

1) Family number: 40723055 (US2007283902A)

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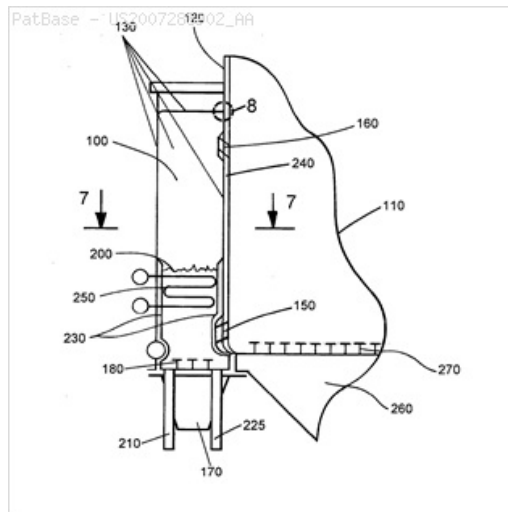
Title: INTEGRATED FLUIDIZED BED ASH COOLER

Abstract: An integrated fluidized bed ash cooler for a fluidized bed boiler, particularly a circulating fluidized bed (CFB) boiler, employs at least two fluidized bed sections positioned in series along a solids flow path. Each section contains fluidizing means, the first section along the solids path being separated from a following section with a threshold. The first section contains means for measuring a bed temperature in the vicinity of the fluidizing means and at a higher elevation within the fluidized bed. Means are provided for removing oversized bed material from the first section to facilitate the removal of ash while minimizing the possibility of ash plugging during operation.

Classifications:**International (IPC 8-9):** B01J8/24 B01J8/28 F23C10/00 F23C10/02

F23C10/18 F23C10/24 F23G5/30 F23J1/00 (Advanced/Invention);

F23C10/00 F23J1/00 F27D15/00 (Core/Invention)

International (IPC 1-7): F23C10/02 F23G5/16 F23G5/30**CPC:** F23C10/18 F23J1/00 F23J2900/01002**European:** F23C10/18 F23J1/00 R23J900/01002**US:** 122/4.00D 122/4.00DP 122/400D 122/4D 422/139 432/80**Family:**

Publication number	Publication date	Application number	Application date
CA2585400 AA	20071019	CA20072585400	20070419
CA2585400 C	20150106	CA20072585400	20070419
DE602007044366 D1	20160218	DE200760044366T	20070418
EP1847773 A2	20071024	EP20070251631	20070418
EP1847773 A3	20140108	EP20070251631	20070418
EP1847773 B1	20151230	EP20070251631	20070418
ES2564792 T3	20160329	ES20070251631T	20070418
HU028669 T2	20161228	HU20070251631T	20070418
IN00615KO2007 A	20071102	IN2007KO00615	20070419
PL1847773 T3	20160630	PL20070251631T	20070418
RU2007114797 A	20081027	RU20070114797	20070419
RU2436013 C2	20111210	RU20070114797	20070419
UA94697 C2	20110610	UA20070004354	20070419
US2007283902 AA	20071213	US20060406765	20060419
US7464669 BB	20081216	US20060406765	20060419

Priority:

US20060406765 20060419 EP20070251631 20070418 CA20072585400 20070419

Probable Assignee: BABCOCK AND WILCOX CO**Assignee(s):** (std): BABCOCK AND WILCOX POWER GENERAT ; JAMES DAVID E ; MARYAMCHIK MIKHAIL ; WIETZKE DONALD L ; SZMANIA MICHAEL J ; WALKER DAVID J ; BABCOCK AND WILCOX CO ; BABCOCK AND WILCOX CO A DELAWARE CORP**Assignee(s):** BABCOCK AND WILCOX CO BARBERTON ; BABCOCK AND WILCOX POWER GENERATION GROUP INC ; BABCOCK AND 38 WILCOX CO ; DZE BEHBKOK EHND UILKOKS KOMPANI ; LIGHTSHIP CAPITAL LLC ; DIAMOND POWER INT LLC ; MEGTEC TURBOSONIC TECHNOLOGIES INC ; BANK OF AMERICA NA ; BANK OF AMERICA NA ADMINISTRATIVE AGENT AS ; BABCOCK AND WILCOX POWER GENERATION GROUP INC20 S. VAN BUREN AVENUEBARBERTONOH44203US ; BABCOCK AND WILCOX CO20 S. VAN BUREN AVENUEP.O. BOX 351BARBERTONOH44203-0351US ; BABCOCK AND WILCOX ENTERPRISES INC ; BABCOCK AND WILCOX MEGTEC LLC ; BABCOCK AND WILCOX TECHNOLOGY LLC ; BABCOCK AND WILCOX UNIVERSAL INC ; THE BABCOCK AND WILCOX COMPANY**Inventor(s):** (std): DZHEJMS DEHVID DZH ; SHMANIJA MAJKL DZH ; UOLKER DEHVID DZH ; MARIAMCHIK MAJKL ; VIETSKÉ DONAL D L ; WALKER DAVID J ; SZMANIA MICHAEL J ; WIETZKE DONALD L ; MARYAMCHIK MIKHAIL ; JAMES DAVID E**Inventor(s):** JAMES DAVID ; SZMANIA MICHAEL ; WIETZKE DONALD ; WALKER DAVID ; WALKER DAVID J WADSWORTH ; WIETZKE DONALD L CARLSBAD ; MARYAMCHIK MIKHAIL FAIRLAWN ; JAMES DAVID E BARBERTON ; SZMANIA MICHAEL J MEDINA ; SZMANIA MICHAEL JUS ; WIETZKE DONALD LUS ; JAMES DAVID EUS ;

WALKER DAVID JUS ; MARYAMCHIK MIKHAILUS ; VIETSKE DONAL'D L.

Agent(s): RIDOUT AND MAYBEE LLP; D YOUNG AND CO LLP; MELDRUM DAVID JAMES; ISERN JORGE; PATENT DEPARTMENT, THE BABCOCK AND WILCOX COMPANY; PATENT DEPARTMENT BABCOCK AND WILCOX CO; MARICH ERIC; SEYMOUR MICHAEL J; ERIC; MICHAEL J

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

2) Family number: 12571110 (US6125634A)

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Title: Power plant

Abstract: A method for operating a power plant includes generating flue gas in a furnace of a fossil-fueled steam generator and generating steam for a steam turbine from heat contained in the flue gas. The steam is superheated prior to entry into the steam turbine and after partial expansion in the steam turbine. Feedwater is preheated exclusively outside the steam generator. The preheated feedwater is evaporated at high pressure. Nitrogen is removed from the hot flue gas directly following heat exchange of the flue gas with the partially expanded steam. A power plant includes a fossil-fueled steam generator having a combustion chamber wall being constructed as an evaporator heating surface, a number of tubes of the evaporator heating surface being gas-tightly joined together and having inlet ends, an inlet collector communicating with the inlet ends of the tubes, and an intermediate superheater. A deNO_x device is disposed directly downstream of the intermediate superheater in flow direction of flue gas. A steam turbine is disposed down-stream of the steam generator. A feedwater preheater is disposed outside the steam generator. An inlet side of the feedwater preheater communicates with the steam turbine and a feedwater line directly connects an outlet side of the feedwater preheater with the inlet collector.

Classifications:

International (IPC 8-9): F01K3/18 F22B37/00 F22D1/32

F23J15/00 (Advanced/Invention);

F23J15/00 (Core/Invention)

International (IPC 1-7): F01K3/18 F01K7/34 F22B37/00 F22D1/32

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CPC: F22B37/008

European: F22B37/00D

US: 60/678 60/679

JP F-Term: 3G080 3L074

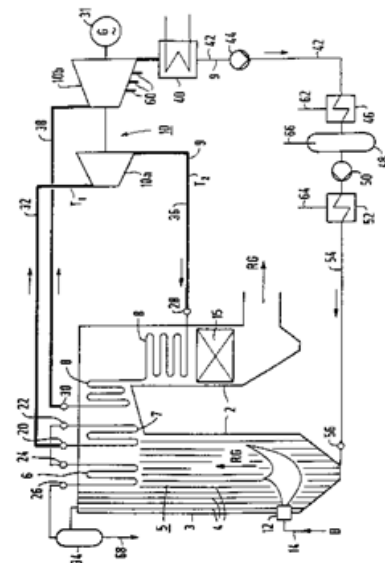
JP F-Index: F01K3/18 F22D1/32/Z

PatBase - US6125634_A

U.S. Patent

Oct. 3, 2000

6,125,634



Family:

Publication number	Publication date	Application number	Application date
CN1056664 C	20000920	CN19931018632	19930928
CN1089331 A	19940713	CN19931018632	19930928
DE59301406 D1	19960222	DE19935001406	19930915
EP0595009 A1	19940504	EP19930114883	19930915
EP0595009 B1	19960110	EP19930114883	19930915
JP3535544 B2	20040607	JP19930268357	19930929
JP6229207 A2	19940816	JP19930268357	19930929
US6125634 A	20001003	US19990320001	19990526

Priority:

DE19924232881 19920930 DE19935001406 19930915 US19930129943 19930930
US19990320001 19990526

Probable Assignee: SIEMENS AG

Assignee(s): (std): SIEMENS AG

Assignee(s): SIEMENS AKTIENGESSELLSCHAFT

Inventor(s): (std): WITTCHOW E ; WITTCHOW EBERHARD DIPL ING ; EBAAHARUTO UITOKOFU ; WITTCHOW EBERHARD

Inventor(s): WITTCHOW EBERHARD DIPL ING D 91054 ERLANGEN DE ; E WITTCHOW ; EBERHARD WITTCHOW

Agent(s): YAMAGUCHI IWAO

Designated states: DE FR GB SE

Title: ENHANCED STEAM CYCLE UTILIZING A DUAL PRESSURE RECOVERY BOILER WITH REHEAT

Abstract: An enhanced steam cycle utilizing a dual pressure recovery boiler with reheat allows a large increase in electrical generation with various turbine cycles while overcoming traditional lower furnace material limitations. A dual pressure designed recovery boiler furnace is provided with a lower furnace and an upper furnace. The lower furnace is operated at a lower temperature to prevent or reduce corrosion of the lower furnace wall tubes caused by the reducing environment. The lower furnace can be either a low pressure natural circulation steam generating (drum) system or economizer. Unlike the lower furnace, the upper furnace is not exposed to a reducing environment and is therefore not as susceptible to severe corrosion rates. The upper furnace is operated at higher temperatures and pressures which permit implementation of higher efficiency reheat steam cycles. The upper furnace thus operates as a high pressure natural circulation steam generating (drum) system, or as a once-through supercritical steam generating system. The dual pressure recovery boiler can thus be coupled to a variety of condensing, non-condensing or a combination of condensing and non-condensing turbine cycles to provide a large increase in electrical generation.

Classifications:

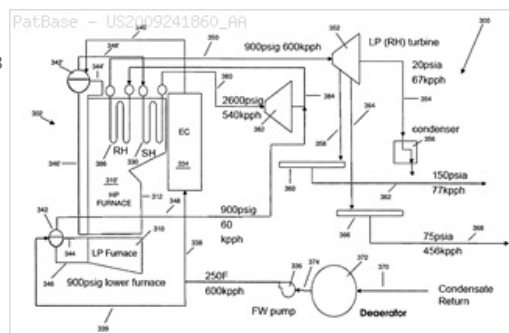
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B22D1/00 F01K23/02 F01K7/00 F22B1/00 F22B33/00 (Core/Invention)

CPC: F22B33/10 F22B33/14 Y02P60/831

European: F22B33/10 F22B33/14

US: 122/479.6 122/7.00RP 122/7R 60/653 60/676 60/677 60/679

**Family:**

Publication number	Publication date	Application number	Application date
BRPI0900749 A2	20091117	BR2009PI00749	20090219
CA2659213 AA	20090926	CA20092659213	20090320
CA2659213 C	20160712	CA20092659213	20090320
CL2009000694 A1	20091106	CL20090000694	20090320
CL52136 B	20160302	CL20090000694	20090320
EP2426411 A1	20120307	EP20090156249	20090326
EP2426411 B1	20170222	EP20090156249	20090326
RU2009110479 A	20100927	RU20090110479	20090324
RU2537823 C2	20150110	RU20090110479	20090324
US2009241860 AA	20091001	US20080055832	20080326
US8443606 BB	20130521	US20080055832	20080326

Priority:

US20080055832 20080326

Probable Assignee: BABCOCK AND WILCOX CO

Assignee(s): (std): HICKS TIMOTHY E ; OSBORNE STEVEN L ; MONACELLI JOHN E ; HINER LARRY A ; BABCOCK AND WILCOX POWER GENERAT ; BEHBKOK EHND UILKOKS PAUA DZHENEREJSHN GRUP INK ; BABCOCK AND WILCOX CO

Assignee(s): BABCOCK AND WILCOX POWER GENERATION GROUP INC ; AMERICON EQUIPMENT SERVICES INC ; AMERICON INC ; APPLIED SYNERGISTICS INC ; B AND W SERVICE CO ; BABCOCK AND WILCOX CHINA HOLDINGS INC ; DZE BEHBKOK EHND UILKOKS PAUA DZHENEREJSHN GRUP INK ; OSBORNE STEVEN I ; LIGHTSHIP CAPITAL LLC ; BABCOCK AND WILCOX UNIVERSAL INC ; DIAMOND POWER INT LLC ; MEGTEC TURBOSONIC TECHNOLOGIES INC ; PALM BEACH RESOURCE RECOVERY CORP ; POWER SYSTEMS OPERATIONS INC ; REVLOC RECLAMATION SERVICE INC ; BABCOCK AND WILCOX CONSTRUCTION CO INC ; BABCOCK AND WILCOX DENMARK HOLDINGS INC ; BABCOCK AND WILCOX EBENSBURG POWER INC ; BABCOCK AND WILCOX EQUITY INVESTMENTS INC ; BABCOCK AND WILCOX INT ; BABCOCK AND WILCOX INT INC ; BABCOCK AND WILCOX INT SALES AND SERVICE CORP ; BABCOCK AND WILCOX ENTERPRISES INC ; BABCOCK AND WILCOX MEGTEC LLC ; BABCOCK AND WILCOX TECHNOLOGY LLC ; DIAMOND OPERATING CO INC ; DIAMOND POWER AUSTRALIA HOLDINGS INC ; DIAMOND POWER CHINA HOLDINGS INC ; DIAMOND POWER EQUITY INVESTMENTS INC ; DIAMOND POWER INT ; NATIONAL ECOLOGY CO ; NORTH COUNTY RECYCLING INC ; BANK OF AMERICA NA ; BANK OF AMERICA NA ADMINISTRATIVE AGENT AS ; CREDIT SUISSE CAYMAN ISLANDS BRANCH COLLATERAL AGE ; DIAMOND POWER INT INC ; CREDIT SUISSE CAYMAN ISLANDS BRANCH AS COLLATERAL ; CREDIT SUISSE CAYMAN ISLANDS BRANCH COLLATERAL AGENT AS

Inventor(s): (std): LARRY A HINER ; JOHN E MONACELLI ; STEVEN I OSBORNE ; TIMOTHY E HICKS ; OSBORNE STEVEN L ; HINER LARRY A ; MONACELLI JOHN E ; OSBORNE STEVEN I ; HICKS TIMOTHY E ; KHINER LARRI A ; MONASSELLI DZHON E ; KHIKS TIMOTI E ; OSBORN STEVEN L

Inventor(s): JOHN E MONACELLI STEVEN I OSBORNE TIMOTHY E HICKS LARRY A HINER

Agent(s): RIDOUT AND MAYBEE LLP; ALESSANDRI; MELDRUM DAVID JAMES; D YOUNG AND CO LLP; BABCOCK AND WILCOX POWER GENERATION GROUP INC; ERIC

Designated states: AL BA FI NO RS SE

Title: STEAM GENERATOR ARRANGEMENT

Abstract: A method and apparatus effectively bypasses flue gas through or around selected boiler convection heat transfer tube

banks within a new or existing boiler flue. Heat transfer tubes are removed, or omitted in the design of a new boiler flue, forming one or more voids at one or more locations within the tube banks. A bypass flue or conduit is formed within each void, for example using steel plates, along with existing flue walls, or using an integral sleeve. A wall of the bypass flue may include water or steam-cooled tubes. Dampers may be installed at either end of or within the bypass flue to control the amount of flue gas directed through each bypass flue.

Classifications:

International (IPC 8-9): F22B23/04 F22B3/00 F22B37/40 F23J11/00

F23J15/00 F24H9/18 F28D7/00 (Advanced/Invention);

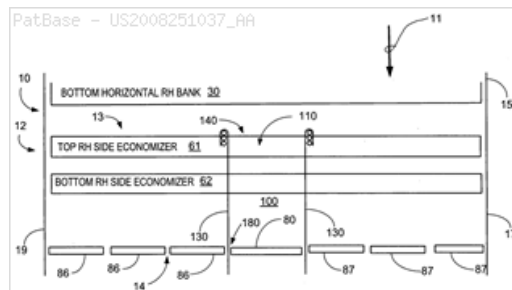
F22B3/00 (Core/Invention)

International (IPC 1-7): F28D21/00 F28D7/00

CPC: F22B35/001

European: F22B35/00B

US: 122/209.1 122/213 122/4.00RP 122/479.5 122/4R



CL2017000809 A1	20170929	CL20170000809	20170404
CO20170003041 A1	20181010	CO20170003041	20170329
DOP2017000091 A	20171031	DO20170000091	20170331
US2017284656 AA	20171005	US20160091221	20160405
US10415819 BB	20190917	US20160091221	20160405

Priority:

US20160091221 20160405

Probable Assignee: BABCOCK AND WILCOX CO

Assignee(s): (std): BABCOCK AND WILCOX CO

Inventor(s): (std): THAYER STEVEN D ; BENNETT ALBERT J ; DETZEL ROGER A ; WELLS ERIC L ; STEVEN D THAYER ; ROGER A DETZEL ; ALBERT J BENNETT ; ERIC L WELLS ; WELLS ERIC

Agent(s): ALESSANDRI Y COMPANIA; SEYMOUR MICHAEL J

6) Family number: 67136248 (US2017284657A)

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Title: HIGH TEMPERATURE SUB-CRITICAL BOILER WITH STEAM COOLED UPPER FURNACE

Abstract: A boiler is disclosed in which the furnace is divided into a lower furnace and an upper furnace. The lower furnace uses water-cooled membrane walls, while the upper furnace uses steam-cooled membrane walls that act as superheating surfaces. A transition section is present between the lower furnace and the upper furnace. The boiler is a high temperature sub-critical natural circulation boiler which is completely top supported. The lower furnace is supported through the transition section by the upper furnace.

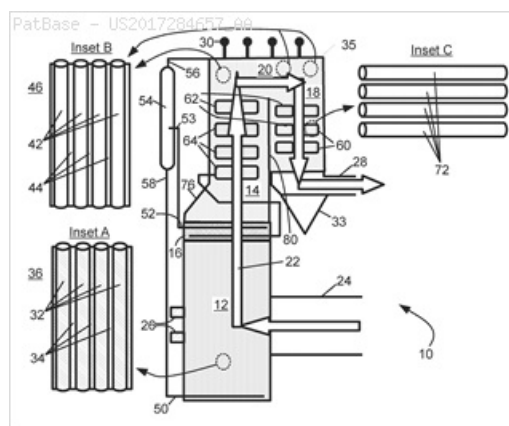
Classifications:

International (IPC 8-9): F22B1/08 F22B11/00 F22B21/00 F22B21/34 F22B31/04 F22B35/04 F22B37/00 F22B37/14 F22B7/00 F22B7/20 F22G5/20 F24D1/00 F24H1/00 F24H1/12 (Advanced/Invention)

International (IPC 1-7): F22B11/00

CPC: F22B21/34 F22B31/04 F22B35/04 F22B37/14 F22G5/20

US: 1/1 122/213



Family:

Publication number	Publication date	Application number	Application date
BR102017006764 A2	20171010	BR20171006764	20170331
CL2017000810 A1	20170929	CL20170000810	20170404
CO20170003160 A1	20181010	CO20170003160	20170331
DOP2017000092 A	20171031	DO20170000092	20170403
US2017284657 AA	20171005	US20160091236	20160405
US10429062 BB	20191001	US20160091236	20160405

Priority:

US20160091236 20160405

Probable Assignee: BABCOCK AND WILCOX CO

Assignee(s): (std): BABCOCK AND WILCOX CO

Assignee(s): BABCOCK AND WILCOX ENTERPRISES INC ; BABCOCK AND WILCOX MEGTEC LLC ; BABCOCK AND WILCOX TECHNOLOGY LLC ; LIGHTSHIP CAPITAL LLC ; BABCOCK AND WILCOX UNIVERSAL INC ; DIAMOND POWER INT LLC ; MEGTEC TURBOSONIC TECHNOLOGIES INC

Inventor(s): (std): STEVEN D THAYER ; ROGER A DETZEL ; ALBERT J BENNETT ; ERIC L WELLS ; WELLS ERIC ; WELLS ERIC L ; DETZEL ROGER A ; BENNETT ALBERT J ; THAYER STEVEN D

Agent(s): ALESSANDRI Y COMPANIA; SEYMOUR MICHAEL J

7) Family number: 67136250 (US2017284658A)

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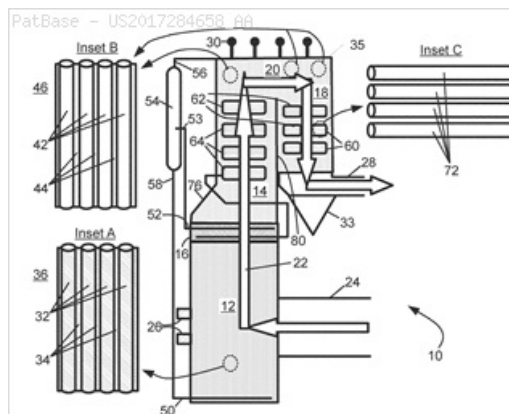
Title: HIGH TEMPERATURE SUB-CRITICAL BOILER WITH STEAM COOLED UPPER FURNACE AND START-UP METHODS

Abstract: A boiler is disclosed in which the furnace is divided into a lower furnace and an upper furnace. The lower furnace uses water-cooled membrane walls, while the upper furnace uses steam-cooled membrane walls that act as superheating surfaces. A steam-cooled circuit includes a steam separator, a primary superheater, and the steam-cooled membrane walls of the upper furnace. During start-up, a diversion path is opened that reduces dry steam flow through the primary superheater and increases dry steam flow through the steam-cooled membrane walls of the upper furnace. This protects the steam-cooled membrane walls from excessive thermal stresses during start-up.

Classifications:

International (IPC 8-9): F22B1/08 F22B11/00 F22B21/00 F22B31/00 F22B35/04 F22B37/00 F22B37/26 F22B7/00 F22B7/12 F22G5/20

F22G7/14 F24D1/00 F24H1/00 F24H1/12 (Advanced/Invention)
International (IPC 1-7): F22B11/00
CPC: F22B35/04 F22G5/20 F22B37/26 F22G7/14
US: 1/1 122/406.5



Family:

Publication number	Publication date	Application number	Application date
BR102017006765 A2	20171010	BR20171006765	20170331
CL2017000808 A1	20170929	CL20170000808	20170404
CO20170003065 A1	20181010	CO20170003065	20170329
DOP2017000089 A	20171031	DO20170000089	20170330
US2017284658 AA	20171005	US20160091211	20160405
US9920924 BB	20180320	US20160091211	20160405

Priority:

US20160091211 20160405

Probable Assignee: BABCOCK AND WILCOX CO

Assignee(s): (std): BABCOCK AND WILCOX CO

Assignee(s): BABCOCK AND WILCOX ENTERPRISES INC ; BABCOCK AND WILCOX MEGTEC LLC ; BABCOCK AND WILCOX TECHNOLOGY LLC ; LIGHTSHIP CAPITAL LLC ; BABCOCK AND WILCOX UNIVERSAL INC ; DIAMOND POWER INT LLC ; MEGTEC TURBOSONIC TECHNOLOGIES INC

Inventor(s): (std): REMUS JEREMY L ; BENNETT ALBERT J ; WELLS ERIC L ; ALBERT J BENNETT ; ERIC L WELLS ; JEREMY L REMUS ; WELLS ERIC

Agent(s): ALESSANDRI Y COMPANIA; MICHAEL J

8) Family number: 67136319 (US2017284700A)

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Title: TRANSITION CASTING FOR BOILER WITH STEAM COOLED UPPER FURNACE

Abstract: Transition castings are disclosed which comprise a steam tube, a water tube, and a pass-through tube, which are joined together by membranes. The ends of the tubes on one vertical end are aligned in a plane, while the ends of the tubes on the other vertical end are aligned in alternating planes, or put another way are angled instead of being in a straight line. The transition castings are used in a transition section of a boiler in which the furnace is divided into a lower furnace and an upper furnace. The lower furnace uses water-cooled membrane walls, while the upper furnace uses steam-cooled membrane walls that act as superheating surfaces. The transition section joins the lower furnace and the upper furnace together.

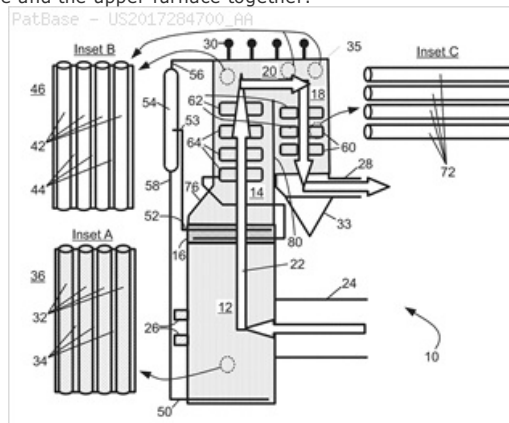
Classifications:

International (IPC 8-9): F22B1/08 F22B21/00 F22B21/34 F22B37/00 F22B37/12 F22B37/20 F22B37/62 F22B37/64 F22B7/00 F22G3/00 F22G7/14 F24H1/30 F24H1/40 (Advanced/Invention)

International (IPC 1-7): F22B21/34 F22B37/12 F22G3/00

CPC: F24H1/30 F24H1/406 F22G7/14

US: 1/1 122/230



Family:

Publication number	Publication date	Application number	Application date
BR102017006537 A2	20171107	BR20171006537	20170329
CL2017000807 A1	20170929	CL20170000807	20170404
CO20170003187 A1	20181010	CO20170003187	20170331
DOP2017000088 A	20171015	DO20170000088	20170329
US2017284700 AA	20171005	US20160091173	20160405
US10234169 BB	20190319	US20160091173	20160405

Priority:

Probable Assignee: BABCOCK AND WILCOX CO

Assignee(s): (std): BABCOCK AND WILCOX CO

Assignee(s): BABCOCK AND WILCOX ENTERPRISES INC ; BABCOCK AND WILCOX MEGTEC LLC ; BABCOCK AND WILCOX TECHNOLOGY LLC ; LIGHTSHIP CAPITAL LLC ; BABCOCK AND WILCOX UNIVERSAL INC ; DIAMOND POWER INT LLC ; MEGTEC TURBOSONIC TECHNOLOGIES INC

Inventor(s): (std): THAYER STEVEN D ; BENNETT ALBERT J ; DETZEL ROGER A ; WELLS ERIC L ; STEVEN D THAYER ; ROGER A DETZEL ; ALBERT J BENNETT ; ERIC L WELLS ; WELLS ERIC

Agent(s): ALESSANDRI Y COMPANIA; SEYMOUR MICHAEL J

9) Family number: 11415342 (US5277151A)

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Title: Integral water-cooled circulating fluidized bed boiler system

Abstract: An integral circulating fluidized bed steam generation system having a particle separator which is formed by the membrane walls of the reactor chamber. The particle separator has a serpentine configuration which includes a first turn which is capable of causing the solid particles in the flue gas to move toward the rear membrane wall and a second turn which is capable of causing smaller sized solid particles and the flue gas to be disposed between the front membrane wall and the larger sized solid particles wherein the flue gas passes through the solid particles to a discharge conduit which is disposed within the rear membrane wall and wherein the smaller sized solid particles are retained between the front membrane wall and the larger sized solid particles. The particle separator also includes a means for recycling the solid particles from the particle separator to the reactor chamber.

Classifications:

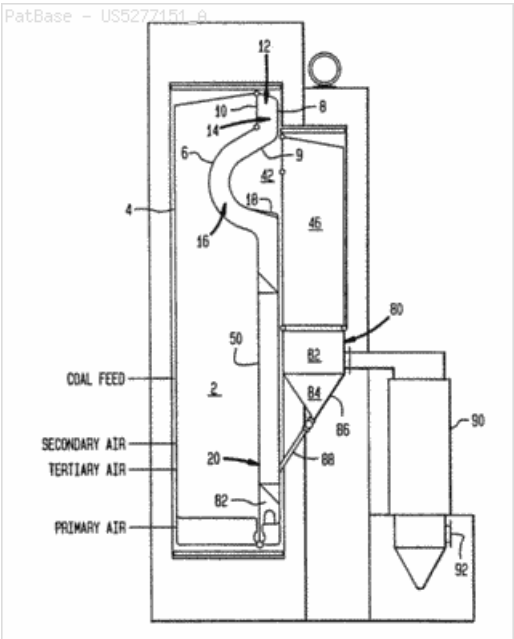
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International (IPC 1-7): F22B1/00

CPC: B01D45/06 F22B31/0084 F23C10/08 F23J15/027 F23J2900/15026

European: B01D45/06 F22B31/00B8 F23C10/08 F23J15/02D3 R23J900/15026

US: 110/245 122/4.00D 122/4D 165/104.16 422/146



Family:

Publication number	Publication date	Application number	Application date
US5277151 A	19940111	US19930005574	19930119

Priority:

US19930005574 19930119

Probable Assignee: TAMPELLA POWER CORP

Assignee(s): (std): TAMPELLA POWER CORP

Inventor(s): (std): PAULHAMUS KENT L

10) Family number: 13846449 (DE19912035A1)

© PatBase

Title: Steam generator for a turbine

Abstract: The steam generator has a boiler with a direct heating system with a fuel inlet, an air inlet, an exhaust take-off and a system to remove burned fuel residue such as ash. It also has a water inlet and an outlet for the generated steam. Two separate water and steam paths are integrated into the boiler (1), which can be used separately and closed together. The first water and steam path is a ring gap (5) in the boiler, and the second path is at least one pipe with a water inlet (12,13) at the base of the boiler (1) and an upper steam outlet (10,11). The second path can be an assembly of vertical rising pipes (7,8) and horizontal collection pipes (9).

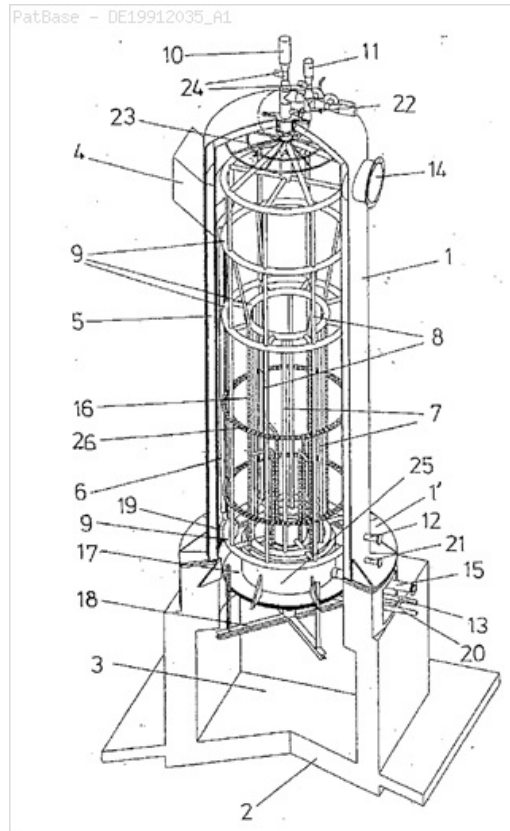
Classifications:

International (IPC 8-9): F22B13/02 F22B21/06 F22B31/00 (Advanced/Invention); F22B13/00 F22B21/00 F22B31/00 (Core/Invention)

International (IPC 1-7): F22B31/00

CPC: F22B13/023 F22B21/065 F22B31/00

European: F22B13/02B F22B21/06B F22B31/00

**Family:**

Publication number	Publication date	Application number	Application date
DE19912035 A1	19991111	DE19991012035	19990317
DE19912035 C2	20020124	DE19991012035	19990317

Priority:

DE19981013676 19980327 DE19991012035 19990317

Probable Assignee:

KRAUS HARRY

Assignee(s): (std):

KRAUS HARRY

Inventor(s): (std):

KRAUS HARRY

11) Family number: 62043606 (US2016097528A)

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Title: ARRANGEMENT AND METHOD IN SODA RECOVERY BOILER

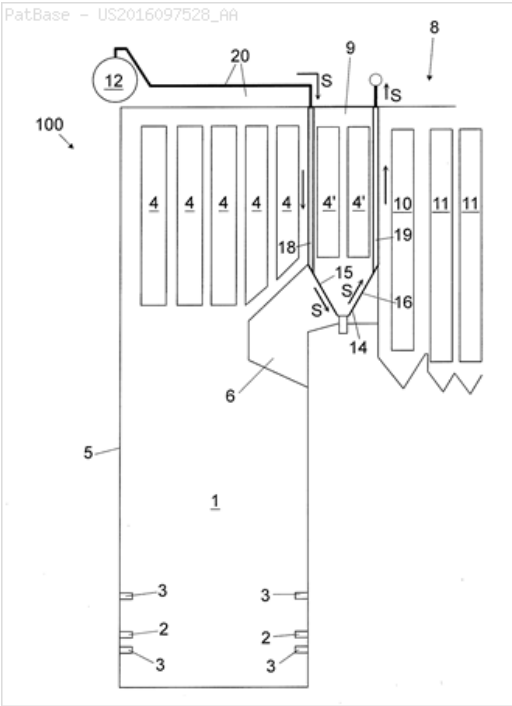
Abstract: An arrangement and a method in a soda recovery boiler. The soda recovery boiler comprises a second pass which is provided with at least one superheater and a second pass ash hopper, a front and/or rear wall of the ash hopper being connected to steam circulation of the soda recovery boiler.

Classifications:

International (IPC 8-9): D21C11/12 F22B1/08 F22B1/18 F22B1/20 F22B31/08 F23G7/04 F23J3/00 (Advanced/Invention)

CPC: F23G7/04 F22B31/08 F23G2209/101 F23J3/00 D21C11/12 F22B1/20 F22B1/1892

US: 110/234 110/238 110/259 110/348 122/468



Family:

Publication number	Publication date	Application number	Application date
BR102015025332 A2	20180320	BR20151025332	20151002
CA2905628 AA	20160403	CA20152905628	20150928
CL2015002913 A1	20160520	CL20150002913	20150930
CL57783 B	20190717	CL20150002913	20150930
CN105485699 A	20160413	CN201510783437	20150928
EP3002366 A1	20160406	EP20150187828	20151001
FI128009 B	20190731	FI20140005866	20141003
FI20145866 A	20160404	FI20140005866	20141003
US2016097528 AA	20160407	US20150870628	20150930
US10119700 BB	20181106	US20150870628	20150930

Priority:

FI20140005866 20141003

Probable Assignee: VALMET POWER OY

Assignee(s): (std): VALMET POWER OY ; VALMET TECH OY ; VALMET TECHNOLOGIES OY

Assignee(s): HAAGA KARI ; RAJALA TAISTO ; NYMAN JUSSI ; RAJALA TAISTO

Inventor(s): (std): HAAGA KARI ; RAJALA TAISTO ; NYMAN JUSSI ; JUSSI NYMAN ; KARI HAAGA ; TAISTO RAJALA

Agent(s): GOWLING WLG CANADA LLP; ESTUDIO FEDERICO VILLASECA V COMPANIA; KOLSTER OY AB; ALSTON AND BIRD LLP

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

12) Family number: 67232684 (US2017299172A)

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Title: TRANSITION CASTING FOR BOILER WITH STEAM COOLED UPPER FURNACE

Abstract: Transition castings are disclosed which comprise a steam tube and a water tube, which are joined together by membranes. A heat transfer fin extends from the membrane and abuts the water tube. The steam tube bends such that an upper end is on one side of the water tube, and a lower end is on an opposite side of the water tube. The transition castings are used in a transition section of a boiler in which the furnace is divided into a lower furnace and an upper furnace. The lower furnace uses water-cooled membrane walls, while the upper furnace uses steam-cooled membrane walls that act as superheating surfaces. The transition casting joins the lower furnace and the upper furnace together.

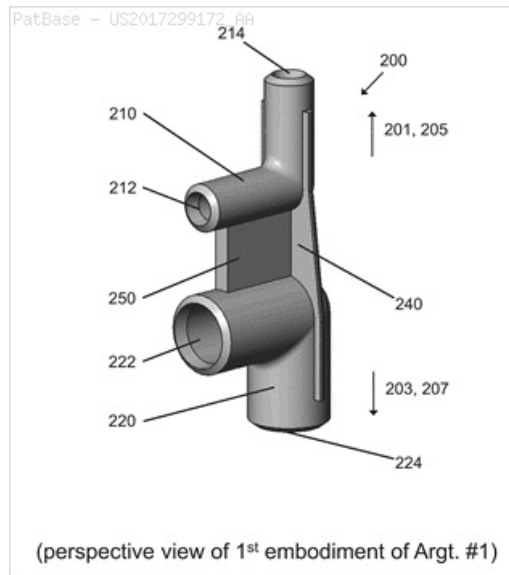
Classifications:

International (IPC 8-9): F22B1/08 F22B21/00 F22B21/34 F22B29/06 F22B33/16 F22B37/00 F22B37/10 F22B37/12 F22B37/62 F22B37/64 F22B7/00 F22B7/14 F22G1/00 F22G3/00 (Advanced/Invention)

International (IPC 1-7): F22B37/00

CPC: F22B37/104 F22G3/009 F22G1/005 F22B37/12 F22B21/341 F22B33/16 F22B29/062 F22B37/101

US: 1/1 122/235.14



Family:

Publication number	Publication date	Application number	Application date
BR102017006737 A2	20171017	BR20171006737	20170331
CL2017000811 A1	20170929	CL20170000811	20170404
CO20170003587 A1	20181022	CO20170003587	20170412
DOP2017000095 A	20171031	DO20170000095	20170407
US2017299172 AA	20171019	US20160099192	20160414
US10253972 BB	20190409	US20160099192	20160414

Priority:

US20160099192 20160412 US20160099192 20160414

Probable Assignee: BABCOCK AND WILCOX CO

Assignee(s): (std): BABCOCK AND WILCOX CO

Assignee(s): BABCOCK AND WILCOX ENTERPRISES INC ; BABCOCK AND WILCOX MEGTEC LLC ; BABCOCK AND WILCOX TECHNOLOGY LLC ; LIGHTSHIP CAPITAL LLC ; BABCOCK AND WILCOX UNIVERSAL INC ; DIAMOND POWER INT LLC ; MEGTEC TURBOSONIC TECHNOLOGIES INC

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Agent(s): ALESSANDRI Y COMPANIA; SEYMOUR MICHAEL J

13) Family number: 42226999 (US2008236459A)

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Title: RECOVERY BOILER COMBUSTION AIR SYSTEM WITH INTERMEDIATE AIR PORTS VERTICALLY ALIGNED WITH MULTIPLE LEVELS OF TERTIARY AIR PORTS

Abstract: A combustion air system particularly useful for Kraft process recovery boilers or soda process recovery boilers has a level of liquor air ports located above the black liquor guns, and multiple levels of tertiary air formed by substantially vertically aligned tertiary air ports located above the black liquor guns. The liquor air ports and the tertiary air ports are on the same opposing walls of the furnace and are substantially vertically aligned with air ports in the same wall at different levels. The liquor air ports are located just above the black liquor guns, within a range of about ½ foot to about four feet. The tertiary air ports are laterally offset with respect to the tertiary air ports on the opposing wall of the furnace. The first tertiary air level is located a vertical distance in the range of about four feet to twelve feet above the elevation of liquor air ports, and the second and any additional tertiary air levels are located and spaced from an adjacent tertiary air level at regular spaced vertical intervals in the range of about four feet to eight feet. The vertically aligned and laterally offset tertiary air ports form a combustion air pattern of vertical sheets which travel across the width of the furnace to the opposing wall to carry smaller liquor particles to the walls of the furnace and reduce carryover and improve combustion efficiency.

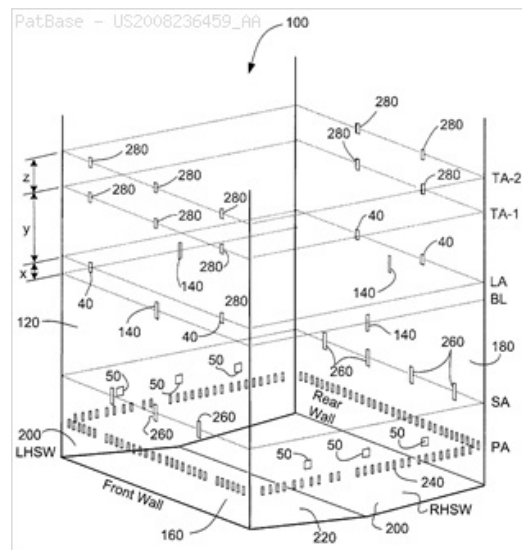
Classifications:

International (IPC 8-9): D21C11/12 D21C11/14 F22B31/00 F23G7/04 F23L1/00 F23L1/02 F23L9/00 F23L9/02 F23L9/06 F27B1/10 (Advanced/Invention); D21C11/12 F22B31/00 F23G7/04 F23L1/00 F23L9/00 F27B1/00 (Core/Invention)

CPC: F23G7/04 F23L9/02

European: F23G7/04 F23L9/02

US: 110/238 110/260 110/297 110/348 162/31



Family:

Publication number	Publication date	Application number	Application date
BRPI0803334 A2	20090331	BR2008PI03334	20080317
CA2622163 AA	20080928	CA20082622163	20080222
CA2622163 C	20120605	CA20082622163	20080222
US2008236459 AA	20081002	US20070694125	20070330
US8607718 BB	20131217	US20070694125	20070330

Priority:

US20070908560P 20070328 US20070694125 20070330 CA20082622163 20080222

Probable Assignee: BABCOCK AND WILCOX CO

Assignee(s): (std): BABCOCK AND WILCOX CO ; BABCOCK AND WILCOX POWER GENERAT ; WESSEL RICHARD A

Assignee(s): THE BABCOCK AND WILCOX COMPANY ; CREDIT SUISSE CAYMAN ISLANDS BRANCH AS ; DIAMOND OPERATING CO INC ; DIAMOND POWER AUSTRALIA HOLDINGS INC ; DIAMOND POWER CHINA HOLDINGS INC ; DIAMOND POWER EQUITY INVESTMENTS INC ; DIAMOND POWER INT ; PALM BEACH RESOURCE RECOVERY CORP ; POWER SYSTEMS OPERATIONS INC ; REVLOC RECLAMATION SERVICE INC ; NATIONAL ECOLOGY CO ; NORTH COUNTY RECYCLING INC ; BANK OF AMERICA NA ; BANK OF AMERICA NA ADMINISTRATIVE AGENT AS ; CREDIT SUISSE CAYMAN ISLANDS BRANCH COLLATERAL AGE ; DIAMOND POWER INT INC ; CREDIT SUISSE CAYMAN ISLANDS BRANCH COLLATERAL AGENT AS ; CREDIT SUISSE CAYMAN ISLANDS BRANCH AS COLLATERAL ; LIGHTSHIP CAPITAL LLC ; BABCOCK AND WILCOX TECHNOLOGY LLC ; BABCOCK AND WILCOX UNIVERSAL INC ; DIAMOND POWER INT LLC ; MEGTEC TURBOSONIC TECHNOLOGIES INC ; BABCOCK AND WILCOX ENTERPRISES INC ; BABCOCK AND WILCOX MEGTEC LLC ; BABCOCK AND WILCOX POWER GENERATION GROUP INC ; AMERICON EQUIPMENT SERVICES INC ; AMERICON INC ; APPLIED SYNERGISTICS INC ; B AND W SERVICE CO ; BABCOCK AND WILCOX CHINA HOLDINGS INC ; BABCOCK AND WILCOX CONSTRUCTION CO INC ; BABCOCK AND WILCOX DENMARK HOLDINGS INC ; BABCOCK AND WILCOX EBENSBURG POWER INC ; BABCOCK AND WILCOX EQUITY INVESTMENTS INC ; BABCOCK AND WILCOX INT ; BABCOCK AND WILCOX INT INC ; BABCOCK AND WILCOX INT SALES AND SERVICE CORP

Inventor(s): (std): WESSEL RICHARD A

Inventor(s): RICHARD A WESSEL

Agent(s): RIDOUT AND MAYBEE LLP; THE BABCOCK AND WILCOX COMPANY; BABCOCK AND WILCOX CO; ERIC