

1) Family number: 44966992 (US2011197709A)

© PatBase

Title: AGITATION DEVICE, MELTING APPARATUS AND MELTING METHOD

Abstract: Provided are an agitation device, a melting apparatus, and a melting method which achieve good melting efficiency without contaminating molten metal. The agitation device is provided with a traveling magnetic field generating unit which is disposed outside a charging tank for storing molten metal and generates, inside the charging tank, a magnetic field that travels downward along the rear sidewall of the charging tank, whereby a flow of the molten metal that rotates longitudinally about an axis approximately parallel to the surface of the molten metal is produced in the molten metal. By charging aluminum cutting chips into the molten metal in which the flow is produced, the aluminum cutting chips move with the flow of the molten metal, get into the molten metal roughly in the position where a downward flow of the molten metal is produced, and are immersed in the molten metal, and thus the melting of the aluminum cutting chips is accelerated.

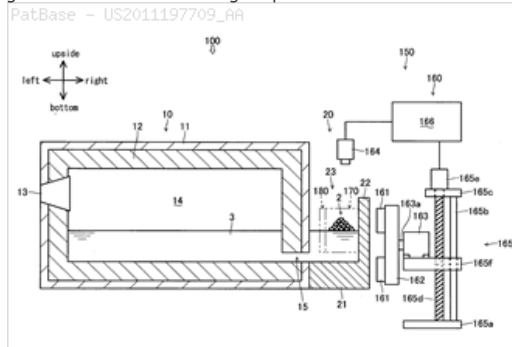
Classifications:

International (IPC 8-9): B22D1/00 B22D35/00 B22D45/00 B22D46/00 C21D11/00 C22B21/00 C22B4/00 C22B4/08 C22B7/00 C22B9/00 C22B9/16 F27B3/10 F27B3/20 F27D21/00 F27D27/00 F27D3/00 G21C7/00 (Advanced/Invention); B22D1/00 C22B21/00 C22B7/00 F27D27/00 (Core/Invention)

CPC: B22D1/00 B22D46/00 C22B9/003 C22B21/0084 C22B21/0092 F27B3/10 F27B3/205 F27D27/00 Y02P10/218 Y02P10/253

European: B22D1/00 B22D46/00 C22B21/00J C22B21/00J2 C22B9/00I F27B3/10 F27B3/20B F27D27/00

US: 266/233 266/233S 266/234 266/234S 266/94 266/94S 266/99 266/99S 373/116 373/146 373/85 75/10.67 75/10.670P

**Family:**

Publication number	Publication date	Application number	Application date
■ CN102223966 A	20111019	CN200980146782	20091027
■ CN102223966 B	20160504	CN200980146782	20091027
■ DE602009033850 D1	20151105	DE200960033850T	20091027
■ DE602009046928 D1	20170810	DE200960046928T	20091027
■ DE602009047440 D1	20170907	DE200960047440T	20091027
■ EP2388085 A1	20111123	EP20090823295	20091027
■ EP2388085 A4	20140326	EP20090823295	20091027
■ EP2388085 B1	20150923	EP20090823295	20091027
■ EP2821161 A2	20150107	EP20140186053	20091027
■ EP2821161 A3	20150304	EP20140186053	20091027
■ EP2821161 B1	20170628	EP20140186053	20091027
■ EP2821162 A2	20150107	EP20140186054	20091027
■ EP2821162 A3	20150304	EP20140186054	20091027
■ EP2821162 B1	20170726	EP20140186054	20091027
■ JP2011017521 A2	20110127	JP20090205091	20090904
■ JP5163615 B2	20130313	JP20090205091	20090904
■ PL2821161 T3	20171130	PL20140186053T	20091027
■ US2011197709 AA	20110818	US20090126309	20091027
■ US8598999 BB	20131203	US20090126309	20091027
■ WO10050182 A1	20100506	WO2009JP05655	20091027

Priority:

JP20080278106 20081029	JP20090141517 20090612	JP20090205091 20090904
EP20090823295 20091027	EP20090823295 20091027	EP20140186053 20091027
EP20140186054 20091027	WO2009JP05655 20091027	

Probable Assignee: TOYOTA JIDOSHA KK**Assignee(s):** (std): TOYOTA MOTOR CO LTD ; TOYOTA MOTOR CORP ; HIRAI TAKASHI ; KORIYAMA SHINICHI**Assignee(s):** TOYOTA JIDOSHA KABUSHIKI KAISHA ; TOYOTA JIDOSHA KK ; TOYOTA MOTOR CO ; TOYOTA JIDOSHA TOYOTA SHI KK**Inventor(s):** (std): HIRAI TAKASHI ; KORIYAMA SHINICHI ; TAKASHI HIRAI ; SHINICHI KORIYAMA**Inventor(s):** KORIYAMA SHINICHI AICHI KEN ; HIRAI TAKASHI AICHI KEN**Agent(s):** TBK; KUHNEN AND WACKER PATENT U RECHTSANWALTSBUERO PARTG MBB; INTES DIDIER GERARD ANDRE; KENYON AND KENYON LLP; YANO JUICHIRO

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 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 TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

2) Family number: 63851903 (US2018156540A)

© PatBase

Title: FURNACE FOR MELTING AND TREATING METAL AND METALLIC WASTE AND METHOD THEREFOR

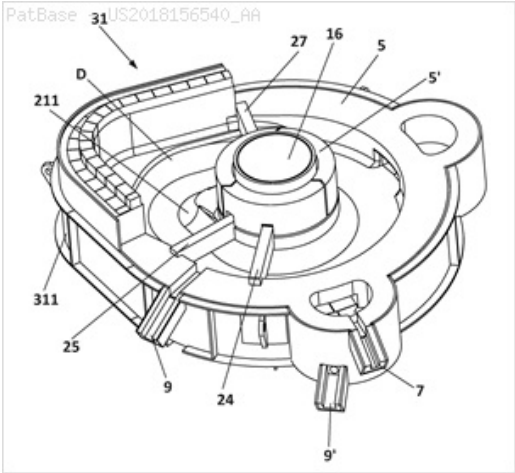
Abstract: A furnace includes a tank having outer and inner walls defining a closed canal configured to be filled with molten

metal continuously circulating along the closed canal. The closed canal includes at least one heating area having a heating component configured to transfer energy to the molten metal thus overheating it; at least one loading area configured for material to be melted or treated, dragged by the overheated molten metal on its surface; a melting/treatment area configured to receive the overheated molten metal and material dragged on its surface. The overheated molten metal transfers its exceeding energy to the material, causing its melting/treatment. The furnace has a central hollow delimited by the inner wall. The furnace includes a driving component within the hollow, having a rotor with at least one magnet body. The rotor is coupled to a motor and configured to rotate upon activation of the motor, generating a magnetic field capable of causing circulation of the molten metal in a continuous and cyclical manner.

Classifications:

International (IPC 8-9): F27B3/10 F27D11/08
F27D27/00 (Advanced/Invention)

CPC: F27B3/10 F27D27/005 F27D11/08 F27D27/00 F27D2003/0054
F27D2003/0083



Family:

Publication number	Publication date	Application number	Application date
BR112017022745 A2	20180717	BR20171122745	20160407
CL2017002684 A1	20180601	CL20170002684	20171023
CN107660264 A	20180202	CN201680031416	20160407
CO20170010745 A2	20180320	CO20170010745	20171023
EP3086069 A1	20161026	EP20150382205	20150423
EP3086069 B1	20190605	EP20150382205	20150423
IN201717037178 A	20171222	IN201717037178	20171020
MX2017013593 A1	20180801	MX20170013593	20160407
RU2017136866 A	20190422	RU20170136866	20160407
US2018156540 AA	20180607	US20160567964	20160407
WO16169780 A1	20161027	WO2016EP57671	20160407

Priority:

EP20150382205 20150423 WO2016EP57671 20160407

Probable Assignee: DIGIMET 2013 SL

Assignee(s): (std): DIGIMET 2013 S L ; DIGIMET 2013 SL

Assignee(s): DIDZHIMET 2013 SL

Inventor(s): (std): COBOS LUIS ; LUIS COBOS

Inventor(s): KOBOS LUIS

Agent(s): JORGE GARAY; HELENA CAMARGO WILLIAMSON; BALDER IP LAW SL; YUS

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

3) Family number: 57699286 (US2015283605A)

© PatBase

Title: METAL MELT CIRCULATING DRIVE DEVICE AND MAIN BATH INCLUDING THE SAME

Abstract: A melt circulating drive device mounted on a side wall of a main bath and driven to agitate nonferrous metal melt present in a melt storage room storing nonferrous metal melt of the main bath. The melt circulating drive device includes a melt drive tank, a melt drive unit, and a partition plate. The melt drive tank includes a hermetically-sealed drive chamber including an opening allowing the drive chamber to communicate with the melt storage room, and the melt drive tank stores melt, which flows from the opening, in the drive chamber. The melt drive unit includes a permanent magnet unit rotated about a first up and down axis while making magnetic lines of force up and down pass through the melt, and a drive unit for the permanent magnet unit that rotates the melt, about the first up and down axis by rotationally driving the permanent magnet unit.

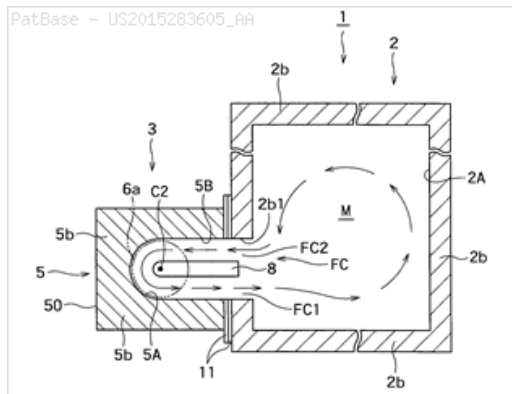
Classifications:

International (IPC 8-9): B01F13/08 B01F7/00 B22D1/00 B22D35/00
B22D41/00 B22D41/08 B22D45/00 F16H49/00 F27D27/00
F27D3/00 (Advanced/Invention);

F27D3/00 (Advanced/Non-invention)

CPC: B22D1/00 B22D41/00 F27D27/005 F27D2003/0054 F27D27/00

US: 266/234

**Family:**

Publication number	Publication date	Application number	Application date
AU2014203045 AA	20141106	AU20140203045	20140331
AU2014203045 BB	20150827	AU20140203045	20140331
CA2861635 AA	20140604	CA20142861635	20140331
CA2861635 C	20160927	CA20142861635	20140331
CN104121787 A	20141029	CN201410165947	20140423
CN104121787 B	20160330	CN201410165947	20140423
CN204007188 U	20141210	CN201420201349U	20140423
DE602014024857 D1	20180524	DE201460024857T	20140331
EP2944396 A1	20151118	EP20140730728	20140331
EP2944396 A4	20160907	EP20140730728	20140331
EP2944396 B1	20180502	EP20140730728	20140331
JP2014213333 A2	20141117	JP20130090729	20130423
JP5813693 B2	20151117	JP20130090729	20130423
KR101613927 B1	20160420	KR20147021315	20140331
KR20140146580 A	20141226	KR20147021315	20140331
US2015283605 AA	20151008	US20140391522	20140331
US9597726 BB	20170321	US20140391522	20140331
WO14175002 A1	20141030	WO2014JP59414	20140331

Priority:

JP20130090729 20130423 EP20140730728 20140331 WO2014JP59414 20140331
 CN201420201349U 20140423

Probable Assignee: TAKAHASHI KENZO MATSUDO SHI

Assignee(s): (std): KENZO TAKAHASHI ; TAKAHASHI KENZO

Assignee(s): TAKAHASHI KENZO MATSUDO SHI ; TAKAHASHI KENZO149 ROKKODAI 9-CHOMEMATSUDO-SHI2702203CHIBAJP

Inventor(s): (std): TAKAHASHI KENZO ; KENZO TAKAHASHI

Inventor(s): TAKAHASHI KENZO MATSUDO SHI ; TAKAHASHI KENZO149 ROKKODAI 9-CHOMEMATSUDO-SHI2702203CHIBAJP

Agent(s): GRIFFITH HACK; FETHERSTONHAUGH AND CO; REGIMBEAU; OBLON MCCLELLAND MAIER AND NEUSTADT LLP; KATSUNUMA HIROHITO ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT KE KG KM KN KP KR KZ LA LC 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

4) Family number: 32249125 (US2005206260A)

© PatBase

Title: MAGNETIC ROTATION TRANSMITTING DEVICE, HERMETIC STIRRING UNIT, AND ELECTRIC FURNACE

Abstract: In order to provide a magnetic rotation transmitting device capable of obtaining a large transmitting torque without using a large-sized permanent magnet, in an axial-type magnetic rotation transmitting device, which includes a driving rotation body having one or plural magnetic line(s) in which plural first magnets (10 A) are disposed in a circumferential direction on a first disk (11 A) at almost equal intervals, a drive source rotationally driving a drive shaft of the driving rotation body, and a driven rotation body having one or plural magnet line(s) in which second magnets (20 A) of the same number as the first magnets (10 A) are disposed in the circumferential direction on a second disk (21 A) at almost equal intervals, symmetrically disposed to, and magnetically coupled with the driving rotation body with a magnetic coupling gap and, which utilizes a magnetic operation and which allows the driven rotation body to rotate by rotationally driving the drive shaft by means of the drive source, the first magnet (10 A) has a N-magnetic pole portion and a S-magnetic pole portion, and an extended surface of a boundary surface between the N-magnetic pole portion and the S-magnetic pole portion approximately overlaps with a driving center line as being a rotation center line of the driving rotation body, the second magnet (20 A) has the N-magnetic pole portion and the S-magnetic pole portion, and the extended surface of the boundary surface between the N-magnetic pole portion and the S-magnetic pole portion approximately overlaps with a driven center line as being the rotation center line of the driven rotation body, adjacent and facing surfaces of the first magnets (10 A) adjacent to each other on the first disk (11 A) are disposed so that magnetic pole faces having the same polarity make pairs, and adjacent and facing surfaces of the second magnets (20 A) adjacent to each other on the second disk (21 A) are disposed so that the magnetic pole faces having the same polarity make pairs.

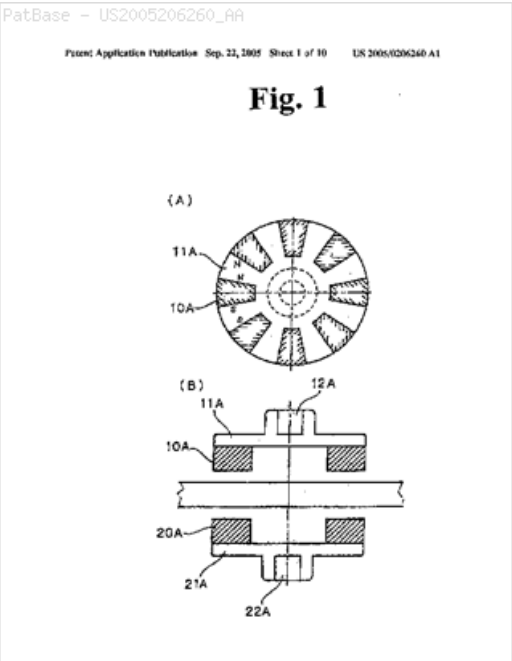
Classifications:

International (IPC 8-9): B01F13/08 B01F3/06 B01F7/00 C30B15/30 F16H49/00 F27B14/04 F27B14/06 F27B14/10 F27D27/00 H02K49/06 H02K49/10 H02K5/10 H05B3/62 H05B6/24 (Advanced/Invention); H02K49/00 (Core/Invention)

International (IPC 1-7): B01F13/08 B01F7/00 F16H49/00 F27D23/04 H02K49/00 H02K49/10 H02K5/10 H02P15/00

CPC: Y10S366/605 H02K49/108 C30B15/30 F27B14/04 F27B14/061

F27B14/10 F27D27/00 H02K49/106 B01F13/0845 B01F13/0872
European: C30B15/30 F27B14/04 F27B14/06D F27B14/10
F27D27/00 H02K49/10C1 H02K49/10C2
US: 310/103 310/104 310/104P 310/114 310/75.00R 310/75R
366/247 366/605 369/266 373/118 373/140 373/77 417/420
417/420S



Family:

Publication number	Publication date	Application number	Application date
EP1578009 A2	20050921	EP20050005768	20050316
EP1578009 A3	20071107	EP20050005768	20050316
JP2005269709 A2	20050929	JP20040074978	20040316
JP2007074900 A2	20070322	JP20060340606	20061218
JP4703550 B2	20110615	JP20060340606	20061218
US2005206260 AA	20050922	US20050076659	20050310
US7112904 BB	20060926	US20050076659	20050310

Priority:

JP20040074978 20040316 JP20060340606 20061218

Probable Assignee: MAGUNEO CO LTD A OF JAPAN CORP

Assignee(s): (std): AKIYAMA SHINICHI ; MAGUNEO CO LTD ; MAGUNEO GIKEN KK

Assignee(s): MAGUNEO CO LTD A OF JAPAN CORP ; LIMITED COMPANY MAGUNEO RESEARCH INSTITUTE ; MAGUNEO CO

Inventor(s): (std): AKIYAMA SHINICHI

Agent(s): NOTARO AND MICHALOS PC

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 NL PL PT RO SE SI SK TR YU