

1) Family number: 62231623 (US2017328498A)

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Title: FITTING FOR CONNECTING TO A TUBULAR ELEMENT, TUBING CONNECTION AND A METHOD FOR CONNECTING A FITTING TO A TUBULAR ELEMENT

Abstract: A fitting (3, 3') for connecting to a tubular element (5, 5') having a first end section (9, 9') comprising at least one first connection element (21, 21'), wherein the diameter of at least a part of the first connection element (21, 21') can be reduced in a radial direction in order to produce a connection, wherein the first connection element (21, 21') comprises at least one first hook element (21, 21') and/or at least one first crimp (237, 437) configured to be connected in force-fit and/or form-fit manner to at least one second crimp (7, 7') and/or at least one second hook element (235) formed on the outer surface of the tubular element, when the diameter of at least a part of the first connection element (21, 21') is reduced, as well as a tubing connection and a method for connecting a fitting to a tubular element.

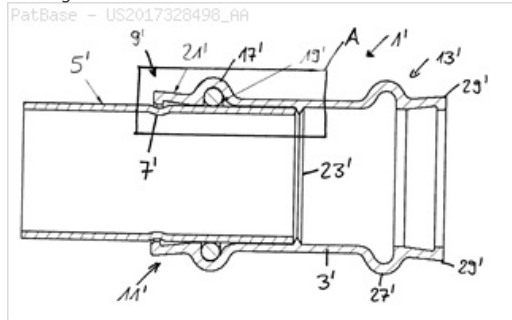
Classifications:

International (IPC 8-9): B21D39/04 B21D51/16 F16L F16L13/14 F16L19/00 F16L25/01 F16L33/207 F16L47/00 (Advanced/Invention); F16L (Subclass/Invention)

International (IPC 1-7): F16L13/14

CPC: F16L2201/10 F16L13/147 F16L13/142 F16L13/146 F16L25/01 F16L33/2073

US: 1/1 285/382.5



Family:

Publication number	Publication date	Application number	Application date
AU2015338696 AA	20170608	AU20150338696	20151029
BR112017008622 A2	20171226	BR20171108622	20151029
CA2965907 AA	20170426	CA20152965907	20151029
CL2017001028 A1	20171103	CL20170001028	20170426
CN107110406 A	20170829	CN201580071578	20151029
CO20170005037 A2	20170810	CO20170005037	20170522
DE202015009132 U1	20161229	DE201520009132U	20151029
DE602014015632 D1	20171116	DE201460015632T	20141031
DK3015751 T3	20180108	DK20140191353T	20141031
EP3015751 A1	20160504	EP20140191353	20141031
EP3015751 B1	20171011	EP20140191353	20141031
EP3015751 B8	20171213	EP20140191353	20141031
EP3290769 A1	20180307	EP20170194244	20141031
ES2654091 T3	20180212	ES20140191353T	20141031
HK1223145 A1	20170721	HK20160111331	20160927
HK1223145 B	20190426	HK20160111331	20160927
HK1252108 A1	20190517	HK20180111428	20180905
ID201803186 A	20180329	ID2017P0003182	20151029
IN201747017699 A	20170707	IN201747017699	20170519
JP2017534823 T2	20171124	JP20170542497T	20151029
KR20170082543 A	20170714	KR20177013716	20151029
MA40307 A1	20171229	MA20150040307	20151029
MA40307 B1	20180831	MA20150040307	20151029
MX2017005471 A1	20180125	MX20170005471	20151029
PH2017500777 A	20171009	PH20170500777	20170426
PL3015751 T3	20180629	PL20140191353T	20141031
PT3015751 T	20180109	PT20140191353T	20141031
RU2017117594 A	20181130	RU20170117594	20151029
RU2017117594 A3	20190523	RU20170117594	20151029
SG11201703461S A1	20170530	SG20171103461	20151029
TR201720934 T4	20180122	TR20170020934T	20141031
US2017328498 AA	20171116	US20150522272	20151029
WO16067231 A1	20160506	WO2015IB58341	20151029

Priority:

EP20140191353 20141031 EP20170194244 20141031 ES20140191353T 20141031
WO2015IB58341 20151029 RU20170117594 20151029

Probable Assignee: CONEX IPR LTD

Assignee(s): (std): KING IND LTD ; APEX GOLD INT LTD ; CONEX IPR LTD

Assignee(s): INT PATENT CLASSIFICATION ; KING INDUSTRIAL LTD ; SALEHI BAKHTIARI MANOUCHEHR ; KONEKS APIAR LTD

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Inventor(s): BAKHTIARI MANO M ; SALEKHI BAKHTIARI MANUCHEHR

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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

2) Family number: 54260617 (US2013167357A)

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Title: REFRIGERATION LINE SET FITTING AND METHOD OF USING THE SAME TO JOIN REFRIGERATION LINES TO EACH OTHER

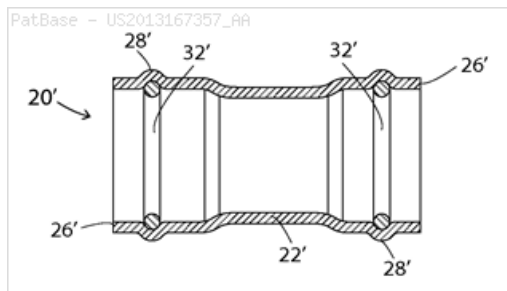
Abstract: A crimp fitting comprises a metal tube wall that forms both a cylindrical tube portion and an adjacent annular O-ring channel portion. The tube wall has a first wall thickness along the cylindrical tube portion and a second wall thickness along at least part of the O-ring channel portion. The second wall thickness is less than the first wall thickness. The cylindrical tube portion and O-ring channel are configured and adapted to encircle a cylindrical end portion of a tube when such end portion of the tube is inserted into the fitting.

Classifications:

International (IPC 8-9): B21D37/16 B21D39/04 F16L15/10
F16L13/14 F16L17/02 F16L21/03 F25B41/00 (Advanced/Invention)

CPC: B21D39/046 F16L13/142 Y10T29/49 Y10T29/49906
Y10T29/49927 F16L17/02 F16L21/03

US: 1/1 148/684 285/345 285/349 29/469.5 29/516 29/592



Family:

Publication number	Publication date	Application number	Application date
AU2012362443 AA	20130704	AU20120362443	20121227
AU2012362443 BB	20161103	AU20120362443	20121227
BR112014016012 A2	20170613	BR20141116012	20121227
BR112014016012 A8	20170704	BR20141116012	20121227
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BR112014016012 A8	20170704	BR20141116012	20121227
CA2800360 AA	20121228	CA20122800360	20121227
CA2800360 C	20191022	CA20122800360	20121227
CN104136143 A	20141105	CN201280070669	20121227
CN109967635 A	20190705	CN201910007302	20121227
CN110017409 A	20190716	CN201910007557	20121227
DE602012052776 D1	20181122	DE201260052776T	20121227
EP2629902 A1	20130828	EP20120809565	20121227
EP2629902 A4	20150603	EP20120809565	20121227
EP2629902 B1	20181121	EP20120809565	20121227
EP3255328 A1	20171213	EP20170177194	20121227
EP3255328 B1	20181024	EP20170177194	20121227
EP3428497 A1	20190116	EP20180187490	20121227
ES2707002 T3	20190402	ES20170177194T	20121227
ES2712807 T3	20190514	ES20120809565T	20121227
IN05362DN2014 A	20150327	IN2014DN05362	20140630
JP2015513641 T2	20150514	JP20140550443T	20121227
JP6051468 B2	20161227	JP20140550443T	20121227
PL2629902 T3	20190531	PL20120809565T	20121227
PL3255328 T3	20190531	PL20170177194T	20121227
US2013167357 AA	20130704	US20120714002	20121213
US2015362098 AA	20151217	US20150836410	20150826
US9145992 BB	20150929	US20120714002	20121213
US9638361 BB	20170502	US20150836410	20150826
WO13101878 A1	20130704	WO2012US71723	20121227

Priority:

US20110580993P 20111228 US20120609039P 20120309 US20120714002 20121213
CN201280070669 20121227 EP20120809565 20121227 EP20170177194 20121227
WO2012US71723 20121227 US20150836410 20150826

Probable Assignee: CERRO FLOW PRODUCTS LLC

Assignee(s): (std): CERRO FLOW PRODUCTS LLC ; RLS LLC

Assignee(s): RLS LLC SHELBYVILLE ; WILSON MICHAEL J ; DUGGAN MICHAEL JOSEPH ; NIXON FORREST ; ARMENT
BRADLEY

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ARMENT ; MICHAEL JOSEPH DUGGAN ; FORREST NIXON ; MICHAEL J WILSON ; DUGGAN MICHAEL ;
WILSON MICHAEL

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Agent(s): SPRUSON AND FERGUSON; MCFADDEN FINCHAM INC; OSLER HOSKIN AND HARCOURT LLP; HACKNEY
NIGEL JOHN; LEACH JAMES; LEHMANN MARIA ISABEL; MORITA HIROSHI; THOMPSON COBURN LLP;
CLYDE L; SMITH CLYDE L

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

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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

3) Family number: 43733081 (US2010025982A)

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Title: COUPLING, JOINT AND METHOD FOR FIXEDLY AND SEALINGLY SECURING COMPONENTS TO ONE ANOTHER

Abstract: A method for forming a joint. The method includes: providing a fitting having a body and a pair of axially spaced apart seals, the body having an insertion end; providing a structure; engaging the fitting and the structure to one another such that the seals sealingly engage the body and the structure; and after the fitting and the structure have been engaged to one another, installing an adhesive to a zone disposed between the body, the structure and the seals to retain the body to the structure. A fitting and an assembly are also provided.

Classifications:

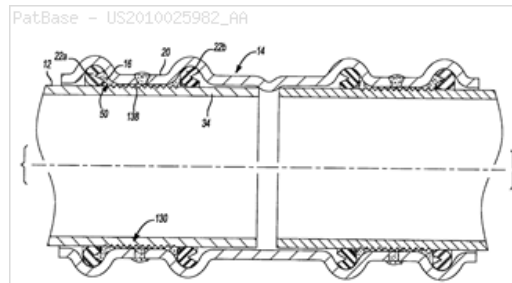
International (IPC 8-9): B23P19/00 E02D29/00 F16B11/00 F16B7/00 F16B7/04 F16B7/20 F16L F16L13/02 F16L13/10 F16L13/11 F16L13/14 F16L17/02 F16L17/025 F16L17/06 F16L21/00 F16L21/02 F16L21/025 F16L21/03 F16L21/06 F16L21/08 F16L25/12 F16L37/02 F16L37/084 F16L37/091 F16L37/10 F16L37/14 F16L47/00 F16L47/02 F16L51/00 (Advanced/Invention); B23P19/00 E02D29/00 F16B11/00 F16B7/00 F16B7/04 F16L13/00 F16L13/10 F16L17/00 F16L21/00 F16L21/02 F16L21/08 F16L47/00 F16L47/02 F16L51/00 (Core/Invention); F16L13/10 (Core/Non-invention)

International (IPC 1-7): F16L13/10 F16L21/02

CPC: F16L17/02 F16L37/02 Y10T29/53 F16L13/11 F16L21/025 E02D29/16 E02D2600/20 F16L13/103 F16L17/06 F16L13/116 F16L21/022 F16L21/08 F16L13/142 F16L37/0845 F16L37/091

European: F16L13/11 F16L13/11C F16L21/02J F16L21/08

US: 1/1 285/295.1 285/296.1 285/31 285/346 285/374 285/382 285/382.2 29/700



Family:

Publication number	Publication date	Application number	Application date
AU2008101269 AD	20090903	AU20080101269	20081205
AU2009203089 AA	20100218	AU20090203089	20090730
CA2671012 AA	20100131	CA20092671012	20090707
CN101660638 A	20100303	CN200910165070	20090730
DE602014016154 D1	20171207	DE201460016154T	20140102
EP2159464 A2	20100303	EP20090166963	20090731
EP2677225 A2	20131225	EP20130172873	20130619
EP2677225 A3	20140723	EP20130172873	20130619
EP2752608 A1	20140709	EP20140150073	20140102
EP2752608 B1	20171025	EP20140150073	20140102
EP2881641 A1	20150610	EP20150151017	20130619
EP3121500 A1	20170125	EP20160173347	20160607
HK1141070 A1	20101029	HK20100107309	20100730
JP2010043737 A2	20100225	JP20090169727	20090721
KR101495659 B1	20150225	KR20130047243	20130429
KR20100014183 A	20100210	KR20090070703	20090731
KR20140000143 A	20140102	KR20130047243	20130429
KR20140088502 A	20140710	KR20140000246	20140102
MX2009007441 A1	20100301	MX20090007441	20090710
NZ578340 A	20110225	NZ20090578340	20090710
SG158815 A1	20100226	SG20090047671	20090714
TH105179 A	20101127	TH20091003420	20090729
TW201013079 A	20100401	TW20090125570	20090729
US2010025982 AA	20100204	US20080183761	20080731
US2010025988 AA	20100204	US20090357176	20090121
US2013119655 AA	20130516	US20130732715	20130102
US2013154260 AA	20130620	US20120531014	20120622
US2015285420 AA	20151008	US20150744170	20150619
US8925978 BB	20150106	US20130732715	20130102
US9851028 BB	20171226	US20150744170	20150619

Priority:

US20080183761 20080731	AU20080101269 20081205	US20090357176 20090121
AU20090203089 20090730	US20110500907P 20110624	US20120531014 20120622
US20130732715 20130102	EP20130172873 20130619	EP20140150073 20140102
US20150744170 20150619		

Probable Assignee: MUELLER IND INC

Assignee(s): (std): ELMER MARCUS R ; ELMER MARCUS ROBERT ; JAMISON TOMMY L ; MCKENZIE ROBERT ; MUELLER IND INC ; YOUNG KEVIN NEIL ; THOMAS ADAM L ; STOUT CHARLES A

Assignee(s): MUELLER IND INC MEMPHIS ; MUELLER INDUSTRIES INC ; MUELLER INDUSTRIES INC US

Inventor(s): (std): YOUNG KEVIN NEIL ; ELMER MARCUS ROBERT ; MCKENZIE ROBERT ; THOMAS ADAM L ; STOUT CHARLES A ; ELMER MARCUS R ; MARCUS ROBERT ELMER ; KEVIN NEIL YOUNG ; ROBERT MCKENZIE ; MUELLER CHRISTOPHER A ; TOMMY L JAMISON ; JAMISON TOMMY L ; JAMISON TOMMY

Inventor(s): JAMISON TOMMY L HERNANDO ; YOUNG KEVIN NEIL ARLINGTON ; MCKENZIE ROBERT MUNFORD ; ELMER MARCUS ROBERT CORDOVA

Agent(s): WRAYS; KRAUS AND WEISERT PATENTANWALTE PARTGMBB; STUTTARD GARRY PHILIP; CHINA PATENT AGENT HK LTD; HARNES DICKEY AND PIERCE PLC

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

Title: Pipe coupling with relieving grooves

Abstract: The connection comprises a plastically deformable connection sleeve (1). The internal diameter of this is adapted to the outer diameter of the pipe (3) in question. A relief groove (8) is located in the outer surface of the connection, next to each sealing bulb (5), on the side of the sleeve where pressure deformation is applied. The outer surface of the support sleeve (2) also has grooves (9), and one of these contains a sealing ring.

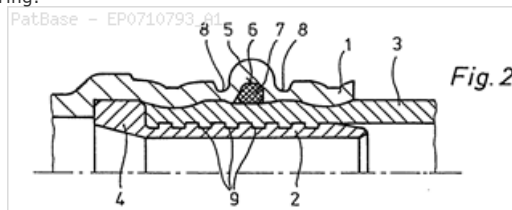
Classifications:

International (IPC 8-9): F16L13/14 (Advanced/Invention); F16L13/14 (Core/Invention)

International (IPC 1-7): F16L13/16 F16L33/207

CPC: F16L13/142 F16L33/207

European: F16L13/14 F16L13/14B3 F16L33/207



Family:

Publication number	Publication date	Application number	Application date
DE9417646 U1	19950209	DE19940017646U	19941104
EP0710793 A1	19960508	EP19950116209	19951013

Priority:

DE19940017646U 19941104

Probable Assignee: SEPPELFRICKE ARMATUREN GMBH AND

Assignee(s): (std): SEPPELFRICKE ARMATUREN GMBH AMP AMP ; SEPPELFRICKE ARMATUREN GMBH AND ; SEPPELFRICKE ARMATUREN GMBH AND CO

Assignee(s): SEPPELFRICKE ARMATUREN GMBH AND CO 45881 GELSENKIR ; SEPPELFRICKE ARMATUREN GMBH AND CO 45881 GELSENKIRCHEN DE

Inventor(s): (std): SELTENHEIM VOLKER DR ; LAND ULRICH ; KOLBE EDUARD

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

Title: NON-BOLT JOINT STRUCTURE AND METHOD FOR PRODUCING NON-BOLT JOINT STRUCTURE

Abstract: A non-bolt joint structure comprising; a packing ring sealing between a receiving opening section and an insertion opening section; an engaging means provided with an inner circumference of the receiving opening section preventing a polyethylene pipe from disengaging from the receiving opening section by engaging with an outer circumferential surface of the polyethylene pipe; and a tubular metallic inner core fitting an inner circumference of the insertion opening section of the polyethylene pipe, wherein the inner core is plastically deformed to include a first bulge portion that its cross-sectional shape bulges toward an outward radial direction, a second bulge portion is formed so that the insertion opening section of the polyethylene pipe bulges toward the outward radial direction along the first bulge portion of the inner core, and the polyethylene pipe is prevented from disengaging by the engaging means engaging with the outer circumferential surface of the second bulge portion.

Classifications:

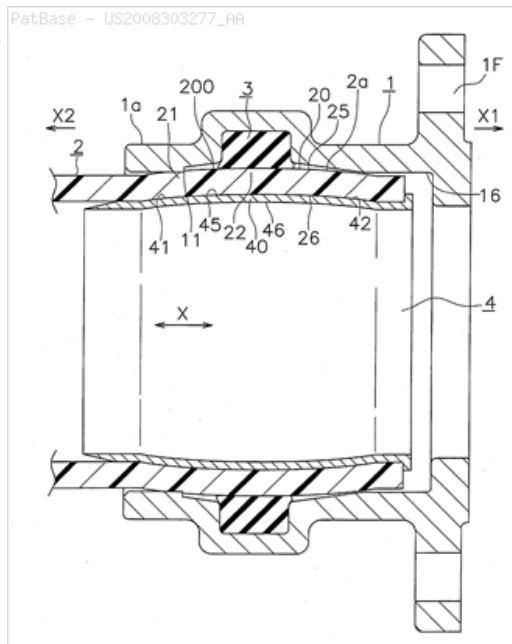
International (IPC 8-9): B21D39/00 F16K27/00 F16L11/00 F16L13/14 F16L17/02 F16L19/06 F16L21/02 F16L21/08 F16L33/00 F16L47/00 (Advanced/Invention);

B21D39/00 F16L11/00 F16L13/14 F16L17/00 F16L19/00 F16L21/02 F16L21/08 F16L33/00 (Core/Invention)

CPC: Y10T29/49936 Y10T29/4994 F16L13/147 F16L13/007 F16L13/013 F16L47/24

European: F16L13/007 F16L13/013 F16L13/14F F16L47/24

US: 285/113 285/239 285/256 285/382 285/382.5 285/382.500P 29/521 29/521S 29/523



Family:

Publication number	Publication date	Application number	Application date
CA2685502 AA	20091027	CA20082685502	20080314
CA2685502 C	20130402	CA20082685502	20080314
CN101688630 A	20100331	CN200880017733	20080314
CN101688630 B	20121121	CN200880017733	20080314
DE112008001502 T5	20100512	DE200811001502T	20080314
FR2917151 A1	20081212	FR20080053554	20080530

FR2917151 B1	20150213	FR20080053554	20080530
GB200810309 A0	20080709	GB20080010309	20080605
GB2449991 A1	20081210	GB20080010309	20080605
GB2449991 B2	20091125	GB20080010309	20080605
JP2008303901 A2	20081218	JP20070149081	20070605
JP4992098 B2	20120808	JP20070149081	20070605
NL2001649 A1	20081208	NL20082001649	20080605
NL2001649 C2	20090415	NL20082001649	20080605
TW200902889 A	20090116	TW20080110898	20080327
TWI394907 B	20130501	TW20080110898	20080327
US2008303277 AA	20081211	US20080131261	20080602
US8118331 BB	20120221	US20080131261	20080602
WO08149590 A1	20081211	WO2008JP54767	20080314

Priority:

JP20070149081 20070605 WO2008JP54767 20080314

Probable Assignee: SUIKEN CO LTD

Assignee(s): (std): SUIKEN CO LTD ; SUIKEN KK ; YAMASHITA TAMOTSU ; YOKOYAMA TAIHEI ; MAEZAWA KOGYO

Assignee(s): SUIKEN CO ; MAEZAWA IND INC

Inventor(s): (std): YAMASHITA TAMOTSU ; YOKOYAMA TAIHEI ; TAIHEI YOKOYAMA ; TAMOTSU YAMASHITA

Agent(s): KIRBY EADES GALE BAKER; CABINET BEAU DE LOMENIE; MARK D SARALINO GENERAL RENNER OTTO BOISSELLE AND SKLAR LLP; RENNER OTTO BOISSELLE AND SKLAR LLP; YAMAMURA YOSHINOBU

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 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 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 UZ VC VN ZA ZM ZW

6) Family number: 31923237 (EP1533555A1)

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Title: PRESSFITTING FOR ELECTRICALLY CONDUCTIVE PIPES

Abstract: The connector has an orifice (4) for insertion of an electrically conductive tube (3) and having a stopper (13). An electrically insulating ring (14), a sealing joint (18) and a protection ring are housed in the orifice to prevent direct contact between the tube and connector before crimping. The protection ring has a protection edge whose diameter is reduced till a value equal to an outer diameter of the tube. An independent claim is also included for a method of verification of a crimping of an electrically conductive tube.

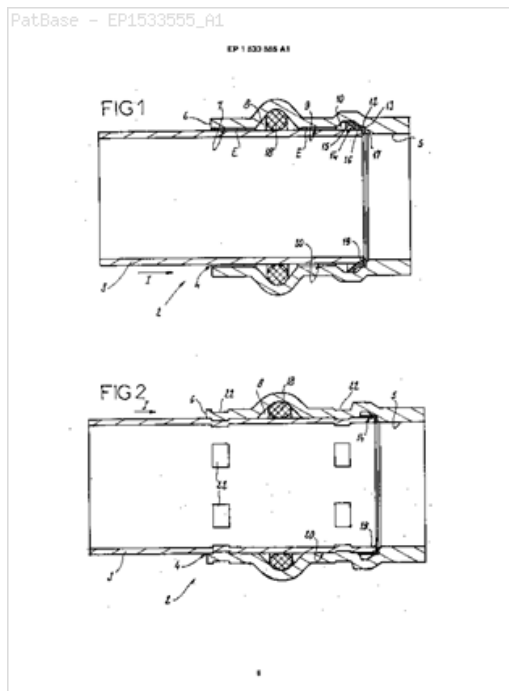
Classifications:

International (ipc 8-9): B21C51/00 B21D39/04 F16L13/14 F16L21/08 F16L25/01 G01M3/40 (Advanced/Invention); B21C51/00 B21D39/04 F16L13/14 F16L21/08 F16L25/00 G01M3/00 (Core/Invention)

International (ipc 1-7): B21C51/00 B21D39/04 F16L13/14 F16L21/08 F16L25/01 G01M3/40

CPC: F16L13/142 F16L2201/10

European: F16L13/14 F16L13/14B3 R16L201/10



Family:

Publication number	Publication date	Application number	Application date
EP1533555 A1	20050525	EP20040356178	20041109
FR2862367 A1	20050520	FR20030013485	20031118
FR2862367 B1	20060120	FR20030013485	20031118

Priority:

FR20030013485 20031118

Probable Assignee: COMAP

Assignee(s): (std): COMAP

Inventor(s): (std): TUFFE STEPHANE

Inventor(s): STEPHANE TUFFE

Agent(s): CABINET GERMAIN ET MAUREAU

Designated states: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LU MC NL PL PT RO SE SI SK TR

Title: FITTING FOR THICK-WALLED PIPES AND METHOD FOR ITS PRODUCTION

Abstract: A fitting for thick-walled pipes, having a contact region and a pressing region, the pressing region being arranged on the side of the contact region facing towards the pipe insertion opening, and the wall thickness in the pressing region being at least in sections less than the wall thickness in the contact region. The invention also relates to a method for producing a fitting for thick-walled pipes, in which a thick-walled pipe is radially widened in a fitting region arranged at one pipe end so that the internal diameter of the fitting region corresponds substantially to the external diameter of the pipe and the wall thickness in the fitting region corresponds substantially to the wall thickness of the rest of the pipe.

Classifications:

International (IPC 8-9): B21C37/16 B21C37/28 B21D41/02
B23P11/00 F16L13/14 F16L19/10 F16L21/00 F16L37/091 F16L47/06
F16L47/08 (Advanced/Invention);

B21C37/16 (Advanced/Non-invention);

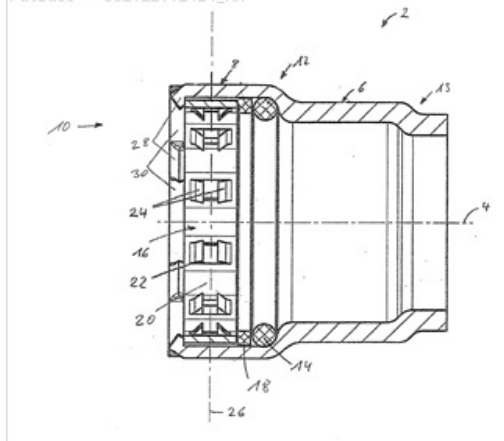
F16L13/14 F16L47/00 (Core/Invention)

CPC: F16L13/147 F16L13/141 B21C37/16 B21C37/28 B21D41/02
F16L13/142 Y10T29/49908 F16L37/091

European: F16L13/14B3

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285/382.4 285/399 285/399S 285/3P 29/505 29/505S

PatBase - US2012001414_AH



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Publication number	Publication date	Application number	Application date
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Priority:

DE200910007303 20090203 EP20100700437 20100119 WO2010EP50588 20100119
US20110147714 20110920 US20130899187 20130521

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Assignee(s): (std): ARNING ULRICH ; KOSCHIG BERND ; VIEGA GMBH AND CO KG ; VIEGA TECH GMBH AND CO KG

Assignee(s): VIEGA TECHNOLOGY GMBH AND CO KG ; VIEGA TECHNOLOGY GMBH CO KG

Inventor(s): (std): KOSCHIG BERND ; ARNING ULRICH ; BERND KOSCHIG ; ULRICH ARNING

Agent(s): KIRBY EADES GALE BAKER; COHAUSZ AND FLORACK; VALLEJO JUAN PEDRO; ERDEM KAYA; WEBB LAW FIRM; COHAUSZ AND FLORACK 24

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

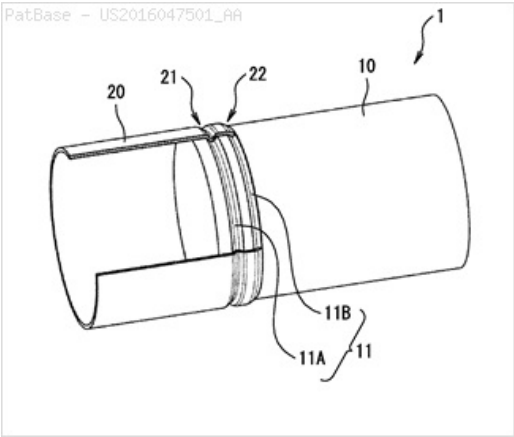
Title: JOINING STRUCTURE AND JOINING METHOD THEREOF

Abstract: Provided are: a joining structure capable of suitably obtaining joining strength between components which compose the joining structure; and a joining method thereof. For this purpose, a joining structure (1) includes: a shaft member (10); and a thin-walled cylindrical member (20) that fits an inner circumferential surface thereof to an outer circumferential surface of the shaft member (10). The thin-walled cylindrical member (20) has: a first crimped portion (21), in which an axially intermediate portion is reduced in diameter in a radial direction, and is crimped to the shaft member (10); and a second crimped portion (22), in which an end surface (20a) is folded radially inward, and is crimped to the shaft member (10).

Classifications:

International (IPC 8-9): B21D39/04 B23P11/00 F16B17/00
F16D1/072 F16D1/08 F16L13/14 F16L33/207 (Advanced/Invention)

CPC: B21D39/04 F16L33/2076 F16L13/146 B23P11/005 F16D1/0858
F16D2300/18 F16L13/141 F16D1/072 F16B17/004
US: 285/382



Family:

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Priority:

JP20130081470 20130409 EP20130881542 20131219 WO2013JP07482 20131219

Probable Assignee: NSK LTD

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Inventor(s): (std): HIROSHI KAWAHARA ; SUMIO SUGITA ; KAWAHARA HIROSHI ; SUGITA SUMIO

Agent(s): KLINGSEISEN RINGS AND PARTNER PATENTANWALTE; KLINGSEISEN FRANZ; HIROSE HAJIME; MORI TETSUYA; MORI TETSUYA 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