

Diego Gonzalez

Search history

Search 1: STAC=(nozzle and (chimney or smokestack) and pipe and heat and exchanger) (Results 200)

Search 2: STAC=(nozzle and (chimney or smokestack) and pipe and heat and exchanger and hopper) (Results 25)

Title: SYSTEM AND METHOD FOR PRODUCING HIGH-PURITY VANADIUM TETRAOXIDE POWDER

Abstract: The present invention provides a system and method for producing high-purity vanadium tetraoxide powder. Industrial grade vanadium pentoxide is converted to vanadium oxytrichloride by low temperature fluidizing chlorination, wherein chlorinating gas is preheated via **heat** exchange between fluidizing gas and chlorination flue gas, and an appropriate amount of air is added to enable a part of carbon powder to combust so as to achieve a balanced **heat** supply during the chlorination, thereby increasing the efficiency of chlorination and ensuring good selectivity in low temperature chlorination. The vanadium oxytrichloride is purified by rectification, and then subjected to fluidized gas phase hydrolyzation, thereby producing a high-purity vanadium pentoxide product and a by-product solution of hydrochloric acid, and further obtaining a high-purity vanadium tetraoxide powder product through fluidized hydrogen reduction. The system and method have advantages of favorable adaptability to raw material, no discharge of contaminated wastewater, low energy consumption, etc.

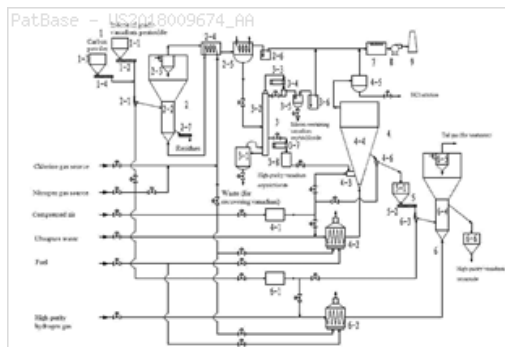
Classifications:

International (IPC 8-9): B01J8/00 B01J8/18 B01J8/26 C01B7/03 C01G31/02 C01G31/04 (Advanced/Invention)

CPC: C01B7/035 C01G31/04 C01P2006/80 B01J8/26 B01J8/1836 B01J8/0015 B01J2208/00017 B01J2208/00752 C01G31/02 Y02P20/129 C01B9/02

JP F-Term: 4G048 4G048/AA02 4G048/AB01 4G048/AC05 4G048/AD03 4G048/AE05

JP F-Index: C01G31/02

**Family:**

Publication number	Publication date	Application number	Application date
AU2016212453 AA	20160804	AU20160212453	20160128
AU2016212453 BB	20180118	AU20160212453	20160128
BR112017015810 A2	20180619	BR20171115810	20160128
CA2973506 AA	20170711	CA20162973506	20160128
CN105984898 A	20161005	CN201510052177	20150130
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EP3252013 A1	20171206	EP20160742781	20160128
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IN201727028674 A	20171013	IN201727028674	20170811
JP2018504365 T2	20180215	JP20170558610T	20160128
JP6347001 B2	20180620	JP20170558610T	20160128
PH2017550060 A	20180205	PH20170550060	20170728
RU2663776 C1	20180809	RU20170130366	20160128
US2018009674 AA	20180111	US20160547071	20160128
WO16119719 A1	20160804	WO2016C072521	20160128

Priority:

CN201510052177 20150130 WO2016C072521 20160128

Probable Assignee: BEIJING ZHONGKAIHONG DE TECHNOLOGY CO LTD

Assignee(s): (std): BEIJING ZHONGKAI HONGDE TECHNOLOGY CO LTD ; BEIJING ZHONGKAIHONGDE TECHNOLOGY CO LTD ; BEIJING ZHONGKAIHONGDE TECH CO LTD ; INST OF PROCESS ENGINEERING CHINESE ACADEMY OF SCIENCES ; INST OF PROTSCESS INZHINIRING CHAJNIS AKADEMI OF SAJNSIS ; OF PROCESS ENGINEERING CHINESE ACADEMY OF SCIENCES INST ; INST PROCESS ENG CAS ; BEIJING ZHONGKAI HONGDE TECH CO LTD

Assignee(s): BEIJING ZHONGKAI HONGDE TECHNOLOGY CO ; BAN QIXUN ; OF PROCESS ENGINEERING CHINESE ACADEMYOF SCIENCES INST ; LIU JIBIN ; ZHU QINGSHAN ; WANG CUNHU ; MU WENHENG ; OF PROCESS ENGINEERINGCHINESE ACADEMY OF SCIENCES INST ; INSTITYUT OF PROTSCESS INZHINIRING CHAJNIS AKADEMI OF SAJNSIS ; BEIJING ZHONGKAIHONG DE TECHNOLOGY CO LTD ; BEJDZHN ZHONGKAJKHONGDE TEKNOLODZHI KO LTD ; BEIJING ZHONGKAIHONGDE TECHNOLOGY CO ; FAN CHUANLIN

Inventor(s): (std): BAN KAJKSUN ; BAN QIXUN ; FAN CHUANLIN ; LIU DZHIBIN ; LIU JIBIN ; MOU WENHENG ; MU VENKHENG ; VANG KUNKHU ; WANG CUNHU ; ZHU KUINGSHAN ; ZHU QINGSHAN ; WENHENG MU ; QIXUN BAN ; QINGSHAN ZHU ; JIBIN LIU ; CUNHU WANG ; CHUANLIN FAN ; MU WENHENG

Agent(s): MADDERNS PATENT AND TRADE MARK ATTORNEYS; MOFFAT AND CO; HANNA MOORE AND CURLEY; NISHIYAMA HARUYUKI; OOO AIS INTEL; FASTA INTELLECTUAL PROPERTY LTD

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

Title: SYSTEM AND METHOD FOR PREPARING HIGH-PURITY VANADIUM PENTOXIDE POWDER

Abstract: The present invention provides a system and method for preparing high-purity vanadium pentoxide powder. Industrial grade vanadium pentoxide is converted to vanadium oxytrichloride by low temperature fluidizing chlorination, wherein chlorinating gas is preheated via **heat** exchange between fluidizing gas and chlorination flue gas, and an appropriate amount of air is added to enable a part of carbon powder to combust so as to achieve a balanced **heat** supply during the chlorination, thereby increasing the efficiency of chlorination and ensuring good selectivity in low temperature chlorination. The vanadium oxytrichloride is subjected to purification by rectification, ammonium salt precipitation and fluidized calcination, thereby obtaining high-purity vanadium pentoxide, wherein the ammonia gas produced during calcination is condensed and then recycled for ammonium salt precipitation. The system and method have advantages of favorable adaptability to raw material, less pollution, low energy consumption in production, low operation cost, stable product quality, etc.

Classifications:

International (IPC 8-9): B01D3/02 B01D3/14 B01J19/06 B01J19/24 B01J6/00 B01J8/00 B01J8/18 C01G31/00 C01G31/02 C01G31/04 (Advanced/Invention);

C01G31/04 (Advanced/Non-invention)

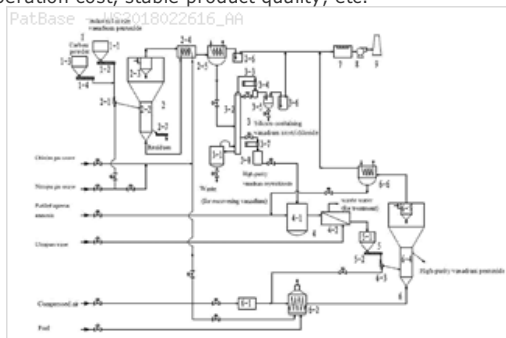
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B01J2208/00752 B01J2208/00761 C01G31/02 C01P2006/80

JP F-Term: 4G048 4G048/AA02 4G048/AB02 4G048/AC06

4G048/AC08 4G048/AD03 4G048/AE05 4G048/AE06

JP F-Index: C01G31/02



Family:

Publication number	Publication date	Application number	Application date
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AU2016212538 BB	20180118	AU20160212538	20160128
BR112017015797 A2	20180619	BR20171115797	20160128
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JP6347903 B2	20180627	JP20170558607T	20160128
PH2017550059 A	20180205	PH20170550059	20170728
RU2663777 C1	20180809	RU20170130365	20160128
US2018022616 AA	20180125	US20160547076	20160128
US10053371 BB	20180821	US20160547076	20160128
WO16119716 A1	20160804	WO2016CN072517	20160128

Priority:

CN201510052262 20150130

WO2016CN072517 20160128

WO2016CN72517 20160128

Probable Assignee: BEIJING ZHONGKAIHONG DE TECHNOLOGY CO LTD

Assignee(s): (std): BEIJING ZHONGKAI HONGDE TECHNOLOGY CO LTD ; BEIJING ZHONGKAIHONGDE TECHNOLOGY CO LTD ; BEIJING ZHONGKAIHONGDE TECH CO LTD ; INST OF PROCESS ENGINEERING CHINESE ACADEMY OF SCIENCES ; INST OF PROTSSESS INZHINIRING CHAJNIS AKADEMI OF SAJNSIS ; OF PROCESS ENGINEERING CHINESE ACADEMY OF SCIENCES INST ; INST PROCESS ENG CAS ; BEIJING ZHONGKAI HONGDE TECH CO LTD

Assignee(s): BEIJING ZHONGKAI HONGDE TECHNOLOGY CO ; BAN QIXUN ; OF PROCESS ENGINEERING CHINESE ACADEMYOF SCIENCES INST ; LIU JIBIN ; ZHU QINGSHAN ; WANG CUNHU ; MU WENHENG ; OF PROCESS ENGINEERINGCHINESE ACADEMY OF SCIENCES INST ; INSTITYUT OF PROTSSESS INZHINIRING CHAJNIS AKADEMI OF SAJNSIS ; BEIJING ZHONGKAIHONG DE TECHNOLOGY CO LTD ; BEJDZHN ZHONGKAJKHONGDE TEKNOLODZHI KO LTD ; BEIJING ZHONGKAIHONGDE TECHNOLOGY CO ; FAN CHUANLIN

Inventor(s): (std): BAN KAJKSUN ; BAN QIXUN ; CHUANLIN FAN ; CUNHU WANG ; FAN CHUANLIN ; JIBIN LIU ; LIU DZHIBIN ; LIU JIBIN ; MOU WENHENG ; MU VENKHENG ; MU WENHENG ; QINGSHAN ZHU ; QIXUN BAN ; VANG KUNKHU ; WANG CUNHU ; WENHENG MU ; ZHU KUINGSHAN ; ZHU QINGSHAN

Agent(s): MADDERNS PATENT AND TRADE MARK ATTORNEYS; MOFFAT AND CO; HANNA MOORE AND CURLEY; NISHIYAMA HARUYUKI; OOO AIS INTELS; BAYRAMOGLU GOKALP; FASTA INTELLECTUAL PROPERTY LTD

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

Title: SYSTEM AND METHOD FOR PRODUCING HIGH-PURITY VANADIUM PENTOXIDE POWDER

Abstract: The present invention provides a system and method for producing high-purity vanadium pentoxide powder. Industrial grade vanadium pentoxide is converted to vanadium oxytrichloride by low temperature fluidizing chlorination, wherein chlorinating gas is preheated via **heat** exchange between fluidizing gas and chlorination flue gas, and an appropriate amount of air is added to enable a part of carbon powder to combust so as to achieve a balanced **heat** supply during the chlorination, thereby increasing the efficiency of chlorination and ensuring good selectivity in low temperature chlorination. The vanadium oxytrichloride is purified by rectification, and then subjected to fluidized gas phase hydrolyzation and fluidized calcination, thereby producing a high-purity vanadium pentoxide product and a by-product of hydrochloric acid solution. The system and method have advantages of favorable adaptability to raw material, no discharge of contaminated wastewater, low energy consumption in production, low operation cost, stable product quality, etc.

Classifications:

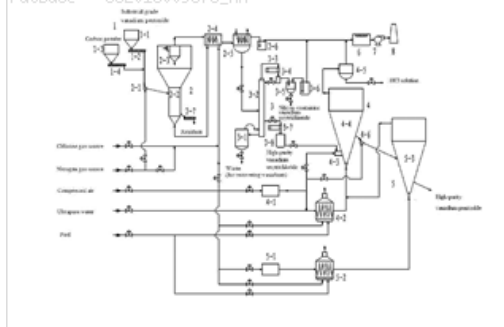
International (IPC 8-9): B01D3/14 B01D53/68 B01D53/78
B01F15/02 B01J6/00 B01J8/26 B01L5/04 C01B3/06 C01B7/03
C01G31/02 C01G31/04 (Advanced/Invention)

CPC: C01B7/035 C01G31/04 B01F15/0235 B01L5/04 B01J6/004
C01B3/061 B01D3/143 B01J8/26 B01F2015/0204 B01J2219/00166
B01J2208/00017 C01G31/02 C01P2006/80

JP F-Term: 4D002 4D002/AA19 4D002/AC07 4D002/BA02
4D002/BA13 4D002/BA14 4D002/DA01 4D002/DA04 4G048
4G048/AA02 4G048/AB02 4G048/AC06 4G048/AC08 4G048/AD03
4G048/AE05 4G048/AE06

JP F-Index: B01D53/68/120 B01D53/78 C01G31/02/ZAB

PatBase - US2018009675_AA



Family:

Publication number	Publication date	Application number	Application date
AU2016212451 AA	20160804	AU20160212451	20160128
AU2016212451 BB	20180118	AU20160212451	20160128
BR112017015803 A2	20180619	BR20171115803	20160128
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EP3252012 A4	20180103	EP20160742779	20160128
IN201727028379 A	20171013	IN201727028379	20170810
JP2018509371 T2	20180405	JP20170558608T	20160128
PH2017550058 A	20180205	PH20170550058	20170728
US2018009675 AA	20180111	US20160547075	20160128
WO16119717 A1	20160804	WO2016CN072518	20160128

Priority:

CN201510051580 20150130 WO2016CN072518 20160128

Probable Assignee: BEIJING ZHONGKAIHONG DE TECHNOLOGY CO LTD

Assignee(s): (std): BEIJING ZHONGKAI HONGDE TECHNOLOGY CO LTD ; BEIJING ZHONGKAIHONGDE TECHNOLOGY CO LTD ; INST PROCESS ENG CAS ; BEIJING ZHONGKAI HONGDE TECH CO LTD ; BEIJING ZHONGKAIHONGDE TECH CO LTD ; OF PROCESS ENGINEERING CHINESE ACADEMY OF SCIENCES INST ; INST OF PROCESS ENGINEERING CHINESE ACADEMY OF SCIENCES

Assignee(s): BEIJING ZHONGKAIHONG DE TECHNOLOGY CO LTD ; BAN QIXUN ; LIU JIBIN ; ZHU QINGSHAN ; WANG CUNHU ; MU WENHENG ; OF PROCESS ENGINEERINGCHINESE ACADEMY OF SCIENCES INST ; INST OF PROCESS ENGINEERINGCHINESE ACADEMY OF SCIENCES ; BEIJING ZHONGKAI HONGDE TECHNOLOGY CO ; BEIJING ZHONGKAIHONGDE TECHNOLOGY CO ; FAN CHUANLIN

Inventor(s): (std): BAN QIXUN ; CHUANLIN FAN ; CUNHU WANG ; FAN CHUANLIN ; JIBIN LIU ; LIU JIBIN ; MOU WENHENG ; MU WENHENG ; QINGSHAN ZHU ; QIXUN BAN ; WANG CUNHU ; WENHENG MU ; ZHU QINGSHAN

Inventor(s): YANG HAITAO

Agent(s): MADDERNS PATENT AND TRADE MARK ATTORNEYS; MOFFAT AND CO; HANNA MOORE AND CURLEY; NISHIYAMA HARUYUKI; FASTA INTELLECTUAL PROPERTY LTD

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

Title: **HEAT** TREATING PLANT, INSTALLATION METHOD FOR POROUS REGENERATIVE ELEMENT, PRODUCTION METHOD FOR **HEAT** TREATED SUBSTANCE, SELECTION METHOD FOR POROUS REGENERATIVE ELEMENT, AND SPENT POROUS REGENERATIVE ELEMENT COMPONENT MEMBER

Abstract: A **heat** treatment equipment having a **heating** chamber having a plurality of regenerative combustors provided with direct-fired burner having a built-in porous regenerator, for applying a **heat** treatment to an object in the **heating** chamber, wherein the substantial average surface pore diameter is not uniform for porous regenerators in a plurality of direct-fired burners or a plurality of regenerative combustors. By making contrivances in the shape of porous regenerators of the direct-fired burners or the regenerative **heat exchangers** arranged in an area where substances causing choking tend to easily adhere to make it difficult for such substances to adhere or prevent choking phenomenon from becoming apparent.

Classifications:

International (IPC 8-9): E21B21/10 F23L15/02 F27B19/00 F27D17/00 F28D17/02 F28D20/00 (Advanced/Invention); F27B19/00 (Advanced/Non-invention); E21B21/00 F23L15/00 F27B19/00 F27D17/00 F28D20/00 (Core/Invention)

International (IPC 1-7): E21B21/10 F23L15/02 F27B19/00 F27D17/00 F28D17/02 F28D19/00 F28D20/00 F28F19/00

CPC: Y02E20/348 F28D20/0056 F23L15/02 F23L2900/15021 F23L2900/15022 Y02E60/142

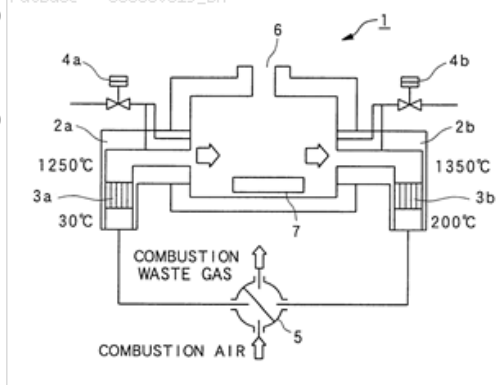
European: F23L15/02 F28D20/00E R23L900/15021 R23L900/15022 Y02E60/14B

US: 165/10 165/4 165/9.2 165/9.3 165/92 165/93

JP F-Term: 3K023 3K023/QA03 3K023/QB02 3K023/QB09 3K023/QC01 3K023/QC06 3K023/QC07 3L107

JP F-Index: F23L15/02 F28D20/00/A

PatBase - US6880619_BA



Family:

Publication number	Publication date	Application number	Application date
CN1222716 C	20051012	CN20008002471	20000831
CN1335921 A	20020213	CN20008002471	20000831
DE60017869 D1	20050310	DE20006017869	20000831
DE60017869 T2	20060330	DE20006017869T	20000831
EP1126217 A1	20010822	EP20000956841	20000831
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JP3926152 B2	20070606	JP20010520042T	20000831
KR100681575 B1	20070209	KR20017005424	20000831
KR20010099771 A	20011109	KR20017005424	20000831
TW489201 B	20020601	TW20000117813	20000831
US6880619 BA	20050419	US20010830760	20010531
WO0116527 A1	20010308	WO2000JP05917	20000831

Priority:

JP19990248081 19990901 WO2000JP05917 20000831 KR20017005424 20010430
WO2000JP05917 20010430

Probable Assignee: NGK INSULATORS LTD

Assignee(s): (std): KASAI YOSHIYUKI ; KAWASAKI STEEL CO ; MORI ISAO ; NAGOSHI MASAYASU ; SUDO JUN ; NIPPON KOKAN KK ; NIPPON FURNACE KOGYO KK ; NGK INSULATORS LTD ; JFE ENG CORP ; NIPPON FURNACE KOGYO K K ; NGK INSULATOR LTD ; SUZUKAWA YUTAKA ; TADA TAKESHI ; UMEHARA KAZUHIKO

Assignee(s): NIPPON KOKAN K K ; NKK CORP ; NIPPON FURNACE KOGYO K K YOKOHAMA ; NIPPON FURNACE KOGYO KAISHA LTD YOKOHAMA ; JFE ENGINEERING CORP ; JFE ENGINEERING CORP TOKIO TOKYO ; JFE STEEL CORP ; NIPPON FURNACE KOGYO KAISHA LTD ; N 1 2 MARUNOUCHI 1 CHOMECHIYODA KU TOKYO 100 ; NIPPON FURNACEKK

Inventor(s): (std): ISAO MORI ; KASAI YOSHIYUKI ; MASAYASU NAGOSHI ; MORI ISAO ; NAGOSHI MASAYASU ; SUDO JUN ; SUZUKAWA YUTAKA ; TADA TAKESHI ; UMEHARA KAZUHIKO ; YUTAKA SUZUKAWA

Agent(s): FRISHAUF HOLTZ GOODMAN AND CHICK PC

Designated states: AT BE CH CN CY DE DK ES FI FR GB GR IE IT JP KR LI LU MC NL PT SE US

Title: SYSTEM AND METHOD FOR PURIFYING VANADIUM PENTOXIDE

Abstract: The present invention provides a system and method for purifying vanadium pentoxide. Industrial grade vanadium pentoxide is converted to vanadium oxytrichloride by low temperature fluidizing chlorination, wherein chlorinating gas is preheated via **heat** exchange between fluidizing gas and chlorination flue gas, and an appropriate amount of air is added to enable a part of carbon powder to combust so as to achieve a balanced **heat** supply during the chlorination, thereby increasing the efficiency of chlorination and ensuring good selectivity in low temperature chlorination. The vanadium oxytrichloride is purified by rectification, and then subjected to plasma oxidation, thereby obtaining a high-purity vanadium pentoxide product and chlorine gas. The chlorine gas is returned for low temperature chlorination. The system and method have advantages of favorable adaptability to raw material, no discharge of contaminated wastewater, low energy consumption and chlorine consumption in production, stable product quality, etc.

Classifications:

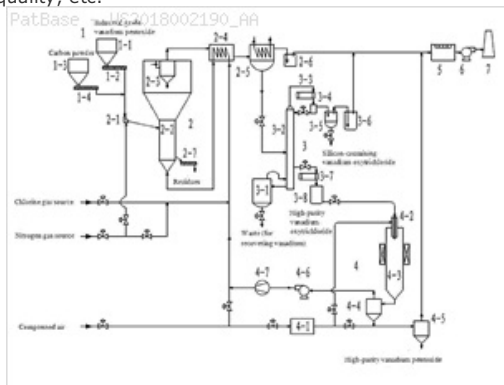
International (IPC 8-9): B01D19/00 B01D3/14 B01J8/24 C01G31/02 C01G31/04 (Advanced/Invention);

C01G31/04 (Advanced/Non-invention)

CPC: C01P2006/80 B01J8/24 B01D3/14 B01D19/0057 C01G31/02 C01G31/04

JP F-Term: 4G048 4G048/AA02 4G048/AB08 4G048/AC06 4G048/AD03

JP F-Index: C01G31/02



Family:

Publication number	Publication date	Application number	Application date
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CN105984899 B	20170517	CN201510052178	20150130
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RU2662515 C1	20180726	RU20170130368	20160128
US2018002190 AA	20180104	US20160547079	20160128
WO16119718 A1	20160804	WO2016C072520	20160128

Priority:

CN201510052178 20150130 WO2016C072520 20160128

Probable Assignee: BEIJING ZHONGKAIHONG DE TECHNOLOGY CO LTD

Assignee(s): (std): BEIJING ZHONGKAI HONGDE TECH CO LTD ; BEIJING ZHONGKAIHONGDE TECH CO LTD ; BEIJING ZHONGKAI HONGDE TECHNOLOGY CO LTD ; BEIJING ZHONGKAIHONGDE TECHNOLOGY CO LTD ; INST PROCESS ENG CAS ; INST OF PROTSSESS INZHINIRING CHAJNIS AKADEMI OF SAJNSIS ; OF PROCESS ENGINEERING CHINESE ACADEMY OF SCIENCES INST ; INST OF PROCESS ENGINEERING CHINESE ACADEMY OF SCIENCES

Assignee(s): BEJDZHN ZHONGKAJKHONGDE TEKNOLODZHI KO LTD ; BAN QIXUN ; LIU JIBIN ; ZHU QINGSHAN ; WANG CUNHU ; MU WENHENG ; OF PROCESS ENGINEERINGCHINESE ACADEMY OF SCIENCES INST ; INSTITYUT OF PROTSSESS INZHINIRING CHAJNIS AKADEMI OF SAJNSIS ; BEIJING ZHONGKAIHONGDE TECHNOLOGY CO ; FAN CHUANLIN ; INST OF PROCESS ENGINEERINGCHINESE ACADEMY OF SCIENCES ; BEIJING ZHONGKAIHONG DE TECHNOLOGY CO LTD ; BEIJING ZHONGKAI HONGDE TECHNOLOGY CO

Inventor(s): (std): BAN KAJKSUN ; BAN QIXUN ; FAN CHUANLIN ; CHUANLIN FAN ; CUNHU WANG ; FAN CHAUNLIN ; MOU WENHENG ; LIU JIBIN ; MU WENHENG ; QINGSHAN ZHU ; JIBIN LIU ; QIXUN BAN ; MU VENKHENG ; LIU DZHIBIN ; ZHU QINGSHAN ; WANG CUNHU ; WENHENG MU ; ZHU KUINGSHAN ; VANG KUNKHU

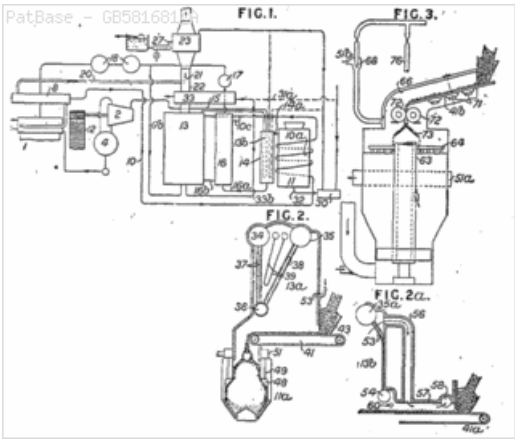
Agent(s): MADDERNS PATENT AND TRADE MARK ATTORNEYS; MOFFAT AND CO; HANNA MOORE AND CURLEY; NISHIYAMA HARUYUKI; OOO AIS INTELS; FASTA INTELLECTUAL PROPERTY LTD

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

Title: Improvements in and relating to power plant

Abstract: 67/41, 1695/41, 17559/40, 6237/41, 7013/41 and 7766/41. [Class 110 (iii)] [Also in Group XXVII] In a power plant for frequently or widely varying loads, comprising a high compression internal combustion engine 1 running alternatively or simultaneously on producer gas and oil, a gas producer 11 normally operating on coal or like solid fuel, and means for generating and superheating steam, the final stage of the superheating is effected by **heat** generated in the gas producer, at least some of the gas from which is used as fuel for the internal-combustion engine. Provision may be made for cutting out or bypassing the final stage of steam superheating when the gas producer is inoperative. The steam may be used in a power unit or for processing or other purposes. The steam generator preferably uses solid fuel normally, but may be **heated** alternatively by oil. In the arrangement shown in Fig. 1, the steam generated is used in the steam turbine 2 of a marine power plant, the turbine driving through gearing 12 to supplement the engine 1 as described in Specification 581,680, and the gas producer 11 may be one which removes tar from the producer gas as described in Specification 579,967, [Group XII]. The engine 1 may drive the propeller shaft direct or through toothed gearing and a hydraulic or other flexible coupling, and the power from the steam prime mover may be transmitted electrically to the propeller shaft. The turbine exhausts to a condenser 4 and the condensate is pumped to the jacket 6 of the engine 1. Water from the jacket 6 is **heated** by engine exhaust in an **exchanger** 8 and is conveyed by a feed **pipe** 10 to means 10a **heated** by the producer 11; this means may be a jacket in the producer body or tubes arranged as described in Specification 579,967, [Group XII]. The water then passes through a steam generator 13 having superheater tubes, through final superheater tubes 13b in an **exchanger** 14 **heated** by gases leaving the producer at 14a, and through a **pipe** 15 to the turbine 2. A branch **pipe** 10c leads **heated** feed water to an auxiliary steam generator 16 **heated** by gases from the **exchanger** 14 through a **pipe** 16a; steam from the generator 16 is conveyed by a **pipe** 16b to the main generator 13 or to first-stage 'superheater tubes therein, while the gas leaving the generator 16 is conveyed to the engine 1 through cleaners c. 18 (for example, electrostatic precipitators) by a Rootes blower 17. Some of the gas is tapped off at 17b to gas burners in the steam generator 13. The engine is a high-compression type similar to a Diesel engine and using spark or oil-jet ignition when working on gas. Engine exhaust from the **exchanger** 8 is conveyed by **pipe** 20 to a jet 21 for creating a draught in the **chimney** 22 of the generator 13. An evaporator 23 in the **chimney** is supplied with water through an **exchanger** **heated** by flue gases at 27, and steam from the evaporator is led to an injector 30 inducing a supply of air and steam to the producer at 32. Air supplied to the steam generator 13 by a **pipe** 33b may be **heated** in an **exchanger** 33 by gases in the **chimney** 22, and some of this air may also be conveyed at 31a to the producer. In a modification, Fig. 2, the gas producer 11a is structurally combined with the steam generator 13a. Coal or other fuel is fed from a **hopper** 43 on to a travelling grate 41 passing through the furnace chamber of the steam generator. The fuel is here deprived of most of its volatile constituents and is delivered to the producer 11a, which may be of the kind described in Specification 579,967, [Group XII], the gas collected at 48 passing through tubes 49 to a collecting belt 51 and thence mainly to the engine and partly also to gas burners 53 in the furnace chamber 13a. The steam generator may comprise drums 34, 35, 36 connected by tubes 37, 38, and superheater tubes 39. In an alternative form, Fig. 2a, the grate 41a passes through a distillation chamber 57, where it is subjected to the **heat** of furnace gases led from the furnace chamber 13b by a conduit 56 as described in Specification 581,692, [Group XII], the distillates being led through a conduit 58 to the producer. Water tubes 53 from the steam-generator drum 35a are connected to a drum 54 restricting the passage between the chamber 57 and the furnace chamber 13b, and steam or gas **nozzles** 60 prevent the passage of furnace gases into the chamber 57. In a further form of the producer, Fig. 3, there is no preliminary partial combustion of the coal on the grate of a steam generator. Coal is fed by a grate 41b in a sloping distillation chamber 66, the double walls of which provide a space into which gas from the outlet 51a of the producer is injected through a **pipe** 51b. The injector **nozzle** 68 is supplied with exhaust gas from the engine, or with steam or air or furnace gas, and the mixture passes through inlets 71 and through the fuel on the grate. The carbonised coal is compressed into pellets by rollers 72 and falls over a deflector 73 into the producer. The distillates pass through a hollow rotating water-jacketed column 63 carrying fuel-distributing arms 64 and are forced through the column by an injector supplied with gas from the **pipe** 76. The distillates enter the fuel bed below its surface in order to **heat** them for removal of tarry constituents, as described in Specification 579,967, [Group XII], and pass to the outlet belt 51a. Specifications 168,705, 169,275, [both in Class 110 (iii)], 375,597 and 581,694, [Group XII], also are referred to.

Classifications:
International (IPC 8-9): F01K15/04 F01K17/06
F01K23/14 (Advanced/Invention);
F01K15/00 F01K17/00 F01K23/00 (Core/Invention)
International (IPC 1-7): C10J3/58
CPC: F01K15/04 F01K17/06 F01K23/14
European: F01K15/04 F01K17/06 F01K23/14



Family:

Publication number	Publication date	Application number	Application date
GB581681 A	19461022	GB19410000067	19410302

Priority:

GB19410000067 19410302

Probable Assignee: RICHARD WILLIAM BAILEY

Assignee(s): (std): RICHARD WILLIAM BAILEY ; VICKERS ELECTRICAL CO LTD

Assignee(s): METROPOLITAN VICKERS ELECTRICAL CO LTD ; METROPOLITAN VICKERS ELECTRICAL COMPANY LIMITED

Title: AUTOMATIC LINE FOR DRYING SAND

Abstract: Source: SU986576A **Machine translation:** 1. Izobretenie relates to a foundry, in particular to the lines of drying sand in foundries, and can be used for engineering plants, as well as enterprise-x ferrous and nonferrous metallurgy. Known line drying sand for making molds containing moist sand bunkers, plate feeders, belt conveyors moist sand, pneumosushilo with two injection gas burners. The drying chamber is connected to tsikpchnami provided with the bottom of the sluice gates. Sluice gates prevent leak vozduza cyclones and provide unloading of dry sand with getting into the flow of sand has dried air stream is broken into individual grains, blown several seconds **heated** air movement, relative zhuschims grains with a velocity of 10 m / sec. Low flow in the early drying of 200-300 C and at the end of 50-80 degrees C. Service Position svodits to timely loading feed **hopper** moist sand and monitor the work of its individual components. In automatic mode, all nodes and lines are interlocked with one emergency stop unit 10 are all located in front automatically incorporated and established in the lines are turned off automatically after. In line there vibrating for dropping out of sand gravel. Line 15 runs on sand with Q, kb percent clay and 2,5-85g water. The disadvantage of the described line is that it can not run on the sand smerzhshems: kom vy20 fall of pneumosushila and sand must first be defrosted. Getomu before serving line in the sand suschki it must pass through a portion of the pre-treatment, which requires additional dome enforcement of production space and energy. Closest to the invention by the technical essence and results are lines, the automatic sand drying in an air stream containing moist sand bunkers with vibroreshetkami and discrimination kovymi feeder E, peredato.chny conveyor receiving **hopper** with rotary valve, a drying chamber and flue with a shaker, treatment with cyclones, the collector and the **chimney**, elevator and dry sand bunkers L23. in the automatic line, these disadvantages are exhibited to a lesser extent. This is achieved by feeding two types of sand: a) after the regeneration, and b) binding: hedgehog raw sands and caking. Them into bins. Regeneration of sand separating the two streams fed to the two belt bucket elevators and using them is loaded into bins of moist sand. Feeding fresh sand at a certain ratio is performed gripper. When injected into the bunker sands re meshivayuts. Sand after regeneration has a temperature of 30-31JC. - When mixing Vania **heat** exchange occurs between the mass of fresh sand with smerzhshimis particles and mass of sand after regeneration. However, this does not **heat** the floor completely eliminates smerzhshihs ingress of particles into the drying chamber. Necessary to supply more **heat** transfer fluid, which is slightly, improving a process, but it leads to a total mass peregreu sand, which must be cooled, thereby increasing the energy consumption for cooling. Furthermore, in the known lines are provided in the automatic operation mode, the line at cluster smerzhshihs particles near the feed section. / Object of the invention increase of productivity and decrease of consumption of energy. This goal is achieved in that. line, the automatic drying sand bunkers containing raw pesKZ with vibroreshetkami and disk supply tel E, transfer conveyor., receiving **hopper** with rotary valve, a drying chamber with vibropitate Lemma and flue, cleaning cyclones collector and the **chimney**, elevator and dry sand bunkers, provided with a receiving **hopper** located upstream of the agitator, executed as two kinematically interconnected by a vane drum, and a **heat exchanger** chamber formed in the cyclone with a rotary valve installed between the receiving **hopper** and the drying chamber and tangential **nozzle** soedinennosvoim s.gazohodom drying chamber and **nozzle** exhaust gas - treatment with one of the cyclones, wherein the **heat** exchange chamber is provided with an extra inlet **pipe** whose axis is parallel to the axis of the gas **nozzle** from the water, coupled with a rotary valve receiving **hopper** and a discharge opening of its **heat** exchange chamber through sluices is connected to a shaker drier. The figure shows a diagram of the line.. Line 1 contains bunkers moist sand, over which are set vibroreshetki 2 drives 3. Bins are equipped with 1 disc feeder chutes with E k 5, which is located under the transfer conveyor 6; bonded relationship with ripper 7 nym vibrating screen 8 is provided, mounted above the feed **hopper** 9 intended for the storage of sand loosened. Bunker 9 is provided with rotary valve 10, which is placed in **heat** exchange chamber 11. Under gateway shutter camera rum 12 11 13 set vibrating, the body of which is formed with the drying kameroy.I.In the chamber and the bottom set grate 15 is guide with a gas distributor and Reporting with a cooling chamber 16 with a similar grate 17 and 18 estrus. 1b camera is equipped with a cooling system of the air duct 19 and the fan 20. Drying chamber 14 is provided with a feed system hot gas comprising a burner gazzVuyuy 21, chamber 22 and the combustion fan 23. Estrus 18 through the dry-vibrating 2k th sand connected with a receiving elevator 25 estrus 2b provided with discharge taKzhe estrus-27 bound. tion to the storage **hopper** 28 dry sand placed on pneumatic pump 29, which is connected tra sa 30 sand. The line is equipped with a drainage system call g, consisting of 31 from flue su shilnoy chamber flue 32 of the refrigerating chamber, flue gas from the **heat** exchange chamber 33 connected. with battery cyclones NW that soy dineny with sluices 35, n which placed SC conveyor and box 37. cyclones placed over the battery manifold 38 connected to the **pipe** 39.. 7 Ripper vyplblen as two vane drums 40 and 1 on each shaft of which planted gears 42 and 43 with different amount stvom teeth, finding each other schies engaged. 7 is provided with a drive ripper t.. The **heat** exchange chamber 11 vypolne.na as a cyclone, the upper portion is connected tangentially to torogo Patent kS wheelhouse with flue 31 of the drying chamber 1A, and the **nozzle** 36. Degassing - a flue 33 connected to a cyclone 3. Adjacent the outlet **pipe** 6 ful; nen k7 short **pipe** connected to a rotary valve or 10.priemnogo **hopper** 9. Discharge opening **heat** exchange chamber through sluices 12 is connected to a shaker 13. Line drives equipped with instrumentation and automation (Scheme n shown) for automatic operation. Line works as follows Wet sand enters the lattice vibration 2, 3 drives incorporated vibroreshetok and sand wakes. 1 inside bunkers. Through disk feeder wet sand gets in unloading (e estrus 5, with co toryh enters the conveyor 6 wet sand. With conveyor 6 in wet sand osupaets ripper 7, the passage through which the sand is crushed and pulverized in the winter time smerzhshies pieces, and then sieved on a vibrating screen 8. After 8 shaker wet sand falls into a **hopper** 9 and the shutter 10 via the gateway into the **heat** exchange chamber 11. the chamber 11 through flue 31 continuously receives the flue gases, **heated** to 120. Furthermore **heated** gases exiting the kame6 ry, and here also the fine particles fall **heated** dry sand, to the mixing chamber 11 takes place with a mass of moist sand **heated** by the off-gas and **heated** amino dry sand particles. weight of moist sand is **heated** and partially loses moisture, and wintertime fully Stu razmerzaets. preheated sand settles in the bottom of the chamber 11 and rotary valve chK Res 12 misses the vibrating 13 which regulates the load of the drying chamber 14. drying chamber 6 and drying takes place on the basis of the sand bed fluidized by means of hot gases, the formed and coming from the combustion chamber 22 at a temperature 600-800 degrees centigrade through the grate 15 from the combustion gas supplied through the burner 21. peresypaets dewatered sand **heated** in the cooling chamber 1b, which enters through the grid 17, the cold air drawn through the fan duct YAO 19. Cooled to the sand from the chamber 16 through the chute 18 falls on vibrating 2k. After dropping out of a vibrating sieve 2k dry sand passes through the receiving chute 25 to the elevator 26, where rises and ssypaets through chute 27 into the **hopper** 28 dry sand, from which with the help of a pneumatic 29 falls into dry sand track 30 for transportation to a preparation section of the moldable mixture. The exhaust from the drying chamber with temperature k 110-130 gas through a gas duct 31 is directed into the **heat** exchange chamber 11 in which gas kak.uzhe mentioned wet weight gives off **heat** to sand, moreover, the gas "obespylivaets as **heat** exchange chamber 11 vypol2 ene as a cyclone. Dedusted 85 percent and gave warm wet sand mass, the gas is supplied through the flue 33 in one of the other two Itsiklonov ZV cyclone 3 is fed through the flue gas 32 to the cooling chamber 16. Cyclones in battery 3k exhaust Mr. al obespylivaets fully supplied and through the manifold 38 into the atmosphere i.trubu 39. Settled in cyclone 3 sand particles using gateway congestion 35 are discharged periodically ransporterom 36 in box 37. Lini ears adapted to the sand and neprey tion rabote.v automatically. Despite this control each unit individually can be performed with the remote control. Passage sand monitored sensors mounted on the moist sand bunkers. In the case of sand hangup automatically incorporated vibrating device. Loading authorities tion sand into the drying chamber is controlled by the gas temperature sensors of the drying chamber under the grate and the flue gases.At normal temperature gases under the bars of the cell signal derived from the sensor temperature of the waste gases, thereby preventing material transfer a drying chamber. From the description of the line should be that it provides a combination of technological operations on wet sand grinding, preheating and drying with cooling. To align these technological positions needed The next set of essential features, installation before receiving **hopper** agitator, made in the form of two kinematically interconnected by paddle drums; Extra-chamber **heat exchanger**, designed as a cyclone, included successively in the exhaust gases between the control chamber and cyclone drying. With the top of the camera is connected to help schyu sluice gate with a receiving **hopper** discharge opening and a discharge opening in the **heat** exchange chamber rotary valve with the drying chamber; -Division of the dryer by drying and cooling chamber suhog sand, reducing the cooling air flow. i / The proposed line is cooled only the mass of sand and **heat** the exhaust gases from the chamber was diverted to display mass of moist n ska unlike existing lines Where is cooled simultaneously dry sand along with the exhaust gases., which increases the energy consumption for cooling dry sand. Thus in the proposed combination of lines provided two groups of technological operations. It is somewhat possible to reduce specific fuel consumption, reduce the consumption of energy by en cooling air. June 8 to reduce the emission of dust into the environment.. In addition, eliminating the need for grinding operations smerzhshihs lumps of sand that is associated with labor

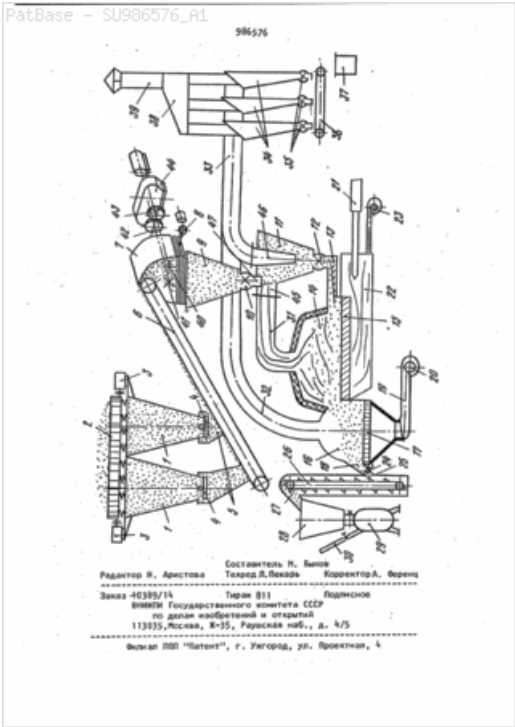
costs and additional costs for depreciation of tools and equipment... Comparative analysis in comparison with the prototype showed that the specific fuel consumption for snizils, fuel, electricity snizils on labor productivity in this sector has increased by 2-3. Claims are automatically line drying sand bunkers containing moist sand with vibroreshetkami and disc feeder E, transfer conveyor, receiving **hopper** with rotary valve, a drying chamber and flue with vibropitagelem, treatment tsi.klony to the collector and the **chimney**, elevator and dry sand bunkers, characterized. fact that in order to increase productivity and reduce the specific consumption of energy, the line is equipped with a set before receiving **hopper** dredger made in the form of two kinematically interconnected by dm paddle drums, and **heat** exchange chamber, made in the form of a cyclone with a gateway a shutter installed between the receiving **hopper** and the drying chamber and is connected with its tangential **nozzle** kiln gas duct and the gas outlet **pipe** - with one of the cyclones of treatment, wherein the **heat** exchange chamber is provided with an extra inlet **pipe** whose axis is parallel to the axis of its gas outlet **pipe** connected to the rotary valve receiving **hopper** and discharge outlet of the **heat** exchange chamber through its floodgates connected to the drying chamber shaker. Sources of information received into account in the examination 1. Foundry Journal, 1966, p. 35.

Classifications:

International (IPC 8-9): B22C5/00 (Advanced/Invention);

B22C5/00 (Core/Invention)

International (IPC 1-7): B22C5/00



Family:

Publication number	Publication date	Application number	Application date
SU986576 A1	19830107	SU19813341218	19811001

Priority:

SU19813341218 19811001

Probable Assignee: PROIZV OB NOVO KRAMATORSKIY MA

Assignee(s): (std): PRODUCTION ASSOCIATION NOVOKRAMATORSKY ENGINEERING WORKS ; PROIZV OB NOVO KRAMATORSKIY MA

Assignee(s): PROIZV OB NOVO KRAMATORSKIY MASHINOSTROITEL'NYI ZAVOD

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Inventor(s): KOVALEV PAVEL S SU ; BUDNITSKIY VLADIMIR S SU ; BUKSHA VIKTOR F SU ; DEGTYAR FELIKS I SU ; GALINTOVSKIY VIKTOR I SU ; GLEJZER VLADIMIR L SU

Title: RAPID THERMAL CONVERSION OF BIOMASS

Abstract: The present invent provides improved rapid thermal conversion processes for efficiently converting wood, other biomass materials, and other carbonaceous feedstock (including hydrocarbons) into high yields of valuable liquid product, e.g., bio-oil, on a large scale production. In an embodiment, biomass material, e.g., wood, is feed to a conversion system where the biomass material is mixed with an upward stream of hot **heat** carriers, e.g., sand, that thermally convert the biomass into a hot vapor stream. The hot vapor stream is rapidly quenched with quench media in one or more condensing chambers located downstream of the conversion system. The rapid quenching condenses the vapor stream into liquid product, which is collected from the condensing chambers as a valuable liquid product. In one embodiment, the liquid product itself is used as the quench media.

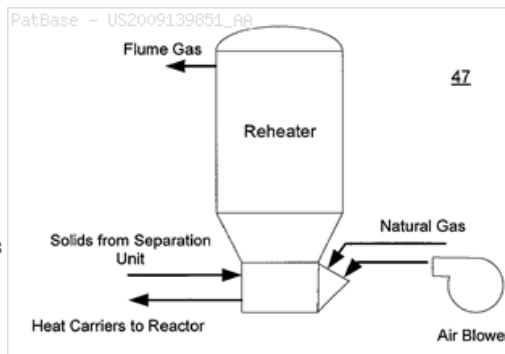
Classifications:

International (IPC 8-9): B01J19/24 B01J8/18 C01B53/02 C01B9/00 C10B21/20 C10B27/00 C10B47/00 C10B49/00 C10B49/16 C10B49/22 C10B53/02 C10B57/00 C10B57/12 C10B9/00 C10G1/00 C10G1/02 C10G9/28 C10K1/04 F28C3/08 (Advanced/Invention); C10B49/00 C10B53/00 C10B9/00 (Core/Invention)

CPC: C10B49/22 C10B53/02 C10G1/02 C10K1/04 Y02E50/14 C10B57/00 C10B27/00 F28C3/08 C10G9/28 Y02P20/145 C10B9/00

European: C10B49/22 C10B53/02 C10G1/02 C10G9/28 Y02E50/14

US: 165/104.13 201/12 201/21 201/21S 201/23 201/23P 201/24 201/24S 201/25 201/28 201/28S 201/39 201/39S 202/108 202/115 202/121 202/208 202/215 202/222 202/262 202/99 208/131 261/128 422/140 422/187 422/187P 585/242

**Family:**

Publication number	Publication date	Application number	Application date
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CA2705775 C	20140114	CA20082705775	20081110
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US2015191656 AA	20150709	US20150593831	20150109
US2018030356 AA	20180201	US20170461062	20170316
US7905990 BB	20110315	US20070943329	20071120
US8961743 BB	20150224	US20110021508	20110204
US9631145 BB	20170425	US20150593831	20150109
WO09067350 A1	20090528	WO2008US83040	20081110

Priority:

US20070943329 20071120 CN200880117154 20081110 WO2008US83040 20081110
 US20110021508 20110204 US20150593831 20150109 US20170461062 20170316

Probable Assignee: ENSYN RENEWABLES INC

Assignee(s): (std): ENSYN GROUP INC ; ENSYN RENEWABLES INC ; ENSYN REWABLES INC ; FREEL BARRY ; FREEL BARRY A

Assignee(s): VENTURE LENDING AND LEASING VII INC ; VENTURE LENDING AND LEASING VIII INC

Inventor(s): (std): FREEL BARRY ; FREEL BARRY A

Inventor(s): BARRY FREEL

Agent(s): SMART AND BIGGAR; JUANITA ACOSTA GOMEZ; BAKER COLIN JOHN; HOLZWARTH ROCHFORD ANDREAS; ORRICK HERRINGTON AND SUTCLIFFE LLP IP PROSECUTION DEPARTMENT; ORRICK HERRINGTON AND SUTCLIFFE LLP; JONES DAY

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 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 PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: Improvements in or relating to smoke-consuming domestic stoves

Abstract: 803,528. Closed solid-fuel stoves. THRING, M. W. Nov. 2, 1956 [Nov. 25, 1955], No. 33923/55. Class 126 A slow-combustion domestic stove usable as an open fire and having hollow side walls for heating air comprises a hopper 12, Fig. 1, having a cover 19 with an air inlet 20, and a shakable grate 1 above an ashpit 4 having a controlled air inlet 5. The combustion gases pass between double doors 6 and the front wall 14 of the hopper, through lateral openings 21, into air spaces 22, Figs. 2, 4, formed between walls 23, 24 and discharge into chambers 25 formed between walls 24, 26. From the chambers 25 the gases pass through outlets 27 and a space 28 beneath the hopper base 16 to an outlet flue 29. Air from the room flows through openings 30 into the spaces 22 and reenters the room through openings in the top of the stove. The doors are held closed by a latch 32 operated by a lever 33 connected by a link 34 to a latch 35 for the hopper cover 19, so that the air inlet 20 in the cover is closed when the doors are opened. Secondary air is supplied to nozzles 36, Fig. 4, over the grate through open-ended pipes 37 in the spaces 22.

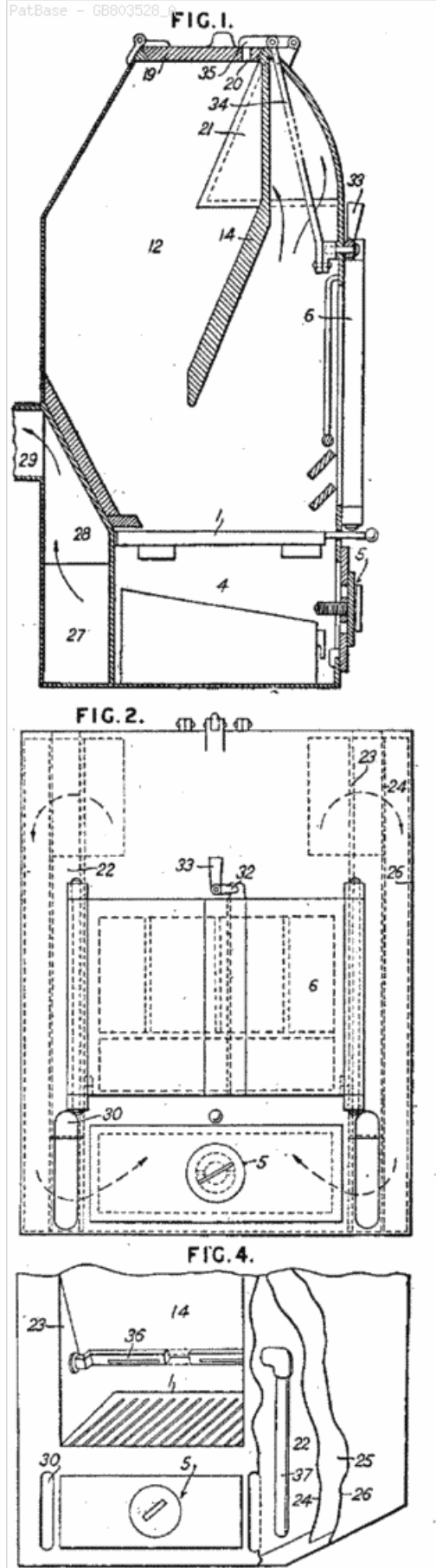
Classifications:

International (IPC 8-9): F24B5/02 (Advanced/Invention);
F24B5/00 (Core/Invention)

International (IPC 1-7): F24B13/02

CPC: F24B5/028

European: F24B5/02D

**Family:**

Publication number	Publication date	Application number	Application date
GB803528 A	19581029	GB19550033923	19551125

Priority:

GB19550033923 19551125

Probable Assignee:

MEREDITH WOOLDRIDGE THRING

Assignee(s): (std):

MEREDITH WOOLDRIDGE THRING

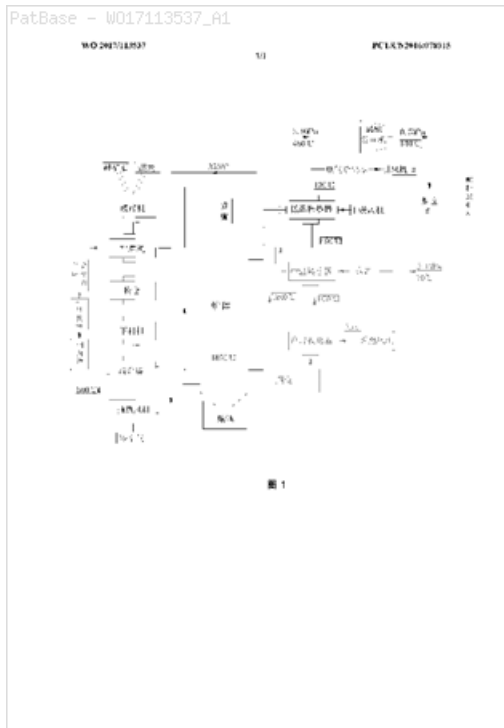
Title: SILICA MINERAL FUSION POWER GENERATION SYSTEM

Abstract: A silica mineral fusion power generation system comprises a furnace, a flue gas pipeline, a high-temperature waste-**heat** recovery subsystem, a waste-**heat** power generation subsystem, a low-temperature waste-**heat** recovery subsystem, a subsystem for blending and crushing silica mineral and coal, and a powder material delivery subsystem. The high-temperature waste-**heat** recovery subsystem, the waste-**heat** power generation subsystem, and the low-temperature waste-**heat** recovery subsystem are sequentially disposed in the flow direction of flue gas in the flue gas pipeline. The subsystem for blending and crushing silica mineral and coal is disposed at one side of the furnace. The lower end of the subsystem for blending and crushing silica mineral and coal is connected to the upper end of the powder material delivery subsystem.

Classifications:

International (IPC 8-9): F01K27/00 F26B21/14 F27D17/00 F27D3/08 F27D3/18 (Advanced/Invention)

CPC: F01K27/00 F26B21/14 F27D3/08 F27D3/18 F27D17/00 F27D2003/185 F27D2017/006 F27M2003/13 Y02P80/152 Y02P70/40



Family:

Publication number	Publication date	Application number	Application date
AU2016380382 AA	20170706	AU20160380382	20160409
CN105651068 A	20160608	CN201511033850	20151231
WO17113537 A1	20170706	WO2016CN078915	20160409

Priority:

CN201511033850 20151231 WO2016CN078915 20160409

Probable Assignee: UNIV GUANGDONG TECHNOLOGY

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Inventor(s): (std): GAO FUQIANG ; LIU WENXING ; LIU XIAOZHOU ; PEI HU ; ZHANG XIAOCHUN

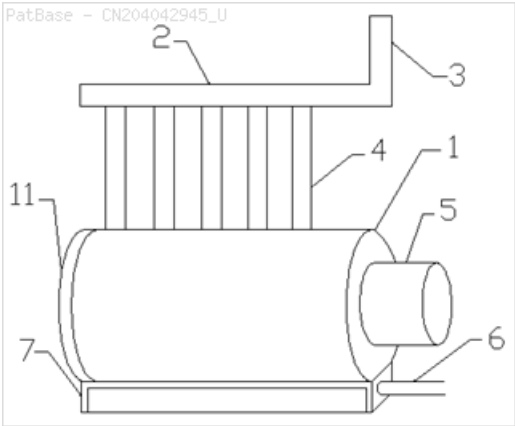
Agent(s): GUANGDONG UNIV OF TECHNOLOGY; BEIJING WANBEI PATENT AGENCY OFFICE

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

Title: **HEAT EXCHANGER** USED FOR BIOLOGIC PARTICLE CURING BARN

Abstract: The utility model discloses a **heat exchanger** used for a biologic particle curing barn. The **heat exchanger** is characterized by comprising a main **heat** dissipation body, main **heat** dissipation **pipes** and auxiliary **heat** dissipation **pipes**, an ash collection **hopper** used for collecting burnt-out ash is arranged at the bottom of the main **heat** dissipation body, a side door is formed in one side of a combustion chamber, a burner combustion **nozzle** is arranged on the other side of the combustion chamber, an air inlet **pipe** used for providing oxygen required for combustion is arranged in the ash collection **hopper**, the main **heat** dissipation **pipes** are arranged on the combustion chamber, the side faces of the tops of the main **heat** dissipation **pipes** are connected with the inlet ends of connecting **pipes**, the outlet sections of the connecting **pipes** are connected to the upper portions of the ash collection sections of the auxiliary **heat** dissipation **pipes**, the tops of the auxiliary **heat** dissipation **pipes** are connected to a collection **pipe**, the bottoms of the auxiliary **heat** dissipation **pipes** serve as ash outlet covers of the ash collection sections, and a **chimney** is arranged on the tail portion of the collection **pipe**. In order to solve the technical problem, the **heat exchanger** used for the biologic particle curing barn is provided, the **heat** dissipation **pipes** are arranged on the device, the **heat** utilization rate of the **heat exchanger** is increased, and the **heat** brought away by discharged smoke can be better recycled.

Classifications:
International (IPC 8-9): F23J15/06 (Advanced/Invention)
CPC: Y02E20/363



Family:

Publication number	Publication date	Application number	Application date
CN204042945 U	20141224	CN201420337292U	20140624

Priority:

CN201420337292U 20140624

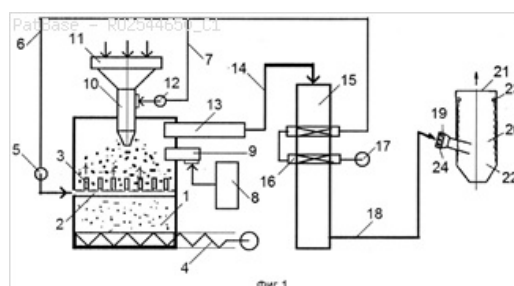
Probable Assignee: TAOJIANG COUNTY WANYOU BIOLOG ENERGY TECHNOLOGY DEV CO LTD
Assignee(s): (std): TAOJIANG COUNTY WANYOU BIOLOG ENERGY TECHNOLOGY DEV CO LTD
Assignee(s): TAOJIANG COUNTY WANYOU BIOLOGICAL ENERGY TECHNOLOGY DEVELOPMENT CO ; TAOJIANGXIAN WAN BIOLOGICAL ENERGY TECHNOLOGY DEVELOPMENT CO LTD
Inventor(s): (std): HU AICHU ; LI GONGHE ; LI GONGYOU

Title: SYSTEM OF RECOVERY OF WET CARBONACEOUS WASTES

Abstract: FIELD: ecology. SUBSTANCE: invention relates to recovery systems. A system of recovery wet carbonaceous wastes comprises a furnace, a **heat exchanger**, and an ash collector, the furnace is made of fluidised bed and comprises an arched housing of refractory material with a grate bar located at a distance of 1/3 of the height of the housing in its lower part, on which the **nozzle** screen is located, at that the total area of **nozzle** holes is about 30÷50 percent by area of the grate bar, and in the lower part of the furnace housing a screw discharger is mounted, and on the grate bar there is an inert carrier in the form of coarse quartz sand, and inside the boiler housing the water **heating pipes** are located, connected to the **heat**-consumer, at that the coolant is supplied to the **nozzles** by the blower fan connected by the **heat** conductor to the output of the high-temperature air **heater** of the **heat exchanger**, and in the side wall of the boiler the vortex **nozzle**-burner is mounted, operating on a gaseous fuel, such as biogas, supplied from the bioreactor, at that the wastes are fed from the pneumo-loading device through the spraying device formed with a tangential coolant inlet, and the **chimney** is located in one of the side walls of the boiler and is connected to the **heat** conductor to the **heat exchanger**, the output of which is connected to the ash collector comprising an inlet **pipe**, the housing, the outlet **pipe**, the **hopper**, the irrigation and spraying **nozzles** which are used as centrifugal **nozzles** for atomization of liquid, each of which comprises a housing with a vortex chamber and a **nozzle**, the housing is made in the form of a fitting with a hole for supplying liquid from the main line and rigidly connected to it with a cylindrical coaxial sleeve with the outer thread, and coaxially to the housing, in its lower part a **nozzle** is connected by the sleeve with the inner thread, formed as a second-stage centrifugal swirler in the form of a cylindrical cavity with at least three tangential inlets in the form of cylindrical holes, at that the sleeve is a part of the **nozzle** and is mounted coaxially and in alignment with respect the second-stage centrifugal swirler, which in the upper part is provided with a cylindrical part passing into the conical part forming an annular conical gap with the housing, and over the second-stage centrifugal swirler a vortex cylindrical chamber is mounted, which is the first stage of the liquid swirler, made in the form of a rod coaxially located in it, with the screw plate fixed on it, at that the rod is secured on three rods connected to the conical chamber, connecting the swirlers of the first and second stages, and the centrifugal swirler is mounted in the housing to form an annular cylindrical chamber for supplying liquid to the tangential inlets of the centrifugal swirler, the cylindrical cavity of which is connected to the outlet conical chamber of the **nozzle**. EFFECT: increased efficiency of energy resource-saving and flue gas cleaning. 1 dwg

Classifications:

International (IPC 8-9): C02F1/00 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
RU2544650 C1	20150320	RU20130146636	20131018

Priority:

RU20130146636 20131018

Probable Assignee: KOCHETOV OLEG SAVEL EVICH

Assignee(s): (std): KOCHETOV OLEG SAVEL EVICH ; KOCHETOV OLEG SAVELIEVICH

Inventor(s): (std): KOCHETOV OLEG SAVEL EVICH ; GETIJA IGOR GEORGIEVICH

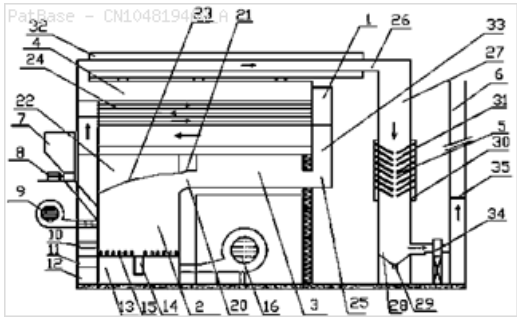
Title: HORIZONTAL BIOMASS BRIQUETTE FUEL FLUIDIZED BED **HEAT PIPE** BOILER

Abstract: The invention discloses a horizontal biomass briquette fuel fluidized bed **heat pipe** boiler. In the **heat pipe** boiler, a material **hopper**, a spiral material feeder, a second air blower, an ignition opening, a gas inlet, a dust cleaning opening are disposed at the left side of a combustion chamber. An air inlet chamber is arranged under the combustion chamber and is provided with an air **nozzle** and a gas **nozzle**, wherein the air **nozzle** is communicated with a first air blower. A plurality of vertical plates and transversal plates are disposed at interval in the second air blower. A reburning chamber is communicated with the combustion chamber through a first channel opening, wherein both the upper surface and the lower surface of the first channel opening are inclined. A first water tank is arranged above the combustion chamber, wherein the bottom of the first water tank is a second inclined surface. Two spiral smoke **pipes** are arranged in a boiler furnace. The boiler furnace is communicated with a **chimney** through a second channel. A waste **heat exchanger** is arranged on the second channel. In the invention, through a fluidized bed combustion method, combustion is fully completed due to cyclone disturbance by high-post secondary air. After dust removal at low smoke speed after combustion, cleaned high-temperature flue gas is fed into the boiler furnace for cyclone **heat** exchange. After three-pass, flue is discharged out from the boiler furnace and then is fed into a super-conductive **heat pipe heat exchanger** for decreasing the temperature and removing dust. The fluidized bed **heat pipe** boiler is lower than 120 degrees centigrade in smoke emission temperature and is higher than 85 percent in total thermal efficiency.

Classifications:

International (IPC 8-9): F23C10/00 F23C10/18 F23C10/20 F23C10/24 (Advanced/Invention)

CPC: F23C10/00 F23C10/18 F23C10/20 F23C10/24



Family:

Publication number	Publication date	Application number	Application date
CN104819460 A	20150805	CN201510229542	20150508

Priority:

CN201510229542 20150508

Probable Assignee: JIANGSU WANDAI ENVIRONMENTAL SCIENCE AND TECHNOLOGY CO LTD

Assignee(s): (std): JIANGSU WANDAI ENVIRONMENTAL SCIENCE AND TECHNOLOGY CO LTD

Assignee(s): BANDAI JIANGSU ENVIRONMENTAL SCIENCE AND TECHNOLOGY CO LTD ; JIANGSU WANDAI ENVIRONMENTAL SCIENCE AND TECHNOLOGY CO

Inventor(s): (std): XU JINGSONG

Title: SYSTEM OF DISPOSAL OF WET CARBON-CONTAINING WASTES

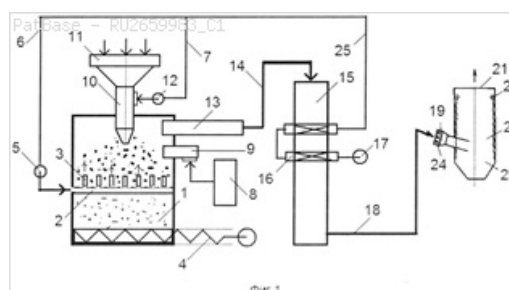
Abstract: FIELD: recycling and disposal of waste. SUBSTANCE: invention relates to recycling systems and can be used at thermal power plants, coal preparation plants, oil refineries in the disposal of hydraulic sludge and oil sludge, as well as on energy technology complexes for the utilization of sewage sludge. Recycling system contains a furnace, a **heat exchanger** and an ash collector. Furnace is made of a fluidized bed and contains a vaulted shell of refractory material with a grate rod on which the **nozzle** grate is located, and a screw unloader is installed in the lower part of the furnace body. Inside the boiler body there are water-**heating pipes** connected to the **heat** consumer. To **nozzles** there supplied is **heat** carrier from forced draft fan connected via **heat** piping to outlet of high-temperature air **heater** of **heat** exchange unit. Vortex **nozzle**-burner operating on gaseous fuel, for example biogas supplied from bioreactor, is installed in side wall of boiler. Waste is supplied from pneumatic loading device through spraying device provided with tangential **heat** carrier supply. **Chimney** is located in one of the side walls of the boiler and is connected by a **heat pipe** to a **heat exchanger**, the outlet of which is connected to the ash collector, containing an inlet branch, a body, an outlet branch, a **hopper**, irrigation and spray **nozzles**. As irrigation and spray **nozzles**, vortex atomizers with a screw conical swirler are used to spray the liquid. Each of the atomizers comprises a body and a fitting coaxially disposed and rigidly connected to it in the upper part with an inlet cylindrical hole connected to the diffuser, which is axially symmetric in the body, which has a perforated disk disposed on it. In the lower part of the housing, there is an axially symmetric housing with a **nozzle** with at least three protrusions centering it in an axial cylindrical chamber. **Nozzle** is made with a central hole, on the inner surface of which a screw thread is made. Between the perforated disk and the **nozzle** there is a hollow helical conical swirler with a screw thread. **Nozzle** is pressed against the atomizer body by a threaded washer with a central confuser. EFFECT: increase in the efficiency of energy conservation and cleaning of flue gases. 1 cl, 3 dwg

Classifications:

International (IPC 8-9): B05B1/34 C02F11/18

F23G7/05 (Advanced/Invention)

CPC: C02F11/18 F23G7/001 F23G7/05 B05B1/265 B05B1/3415



Family:

Publication number	Publication date	Application number	Application date
RU2659983 C1	20180704	RU20170142255	20171205

Priority:

RU20170142255 20171205

Probable Assignee: KOCHETOV OLEG SAVELIEVICH

Assignee(s): (std): KOCHETOV OLEG SAVELEVICH ; KOCHETOV OLEG SAVELIEVICH

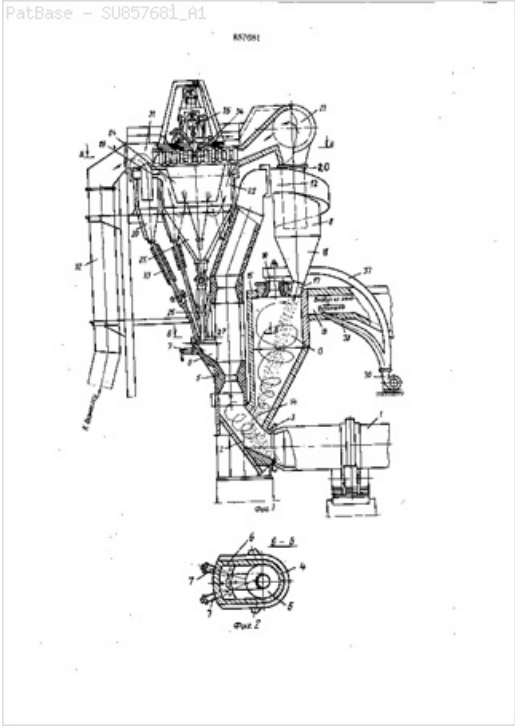
Inventor(s): (std): KOCHETOV OLEG SAVELEVICH

Agent(s): KOCHETOVU OLEGU SAVELEVICHU

Title: UNIT FOR FIRING RAW MIXTURE

Abstract: Source: SU857681T **Machine translation:** I Invention relates to building materials and can be used in the chemical industry, etc. x, which is used for firing furnace vraschayush.ies wet feed mixture to the spray dryer for drying the slurry prepared by any moisture. Known plant for calcination of cement raw material mixture in wet process soderzhashih vraschayushuyus oven and spray dryer slurry bonded to each other and the gas duct Feeding pipeline 1. Disadvantages known installation - low productivity furnace unit and large unit cost of metal, refractory, etc. The closest technical sushi, values and achieved result of the invention is an apparatus for burning cement raw meal wet process comprising cyclone preheater with an additional furnace, the inlet of which is connected to a storage chamber of the rotary kiln and the output - with camera spray dryer equipped discharge **hopper**, cyclone precipitator-E and unloading **pipes**. In the known apparatus cyclone preheater is connected to the kiln feed chamber through the flue, and an additional insert your **pipe** exhaust gases connected to the cyclone chamber tangentially 2. disadvantages of the known installation is the low intensity of the thermal preparation of microbeads slurry fed into the rotary kiln 10, the relatively large size of the unit, in particular the length of the kiln that does not provide a payback period of regulatory reconstruction of existing furnaces small and medium power (capacity 6-24 t / h 5 clinker). In known plant sludge microbeads only partially (the smallest fraction) dekarboniziruyuts cyclone preheater-by feeding it extra **heat** from the furnace connected to the cyclone. Degree of decarbonization is not greater than 10 percent. Therefore, the basic process of decarbonisation feed mixture flows into the rotary kiln. The last circumstance requires maintaining a sintering zone at a high thermal stress, which in turn contributes to reducing the durability of the lining in the sintering zone and KI (utilization factor) in the whole **heating** unit. object of the invention - povyschenie quality and increase productivity. Said object is achieved in that the apparatus for firing the raw mix in cement production by the wet method, comprising: a rotary kiln and spray tsiklonpodogrevatel suschilku with discharge **hopper**, cyclone precipitator-E and unloading **pipes** are fitted with ramjet-calciner reactor connected by download from the cyclone discharge cone **heater** and the discharge end of a storage chamber of the rotary kiln and the preheater ramjet dry microbeads schlama made as schachty with constriction and prechamber with burners mounted above constriction and unloading piping suschilki and cyclones precipitants entered into a prechamber above the burners. Fig. 1 illustrates installation general view; Fig. 2 - section B-B in Fig. One; Fig. 3 - section B-B in Fig. 1. apparatus for roasting raw mixture comprises the rotary kiln 1 from the loading chamber 2. between the oven 1 and the camera 2 is mounted an annular seal 3. camera installed above the loading straight-through **heater** 4 arranged in the form schachty. On the border between the preheater 4 and loading chamber 2 (bottom schachty) posted 5 constriction made in the form of a cylindrical channel constriction schachty **heater** 4. Directly above the constriction placed prechamber 6 adjacent burners 7. Above mine **heater** installed 4 cyclone preheater 8 with further: slnoy furnace burner 9 and 10. output portion 11 is connected to the combustor 9 of the cyclone chamber 8 (as well as inlet 12) tangentially so that the gas flows employed in the cyclone is directed to both channels in aimed One way. 12 cyclone **pipe** 8 is connected to the top of the **heater** schachty 4. Between cyclone preheater-loading chamber 8 and 2 1 rotary kiln calciner installed reactor 13 to the discharge end 14. Vault 15 in the calciner 13 is mounted burner device 16 and the **nozzle** 17 mounted discharge cone 18 8, the cyclone preheater. podsvodnomu K space calciner chamber 13 duct 19 is connected tangentially to the hot air supplied to the refrigerator of the linker (not shown). discharge end of the calciner 14 is connected to a storage chamber 2 of the furnace 1. outlet port 20, preheater cyclone 8 via manifold 21 is connected to the cylindrical portion 22 of the spray suschilki. suschilki cylindrical portion of the chamber 22 has inside guide vanes 23 and the separation chamber 24 frustoconical. The lower portion 22 has suschilki discharge **hopper** 25, which by degrees unloaded dressing conduit 26 communicates with prechamber 6 ramjet **heater** 4, and the output end of the pipeline in the vault 27 26.vveden prechamber 6 of 7 burners. in the wall of the cylindrical portion 22 of the spray suschilki against the separation chamber 24 are windows 28 for evacuation dusty flue gases, which are connected to the inlets 29 cyclones precipitators 30. Output connections cyclones precipitators 30 Connecting to a collection manifold 31, which in turn, is connected common flue 32. Tapered portion of the cyclone-precipitants by unloading 33 5 connected with a set of 27 prechamber 6, 32 is connected to the flue smoke sucker furnace unit. In the example rotary dryer 22 is provided with a centrifugal raspylitelem schlama 34 mounted in the roof and equipped with an electromotive suschilki 35. Moreover, the figure depicts the track fan 36 connected to ducts 37 and 38 respectively to burner device 16 and the duct 19 hot air. device operates as follows. Feed mixture is fed into any moisture disc centrifugal spray 34 whose drive, while rotating at a speed of 100-140 m / s, mass disperses schlama to particles 50-150 microns. Schlama particles ejected toward gases with a temperature of 800-1000 degrees C, resulting from the annular gas distributor formed profiled vanes 23 and the chamber wall spray suschilki. High-temperature gas fed to the dryer are formed during combustion in the kiln 1, a calciner 13, the prechamber 6 preheater 4 ramjet combustor 9, and further the cyclone preheater 8. schlama Particles in contact with high-temperature gases intensively vysuschivayuts harden in the form of microgranules, is defined by a thin-walled material with a moisture chaschekki by 0,1 percent, and a swirling gas flow conveyed into the separation chamber 24. Upon exiting the separation chamber 24 micro: granules lose their speed and spuskeyuts discharge **hopper** 25 at the dryer 22, and gases. chilled (on evaporation of moisture and **heating** dry granules) to a temperature of 130 - 200 degrees centigrade is rotated 180 degrees and, after passing through the annular space between the separation chamber 24 and the cylindrical wall of the dryer through 28 windows care into tubes 29 and then precipitators, cyclones 30. From the above cyclone 30 through the manifold assembly 31 and the flue gases 32 otsasyvayuts stove smoke exhaust filter to further limit exhauster is ejected into the **chimney**. The dried microgranules temperature 150-200 degrees centigrade from the discharge **hopper** 25 and the dryer cyclone separators 30 through sootvetsvuyushaya they discharge conduits 26 and 33 are provided in the prechamber space podsvodnoe 6 so that a fall in the fall of the jet of hot gases formed by during combustion of fuel supplied to the burner 7. gas temperature in the precombustion chamber correspondence 900 - 950 degrees C. The gas jets not only **heat** the material, but it is dispersed by the channel cross section of the preheater 4 ramjet above constriction 5. contraction After 5 Shijo exhaust gases from the kiln 1 and 13 of the calciner reactor flow rate not allow yushey microgranules provalivats 2 in the loading chamber of the furnace 1. velocity of the gas in the shaft preheater 4 and exceeds the rate of wool-microbeads, so last carried by the gases from the mine in the preheater cyclone preheater 8. temperature of the material when exiting the prechamber 6 mine is 400-500 degrees C. The temperature of the gases exiting the pinch 4, is about 1000 degrees C, since the furnace gases with a temperature of 1100-1150 degrees centigrade partially cooled gases from the calciner exit Shimi, temperature which is **heated** to 900-950 degrees C. In a cocurrent **heat exchanger** 4 the material is **heated** to a temperature 600-650 degrees C. Once inside the cyclone-preheater 8 under the action of the gas mixture exiting the combustor 9 further (temperatures between 1300-1400 degrees C) 4 and from the preheater (temperature 700-800C), the material is **heated** during cocurrent **heat** exchange to a temperature of 800-850 degrees C. The gases leaving the cyclone 8 are cooled to a temperature of 850-900 degrees centigrade and are directed through conduit 20 into manifold 21, where as indicated above, fed into the spray dryer chamber 22. sliding along the walls of the cyclone 8, microbeads fall within the discharge cone 18, of which input through the conduit 17 into the reactor space-podsvodnoe calciner 13. microgranules Here a flow of hot air sucked from clinker cooler air duct 19 and the additional flow of air supplied by the fan 36 duct 38, and intensively dispersed evenly distributed over the cross section of the reactor, the calciner 13. Microgranules further subjected to **heat** treatment gases derived from the combustion of additional fuel (the amount of 40 percent of the total amount of fuel burned in the facility) in a specific set, the arch 15 of the calciner 13, a burner device. By tightening tangential inlet gas stream of hot air, the microgranules are gradually deflected toward the chamber wall and to slide to a discharge portion 14, from the loading chamber to fall into the furnace 1 2. material temperature 5 calciner maintained at 850-950 degrees centigrade (depending on the properties of the feed and fuel). Under the influence of vacuum created by exhauster furnace gases with the material of which the degree of decarbonation is 80-90 percent, stem 2 into the loading chamber of the furnace 1. Upon crossing the high temperature kiln gas stream microgranules pass final **heat** treatment furnace is almost completely and dekarboniziruyuts da5 Lee flow into a sintering furnace 1. intensification of **heat** treatment of the material is achieved by repeated exposure to the material present in suspension, high-temperature gases. claims apparatus for roasting raw mixture j cement manufacturing wet process comprising a rotary kiln with cyclone preheater furnace and additional spray suschilku with discharge **hopper**, cyclone precipitator-E and unloading, wherein 0 that in order to improve quality and increase productivity, it is fitted with ramjet-calciner reactor connected by booting from a rout. dressing cyclone cone-discharge end of the preheater and with the loading chamber of the rotary kiln and preheater cocurrent dry micropellets sludge formed in the shaft with a constriction and with prechamber burners mounted above the constriction and unloading **pipes** 0 dryers and cyclones, precipitators entered into a prechamber above the burners. Sources of information received into account in the examination of I. USSR Author's Certificate number 453547, cl.. F 27 B 7/34, 1973. May 2. USSR Author's Certificate number 465536, cl. In 27 F 7/34, 1972.

Classifications:
International (IPC 8-9): F27B7/34 (Advanced/Invention);
F27B7/20 (Core/Invention)
International (IPC 1-7): F27B7/34



Family:

Publication number	Publication date	Application number	Application date
SU857681 A1	19810823	SU19792860895	19791228
SU857681 T	19810823	SU19792860895	19791228

Priority:

SU19792860895 19791228

Probable Assignee: GVNII TSEMENTNOJ PROMY

Assignee(s): (std): GVNII TSEMENTNOJ PROMY

Assignee(s): GV PNII TSEMENTNOJ PROMYSHLENNOSTI

Inventor(s): (std): ANANENKO NIKOLAJ F ; BOROVNIKOV VLADIMIR I ; CHERVINSKIY GENRIKH A ; DMITRIEV ALEKSEJ M ; KHOLODOVA EVGENIYA L ; KRASHENINNIKOV NIKITA N ; KULABUKHOV VADIM A ; LAZUTOV IVAN YA ; MIEZIS MATIS M

Inventor(s): MIEZIS MATIS M SU ; LAZUTOV IVAN YA SU ; KULABUKHOV VADIM A SU ; KRASHENINNIKOV NIKITA N SU ; KHOLODOVA EVGENIYA L SU ; DMITRIEV ALEKSEJ M SU ; CHERVINSKIY GENRIKH A SU ; BOROVNIKOV VLADIMIR I SU ; ANANENKO NIKOLAJ F SU

Title: SYSTEM FOR RECYCLING WET CARBON-CONTAINING WASTES

Abstract: FIELD: chemistry. SUBSTANCE: system contains a boiler body, a fluidized-bed furnace, a **heat exchanger** and an ash collector, the furnace contains a vaulted shell of refractory material with a grate located at a distance of 1/3 of the body height from its lower part, on which the **nozzle** array is located. The total area of **nozzle** apertures is about 30÷50 percent of the grate area, and a screw unloader is installed in the lower part of furnace body. On the grate there is an inert carrier in the form of coarse-grained quartz sand, and inside the boiler body there are water-**heating pipes** connected to the **heat** consumer. The **nozzle** is supplied with a coolant from an air blower connected by a **heat pipe** to the outlet of a high-temperature air **heater** of the **heat exchanger**, and a vortex **nozzle**-burner is installed in the side wall of the boiler, operating from gaseous fuel, for example biogas coming from a bioreactor. The waste is supplied from the pneumatic loading device through a spraying device made with a tangential supply of the **heat** carrier, and the **chimney** is located in one of the side walls of the boiler and is connected by a **heat pipe** with a **heat exchanger**, the output of which is connected to the ash collector containing an inlet branch, a body, an outlet, a **hopper**, irrigation and spray **nozzles**, which are used as centrifugal **nozzles** for spraying liquids. EFFECT: improving the efficiency of energy conservation and purification of flue gases. 2 cl, 2 dwg

Classifications:

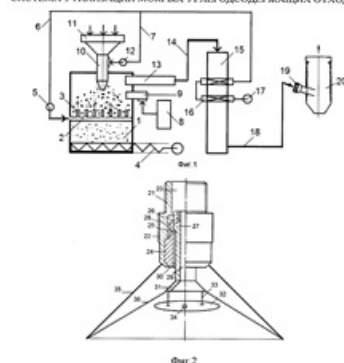
International (IPC 8-9): B22C1/00 (Advanced/Invention)

CPC: B22C1/00

PatBase - RU2625189_C1

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СИСТЕМА УТИЛИЗАЦИИ МОКРЫХ УГЛЕРОДСОДЕРЖАЩИХ ОТХОДОВ



Family:

Publication number	Publication date	Application number	Application date
RU2625189 C1	20170712	RU20160140678	20161017

Priority:

RU20160140678 20161017

Probable Assignee: KOCHETOV OLEG SAVELIEVICH

Assignee(s): (std): KOCHETOV OLEG SAVELEVICH ; KOCHETOV OLEG SAVELIEVICH

Inventor(s): (std): KOCHETOV OLEG SAVELEVICH

Title: PYROLYSIS OF FORESTRY AND FARMING WASTE OR OF PLASTICS, ETC. - TO GIVE PRODUCER GAS AND OTHER PRODS.

Abstract: Processes are claimed for the pyrolysis of biological materials, e.g. agricultural or forestry wastes, or of waste mfd. organic prods., e.g. used tyres, plastics or paper, giving carbon, oils and gases as primary prods. Producer gas, obtd. by partial combustion of the primary prods. or of the feedstock during pyrolysis is a pref. final prod. Pyrolysis may be initiated by the **heat** from burning charcoal or from a carbon prod., and the primary prods. may be fed to this bed. 15 forms of appts. are claimed. The various appts. separately incorporate the following: use of chopped straw or wood chips as feed; pre-drying of feed with process **heat**; fractional condensation of pyrolysis liq. to tar and fractions rich in acetic acid, water and methanol; use of centrifuges for fractionation of gases at pressure or of tar vapours, or (as a centrifugal gasifier) during gasification; pyrolysis in a steam-air mixt., the steam being raised by the process's own **heat**; and briquetting of charcoal prod. to avoid smoke from later combustion. Also claimed are purificn. of pyrolysis gas for feeding to a petrol engine run on binary fuel; and the soil **heating** of market gardens, using gas from rapid composting. Used for generation of **heat**, producer gas and pyrolysis prods., esp. in developing countries lacking coal and oil. The processes are environmentally acceptable.

Classifications:

International (IPC 8-9): C10B53/00 C10J3/58 (Advanced/Invention); C10B53/00 C10J3/00 (Core/Invention)

International (IPC 1-7): C10B53/00 C10B53/02 C10B57/02 C10J3/00 C10J3/66

CPC: C10J3/58 C10B53/00 C10J3/487 C10J3/60 C10J3/66 C10J3/74 C10J3/84 C10J2300/0909 C10J2300/0916 C10J2300/092 C10J2300/0946 C10J2300/0956 C10J2300/164 Y02E50/32 Y02P20/129 Y02P20/145

European: C10B53/00 C10J3/58 Y02E50/32

PatBase - DE3030593_A1

Number: 3030593
Int. Cl. C10B53/00
Annalding: 11 August 1982
Offenlegungsgang: 11 März 1982

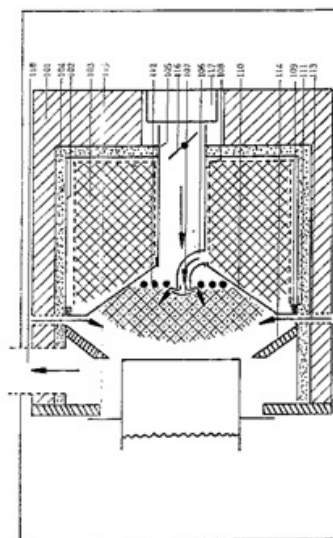


Fig. A

Family:

Publication number	Publication date	Application number	Application date
DE3030593 A1	19820311	DE19803030593	19800811
DE3030593 C2	19870115	DE19803030593	19800811

Priority:

DE19803030593 19800811

Probable Assignee: MICHEL KIM HERWIG

Assignee(s): (std): MICHEL KIM HERWIG

Assignee(s): MICHEL KIM HERWIG 1000 BERLIN DE

Inventor(s): (std): NICHTNENNUNG ANTRAG AUF

Inventor(s): VERZICHT DES ERFINDERS AUF NENNUNG

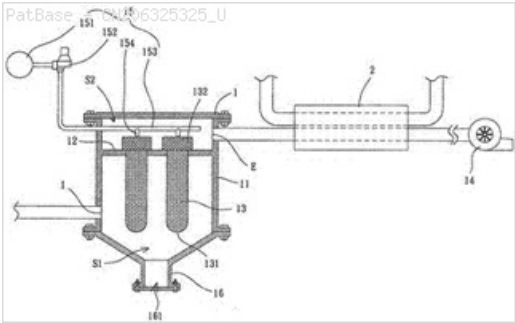
Title: HIGH TEMPERATURE WASTE GAS PROCESSING APPARATUS

Abstract: The utility model provides a high temperature waste gas processing apparatus which characterized in that: high temperature waste gas processing apparatus contains filter and **heat exchanger**, the filter contains the casing, and the casing is equipped with the shim, divides into first accommodation space and second accommodation space with the inside of casing, the casing is equipped with into gas port and gas vent, goes into the first accommodation space of gas port intercommunication, gas vent intercommunication second accommodation space, the filter contains the **chimney** filter, and the **chimney** filter has blind end and open end, and the **chimney** filter runs through the shim, and the blind end is located first accommodation space, and the open end is located the second accommodation space, **heat exchanger** communicates the gas vent. A second accommodation space intercommunication air exhaust device. **Hopper** is established to the casing in the bottom, the controllable opening is established to lower **hopper**. A jetting device can be established in addition to the filter, and the jetting device contains compressed gas source, solenoid valve, jetting **pipe** and **nozzle**, and the solenoid valve is located between compressed gas source and the jetting **pipe**, the mouth end of **nozzle** counterpoint **chimney** filter. The beneficial effects of the utility model are that: the rate of recovery of elevating mast ability promotes the dust exhaust convenience.

Classifications:

International (IPC 8-9): B01D46/24 (Advanced/Invention)

CPC: B01D46/24 B01D46/0021 B01D46/0071



Family:

Publication number	Publication date	Application number	Application date
CN106390632 A	20170215	CN201611103885	20161205
CN206325325 U	20170714	CN201621322485U	20161205

Priority:

CN201611103885 20161205 CN201621322485U 20161205

Probable Assignee: NINGBO PINGHAI BUILDING MAT CO LTD

Assignee(s): (std): NINGBO PINGHAI BUILDING MAT CO LTD

Assignee(s): NINGBO PINGHAI BUILDING MATERIALS CO ; NINGBO SEA BUILDING MATERIAL CO LTD

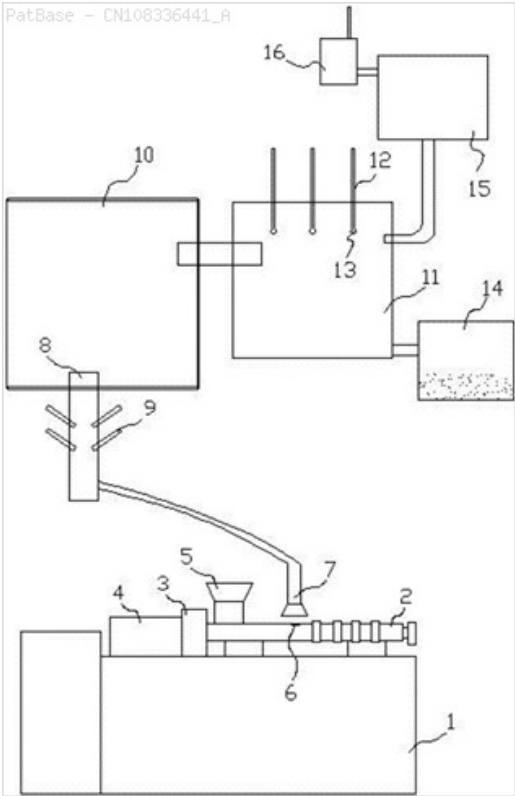
Inventor(s): (std): ZHU ZIZHEN

Title: Waste of battery shell environmentally efficient regeneration preparation system (Machine translation)

Abstract: Source: CN108336441A **Machine translation:** One kind of waste battery shell environmentally efficient regeneration preparation system, including a rack, the upper rack is provided with a sleeve, the sleeve is installed extrusion screw extrusion extruder, extrusion screw on one end connected to the gear box, gear box connected to the motor, the extruded sleeve is connected into the **hopper**, extrusion sleeve has opened a vent, the vent hole is provided above the suction **pipe**, the suction **pipe** is flared, covering the exhaust hole, the air intake duct and the other end connected to the **chimney**, the **chimney** outer wall of the upper end opened into the pores, and the intake vent hole, is inserted oxygen lance, **chimney** on the port connected to the high temperature exhaust gas **heat exchanger**, high temperature exhaust **heat exchanger** discharge outlet through a **pipe** connected to the spray chamber, the spray chamber upper portion is provided with spray tube, spray tube one end is located in the spray chamber mounted **nozzle**, spray chamber, the spray chamber through a **pipe** connected to the sedimentation tank through the upper connecting valve connected to the desulfurization tower, the desulfurization tower at the top of the exhaust **pipe** to the gas components, the gas component analyzer analyzer analysis after passing into air emissions.

Classifications:

International (IPC 8-9): H01M10/54 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
CN108336441 A	20180727	CN201810072319	20180125

Priority:

CN201810072319 20180125

Probable Assignee: JIESHOU CITY DAYS CLONED PLASTIC IND CO LTD

Assignee(s): JIESHOU CITY DAYS CLONED PLASTIC IND CO LTD

Title: A method and apparatus for burning fuel and absorbing **heat**

Abstract: 815,725. Combustion apparatus; recirculating combustion gases. COMBUSTION ENGINEERING Inc. April 30, 1956 [June 21, 1955], No. 13160/56. Class 51 (1). [Also in Group XIII] Fuel is burnt in a boiler furnace in the presence of oxygen and recirculated combustion gases. As shown, pulverized coal is blown into a combustion chamber 4A, Fig. 1, through **nozzles** 42, Fig. 2, in a recirculated gas stream taken from the boiler gas-flow path by a fan 52 and blown through **pipes** 60, 56, entraining the coal in the latter **pipe** as it drops from a **hopper** 54. Oxygen from a vessel 66 is mixed with the coal and gas before its discharge through the **nozzles** 42 in such proportions that incomplete combustion ensures and the products, passing through a throat 46 into a combustion chamber 4B, contain a large amount of combustibles. Before its passage through the throat 46 additional gas-borne pulverised coal is added to the combustible mixture through tangentially directed **nozzles** 44. Preferably the **nozzle** sets 42, 44 are disposed to fire in opposite directions. The gases passing through the chamber 4B are cooled by a high-temperature reheater 30 before admixture with tangentially introduced streams of mixed recirculated gas and oxygen issuing through **nozzles** 45. The resulting products of complete combustion then pass to a **chimney** via a high-temperature superheater 20, a low-temperature superheater 16, a low-temperature reheater 26 and an economizer 48. Individual control of superheat and reheat steam temperatures may be effected by controlling the proportions of recirculated gas and oxygen passed into the chambers 4A, 4B. Reheat and superheat temperature variations are recorded by respective devices 80, 84, the temperature impulses received by them being translated into mechanical motion operative in oxygen adjusting valves 82, 78, and recirculated gas dampers 74, 72, by known electric, pneumatic or hydraulic devices 92, 90, 86, 88. Specification 815,724 is referred to.

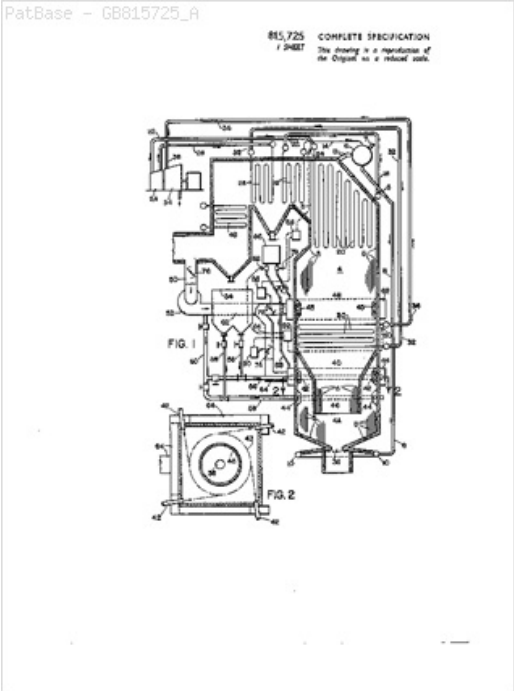
Classifications:

International (IPC 8-9): F22B21/34 F22G5/04 F23C3/00 F23C5/32 F23C9/00 F23L7/00 (Advanced/Invention)

International (IPC 1-7): F23C5/14

CPC: F22B21/341 F22G5/04 F23C3/008 F23C5/32 F23C9/00 F23L7/007 F23L2900/07001 Y02E20/322 Y02E20/344

European: F22B21/34E F22G5/04 F23C3/00F1 F23C5/32 F23C9/00 F23L7/00D R23L900/07001 Y02E20/32B Y02E20/34D



Family:

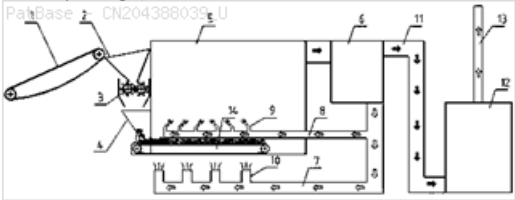
Publication number	Publication date	Application number	Application date
GB815725 A	19590701	GB19560013160	19560430

Probable Assignee: COMBUSTION ENG
Assignee(s): (std): COMBUSTION ENG
Assignee(s): COMBUSTION ENGINEERING INC

Title: CLEAN COMBUSTING SYSTEM FOR MODIFYING COAL BOILER INTO COMBUSTING BLOCK TYPE WASTE WOOD BOILER

Abstract: The utility model relates to a clean combusting system for modifying a coal boiler into a combusting block type waste wood boiler, and belongs to the technical field of biomass boilers. The clean combusting system is characterized in that a material **hopper**, an extrusion roll and a coal **hopper** are sequentially arranged at the bottom part of a fuel conveying belt, the coal **hopper** is arranged in front of the boiler, a boiler body is sequentially connected with a **heat exchanger**, a tail gas pipeline, a dedusting and purifying system and a **chimney** through a pipeline, the **heat exchanger** is communicated with a spray **nozzle** through a secondary oxygen supply **pipe**, and is communicated with a primary air delivery opening through a primary air delivery **pipe**, a chain grate is arranged at the bottom part of the boiler body, the primary air delivery opening is arranged under the chain grate, and the spray **nozzle** is arranged above the chain grate. The clean combusting system for modifying the coal boiler into the combusting block type waste wood boiler has the characteristics that the structure is simple, the cost is low, the **heat** efficiency is high, and the like.

Classifications:
International (IPC 8-9): F23B40/00 F23L1/00 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
CN204388039 U	20150610	CN201520005131U	20150106

Priority:
CN201520005131U 20150106

Probable Assignee: WEI XING
Assignee(s): (std): WEI XING
Inventor(s): (std): FANG TINGYONG ; WEI XING

Title: SEWAGE TREATMENT PLANT

Abstract: Waste water conditioning has nearly 150 years of history. During this time, a method has developed that is considered to be state of the art. While this method meets the requirements at hand, it is complicated and expensive. The novel method breaks down the rigidly entrenched method and simplifies it. In a plurality of stages, the only energy that is used is gravity, which is readily available and free of cost. Thus, an "alternative sewage treatment plant" has been developed, which has a simpler method and is less expensive in terms of investment costs and operating costs, at the same capacity, and requires only a fraction of the previous required surface area. The most important characteristic of the invention is that the novel method separates solids from waste water immediately after entering the sewage treatment plant. Mechanically purified water is much faster, easier and less expensive to purify. The paths pursued for conditioning of the sludge are also new. The sludge is regarded as an energy source or recyclable material, which should be utilized accordingly. According to the invention, the prerequisite for utilizing the sludge is also created by economically drying it to 95 to 98 percent dry substance.

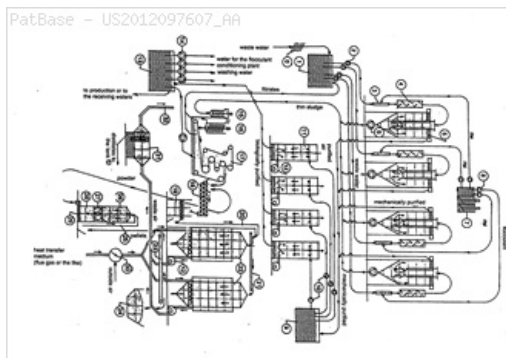
Classifications:

International (IPC 8-9): B02C13/00 C02F1/54 C02F11/00 C02F11/12 C02F11/14 C02F3/04 C02F9/14 F26B21/00 (Advanced/Invention); C02F1/54 C02F11/12 C02F3/04 (Core/Invention)

CPC: Y02W10/15 C02F3/04 C02F11/12 C02F11/123

European: C02F11/12 C02F11/12C4 C02F3/04

US: 210/114 210/114S 210/151 210/151S 210/298 210/298S 210/609 241/194 241/194S 34/524 34/524S 425/6 425/6S



Family:

Publication number	Publication date	Application number	Application date
DE102009004619 A1	20110217	DE200910004619	20090115
EP2387550 A2	20111123	EP20100706901	20100115
IN03397KN2011 A	20121102	IN2011KN03397	20110811
MA33036 B1	20120201	MA20110034077	20110805
RU2011134036 A	20130220	RU20110134036	20100115
US2012097607 AA	20120426	US20100138170	20100115
WO10081471 A2	20100722	WO2010DE000065	20100115
WO10081471 A3	20101028	WO2010DE000065	20100115

Priority:

DE200910004619 20090115 WO2010DE000065 20100115

Probable Assignee: CABINET AKSIMAN

Assignee(s): (std): CABINET AKSIMAN ; MERAI JOSEF

Inventor(s): (std): MERAI JOSEF

Agent(s): BERNHARDT REINOLD; BERNHARDT REINHOLD ET AL

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: PROCEDE ET DISPOSITIF POUR LE DEGAZAGE DE COMBUSTIBLES METHOD AND DEVICE FOR FUEL DEGASSING
(Machine translation)

Abstract: Source: FR1255305A [FR] (Claim 1) 1. Un procede de degazage de combustibles, dans lequel le combustible a l'etat finement broye est melange a un gaz sustentateur, remarquable en ce que le degazage s'effectue en deux stades.

Machine translation: (Claim 1) 1. A method for degassing fuel, in which the fuel in a finely milled mixture is a gas sustainer, remarkable in that the degassing takes place in two stages.

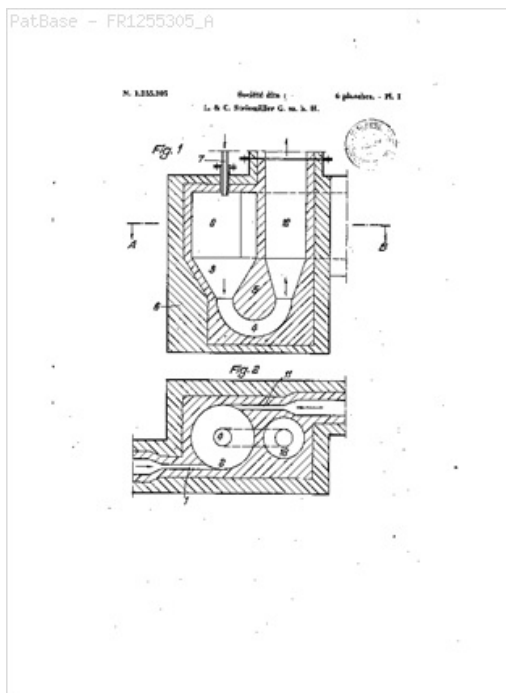
Classifications:

International (IPC 8-9): C10B49/08 (Advanced/Invention);
C10B49/00 (Core/Invention)

International (IPC 1-7): C10B49/12

CPC: C10B49/08

European: C10B49/08



Family:

Publication number	Publication date	Application number	Application date
FR1255305 A	19610310	FR19550685982	19550219

Priority:

FR19550685982 19550219

Probable Assignee: STEINMUELLER GMBH L AND C

Assignee(s): (std): STEINMUELLER GMBH L AND C

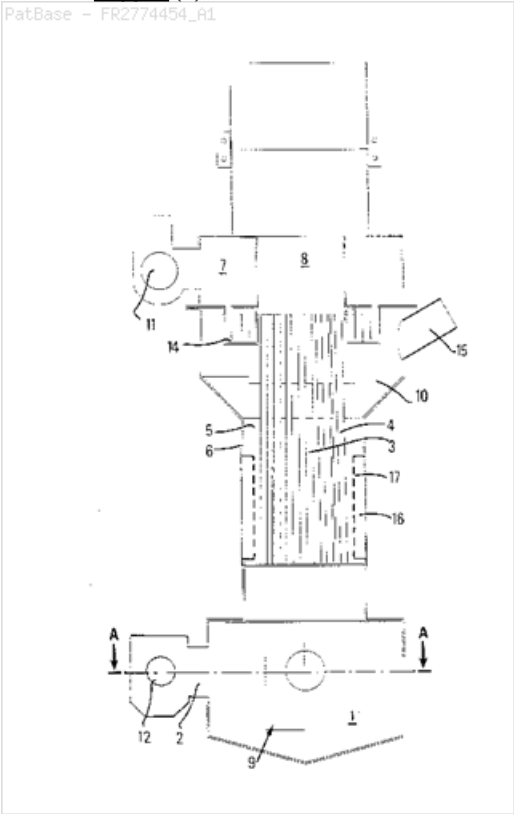
Assignee(s): L AND C STEINMUELLER G M B H ; L AND C STEINMUELLER GMBH

Title: Combustor for mixed waste

Abstract: The combustor has an ignition chamber (1) with a primary air inlet (2) under a combustion chamber (3). The ignition chamber has a gas burner (9) for ignition. A secondary air inlet chamber (7) opens at he upper part of the main flame. An intermediate waste container (10) is positioned to open into the main **hopper** (5).

Classifications:

International (ipc 8-9): F23G5/00 F23G5/24 F23G5/44
F23G5/46 (Advanced/Invention);
F23G5/00 F23G5/24 F23G5/44 F23G5/46 (Core/Invention)
International (ipc 1-7): F23G5/24 F23G5/46 F23G5/50 F24H1/20
F24H9/20
CPC: F23G5/002 F23G5/24 F23G5/444 F23G5/46 F23G2203/403
European: F23G5/00B F23G5/24 F23G5/44B1 F23G5/46
R23G203/403



Family:

Publication number	Publication date	Application number	Application date
FR2774454 A1	19990806	FR19980001273	19980202
FR2774454 B1	20000303	FR19980001273	19980202

Priority:

FR19980001273 19980202

Probable Assignee: IFP ENERGIES NOUVELLES

Assignee(s): (std): IFP ENERGIES NOUVELLES ; INST FRANCAIS DU PETROL ; INST FRANCAIS DU PETROLE

Assignee(s): INSTITUT FRANCAIS DU PETROLE ; FRANCAIS DU PETROLE INST

Inventor(s): (std): FLAMENT PATRICK ; GARNIER DOMINIQUE ; HENDOU MOULOU ; LACAZE PIERRE