

April 9, 1940.

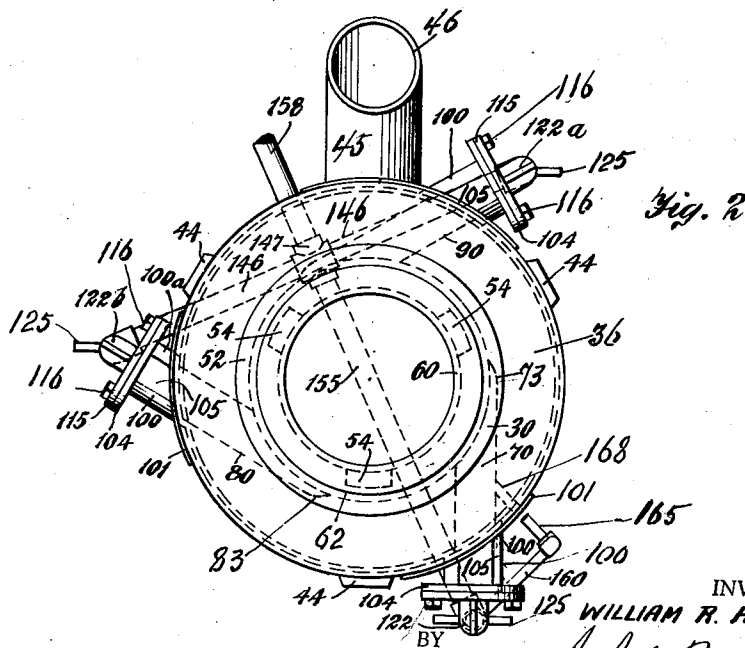
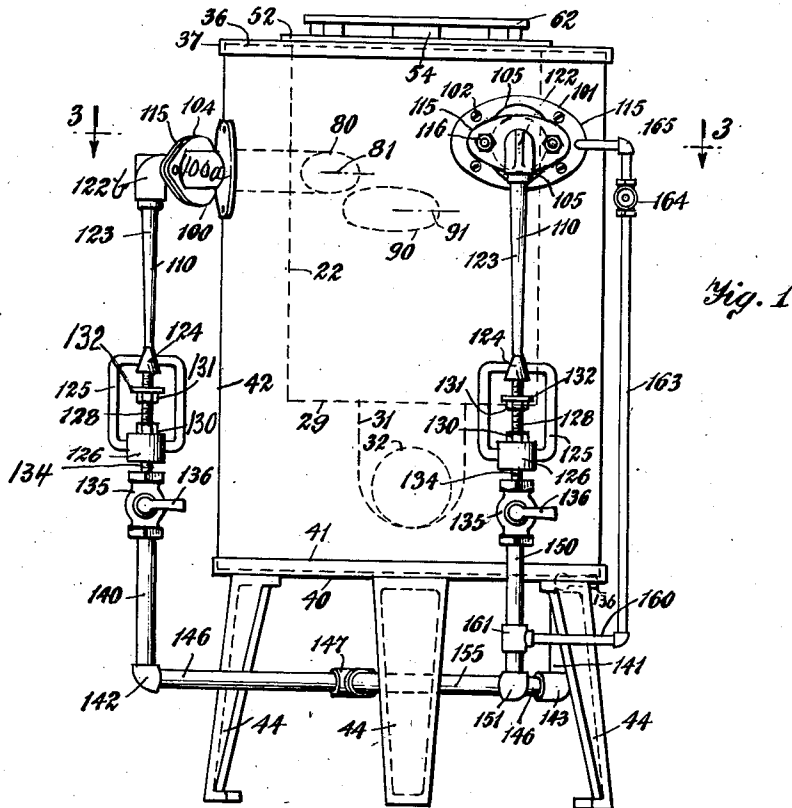
W. R. HONES

2,196,864

MELTING FURNACE

Filed June 10, 1938

2 Sheets-Sheet 1



INVENTOR.

WILLIAM R. HONES

A. A. de Bonneville

ATTORNEY.

April 9, 1940.

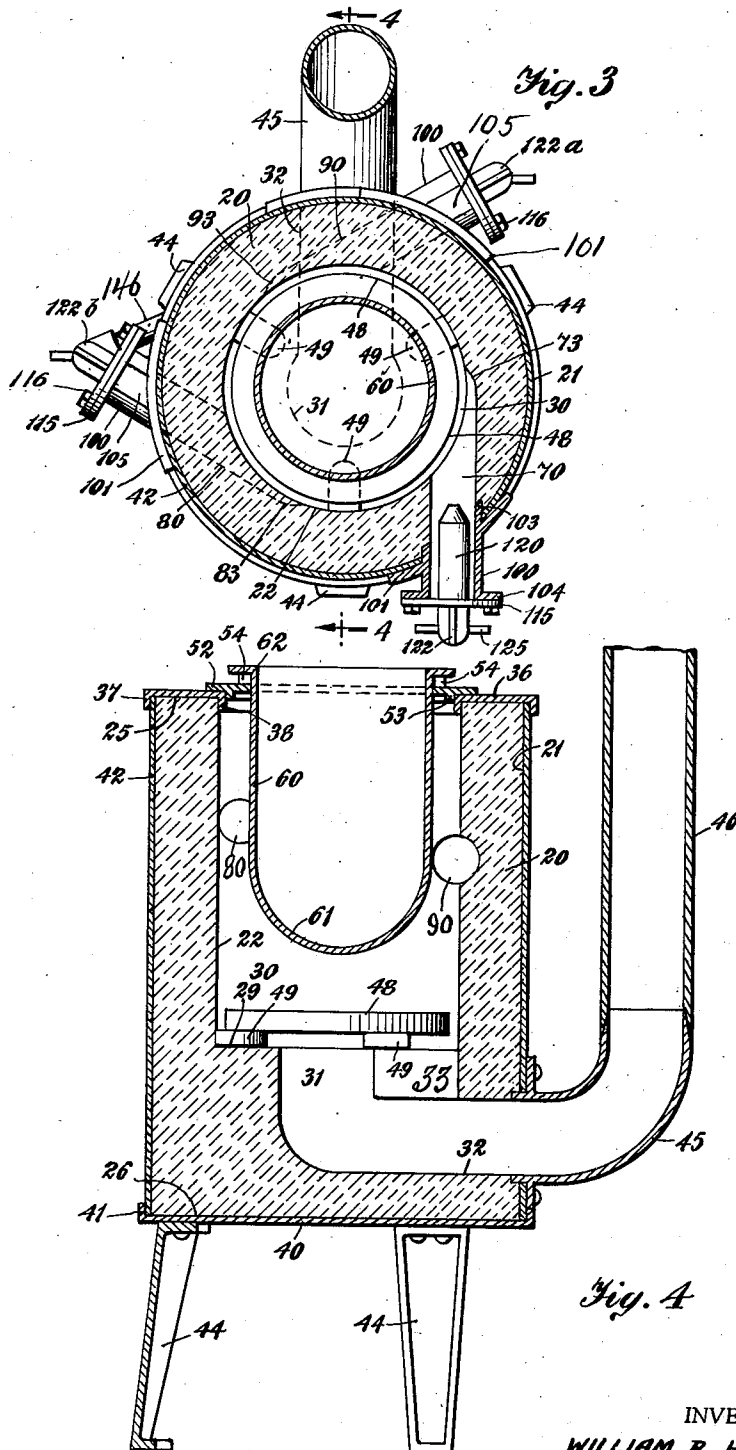
W. R. HONES

2,196,864

MELTING FURNACE

Filed June 10, 1938

2 Sheets-Sheet 2



INVENTOR.
WILLIAM R. HONES
A. A. de Bonneville
ATTORNEY.

UNITED STATES PATENT OFFICE

2,196,864

MELTING FURNACE

William R. Hones, Baldwin, N. Y., assignor to
Charles A. Hones, Inc., Baldwin, N. Y., a cor-
poration of New York

Application June 10, 1938, Serial No. 212,863

1 Claim. (Cl. 263—14)

This invention relates to a melting furnace.

The object of the invention is the production of a melting or crucible furnace, heated to high temperatures, by means of atmospheric burners, preferably gas burners supplied with fuel at normal pressure slightly above atmospheric pressure, not requiring forced draft.

The second object of the invention is the production of a melting furnace, adapted to melt various metals, salts and the like efficiently.

The third object of the invention is the production of a melting furnace, constructed to quickly discharge the products of combustion from its heating chamber to secure high temperatures therein and increasing the speed of heating the material treated in the pot of the furnace.

In the drawings Fig. 1 represents a front elevation of an exemplification of the improved melting furnace; Fig. 2 shows a top view of Fig. 1; Fig. 3 indicates a section of Fig. 1 on the line 3, 3 and Fig. 4 is a section of Fig. 3 on the line 4, 4.

The melting furnace is indicated with the cylindrical wall 20 of refractory material, having the outer vertical cylindrical surface 21 and the inner vertical cylindrical surface 22. The top horizontal face of the wall 20 is shown at 25 and its bottom horizontal face is indicated at 26. A bottom horizontal wall 29 is indicated at the lower end of the cylindrical surface 22. The surface 22 and wall 29 form the cylindrical shaped heating chamber 30. A cylindrical outlet conduit is shown with the vertical member 31 at the axial center of the heating chamber 30, which joins with the horizontal member 32 that extends through the wall 20. The inlet ends of the members 31 and 32 are connected by the supplemental outlet conduit 33 extending from the bottom wall 29 of the heating chamber 30, to enhance the velocity of the flow of the products of combustion from said chamber. A top plate 36 having the outer circumferential flange 37 and the inner circumferential flange 38 is supported upon the top face 25 of the wall 20. A bottom plate 40 having the outer circumferential flange 41 bears up against the bottom face 26 of the wall 20. A cylindrical steel jacket 42 surrounds the wall 20 and its top and bottom ends respectively bear against the top plate 36 and the bottom plate 40.

Three supporting legs 44 for the furnace have their upper ends bolted to the bottom plate 40.

An elbow 45 is secured to the jacket 42 and exhaust piping 46 is supported by said elbow.

A cylindrical baffle plate 48 has extending from

its lower face the lugs 49 which are supported upon the wall 29.

Upon the top plate 36 is supported the annular cover 52 having the annular flange 53 extending from its lower face and three supporting lugs 54 extend from its upper face.

A cylindrical melting pot 60 extends into the heating chamber 30 and is indicated with the semi-spherical lower end 61, and the annular flange 62 at its upper end. The flange 62 bears upon the supporting lugs 54.

A cylindrical shaped fuel inlet conduit 70 with its axial center in a plane coincident with the line 3, 3 see Fig. 1, extends through the wall 20. The conduit 70 is preferably a little larger in diameter than the annular space between the outer surface of the melting pot 60 and the surface 22 of the wall 20. The conduit 70 is curved at 73 to meet the inner face 22 of the wall 20.

A second cylindrical fuel inlet conduit 80, identical to the conduit 70, has its axial center coincident with the line 81, see Fig. 1, below the line 3, 3 and also extends through the wall 20. The conduit 80 is also a little larger in diameter than the space between the outer surface of the melting pot 60 and the inner surface 22 of the wall 20. The conduit 80 is curved at 83 to meet the surface 22.

A third cylindrical conduit 90, identical to the conduit 70, has its axial center coincident with the line 91, below the line 81, and extends through the wall 20. The conduit 90 is also a little larger in diameter than the space between the outer surface of the melting pot 60 and the inner surface 22 of the wall 20. The conduit 90 is also curved, at 93 to meet the surface 22 of the wall 20. It will be noted that the conduits 70, 80 and 90 are also horizontally spaced from one another to enter the heating chamber 30 at equal distances apart.

Coaxial with each of the conduits 70, 80, and 90 are indicated bunsen burner supporting brackets 100, which are identical with one another. Each of the brackets 100 is shown with the cylindrical body portion 100a that has integral therewith the oval shaped flange 101. The latter are secured to the steel jacket 42 by means of screw 102 and the like. A cylindrical sleeve 103 at the inner face of each flange 101 extends into the wall 20 and a flange 104 extends from the outer end of each body portion 100a. A pair of oppositely positioned openings 105 are indicated in each body portion 100a and extend through the flange 101, to provide a

supplemental air supply for the bunsen burners.

A bunsen burner designated in its entirety by the numeral 110 is detachably maintained in each bracket 100.

Each bunsen burner 110 comprises the flange 115 which is detachably bolted to its coacting flange 104, by bolts 116. From the inner face of each flange 115 extends the horizontal nozzle 120 and from the outer faces of the flanges 115 extend the similar elbow shaped fittings 122, 122a and 122b.

The usual tapered inlet conduits 123 with the funnel shaped inlet ends 124, extend from the fittings 122, 122a and 122b. The usual frame 125 extends from the end 124 and supports the chamber 126. A threaded pipe 128 extends from the chamber 126 into the funnel shaped inlet and 124. Nuts are shown at 130 and 131, and a regulating disc 132 is in threaded engagement with the pipe 128. A threaded pipe 134 extends from each chamber 126 and supports the usual regulating valves 135, with the handle 136.

From the valve 135 of the bunsen burner having the fitting 122b extends the vertical pipe 140, and from the valve 135 of the bunsen burner having the fitting 122a extends the pipe 141. The said pipes 140 and 141 at their lower ends have respectively connected thereto the elbows 142 and 143. Piping 146 with the cross 147 connect the elbows 142, 143. A pipe 150 extends from the valve 135 of the burner having the fitting 122 and at its lower end is shown the elbow 151. The elbow 151 and the cross 147 are connected by the pipe 155. A fuel supply pipe 158 is connected to the cross 147.

A pilot light is provided for the bunsen burner having the fitting 122 and in this instance is indicated with the horizontal pipe 160 extending from the T 161 in the pipe 150. A vertical pipe 163 with the valve 164 extends from the pipe 160,

and a horizontal pipe 165 extends from the pipe 163 and leads to an opening 168 extending through the flange 101 of the bracket 100 of the bunsen burner having the fitting 122.

The opening 168 extends through the wall 20 and leads into the conduit 70.

To operate the melting furnace the melting pot 60 with its charge of material is positioned to extend into the heating chamber 30. The valves 135 are then opened by means of the handles 136 and the valve 164 in the pipe 163 of the pilot light is also opened and fuel flowing therethrough is lit. The fuel from each horizontal nozzle 120 of the bunsen burners is discharged into the conduits 70, 80, and 90, and is lit and twirled at different levels from said conduits around the outer surface of the pot 60 and melts the charge therein as required. It will be noted as the fuel descends toward the bottom of the heating chamber 30 it strikes the baffle plate 48 and is reflected upwardly and strikes the bottom portion of the melting pot 60.

Various modifications may be made in the invention and the present exemplification is to be taken as illustrative and not limitative thereof.

Having described my invention I claim:

In a melting furnace the combination of a heating chamber having an inner vertical cylindrical wall, and a bottom horizontal wall, an outlet conduit extending from said bottom wall, said outlet conduit comprising a vertical member and a horizontal member and a supplemental outlet extending from the bottom horizontal wall of the said heating chamber connecting said members, means to charge said heating chamber with a heating fluid slightly above atmospheric pressure and a melting pot detachably supported in the heating chamber.

WILLIAM R. HONES. 40