent grant	
JP5248638 B2	20130416	LSFE	R100	特許料納付書 Patent fee payment form	
JP5248638 B2	20160407	LSFE	R20	特許料納付書 Patent fee payment form	
JP5248638 B2	20160412	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP5248638 B2	20170413	LSFE	R20	特許料納付書 Patent fee payment form	
JP5248638 B2	20170418	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
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JP5248638 B2	20180417	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
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JP5248638 B2	20190522	LSAS	R350	WRITTEN NOTIFICATION OF REGISTRATION OF TRANSFER	TEXT : JAPANESE INTERMEDIATE CODE: R350
JP5248638 B2	20310210	PEXP		Calculated Patent	

JP5335344 B2	20131106	LSGT	+	Term Expiry granted / extensions (spc, cpc, pte)	
JP5335344 B2	20130704	LSGT	+A01	特許査定書 Decision of patent grant	
JP5335344 B2	20130806	LSFE	R100	特許料納付書 Patent fee payment form	
JP5335344 B2	20160728	LSFE	R20	特許料納付書 Patent fee payment form	
JP5335344 B2	20160802	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
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JP5335344 B2	20180731	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP5335344 B2	20190514	LSAS	S111	REQUEST FOR CHANGE OF OWNERSHIP OR PART OF OWNERSHIP	TEXT : JAPANESE INTERMEDIATE CODE: R313111
JP5335344 B2	20190522	LSAS	R350	WRITTEN NOTIFICATION OF REGISTRATION OF TRANSFER	TEXT : JAPANESE INTERMEDIATE CODE: R350
JP5335344 B2	20280919	PEXP		Calculated Patent Term Expiry	
KR100992643 B1	20101105	LSGT	+	granted / extensions (spc, cpc, pte)	
KR100992643 B1	20131022	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20131023 YEAR OF FEE PAYMENT : 4
KR100992643 B1	20141022	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20141023 YEAR OF FEE PAYMENT : 5
KR100992643 B1	20151022	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20151023 YEAR OF FEE PAYMENT : 6
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KR100992643 B1	20171019	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20171020 YEAR OF FEE PAYMENT : 8
KR100992643 B1	20181022	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20181023 YEAR OF FEE PAYMENT : 9
KR100992643 B1	20220703	PEXP		Calculated Patent Term Expiry	
KR101017165 B1	20110225	LSGT	+	granted / extensions (spc, cpc, pte)	
KR101017165 B1	20100302	LSSES	A201	REQUEST FOR EXAMINATION	
KR101017165 B1	20140206	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20140207 YEAR OF FEE PAYMENT : 4
KR101017165 B1	20150204	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20150205 YEAR OF FEE PAYMENT : 5
KR101017165 B1	20160203	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20160204 YEAR OF FEE PAYMENT : 6
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KR101017165 B1	20180205	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20180206 YEAR OF FEE PAYMENT : 8
KR101017165 B1	20190131	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20190201 YEAR OF FEE PAYMENT : 9

KR101017165 B1	20220703	PEXP		Calculated Patent Term Expiry	
KR101024445 B1	20110323	LSGT	+	granted / extensions (spc, cpc, pte)	
KR101024445 B1	20140307	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20140310 YEAR OF FEE PAYMENT : 4
KR101024445 B1	20150305	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20150306 YEAR OF FEE PAYMENT : 5
KR101024445 B1	20160307	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20160308 YEAR OF FEE PAYMENT : 6
KR101024445 B1	20170313	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20170314 YEAR OF FEE PAYMENT : 7
KR101024445 B1	20180306	LSFE	FPAY	ANNUAL FEE PAYMENT	PAYMENT DATE : 20180307 YEAR OF FEE PAYMENT : 8
KR101024445 B1	20220703	PEXP		Calculated Patent Term Expiry	
KR20040030790 A	20040409	LSPB	+	published / reissued	
KR20040030790 A	20070703	LSES	A201	REQUEST FOR EXAMINATION	
KR20040030790 A	20070703	LSRE	AMND	AMENDMENT	
KR20040030790 A	20090220	LSES	-E902	NOTIFICATION OF REASON FOR REFUSAL	
KR20040030790 A	20090820	LSRE	AMND	AMENDMENT	
KR20040030790 A	20091130	LSRV	-E601	DECISION TO REFUSE APPLICATION	
KR20040030790 A	20100302	LSRE	AMND	AMENDMENT	
KR20040030790 A	20100407	LSES	-E902	NOTIFICATION OF REASON FOR REFUSAL	
KR20040030790 A	20101026	LSGT	+B701	DECISION TO GRANT	
KR20040030790 A	20101101	LSGT	+GRNT	WRITTEN DECISION TO GRANT	
KR20040030793 A	20040409	LSPB	+	published / reissued	
KR20040030793 A	20070612	LSES	A201	REQUEST FOR EXAMINATION	
KR20040030793 A	20090220	LSES	-E902	NOTIFICATION OF REASON FOR REFUSAL	
KR20040030793 A	20091119	LSES	-E902	NOTIFICATION OF REASON FOR REFUSAL	
KR20040030793 A	20100830	LSES	-E902	NOTIFICATION OF REASON FOR REFUSAL	
KR20040030793 A	20110302	LSGT	+E701	DECISION TO GRANT OR REGISTRATION OF PATENT RIGHT	
KR20040030793 A	20110316	LSGT	+GRNT	WRITTEN DECISION TO GRANT	
KR20100039439 A	20100415	LSPB	+	published / reissued	
KR20100039439 A	20100614	LSES	-E902	NOTIFICATION OF REASON FOR REFUSAL	
KR20100039439 A	20110208	LSGT	+E701	DECISION TO GRANT OR REGISTRATION OF PATENT RIGHT	
KR20100039439 A	20110216	LSGT	+GRNT	WRITTEN DECISION TO GRANT	
MX343761 B	20161122	LSGT	+	granted / extensions (spc, cpc, pte)	
MX343761 B	20220703	PEXP		Calculated Patent Term Expiry	
MXPA03012025 A1	20050701	LSPB	+	published / reissued	

MXPA03012025 A1	20071123	LSGT	+FG	GRANT OR REGISTRATION	
MXPA04000163 A1	20050606	LSPB	+	published / reissued	
MXPA04000163 A1	20100226	LSGT	+FG	GRANT OR REGISTRATION	
MY133535 A	20071130	LSGT	+	granted / extensions (spc, cpc, pte)	
MY133535 A	20220705	PEXP		Calculated Patent Term Expiry	
MY135424 A	20080430	LSGT	+	granted / extensions (spc, cpc, pte)	
MY135424 A	20220705	PEXP		Calculated Patent Term Expiry	
MY143623 A	20110615	LSGT	+	granted / extensions (spc, cpc, pte)	
MY143623 A	20220705	PEXP		Calculated Patent Term Expiry	
MY144084 A	20110815	LSGT	+	granted / extensions (spc, cpc, pte)	
MY144084 A	20220705	PEXP		Calculated Patent Term Expiry	
NO20040022 A	20040304	LSPB	+	published / reissued	
NO20040025 A	20040126	LSPB	+	published / reissued	
NO336692 B1	20151019	LSGT	+	granted / extensions (spc, cpc, pte)	
NO336692 B1	20190204	LSAS	CHAD	CHANGE OF THE OWNER'S NAME OR ADDRESS (PAR. 44 PATENT LAW, PAR. PATENTFORSKRIFTEN)	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, US
NO336692 B1	20240105	PEXP		Calculated Patent Term Expiry	
NO336703 B1	20151019	LSGT	+	granted / extensions (spc, cpc, pte)	
NO336703 B1	20190204	LSAS	CHAD	CHANGE OF THE OWNER'S NAME OR ADDRESS (PAR. 44 PATENT LAW, PAR. PATENTFORSKRIFTEN)	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, US
NO336703 B1	20240105	PEXP		Calculated Patent Term Expiry	
NZ530359 A	20060929	LSPB	+	published / reissued	
NZ530359 A	20070126	LSGT	+PSEA	PATENT SEALED	
NZ530359 A	20070223	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	
NZ530359 A	20090731	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	
NZ530359 A	20150626	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2016 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20150618
NZ530359 A	20160624	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2017 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20160618
NZ530359 A	20170630	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2018 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20170620
NZ530359 A	20180629	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2019 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20180619
NZ530359 A	20180928	LSAS	ASS	CHANGE OF OWNERSHIP	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, US EFFECTIVE DATE : 20180925
NZ530392 A	20060331	LSPB	+	published / reissued	

NZ530392 A	20060728	LSGT	+PSEA	PATENT SEALED	
NZ530392 A	20060831	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	
NZ530392 A	20090731	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	
NZ530392 A	20150626	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2016 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20150618
NZ530392 A	20160624	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2017 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20160618
NZ530392 A	20170630	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2018 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20170620
NZ530392 A	20180629	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2019 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20180619
NZ530392 A	20180928	LSAS	ASS	CHANGE OF OWNERSHIP	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, US EFFECTIVE DATE : 20180925
NZ545677 A	20070727	LSPB	+	published / reissued	
NZ545677 A	20071130	LSGT	+PSEA	PATENT SEALED	
NZ545677 A	20071221	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	
NZ545677 A	20090731	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	
NZ545677 A	20150626	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2016 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20150618
NZ545677 A	20160624	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2017 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20160618
NZ545677 A	20170630	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2018 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20170620
NZ545677 A	20180629	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2019 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20180619
NZ545677 A	20180928	LSAS	ASS	CHANGE OF OWNERSHIP	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, US EFFECTIVE DATE : 20180925
NZ555735 A	20080328	LSPB	+	published / reissued	
NZ555735 A	20080731	LSGT	+PSEA	PATENT SEALED	
NZ555735 A	20090731	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	
NZ555735 A	20150626	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2016 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20150618
NZ555735 A	20160624	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2017 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20160618
NZ555735 A	20170630	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2018 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20170620

NZ555735 A	20180629	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 03 JUL 2019 BY COMPUTER PACKAGES INC EFFECTIVE DATE : 20180619
NZ555735 A	20180928	LSAS	ASS	CHANGE OF OWNERSHIP	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, US EFFECTIVE DATE : 20180925
PE02642003 A1	20030424	LSPB	+	published / reissued	
PE02642003 A1	20040331	LSGT	+FG	GRANT, REGISTRATION	
PE02702003 A1	20030429	LSPB	+	published / reissued	
PE02702003 A1	20040531	LSGT	+FG	GRANT, REGISTRATION	
PT1404925 T	20100304	LSGT	+	granted / extensions (spc, cpc, pte)	
PT1404925 T	20220703	PEXP		Calculated Patent Term Expiry	
PT1637660 T	20100308	LSGT	+	granted / extensions (spc, cpc, pte)	
PT1637660 T	20220703	PEXP		Calculated Patent Term Expiry	
PT1637661 T	20100615	LSGT	+	granted / extensions (spc, cpc, pte)	
PT1637661 T	20220703	PEXP		Calculated Patent Term Expiry	
TH102100 A	20100625	LSPB	+	published / reissued	
TH30571 B	20110902	LSGT	+	granted / extensions (spc, cpc, pte)	
TH30571 B	20220705	PEXP		Calculated Patent Term Expiry	
TH30572 B	20110902	LSGT	+	granted / extensions (spc, cpc, pte)	
TH30572 B	20220705	PEXP		Calculated Patent Term Expiry	
TH52536 B	20161125	LSGT	+	granted / extensions (spc, cpc, pte)	
TH52536 B	20220705	PEXP		Calculated Patent Term Expiry	
TH55024 A	20030204	LSPB	+	published / reissued	
TH55617 A	20030307	LSPB	+	published / reissued	
US2003005606 AA	20030109	LSPB	+	published / reissued	
US2003005606 AA	20040429	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2003024139 AA	20030206	LSPB	+	published / reissued	
US2003024139 AA	20060118	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2004093771 AA	20040520	LSPB	+	published / reissued	
US2004093771 AA	20060816	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2006117613 AA	20060608	LSPB	+	published / reissued	
US2006117613 AA	20080416	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2006265916 AA	20061130	LSPB	+	published / reissued	
US2006265916 AA	20100602	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US6735890 BB	20040518	LSGT	+	granted / extensions (spc, cpc, pte)	
US6735890 BB	20011018	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST;

					ASSIGNORS:CARPENTER, CHRISTOPHER M.; FLECK, ROBERT S.; BRISCOE, TERRY L.; AND OTHERS; REEL/FRAME:012268/0538; SIGNING DATES FROM 20010727 TO 20010806
US6735890 BB	20040429	LSGT	PAT1	Patented Case	
US6735890 BB	20050531	LSRE	CC	CERTIFICATE OF CORRECTION	
US6735890 BB	20071119	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6735890 BB	20101129	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT, WA OLDPARTY : NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS; ASSIGNOR:ESCO CORPORATION; REEL/FRAME:025406/0714 EFFECTIVE DATE : 20101118
US6735890 BB	20111118	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6735890 BB	20151118	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 12
US6735890 BB	20180716	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF AMERICA, N.A.; REEL/FRAME:046551/0375 EFFECTIVE DATE : 20180711
US6735890 BB	20180817	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, OREGON OLDPARTY : MERGER AND CHANGE OF NAME; ASSIGNORS:ESCO CORPORATION; ESCO GROUP LLC; REEL/FRAME:046848/0493 EFFECTIVE DATE : 20180711
US6735890 BB	20211115	PEXP		Calculated Patent Term Expiry (PTA 132 days)	
US6993861 BB	20060207	LSGT	+	granted / extensions (spc, cpc, pte)	
US6993861 BB	20020926	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:JONES, LARREN F; CARPENTER, CHRISTOPHER M.; GRAF, DAVID M.; REEL/FRAME:013334/0836 EFFECTIVE DATE : 20020702
US6993861 BB	20060118	LSGT	PAT1	Patented Case	
US6993861 BB	20081118	LSRE	CC	CERTIFICATE OF CORRECTION	
US6993861 BB	20090807	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6993861 BB	20101129	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT, WA OLDPARTY : NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS; ASSIGNOR:ESCO CORPORATION; REEL/FRAME:025406/0714 EFFECTIVE DATE : 20101118
US6993861 BB	20130807	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6993861 BB	20170807	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 12
US6993861 BB	20180716	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF

					AMERICA, N.A.; REEL/FRAME:046551/0375 EFFECTIVE DATE : 20180711
US6993861 BB	20180817	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, OREGON OLDPARTY : MERGER AND CHANGE OF NAME; ASSIGNORS:ESCO CORPORATION; ESCO GROUP LLC; REEL/FRAME:046848/0493 EFFECTIVE DATE : 20180711
US6993861 BB	20220702	PEXP		Calculated Patent Term Expiry	
US7100315 BB	20060905	LSGT	+	granted / extensions (spc, cpc, pte)	
US7100315 BB	20060816	LSGT	PAT1	Patented Case	
US7100315 BB	20081118	LSRE	CC	CERTIFICATE OF CORRECTION	
US7100315 BB	20100305	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7100315 BB	20101129	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT, WA OLDPARTY : NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS; ASSIGNOR:ESCO CORPORATION; REEL/FRAME:025406/0714 EFFECTIVE DATE : 20101118
US7100315 BB	20101201	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:CARPENTER, CHRISTOPHER M; FLECK, ROBERT S; BRISCOE, TERRY L; AND OTHERS; SIGNING DATES FROM 20010727 TO 20010806; REEL/FRAME:025415/0395
US7100315 BB	20140305	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7100315 BB	20180305	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 12
US7100315 BB	20180716	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF AMERICA, N.A.; REEL/FRAME:046551/0375 EFFECTIVE DATE : 20180711
US7100315 BB	20180817	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, OREGON OLDPARTY : MERGER AND CHANGE OF NAME; ASSIGNORS:ESCO CORPORATION; ESCO GROUP LLC; REEL/FRAME:046848/0493 EFFECTIVE DATE : 20180711
US7100315 BB	20240109	PEXP		Calculated Patent Term Expiry (PTA 52 days and a terminal disclaimer has been filed)	
US7367144 BB	20080506	LSGT	+	granted / extensions (spc, cpc, pte)	
US7367144 BB	20080416	LSGT	PAT1	Patented Case	
US7367144 BB	20091110	LSRE	CC	CERTIFICATE OF CORRECTION	
US7367144 BB	20101129	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT, WA OLDPARTY : NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS; ASSIGNOR:ESCO CORPORATION; REEL/FRAME:025406/0714 EFFECTIVE DATE : 20101118

US7367144 BB	20101201	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:JONES, LARREN F; CARPENTER, CHRISTOPHER M; GRAF, DAVID M; REEL/FRAME:025415/0328 EFFECTIVE DATE : 20020702
US7367144 BB	20111107	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7367144 BB	20151106	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7367144 BB	20180716	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF AMERICA, N.A.; REEL/FRAME:046551/0375 EFFECTIVE DATE : 20180711
US7367144 BB	20180817	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, OREGON OLDPARTY : MERGER AND CHANGE OF NAME; ASSIGNORS:ESCO CORPORATION; ESCO GROUP LLC; REEL/FRAME:046848/0493 EFFECTIVE DATE : 20180711
US7367144 BB	20260126	PEXP		Calculated Patent Term Expiry (PTA 22 days)	
US7739814 BB	20100622	LSGT	+	granted / extensions (spc, cpc, pte)	
US7739814 BB	20100602	LSGT	PAT1	Patented Case	
US7739814 BB	20101129	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BANK OF AMERICA, N.A., AS ADMINISTRATIVE AGENT, WA OLDPARTY : NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS; ASSIGNOR:ESCO CORPORATION; REEL/FRAME:025406/0714 EFFECTIVE DATE : 20101118
US7739814 BB	20101201	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:CARPENTER, CHRISTOPHER M; FLECK, ROBERT S; BRISCOE, TERRY L; AND OTHERS; SIGNING DATES FROM 20010727 TO 20010806; REEL/FRAME:025415/0395
US7739814 BB	20131223	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7739814 BB	20171222	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7739814 BB	20180716	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO CORPORATION, OREGON OLDPARTY : RELEASE BY SECURED PARTY; ASSIGNOR:BANK OF AMERICA, N.A.; REEL/FRAME:046551/0375 EFFECTIVE DATE : 20180711
US7739814 BB	20180817	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ESCO GROUP LLC, OREGON OLDPARTY : MERGER AND CHANGE OF NAME; ASSIGNORS:ESCO CORPORATION; ESCO GROUP LLC; REEL/FRAME:046848/0493 EFFECTIVE DATE : 20180711
US7739814 BB	20280505	PEXP		Calculated Patent Term Expiry (PTA 642 days)	
WO03004782 A2	20030116	LSPB	+	published / reissued	

WO03004782 A3	20031222	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2451306 COUNTRY OF REF DOCUMENT : CA
WO03004782 A3	20031224	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 530392 COUNTRY OF REF DOCUMENT : NZ
WO03004782 A3	20031231	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2002320130 COUNTRY OF REF DOCUMENT : AU
WO03004782 A3	20040105	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 200400020 COUNTRY OF REF DOCUMENT : ZA
WO03004782 A3	20040105	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2004/00020 COUNTRY OF REF DOCUMENT : ZA
WO03004782 A3	20040105	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 8/MUMNP/2004 COUNTRY OF REF DOCUMENT : IN
WO03004782 A3	20040106	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 1020047000151 COUNTRY OF REF DOCUMENT : KR
WO03004782 A3	20040106	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2003510529 COUNTRY OF REF DOCUMENT : JP
WO03004782 A3	20040107	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : PA/A/2004/000163 COUNTRY OF REF DOCUMENT : MX
WO03004782 A3	20040107	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2002749630 COUNTRY OF REF DOCUMENT : EP
WO03004782 A3	20040206	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 20028154606 COUNTRY OF REF DOCUMENT : CN
WO03004782 A3	20040407	LSPB	+WWP	WIPO INFORMATION: PUBLISHED IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 2002749630 COUNTRY OF REF DOCUMENT : EP
WO03004782 A3	20040519	LSWD	REG	REFERENCE TO NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : 8642
WO03004782 A3	20060331	LSPB	+WWP	WIPO INFORMATION: PUBLISHED IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 530392 COUNTRY OF REF DOCUMENT : NZ
WO03004782 A3	20070927	LSGT	+WWG	WIPO INFORMATION: GRANT IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 2002320130 COUNTRY OF REF DOCUMENT : AU
WO03004782 A3	20100302	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 1020107004746 COUNTRY OF REF DOCUMENT : KR
WO03004783 A2	20030116	LSPB	+	published / reissued	
WO03004783 A3	20031216	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2002320131 COUNTRY OF REF DOCUMENT : AU
WO03004783 A3	20031219	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : PA/A/2003/012025 COUNTRY OF REF DOCUMENT : MX
WO03004783 A3	20031222	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2451309 COUNTRY OF REF DOCUMENT : CA
WO03004783 A3	20031223	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 530359 COUNTRY OF REF DOCUMENT : NZ
WO03004783 A3	20031224	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 1170/MUMNP/2003 COUNTRY OF REF DOCUMENT : IN

WO03004783 A3	20031225	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2003510530 COUNTRY OF REF DOCUMENT : JP
WO03004783 A3	20040105	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2004/00018 COUNTRY OF REF DOCUMENT : ZA
WO03004783 A3	20040105	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 200400018 COUNTRY OF REF DOCUMENT : ZA
WO03004783 A3	20040106	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 1020047000180 COUNTRY OF REF DOCUMENT : KR
WO03004783 A3	20040106	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 20028136578 COUNTRY OF REF DOCUMENT : CN
WO03004783 A3	20040107	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2002749631 COUNTRY OF REF DOCUMENT : EP
WO03004783 A3	20040407	LSPB	+WWP	WIPO INFORMATION: PUBLISHED IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 2002749631 COUNTRY OF REF DOCUMENT : EP
WO03004783 A3	20040519	LSWD	REG	REFERENCE TO NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : 8642
WO03004783 A3	20070620	LSGT	+WWG	WIPO INFORMATION: GRANT IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 2002749631 COUNTRY OF REF DOCUMENT : EP
WO03004783 A3	20070920	LSGT	+WWG	WIPO INFORMATION: GRANT IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 2002320131 COUNTRY OF REF DOCUMENT : AU
ZA200400018 A	20040817	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA200400018 A	20240104	PEXP		Calculated Patent Term Expiry	
ZA200400020 A	20050405	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA200400020 A	20050629	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA200400020 A	20240104	PEXP		Calculated Patent Term Expiry	
ZA200400020 A	20240104	PEXP		Calculated Patent Term Expiry	

Title: UNIVERSAL MINE GALLERY DRIVING **EXCAVATING** MACHINE - HAS DETACHABLE BOLT COUPLING REPLACEABLE TOOL TO CARRIER FRAME ON TRACKED CHASSIS

Abstract: The chassis is supported on endless tracks and has a hydraulic power system. There is a tool connected to this power system and there are control systems esp. in the area of a driver's seat. The universal **working** machine is used esp. for driving forward galleries in underground mines. The chassis (1) has a carrier element (6) - pref. frame-mounted on it. The tool (7) has a coupling element (71) - pref. a coupling plate - fastened to the carrier element by a detachable fastening element - pref. bolt. The tool can have a system of arms forming a parallel guide unit, and a loading shovel mechanism (8) mounted on this. The tool can also be a winch, or carriage-mounted drilling machine.

Classifications:

International (IPC 8-9): E02F3/96 E21B7/02

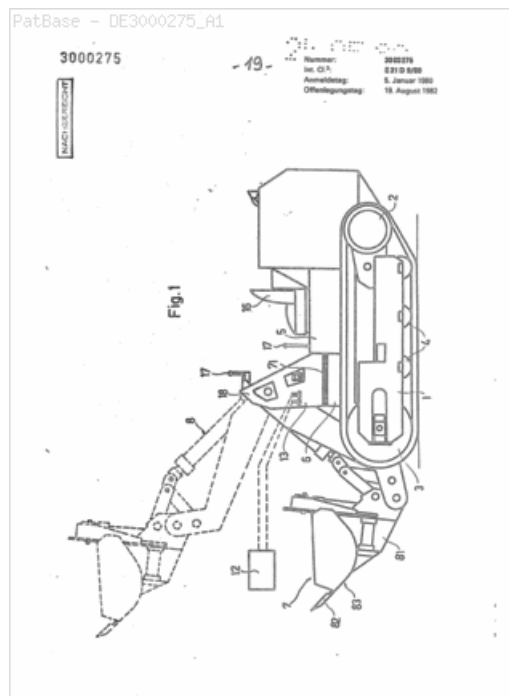
E21D11/40 (Advanced/Invention);

E02F3/04 E21B7/02 E21D11/40 (Core/Invention)

International (IPC 1-7): E21B7/02 E21C11/02 E21D9/00

CPC: E02F3/96 E21B7/025 E21B7/028 E21D11/40

European: E02F3/96 E21B7/02 E21B7/02J E21B7/02S2 E21D11/40



Family:

Publication number	Publication date	Application number	Application date
DE3000275 A1	19820819	DE19803000275	19800105

Priority:

DE19803000275 19800105

Probable Assignee: KOZEPE DUNANTULI SZENBANYAK

Assignee(s): (std): KOZEPE DUNANTULI SZENBANYAK

Inventor(s): (std): SEBOEK LASZLO ; HIDASI ISTVAN DIPL ING

Legal status (INPADOC)

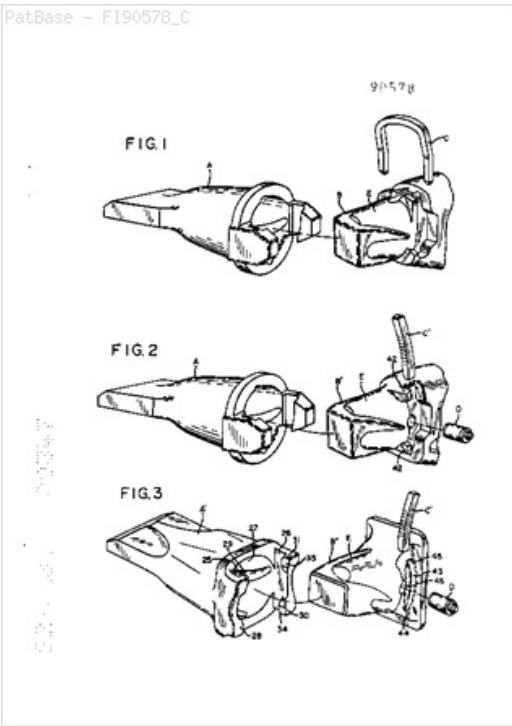
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Patent	Date recorded	Event group	Code	Event	Details
DE3000275 A1	19820819	LSPB	+	published / reissued	
DE3000275 A1	19830203	LSWD	-8130	WITHDRAWAL	

Title: Kaivinhampaan vaihtoterae Insatsskaer foer graevtand

Abstract: Excavator tooth, which has a tip A' provided with a cavity arranged on a nose piece B'' of an adapter and fastened thereto by a vertical split pin C'' on one side of the nose piece, which has a recess for the split pin and a sprung holder, which is situated transversely along the length of the tip, and the tip has at least one side wall that extends rearward over the cavity 27, and which has fixed, vertically separated appendages 28, 29; 30, 31, the forward-facing surfaces of which bear against the split pin and the rearward facing surface supported by the recess in the nose piece B'' bears against the split pin between surfaces that carry the appendages.

Classifications:
International (IPC 8-9): E02F9/28 (Advanced/Invention);
E02F9/28 (Core/Invention);
E02F (Subclass/Invention)
International (IPC 1-7): E02F9/28



Family:

Publication number	Publication date	Application number	Application date
FI893476 A	19910119	FI19890003476	19890718
FI893476 A0	19890718	FI19890003476	19890718
FI90578 B	19931115	FI19890003476	19890718
FI90578 C	19940225	FI19890003476	19890718

Priority:

FI19890003476 19890718

Probable Assignee: ESCO CORP
Assignee(s): (std): ESCO CORP
Inventor(s): (std): EMRICH ROBERT K

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
FI893476 A	19910119	LSPB	+	published / reissued	
FI893476 A	19931018	LSPB	BB	PUBLICATION OF EXAMINED APPLICATION	
FI90578 B	19931115	LSPB	+	published / reissued	
FI90578 C	19940225	LSGT	+	granted / extensions (spc, cpc, pte)	
FI90578 C	20040831	LSGT	+FG	PATENT GRANTED	PARTYTYPE : OWNER OWNER : ESCO CORPORATION
FI90578 C	20090718	PEXP		Calculated Patent Term Expiry	