

Search strategy

Query

(WO2016193608)/XPN

..SIMILARITY SS 1 RANKED 1

20 Documents

Publication numbers	Title	Current assignees
CA2987532 A1	Sonic injection furnace	VERALLIA FRANCE, ...
FR2909995 A1	Method of manufacturing glass fibres using an end fired furnace	SAINT GOBAIN GLASS
US20010039813 A1	Method for glass melting using roof-mounted oxy-fuel burners	BOC
FR2917155 A1	Diluted combustion	SAINT GOBAIN EMBALLAGE, ...
DE102016125210 A1	Glass melting unit and method for operating a glass melting unit	BETEILIGUNGEN SORG
FR2909994 A1	Glass melting furnace	ENGIE
CA2315486 A1	Method of boosting the heating in a glass melting furnace using a roof-mounted oxygen-fuel burner	BOC
BR200101132 A1	Glass melting process and furnace therefor with oxy-fuel combustion over melting zone and air-fuel combustion over fining zone	AIR PRODUCTS & CHEMICALS
IT8222231 D0	Melting glass with two stage NO.sub.x control	PPG INDUSTRIES
DE19818953 C1	Method and apparatus for melting glass in U-flames or transverse-flames tank furnaces for reducing the concentration of NOx and CO in the burnt gases	BETEILIGUNGEN SORG
EP2508827 A1	Method and device for melting melting stock	LINDE
GB9224852 D0	Flat glass furnaces	PILKINGTON
CA2982355 A1	Low-nox combustion method	PRAXAIR TECHNOLOGY
FR2915989 A1	Low nox mixed injector	SAINT GOBAIN EMBALLAGE, ...
CA2205721 A1	Method for recovering energy in oxygen-fired glass melting furnaces	PRAXAIR TECHNOLOGY
CA2230600 A1	Reduction of nox emissions in a glass melting furnace	VITRO
US4599100 A	Melting glass with port and melter burners for NO.sub.x control	PPG INDUSTRIES
US20070119213 A1	Gas injection for glass melting furnace to reduce refractory degradation	LINDE
WO2009118333 A1	Glass melting furnace	AGC GLASS EUROPE
US20130091898 A1	Method and device for melting meltable stock	LINDE

AR104864	A1	2017-08-23	AR-104864				
AU2016272345	A1	2018-01-25	AU2016272345				
IN201717041795	A	2018-02-02	IN201717041795				
CO2017011934	A2	2018-02-09	CO2017011934				
BR112017025944	A1	2018-04-10	BR112017025944				
EP3303232	A1	2018-04-11	EP3303232				
CN107949545	A	2018-04-20	CN107949545				
PE7212018	A1	2018-04-26	PE201800721				
EA201792620	A1	2018-04-30	EA201792620				
KR20180045860	A	2018-05-04	KR20180045860				
JP2018516226	A	2018-06-21	JP2018516226				
US20180170786	A1	2018-06-21	US20180170786				
MX2017015350	A	2018-06-27	MX2017015350				
BR112017025944	A2	2018-08-14	BR112017025944				
CL2017003062	A1	2018-08-24	CL3062201700				
EP3303232	B1	2019-03-13	EP3303232				

Abstract

(EP3303232)

The invention concerns a low-NO_x end-fired furnace for melting glass provided with an overhead burner comprising a conduit for supplying oxidant comprising 15 to 30% oxygen in the upstream wall of same, a conduit for receiving combustion fumes in the upstream wall of same, and a sonic injection system comprising at least one injector for injecting a jet of a gas at a speed at least equal to 80% of the speed of sound, referred to as a sonic injector, opening in the upstream wall or opening in the conduit for receiving combustion fumes, said sonic injector injecting the gas of same, counter-current to the flow of combustion fumes travelling towards the conduit for receiving combustion fumes, and a method for preparing molten glass comprising the melting of glass in said furnace.

Inventors

HAYAU FRÉDÉRIC

GARNIER LAURENT

Latest standardized assignees - inventors removed

VERALLIA FRANCE

SAINT GOBAIN GLASS

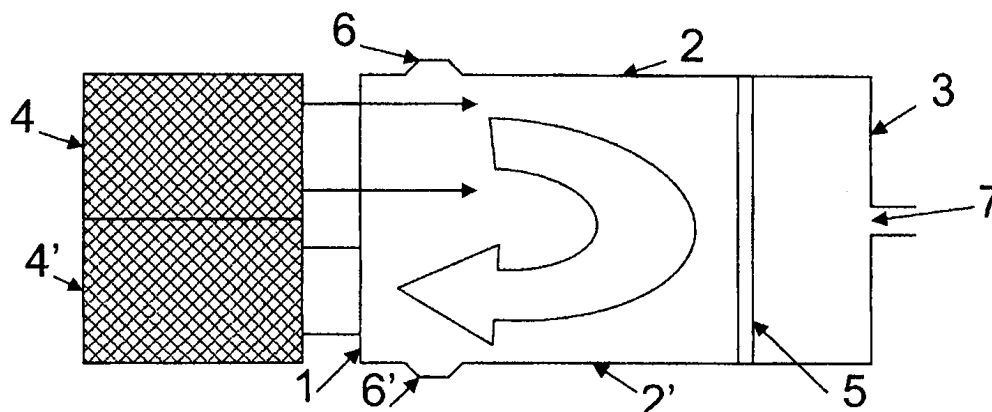
Family 2/20 - FAMPAT - ©Questel

Title

(EP2118023)

Method of manufacturing glass fibres using an end fired furnace

Images



Publication data including kind & date

FR2909995	A1	2008-06-20	FR2909995
WO2008078049	A2	2008-07-03	WO200878049
WO2008078049	A3	2008-11-13	WO200878049
MX2009006502	A	2009-09-29	MX2009006502
EP2118023	A2	2009-11-18	EP2118023
CN101626985	A	2010-01-13	CN101626985
FR2909995	B1	2010-04-23	FR2909995
US20100101278	A1	2010-04-29	US20100101278
EP2118023	B1	2015-01-28	EP2118023

**Abstract**

(EP2118023)

The invention relates to a method and a device for preparing a glass having a low boron content and loaded with alumina or zirconia, the melting of the vitrification materials being carried out in an end-fired furnace provided with regenerators (4, 4i), the main portion of the fossil energy being introduced by the loop flame in which the oxidant and the fuel are introduced in the upstream side (1) of said furnace, the oxidant consisting of air or oxygen-enriched air. The melting compartment can be followed by a glass fibering unit. The invention can be used in the production of fibres having combustion yield and a high productivity.

Inventors

JACQUES DIDIER

Latest standardized assignees - inventors removed

SAINT GOBAIN GLASS

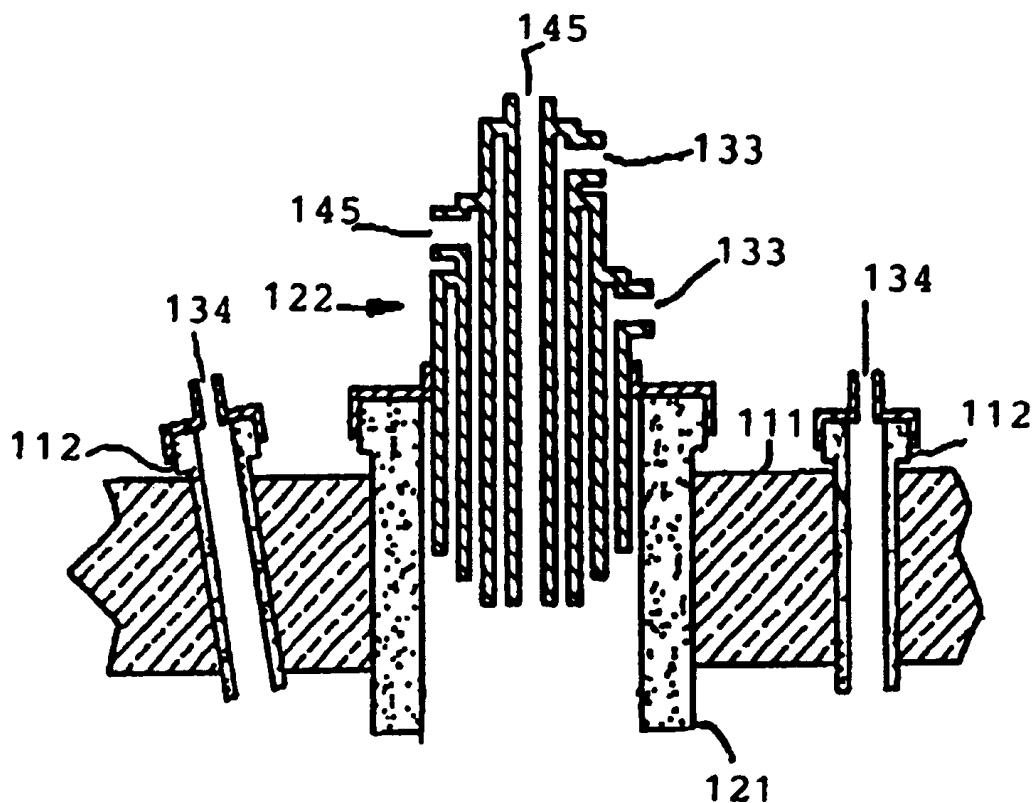
Family 3/20 - FAMPAT - ©Questel

Title

(EP1236691)

Method for glass melting using roof-mounted oxy-fuel burners

Images



Publication data including kind & date

US20010039813	A1	2001-11-15	US20010039813
NO20021033	D0	2002-03-01	NO200201033
HU0200698	D0	2002-04-29	HU200200698
BRPI0200582	A1	2002-05-07	BR200200582
ZA200201227	B	2002-08-22	ZA200201227
CA2371620	A1	2002-09-02	CA2371620
NO20021033	A	2002-09-03	NO200201033
EP1236691	A2	2002-09-04	EP1236691
AU1681702	A	2002-09-05	AU200216817
PL352568	A1	2002-09-09	PL2002352568
KR20020070869	A	2002-09-11	KR20020070869
HU0200698	A2	2002-09-28	HU200200698
CN1374261	A	2002-10-16	CN1374261
TH54191	A	2002-11-29	TH--54191
BR0200582	A	2002-12-10	BR200200582
JP2002356331	A	2002-12-13	JP2002356331
EP1236691	A3	2003-02-05	EP1236691
HU0200698	A3	2003-03-28	HU200200698
NZ517368	A	2003-09-26	NZ-517368
TW564243	B	2003-12-01	TW-564243
CZ20020757	A3	2004-01-14	CZ200200757
US6705117	B2	2004-03-16	US6705117
MXPA02002281	A	2004-05-21	MX2002PA002281
CN1245339	C	2006-03-15	CN1245339C
RU2288193	C2	2006-11-27	RU2288193



AU785329	B2	2007-01-18	AU-785329				
SG129219	A1	2007-02-26	SG-129219				
JP3981286	B2	2007-07-06	JP3981286				
IN0138/MAS/2002	A	2007-10-26	IN2002MA00138				
IN0138/CHE/2002	A	2007-10-26	IN2002CH00138				
MY135084	A	2008-01-31	MY-135084				
KR100847950	B1	2008-07-22	KR100847950				
IN224244	B	2008-11-21	IN-224244				
PL199956	B1	2008-11-28	PL-199956				
EP1236691	B1	2010-01-20	EP1236691				
AT455733	T	2010-02-15	ATE455733				
DE60235133	D1	2010-03-11	DE60235133				
ES2339639	T3	2010-05-24	ES2339639				
BRPI0200582	A2	2010-07-27	BR200200582				
SG169229	A1	2011-03-30	SG-169229				
CZ302602	B6	2011-08-03	CZ-302602				
BR0200582	B1	2011-09-06	BR200200582				
CA2371620	C	2011-11-29	CA2371620				
HU228408	B1	2013-03-28	HU-228408				
TH50845	B	2016-08-19	TH-50845B				

Abstract

(EP1236691)

A method of melting glass forming material in a glass melting furnace, said furnace having a back wall, breast walls above sidewalls, and a downstream front wall connected to a roof, wherein at least one batch charger for charging glass forming batch material is contained in at least one of the back wall and the sidewall, comprising providing at least one oxy-fuel burner in the roof of said furnace over said batch material, wherein said at least one oxy-fuel burner is adapted for staged combustion; providing a flow of fuel to said at least one oxy-fuel burner; providing a flow of gaseous oxidant in association with said at least one oxy-fuel burner; injecting the fuel and the oxidant into the furnace, wherein the fuel jet comprises one of a substantially fuel only jet and a fuel rich fuel-oxidant mixture, and wherein the oxidant jet comprises one of a substantially oxidant only jet and a fuel lean fuel-oxidant mixture, wherein the injected fuel jet and the injected oxidant jet are separated, and are optionally angled with respect to the other, by an amount sufficient to cause the respective flows to converge proximate to or at the surface of the glass forming material, preferably wherein the fuel jet and oxidant jet are separated and angled with respect to each other from 0 DEG to about 90 DEG ; and, combusting said fuel from at least said one oxy-fuel burner such that at least a portion of combustion is effected in the vicinity of said glass forming material to enhance convective and radiative transfer of heat to said glass forming material without substantially disturbing said glass forming material; optionally wherein the mixing of said fuel and said oxidant is delayed to localize combustion proximate to or at the surface of said glass forming material, optionally including staging the flow of fuel from the oxy-fuel burner, and further optionally including fully combusting reactive intermediate species proximate to or at the glass forming material surface.

Inventors

SIMPSON NEIL GEORGE

PRUSIA GREG FLOYD

CLAYTON THOMAS GRANT

RICHARDSON ANDREW PETER

LEBLANC JOHN ROBERT

Latest standardized assignees - inventors removed

BOC

US9188333

B2 2015-11-17 US9188333

Abstract

(EP2153128)

The invention relates to a combustion method in a furnace provided with a burner including an inlet for an oxidizer containing from 10% to 30% of oxygen, and a fuel inlet giving into the furnace outside of the oxidizer inlet and at a distance therefrom of between 0.3 and 4 times the equivalent diameter of the oxidizer inlet, said oxidizer being fed into the furnace at a speed of between 10 and 60 m/sec. The method can be used for substantially reducing the nitrogen oxide emissions and is particularly useful for glass furnaces.

Inventors

GALLEY DAVID

GONCALVES-FERREIRA PAULA

PIERROT LAURENT

Latest standardized assignees - inventors removed

SAINT GOBAIN EMBALLAGE

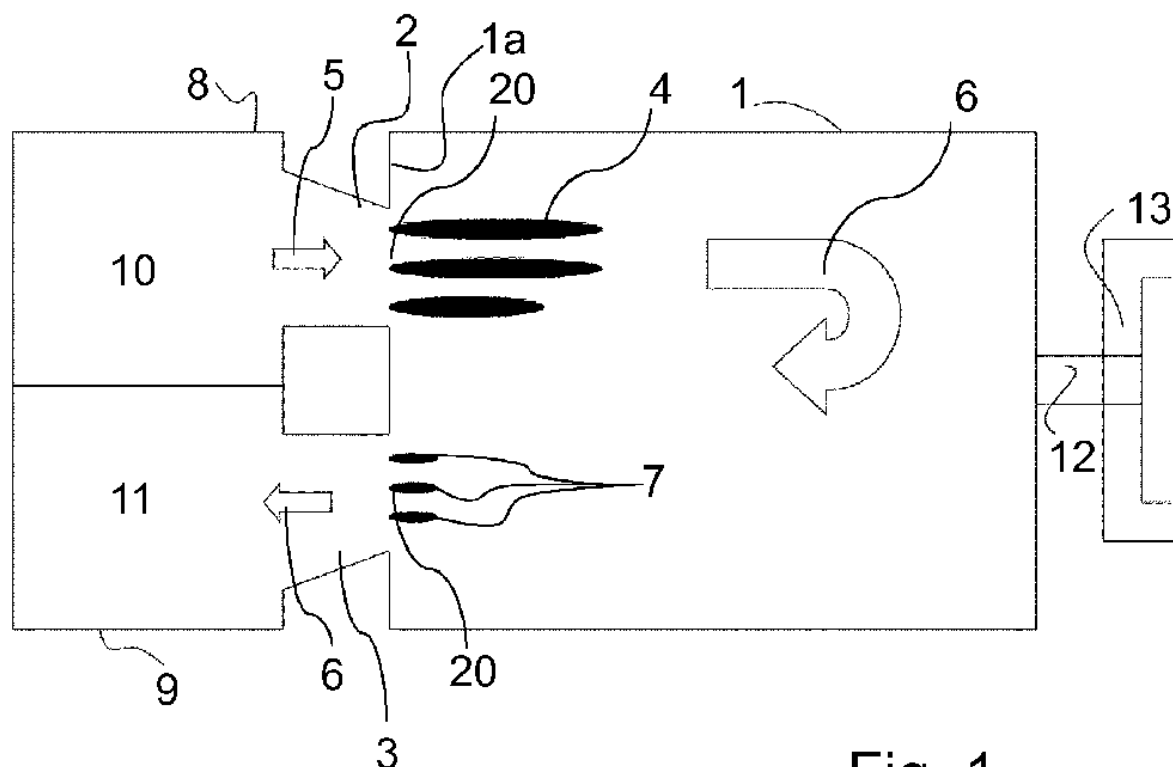
SAINT GOBAIN GLASS

Family 5/20 - FAMPAT - ©Questel

Title

(EP3339255)

Glass melting unit and method for operating a glass melting unit

Images**Fig. 1****Publication data including kind & date**

DE102016125210

A1 2018-06-21

DE102016125210

EP3339255

A1 2018-06-27

EP3339255

**Abstract**

(EP3339255)

The invention relates to a method for operating a glass melting system with a combustion (1) chamber, the combustion of a (4) fuel with an Oxidant (5) takes place, wherein the combustion (1) chamber having at least two burner ports (2, 3) is connected, in an end wall (1a) or in a side wall of the combustion chamber are used, each burner port at least one burner

nozzle (20) for injecting the fuel (4) and a channel for supplying the Oxidant (5) and to remove arising from the combustion exhaust combustion gas which are, each burner port (2.3) alternately in a combustion mode and a discharge mode, wherein in the operating mode the combustion (1) chamber through the at least one burner nozzle (20) of the respective burner ports (2) of the (4) fuel and the passage of the respective burner ports (2) of the Oxidant (5) are supplied, wherein in the extraction mode the combustion (6) gas through the channel of the respective burner ports (3) is exhausted. A reliable reduction of nitrogen oxide emissions achieved, the combustion chamber (1) is at least one burner nozzle (20) of the in the print mode control burner ports (3) and/or at least one of the burner nozzle (20) separate feed (37) port pulse gas (7) supplied, wherein the at least one supply opening (37) in the end wall (1a) and/or the side wall (3a) adjacent to and/or in the in the burner port (3) is firing mode is operated. The invention further relates to a corresponding glass melt.

Inventors

BREITFELDER DIPL -ING THOMAS

WAGNER MANFRED

LINDIG DR MATTHIAS

Latest standardized assignees - inventors removed

BETEILIGUNGEN SORG

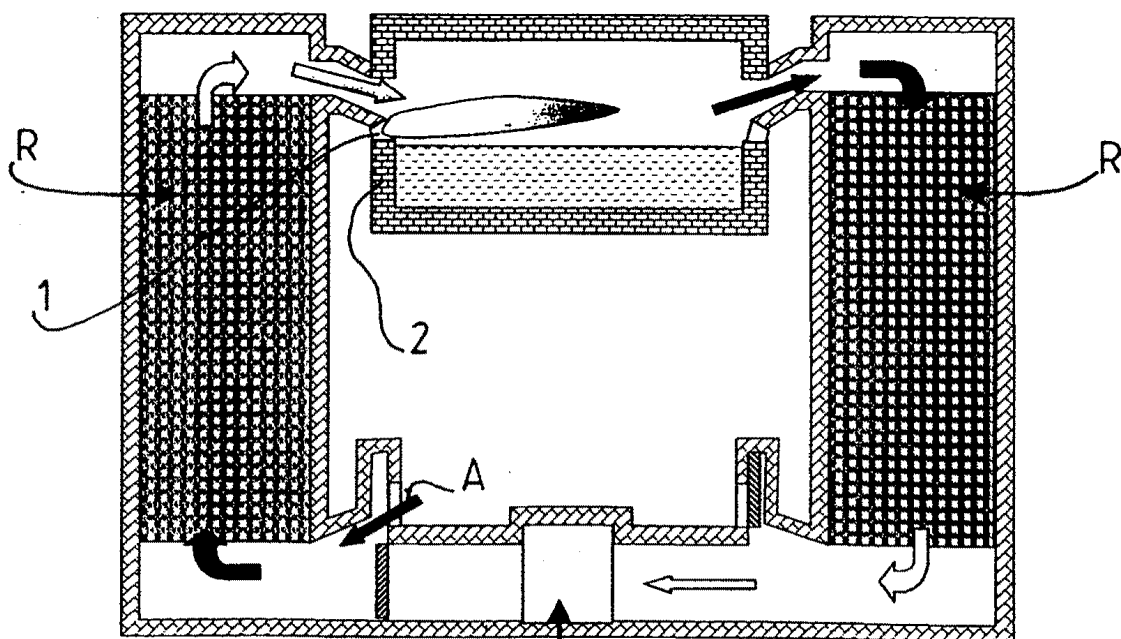
Family 6/20 - FAMPAT - ©Questel

Title

(EP3241808)

Glass melting furnace

Images



Publication data including kind & date

FR2909994	A1	2008-06-20	FR2909994
WO2008074961	A2	2008-06-26	WO200874961
WO2008074961	A3	2008-11-06	WO200874961
MX2009006175	A	2009-06-24	MX2009006175
IN2096/KOLNP/2009	A	2009-06-26	IN2009KN02096
EP2091872	A2	2009-08-26	EP2091872
FR2909994	B1	2009-11-06	FR2909994
CN101588995	A	2009-11-25	CN101588995
US20100050691	A1	2010-03-04	US20100050691
JP2010513181	A	2010-04-30	JP2010513181



RU2009123205	A	2010-12-27	RU2009123205
CN101588995	B	2012-08-29	CN101588995B
BRPI0718352	A1	2012-12-04	BR200718352
RU2473475	C2	2013-01-27	RU2473475
BRPI0718352	A2	2013-11-19	BR200718352
IN266179	B	2015-04-17	IN-266179
EP3241808	A1	2017-11-08	EP3241808
BRPI0718352	B1	2018-09-25	BR200718352



Abstract

(EP3241808)

A combustion method for melting glass in which two fuels of the same nature or different natures are fed into a fusion furnace at two locations remote from each other for distributing the fuel to reduce NOx emissions. The combustion air is supplied at only one of the locations. In a method for operating a glass melting furnace, the fuel injection is distributed to reduce NOx emissions. The furnace includes a melting vessel for receiving the glass to be melted and containing a bath of molten glass, walls defining the furnace, a hot combustion air inlet, a hot smoke outlet, at least one burner for injecting a first fuel, and at least one injector for injecting a second fuel. The injector has an adjustable flow complementary relative to the flow to the burner so that up to 100% of the totality of the first and second fuels used may be injected.

(From US2010050691 A1)

Inventors

WARD JOHN

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PONT RICHARD STANLEY

FERLIN THIERRY

MAUREL STÉPHANE

Latest standardized assignees - inventors removed

ENGIE

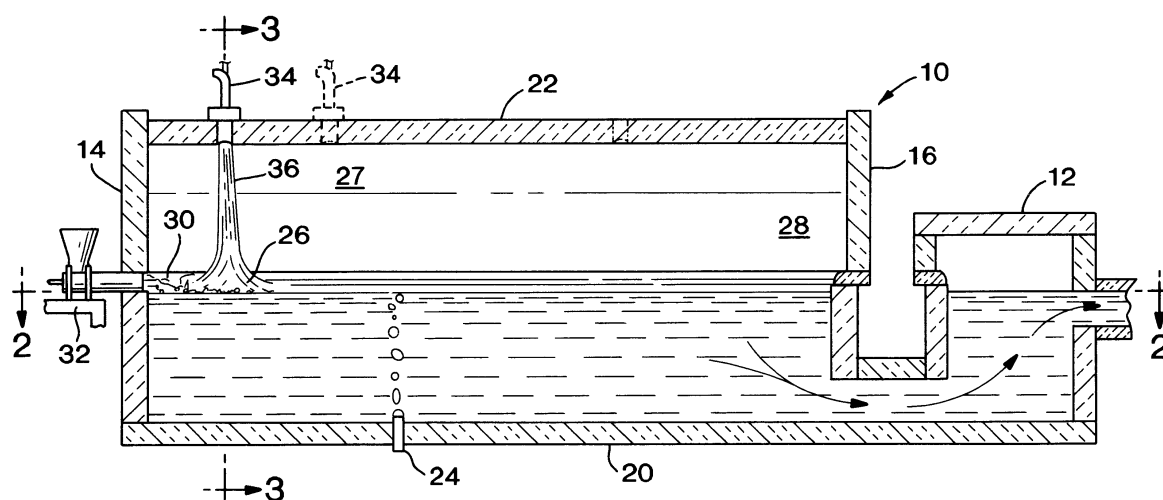
Family 7/20 - FAMPAT - ©Questel

Title

(EP1077201)

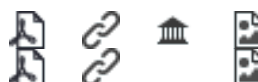
Method of boosting the heating in a glass melting furnace using a roof-mounted oxygen-fuel burner

Images



Publication data including kind & date

[CA2315486](#) A1 2001-02-16 CA2315486



ZA200004135	B	2001-02-20	ZA200004135				
EP1077201	A2	2001-02-21	EP1077201				
AU5195200	A	2001-02-22	AU200051952				
KR20010050066	A	2001-06-15	KR20010050066				
CN1306945	A	2001-08-08	CN1306945				
JP2001220150	A	2001-08-14	JP2001220150				
TR200002370	A2	2002-02-21	TR200002370				
TR200002370	A3	2002-02-21	TR200002370				
TW491819	B	2002-06-21	TW-491819				
US6422041	B1	2002-07-23	US6422041				
US20020144518	A1	2002-10-10	US20020144518				
EP1077201	A3	2003-02-05	EP1077201				
KR100383777	B1	2003-05-12	KR100383777				
US6705118	B2	2004-03-16	US6705118				
AU780088	B2	2005-03-03	AU-780088				
EP1077201	B1	2005-11-30	EP1077201				
AT311351	T	2005-12-15	ATE311351				
DE60024370	D1	2006-01-05	DE60024370				
ES2253186	T3	2006-06-01	ES2253186				
DE60024370	T2	2006-07-06	DE60024370				
CA2315486	C	2006-11-21	CA2315486				
JP3913450	B2	2007-02-09	JP3913450				
JP2007099620	A	2007-04-19	JP2007099620				
CN100341805	C	2007-10-10	CN100341805C				
JP4922735	B2	2012-02-10	JP4922735				
EP1077201	B2	2012-09-19	EP1077201				
ES2253186	T5	2013-02-18	ES2253186				
DE60024370	T3	2013-04-11	DE60024370				

Abstract

(EP1077201)

In an industrial glass furnace 10 which contains recuperators, regenerators, electric boost or other devices for providing heat to glass batch material at least one oxy-fuel burner (34) mounted in the roof of the furnace provides additional heat to melt the batch material. By using such a roof-mounted oxy-fuel burner 34 heat transfer can be maximised while minimising the disturbance of the batch material. The velocity of the flame 36 produced by operation of the oxy-fuel burner 34 is kept to 30 metres per second or less near the surface.

Inventors

SIMPSON NEIL GEORGE

PRUSIA GREGORY FLOYD

CARNEY STEPHEN MCDONALD

CLAYTON THOMAS G

RICHARDSON ANDREW PETER

LEBLANC JOHN R

Latest standardized assignees - inventors removed

BOC

Family 8/20 - FAMPAT - ©Questel

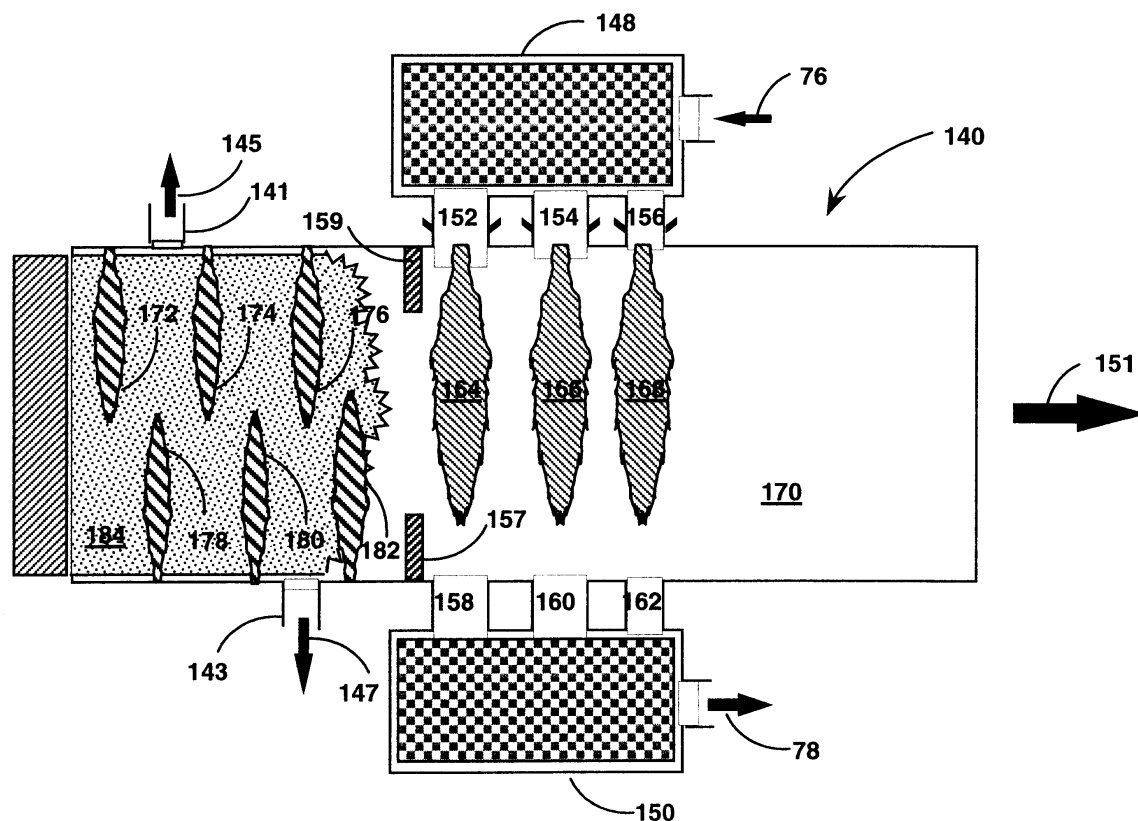
Title

(EP1136451)

Glass melting process and furnace therefor with oxy-fuel combustion over melting zone and air-fuel combustion over fining

zone

Images



Publication data including kind & date

BRPI0101132	A1	2001-04-24	BR200101132
CA2340866	A1	2001-09-23	CA2340866
EP1136451	A2	2001-09-26	EP1136451
KR20010090506	A	2001-10-18	KR20010090506
BR0101132	A	2001-11-06	BR200101132
JP2001316121	A	2001-11-13	JP2001316121
CZ20011060	A3	2001-11-14	CZ200101060
EP1136451	A3	2002-01-23	EP1136451
MXPA01002930	A	2002-06-04	MX2001PA002930
US6519973	B1	2003-02-18	US6519973
EP1136451	B1	2003-10-22	EP1136451
AT252520	T	2003-11-15	ATE252520
DE60101011	D1	2003-11-27	DE60101011
ES2204809	T3	2004-05-01	ES2204809
DE60101011	T2	2004-07-01	DE60101011
KR100441314	B1	2004-07-23	KR100441314
CA2340866	C	2005-04-05	CA2340866
JP3677217	B2	2005-05-13	JP3677217
IN0241/CHE/2001	A	2007-03-30	IN2001CH00241
IN0241/MAS/2001	A	2007-03-30	IN2001MA00241
IN219199	B	2008-06-06	IN-219199
CZ301478	B6	2010-03-17	CZ-301478
BRPI0101132	A2	2010-05-04	BR200101132



Abstract

(EP1136451)

Glass forming ingredients are melted in a furnace (140; 200) having a melting zone (184; 236) and a fining zone (170; 270) and in which the majority of the combustion energy (172-184; 238-248) over the melting zone (184; 236) is provided by oxy-fuel combustion while a majority of the combustion energy (164-168; 224-234) over the fining zone (170; 270) is provided by air-fuel combustion. Preferably greater than 70% and up to and including 100% of the combustion energy (172-184; 238-248) over the melting zone (184; 236) is provided by oxy-fuel combustion and greater than 70% and up to and including 100% of the combustion energy (164-168; 224-234) over the fining zone (170; 270) is provided by air-fuel combustion.

Inventors

HOKE BRYAN CLAIR

LIEVRE KEVIN ALAN

SLAVEJKOV ALEKSANDAR GEORGI

INSKIP JULIAN LEONARD

MARCHIANDO ROBERT DEAN

ENG ROBERT MICHAEL

Latest standardized assignees - inventors removed

AIR PRODUCTS & CHEMICALS

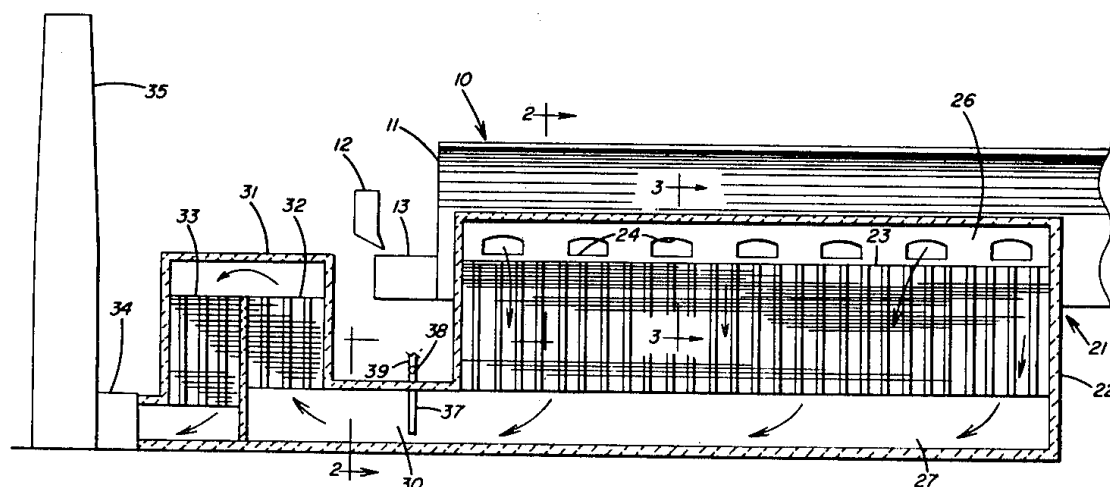
Family 9/20 - FAMPAT - ©Questel

Title

(US4372770)

Melting glass with two stage NO.sub.x control

Images



Publication data including kind & date

IT8222231	D0	1982-07-02	IT8222231
FR2510423	A1	1983-02-04	FR2510423
US4372770	A	1983-02-08	US4372770
JPS5827621	A	1983-02-18	JP58027621
CA1178029	A	1984-11-20	CA1178029
FR2510423	B1	1985-03-15	FR2510423
IT1190904	B	1988-02-24	IT1190904
JPH0131926	B2	1989-06-28	JP89031926
JP1604765	C	1991-05-13	JP1604765



Abstract

(US4372770)

Afterburning is employed with selective, non-catalytic reduction by ammonia injection to reduce NO.sub.x emissions of a

process furnace, especially a glass melting furnace.

Inventors

KRUMWIEDE JOHN F

AMRHEIN ALAN G

Latest standardized assignees - inventors removed

PPG INDUSTRIES

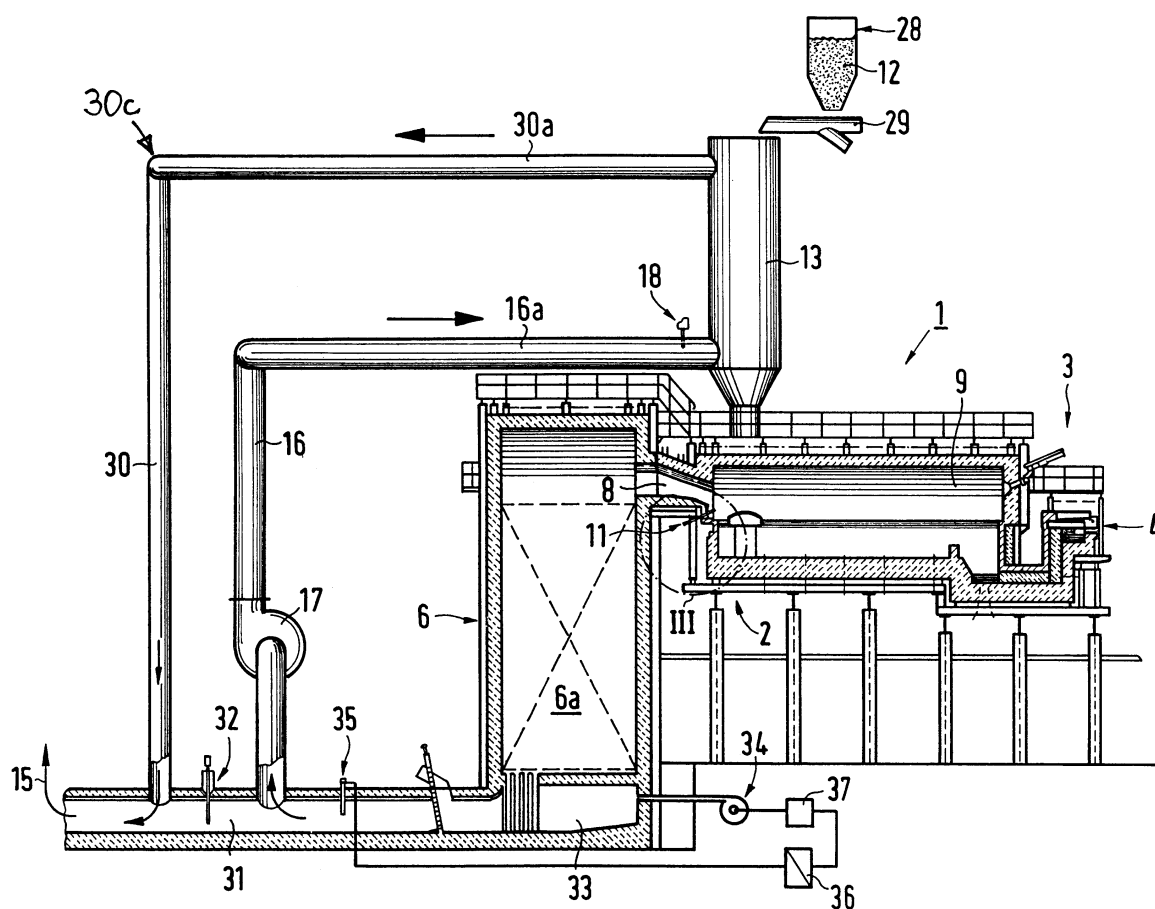
Family 10/20 - FAMPAT - ©Questel

Title

(EP-955271)

Method and apparatus for melting glass in U-flames or transverse-flames tank furnaces for reducing the concentration of NO_x and CO in the burnt gases

Images



Publication data including kind & date

DE19818953	C1	1999-07-08	DE19818953
EP0955271	A2	1999-11-10	EP-955271
EP0955271	A3	2000-04-26	EP-955271
US6289694	B1	2001-09-18	US6289694



Abstract

(EP-955271)

Method and control apparatus for melting glass

The temperature of used gases from the regenerators (5, 6) is measured before their entry into at least one preheater (13, 14). The amount of secondary fuel is regulated before their entry into the preheaters is at least 400 degrees C, and is just below the value at which the charge material (12) becomes sticky.

The apparatus includes a temperature probe (18) in each used gas duct (16) from which the output is fed to a control unit with a regulator and a valve for adjustment of the amount of secondary fuel.

Preferred Features: Air for supplementary combustion is fed into the space below the grids of the regenerators (5,

6).Supplementary oxidation takes place (partly) in the preheaters (13, 14).The amounts of primary and secondary fuel supplied to the burners are controlled and regulated according to the process phases (tub heating and supplementary combustion) taking place, with use of control and blocking valves in the fuel main and bypass lines.The flow direction of combustion gases over the glass melt is also alternated by use of these valves.

Inventors

PIEPER HELMUT DIPL-ING

Latest standardized assignees - inventors removed

BETEILIGUNGEN SORG

Family 11/20 - FAMPAT - ©Questel

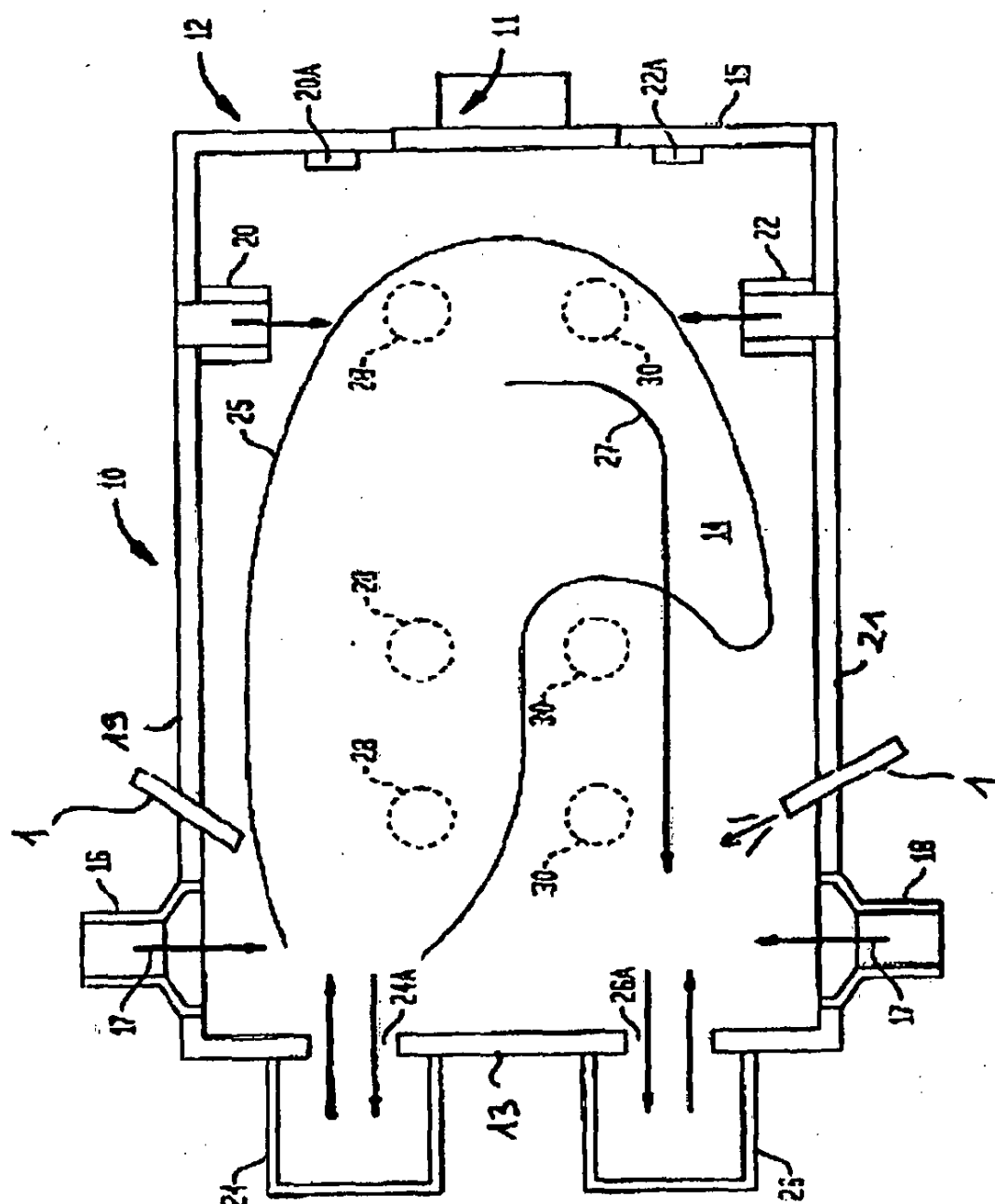
Title

(EP2508827)

Method and device for melting melting stock

Images

FIG. 1



EP2508827	B1	2015-07-01	EP2508827				
ES2548180	T3	2015-10-14	ES2548180				
PT2508827	E	2015-10-16	PT2508827				
SI2508827	T1	2015-10-30	SI2508827T				
HUE027646	T2	2016-10-28	HUE027646				
EP2508827	B2	2019-01-16	EP2508827				

Abstract

(EP2508827)

The present invention relates to a method and a device for melting melting stock, such as glass, in which a melting furnace (10) is heated via a burner flame (25; 29) generated by means of a burner port, to which fuel and oxidizer are supplied, a fuel-rich gas stream being introduced into the furnace (10) downstream from the burner port via at least one substoichiometrically operated burner (20; 22) and/or a fuel or fuel mixture being introduced into the furnace (10) downstream from the burner arrangement via at least one fuel nozzle, and a oxygen containing gas stream being introduced into the furnace (10) downstream from the at least one substoichiometrically operated burner (20; 22) and/or the at least one fuel nozzle.

Inventors

MIETH RAINER

SIMPSON NEIL

WILCOX RICHARD

Latest standardized assignees - inventors removed

LINDE

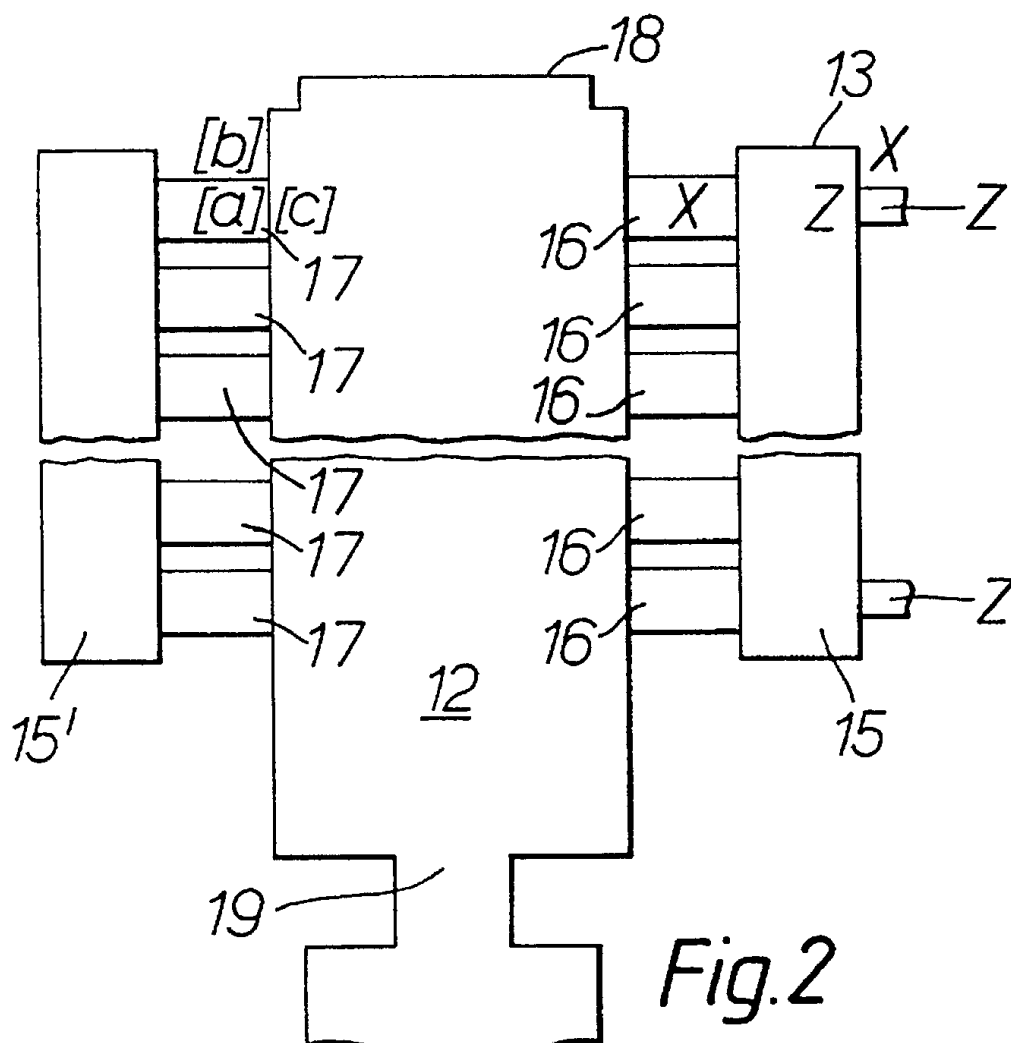
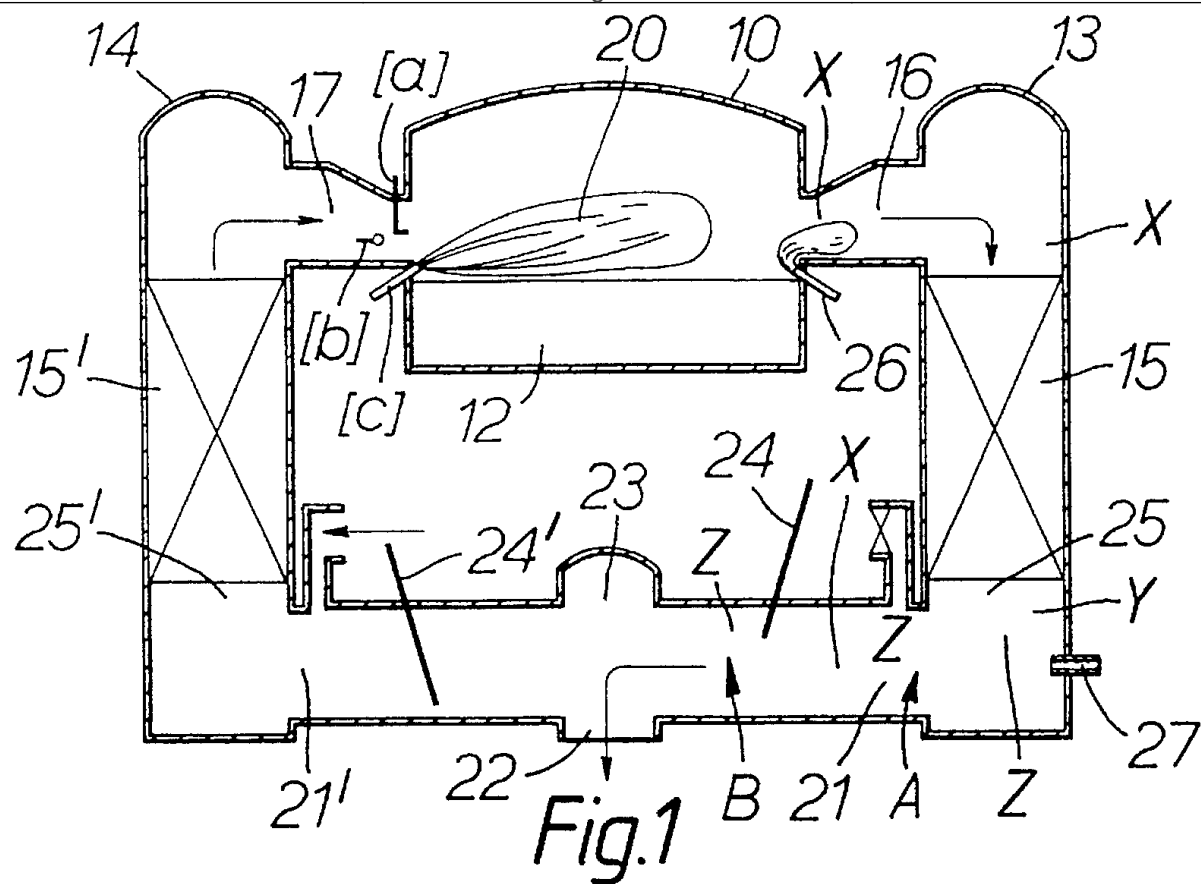
Family 12/20 - FAMPAT - ©Questel

Title

(EP-759412)

Flat glass furnaces

Images



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GB9310720	D0	1993-07-14	GB9310720				
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AU5072993	A	1994-06-09	AU9350729				
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ZA9308551	B	1994-07-19	ZA9308551				
ZA9308550	B	1994-07-19	ZA9308550				
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JP6239618	A	1994-08-30	JP06239618				
TR27071	A	1994-10-12	TR--27071				
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AU667976	B2	1996-04-18	AU-667976				
US5569312	A	1996-10-29	US5569312				
EP0759412	A2	1997-02-26	EP-759412				
EP0599548	B1	1997-07-16	EP-599548				
AT155445	T	1997-08-15	ATE155445				
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EP0759412	A3	1997-10-15	EP-759412				
ES2106982	T3	1997-11-16	ES2106982				
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RU2111180	C1	1998-05-20	RU2111180				
US5810901	A	1998-09-22	US5810901				
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US5837028	A	1998-11-17	US5837028				
US5849059	A	1998-12-15	US5849059				
TW349932	B	1999-01-11	TW-349932				
KR0173136	B1	1999-02-18	KR100173136				
HU215884	B	1999-03-29	HU-215884				
EP0759412	B1	1999-06-30	EP-759412				
CZ285366	B6	1999-07-14	CZ-285366				
AT181718	T	1999-07-15	ATE181718				
DE69325522	D1	1999-08-05	DE69325522				
DE69325522	T2	1999-12-23	DE69325522				
IN183850	B	2000-04-29	IN-183850				

IN183852	B	2000-04-29	IN-183852
PL178778	B1	2000-06-30	PL-178778
PL178964	B1	2000-07-31	PL-178964
BRPI9304852	B1	2000-09-05	BR9304852
JP3390229	B2	2003-03-24	JP3390229
CA2103308	C	2004-08-03	CA2103308



Abstract

(EP-759412)

A method of operating a regenerative glass furnace (10) for melting flat glass so as to minimise emission of carbon monoxide (CO) in waste gases leaving the furnace (10), the furnace (10) including a melting chamber (12) and regenerators (13,14) which act as heat exchangers, each regenerator (13,14) containing a checkerwork structure (15,15'), the method comprising providing air and supplying fuel to the melting chamber (12) of the furnace (10) to ensure that glass of a required quality at a required production rate is obtained, characterised in that the regenerators (13,14) are sealed and fuel in excess of that required to ensure the glass quality and production rate is supplied at least to the melting chamber (12) or the sealed regenerators (13,14) such that the waste gases in the sealed regenerators (13,14) contain combustible material including CO, and removing the CO from the waste gases in the regenerators (13,14) by combusting CO downstream of the checkerwork structure (15,15') of the regenerators (13,14) at a temperature of greater than about 650 DEG C. <IMAGE>

Inventors

QUIRK RICHARD

SHULVER IAN NIGEL WILLIAM

BIRD DAVID ALAN

MCINTOSH ROBIN MAXWELL

Latest standardized assignees - inventors removed

PILKINGTON

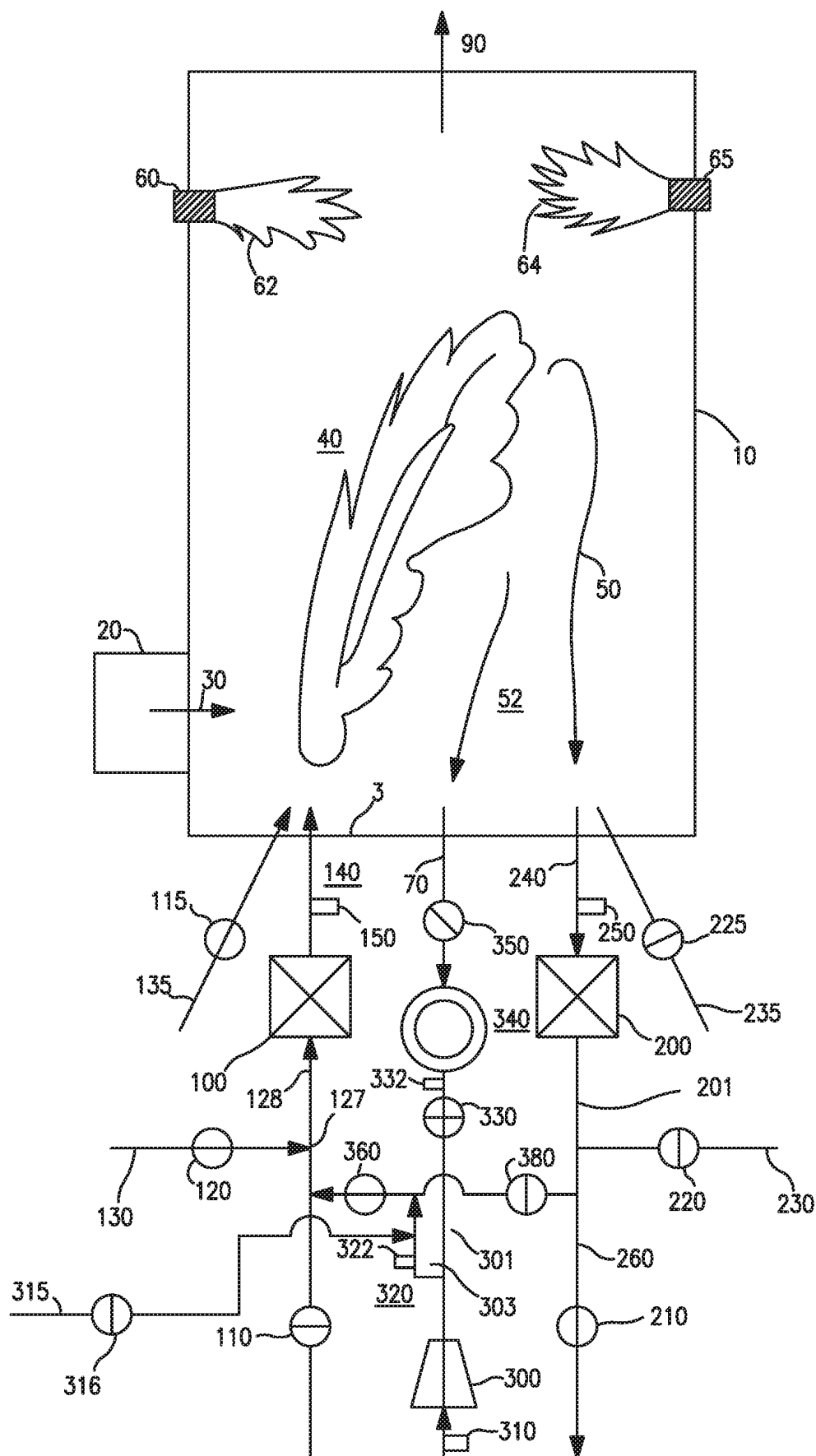
Family 13/20 - FAMPAT - ©Questel

Title

(EP3283824)

Low-nox combustion method

Images



Publication data including kind & date

CA2982355

A1 2016-10-20

CA2982355

US20160305656

A1 2016-10-20

US20160305656



WO2016168099	A1	2016-10-20	WO2016168099				
KR20170137870	A	2017-12-13	KR20170137870				
IN201717039980	A	2017-12-29	IN201717039980				
WO2016168099	A8	2018-01-04	WO2016168099				
MX2017013108	A	2018-01-16	MX2017013108				
CN107683263	A	2018-02-09	CN107683263				
EP3283824	A1	2018-02-21	EP3283824				
BR112017022120	A1	2018-04-03	BR112017022120				
JP2018514739	A	2018-06-07	JP2018514739				
BR112017022120	A2	2018-07-03	BR112017022120				
US10184659	B2	2019-01-22	US10184659				
RU2679069	C1	2019-02-05	RU2679069				

Abstract

(EP3283824)

Disclosed is a combustion method in which heated flue gas heats a regenerator (100) through which a mixture of fuel and flue gas containing NOx is passed to undergo endothermic reactions that produce syngas and destroy NOx.

Inventors

WU KUANG-TSAI

KOBAYASHI HISASHI

Latest standardized assignees - inventors removed

PRAXAIR TECHNOLOGY

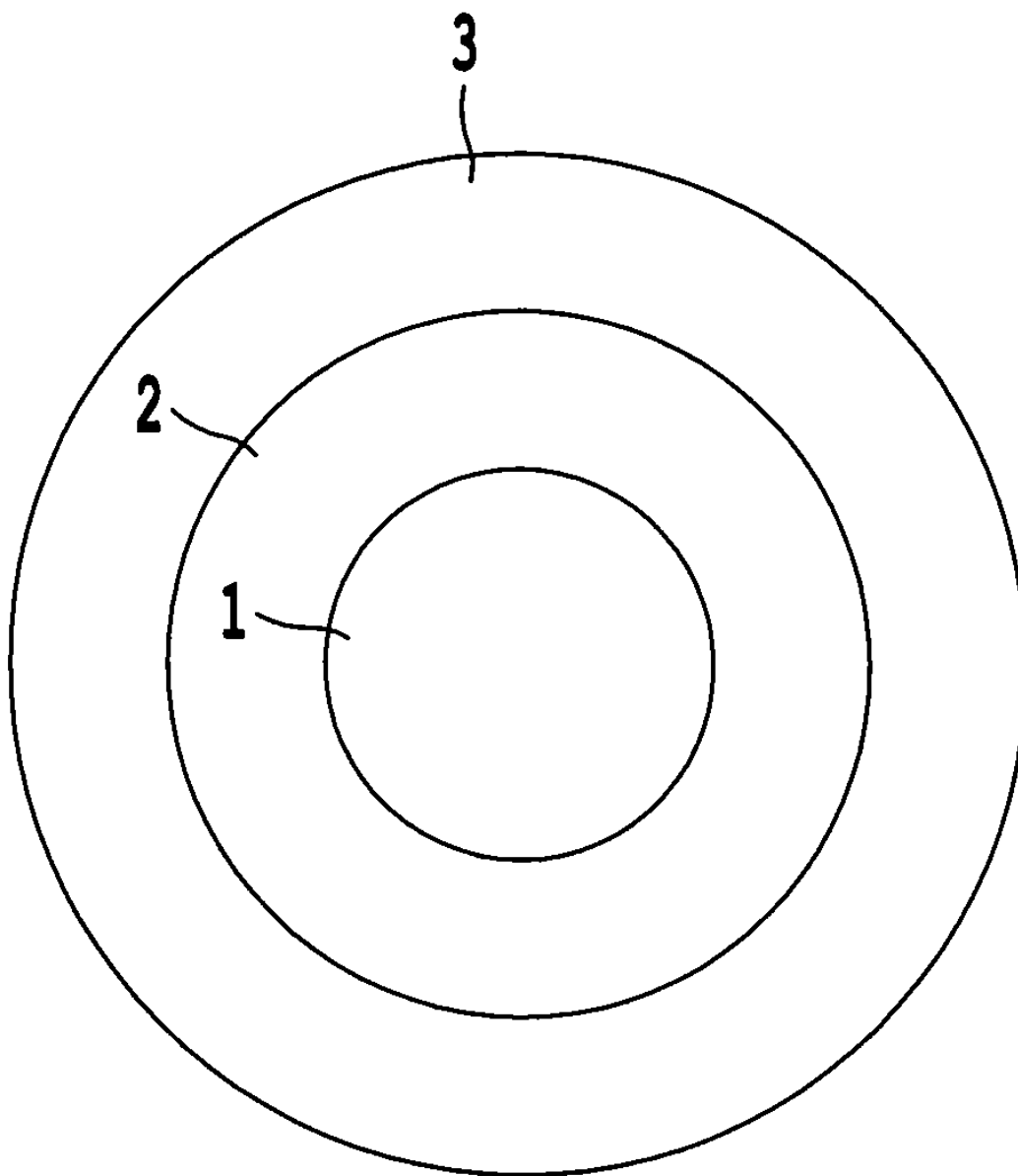
Family 14/20 - FAMPAT - ©Questel

Title

(EP2153130)

Low nox mixed injector

Images


Publication data including kind & date

FR2915989	A1	2008-11-14	FR2915989
WO2008148994	A2	2008-12-11	WO2008148994
WO2008148994	A3	2009-02-19	WO2008148994
MX2009012015	A	2010-01-14	MX2009012015
IN3907/KOLNP/2009	A	2010-02-19	IN2009KN03907
EA200971043	A1	2010-04-30	EA200971043
CN101779082	A	2010-07-14	CN101779082
JP2010526747	A	2010-08-05	JP2010526747
US20100304314	A1	2010-12-02	US20100304314
FR2915989	B1	2011-05-20	FR2915989
EA016315	B1	2012-04-30	EA--16315
UA100379	C2	2012-12-25	UA-100379
BRPI0811121	A2	2014-12-23	BR200811121
US9169148	B2	2015-10-27	US9169148
EP2153130	A2	2015-11-11	EP2153130
ES2569356	T3	2016-05-10	ES2569356



DK2153130	T3	2016-05-23	DK2153130T				
HRP20160542	T1	2016-06-17	HRP20160542				
JP5989963	B2	2016-08-19	JP5989963				
MX342208	B	2016-09-21	MX-342208				
PL2153130	T3	2016-10-31	PL2153130				
HUE027775	T2	2016-11-28	HUE027775				
EP2153130	B1	2017-09-13	EP2153130				
IN293398	B	2018-02-26	IN-293398				

Abstract

(EP2153130)

The invention relates to a combustion process, especially for melting glass, in which a flame is created both by an impulse of liquid fuel and a single impulse of gaseous fuel, characterized in that the fraction of the total power due to the liquid fuel varies between 20 and 80%, and in that the specific impulse of the gaseous fuel is limited to a sufficiently low value such that the NO_x content of the fumes produced does not exceed 800 mg/Nm³ for a cross-fired furnace and 600 mg/Nm³ for an end-fired furnace; an injector for implementing this process; a burner comprising one or more such injectors; a furnace comprising at least one such burner.

Inventors

ROUCHY PATRICE

GARNIER LAURENT

VERNAZ JOSEPH

MAZZOTTI DE OLIVEIRA CARLOS

Latest standardized assignees - inventors removed

SAINT GOBAIN EMBALLAGE

SAINT GOBAIN GLASS

Family 15/20 - FAMPAT - ©Questel

Title

(EP-808806)

Method for recovering energy in oxygen-fired glass melting furnaces

Images

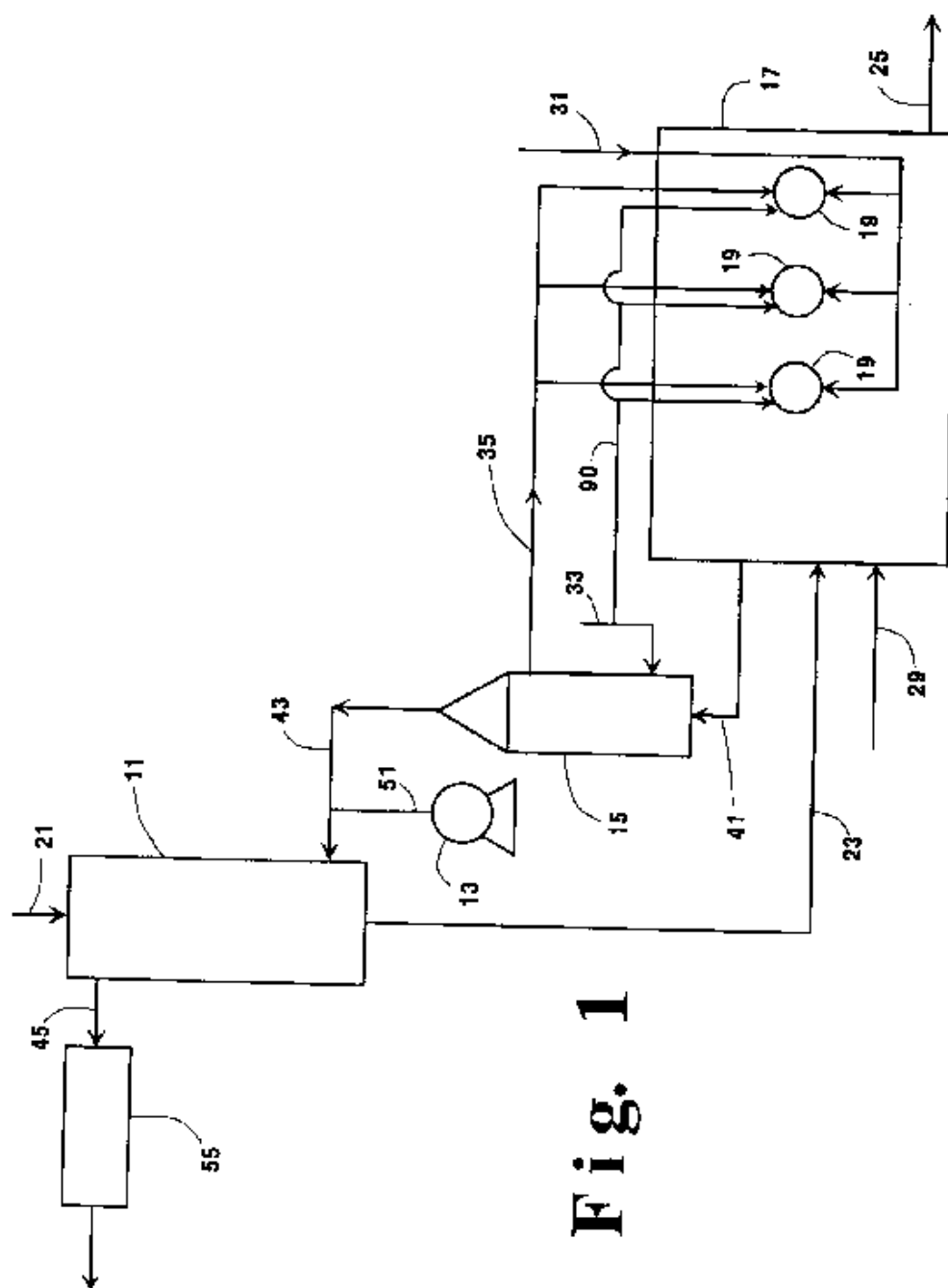


Fig. 1

Publication data including kind & date

CA2205721	A1	1997-11-21	CA2205721
EP0808806	A1	1997-11-26	EP-808806
KR19970074699	A	1997-12-10	KR19970074699
CN1172081	A	1998-02-04	CN1172081
JPH1087333	A	1998-04-07	JP10087333
BR9703296	A	1998-09-15	BR9703296
US5807418	A	1998-09-15	US5807418
EP0808806	B1	1999-04-07	EP-808806
DE69700170	D1	1999-05-12	DE69700170
ES2129996	T3	1999-06-16	ES2129996



DE69700170	T2	1999-09-23	DE69700170				
CA2205721	C	2000-09-05	CA2205721				
KR100303991	B1	2001-10-19	KR100303991				
BRPI9703296	A1	2003-07-15	BR199703296				
CN1121352	C	2003-09-17	CN1121352C				
EP0808806	B2	2003-10-29	EP-808806				
ES2129996	T5	2004-05-16	ES2129996				
DE69700170	T3	2004-06-24	DE69700170				

Abstract

(EP-808806)

A method for improving the energy efficiency of oxygen-fired glass melting furnaces wherein heat from hot flue gases from the melting furnace is used to heat all or part of the combustion oxidant having an oxygen concentration of at least 50% wt. and thereafter to preheat at least a portion of the glass forming materials to be melted.

Inventors

CHAMBERLAND RAY PAUL

KOBAYASHI HISASHI

Latest standardized assignees - inventors removed

PRAXAIR TECHNOLOGY

Family 16/20 - FAMPAT - ©Questel

Title

(EP-882488)

Reduction of nox emissions in a glass melting furnace

Images

DE69815755

D1 2003-07-31 DE69815755

DE69815755

T2 2004-04-29 DE69815755

**Abstract**

(EP-882488)

The present invention provides a method of controlling NO_x emissions from a glass melting process in which combustion fuel produces exhaust gas in a melting furnace (10) including NO_x compounds. Furnace exhaust gas passes from the melting furnace (10) through a regenerator (20, 22) to a zone downstream from the regenerator (20, 22). Ammonia is injected into the furnace exhaust gas at the downstream zone while the furnace exhaust gas is within a desired temperature range to reduce the amount of NO_x compounds. Additional gas is introduced into the furnace exhaust gas as it moves from the regenerator (20, 22) to the downstream zone whenever the furnace exhaust gas has a temperature which is outside the desired temperature range at the downstream zone so as to modify the furnace exhaust gas temperature such that the furnace exhaust gas is within the desired temperature range when furnace exhaust gas reaches to the downstream zone. In one particular embodiment of the invention, the additional gas is the exhaust from an excess air burner (64) which is injected into the furnace exhaust gas at a temperature such that the furnace exhaust gas and the injected gas have a combined temperature between 870 DEG to 1090 DEG C at the downstream zone. <IMAGE>

Inventors

TSAI YIH-WAN

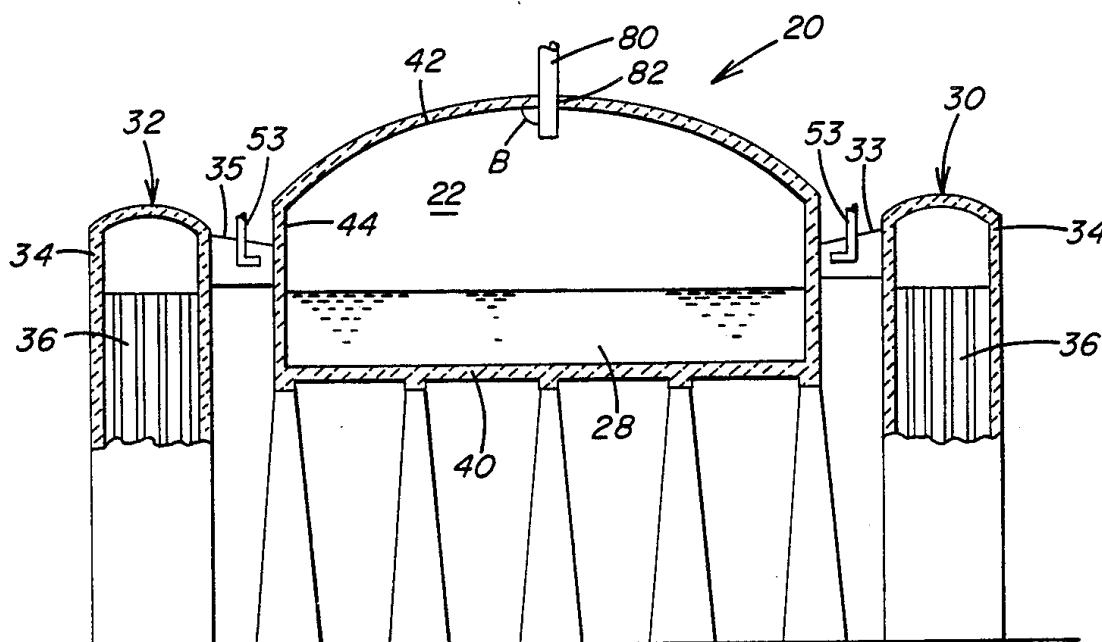
Latest standardized assignees - inventors removed

VITRO

Family 17/20 - FAMPAT - ©Questel

Title

(US4599100)

Melting glass with port and melter burners for NO_x control**Images****Publication data including kind & date**

US4599100

A 1986-07-08 US4599100

**Abstract**

(US4599100)

When primary fuel for combustion is combined with an amount of oxygen in excess of the stoichiometric amount required for complete combustion, in the ports of a glassmaking furnace, additional fuel is injected into the melting chamber to

consume at least a portion of the excess oxygen and reduce at least a portion of NO.sub.x present in the melting chamber, to thereby reduce or suppress NO.sub.x emissions from the furnace.

Inventors

DEMAREST JR HENRY M

Latest standardized assignees - inventors removed

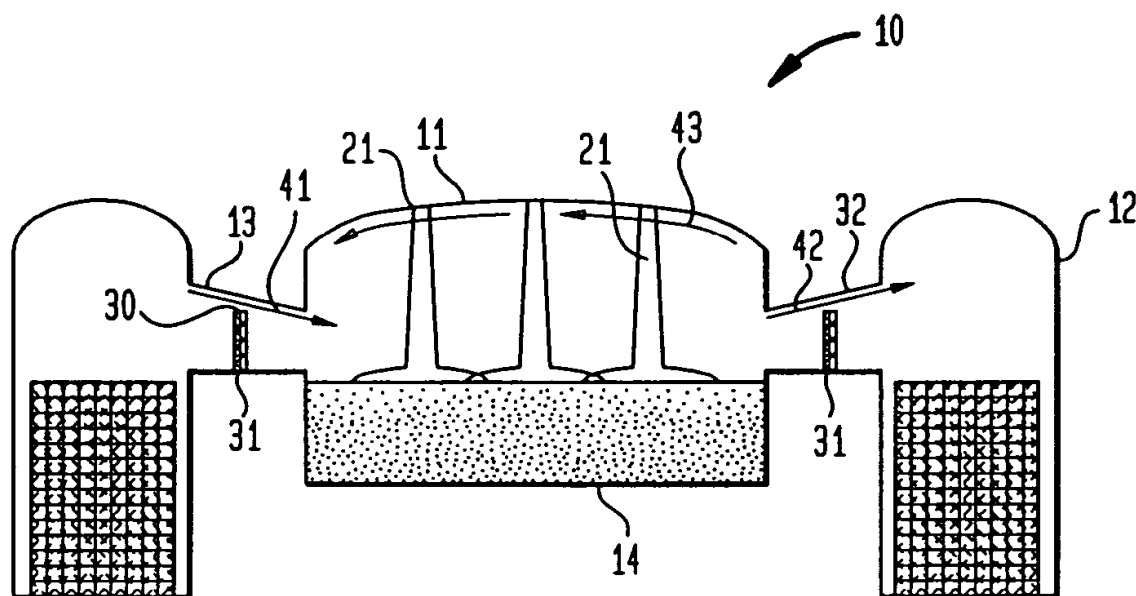
PPG INDUSTRIES

Family 18/20 - FAMPAT - ©Questel

Title

(US7669439)

Gas injection for glass melting furnace to reduce refractory degradation

Images**Publication data including kind & date**

US20070119213	A1	2007-05-31	US20070119213
US7669439	B2	2010-03-02	US7669439

**Abstract**

(US7669439)

A glass melting furnace has a gas inlet positioned proximate to a charging section oxy-fuel combustion region to introduce gas into the region and to at least partially displace gas having a partial pressure of alkali vapor from the region, and optionally a gas outlet is adapted to provide an exit for a volume of furnace atmosphere. A method for reducing alkali vapor corrosion of glass furnace refractory structures includes providing a gas inlet proximate to the oxy-fuel combustion region; introducing a volume of gas from the inlet into the region, displacing a volume of gas having a partial pressure of alkali vapor from the region; and, optionally providing a gas outlet adapted to provide an exit for a volume of furnace atmosphere.

Inventors

SIMPSON NEIL GEORGE

LEBLANC JOHN R

PRUSIA GREGORY FLOYD

Latest standardized assignees - inventors removed

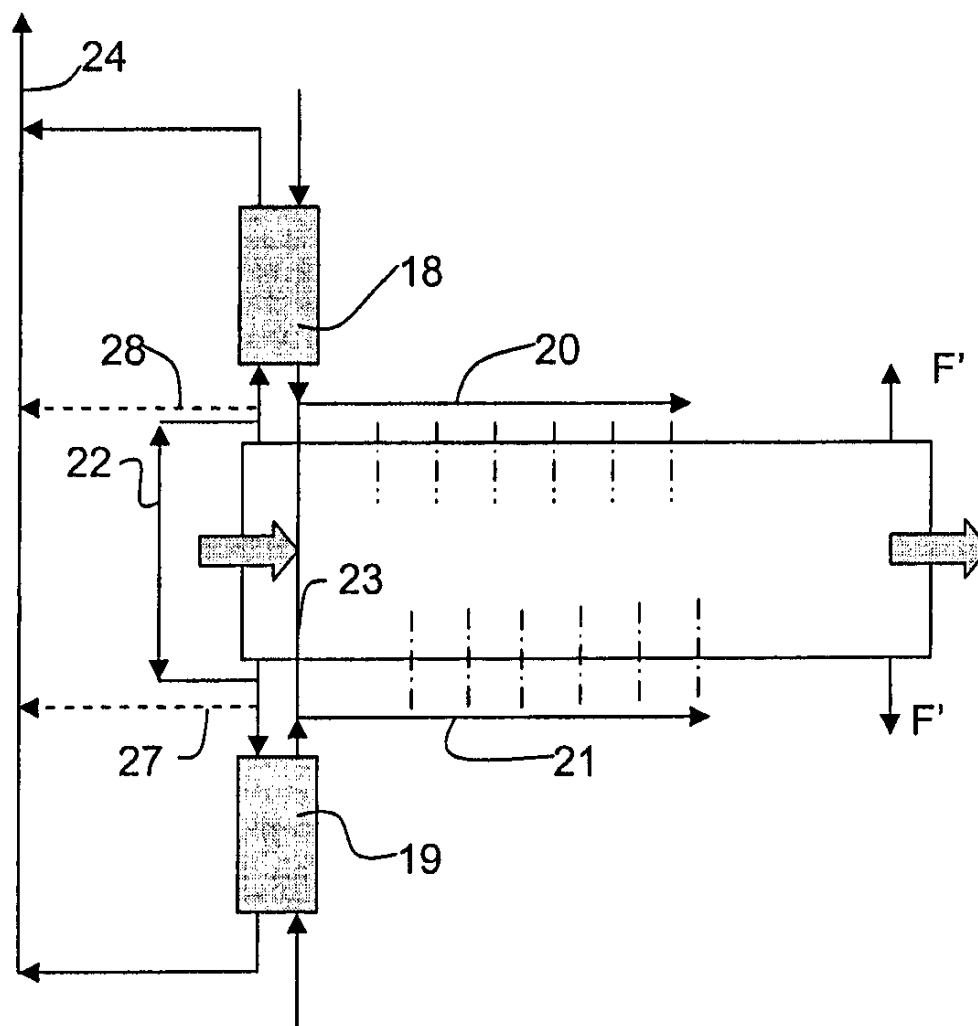
LINDE

Family 19/20 - FAMPAT - ©Questel

Title

Glass melting furnace

Images



WO2009118333	A1	2009-10-01	WO2009118333
EP2254845	A1	2010-12-01	EP2254845
KR20110009105	A	2011-01-27	KR20110009105
CN101980976	A	2011-02-23	CN101980976
MX2010010559	A	2011-03-25	MX2010010559
US20110079050	A1	2011-04-07	US20110079050
EA201001540	A1	2011-04-29	EA201001540
JP2011518744	A	2011-06-30	JP2011518744
IN6526/DELNP/2010	A	2011-08-19	IN2010DN06526
JP5454808	B2	2014-01-17	JP5454808
EA020084	B1	2014-08-29	EA--20084
BRPI0909079	A2	2015-08-25	BR200909079
US9221703	B2	2015-12-29	US9221703
CN101980976	B	2016-03-16	CN101980976B
KR101609892	B1	2016-04-06	KR101609892
IN286703	B	2017-09-01	IN-286703



Abstract

(EP2254845)

The invention relates to a glass melting furnace including a channel-shaped melting end. According to the invention, the raw materials are introduced at an upstream end and the molten glass is recovered at the downstream end, said furnace being heated by burners. At least 65% of the combustion energy is produced by oxycombustion and the burners are distributed on the walls along the length of the furnace. The majority of the flue gases are released close to the upstream end near the raw material inlets, the remainder being released close to the downstream part such as to maintain a dynamic seal in relation to the surrounding atmosphere.

Inventors

DOUXCHAMPS OLIVIER

BEHEN JOHAN

Latest standardized assignees - inventors removed

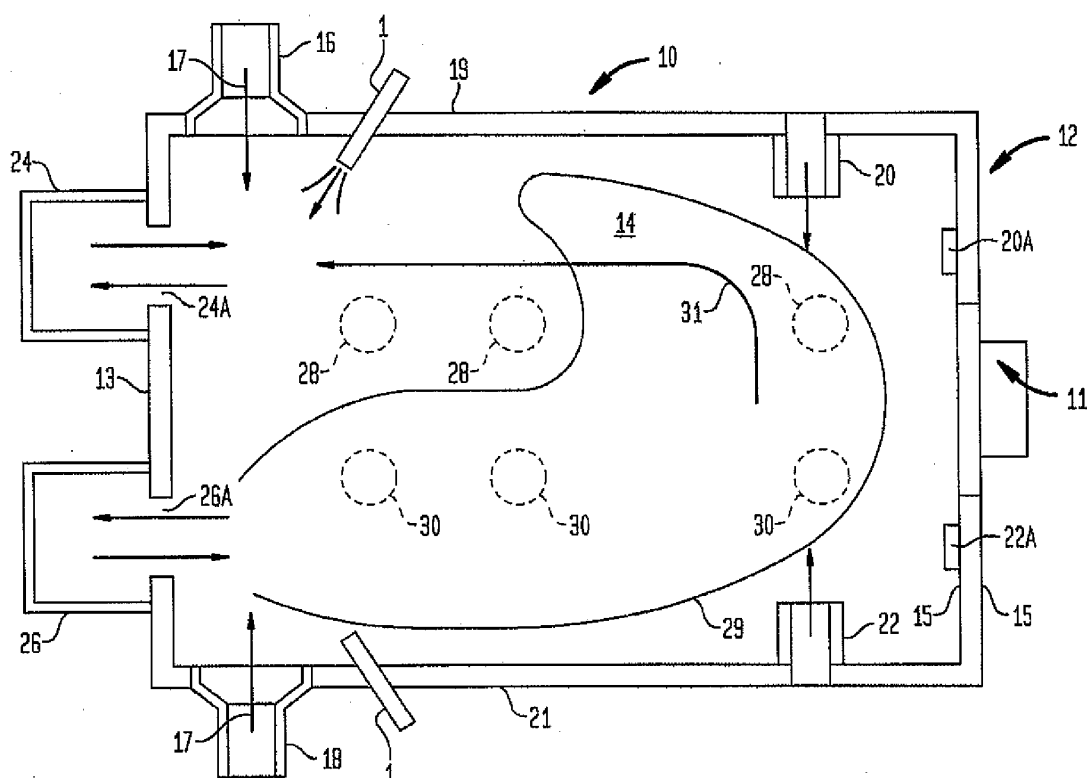
AGC GLASS EUROPE

Family 20/20 - FAMPAT - ©Questel

Title

(US20130091898)

Method and device for melting meltable stock

Images**Publication data including kind & date**

US20130091898 A1 2013-04-18 US20130091898

IN1380/CHE/2012 A 2016-04-01 IN2012CH01380

**Abstract**

(US20130091898)

A method for melting meltable stock, such as glass includes a melting furnace (10) heated via a burner flame (25,29) generated by a burner port, through which fuel and oxidizer are supplied, a fuel-rich gas stream introduced into the furnace downstream from the burner port via at least one substoichiometrically operated burner (20,22) and/or a fuel or fuel mixture

being introduced into the furnace downstream from the burner arrangement via at least one fuel nozzle, and a oxygen containing gas stream being introduced into the furnace downstream from the at least one substoichiometrically operated burner and/or the at least one fuel nozzle. A furnace device is also provided.

Inventors

MIETH RAINER

SIMPSON NEIL

WILCOX RICHARD

Latest standardized assignees - inventors removed

LINDE