No. 683,378. Patented Sept. 24, 1901.

W. J. BROWN.

REVERBERATORY MELTING FURNACE.

(Application filed Sept. 8, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

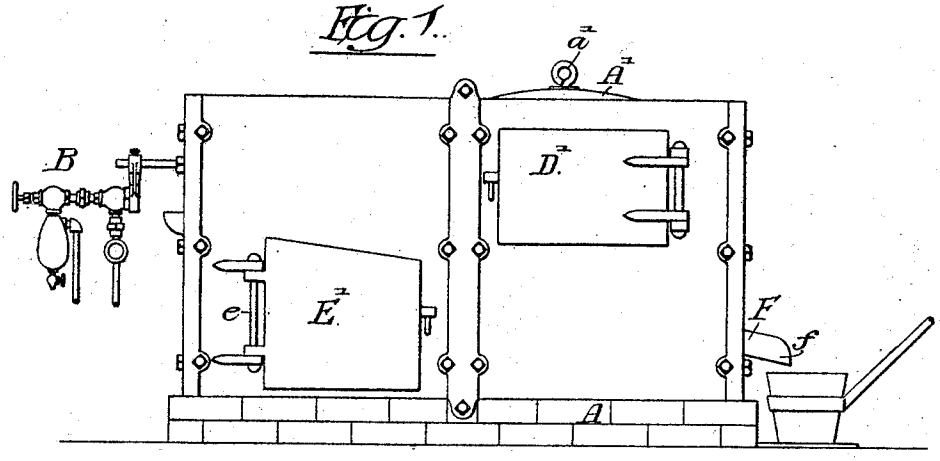


Fig. 2.

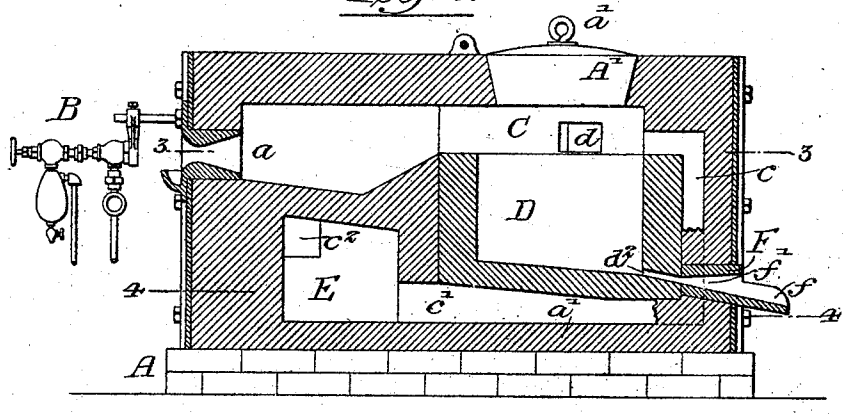
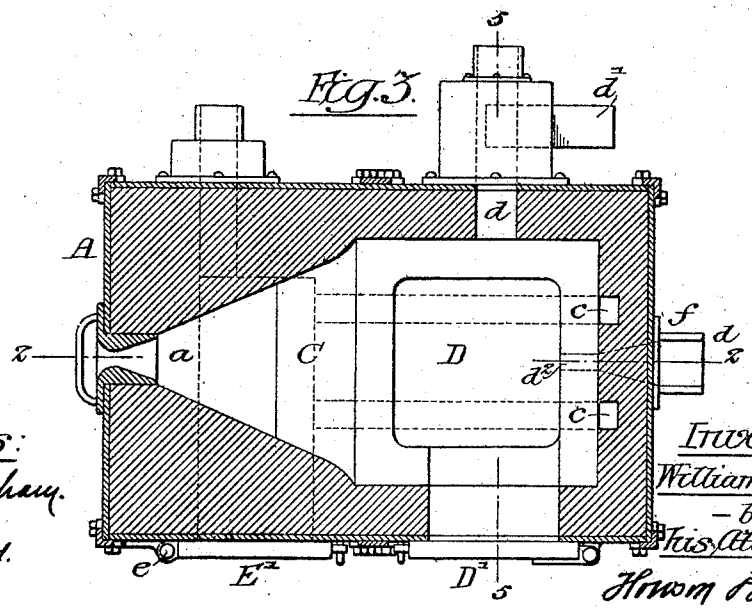


Fig. 3.



Witnesses:
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Inventor:-
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— by —
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. 4.

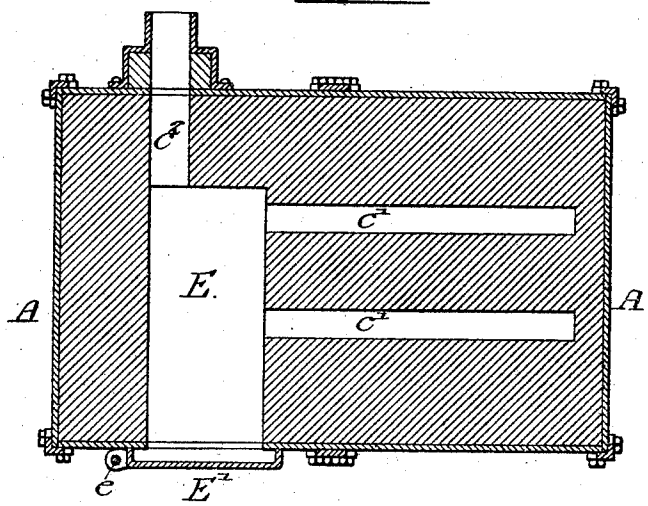
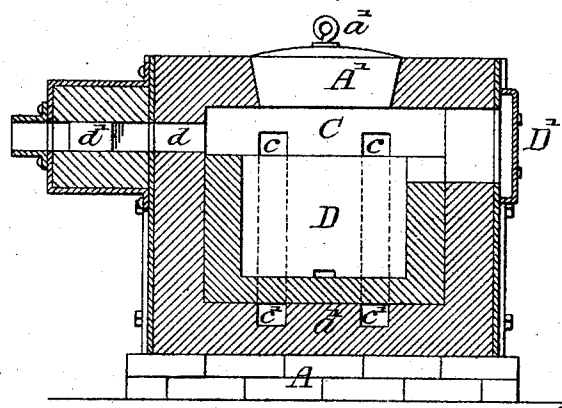


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM J. BROWN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO J. W. PAXSON COMPANY, OF SAME PLACE.

REVERBERATORY MELTING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 683,378, dated September 24, 1901.

Application filed September 8, 1900. Serial No. 29,392. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. BROWN, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Reverberatory Melting-Furnaces, of which the following is a specification.

One object of my invention is to so construct a furnace for melting brass, copper, nickel, and alloys as to provide for the convenient and effective use of oil as fuel, a further object being to provide such a furnace with an oven for heating the ladles while the charge is being melted. These objects I attain in the following manner, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of my improved melting-furnace. Fig. 2 is a longitudinal section on the line 2 2, Fig. 3. Fig. 3 is a sectional plan view on the line 3 3, Fig. 2. Fig. 4 is a sectional plan view on the line 4 4, Fig. 2; and Fig. 5 is a transverse section on the line 5 5, Fig. 3.

A is the body of the furnace, made of brickwork inclosed by metallic plates and braces and having an inlet-passage *a* for the fuel, and directly in front of this inlet-passage is an oil-burner B, which may be of any available type, that shown in the drawings being what is known as the "Brown" burner, as shown in United States patent, dated August 24, 1897, No. 588,691.

D is the melting-pot, which is preferably made of material that will withstand the heat and is built into the furnace, resting upon the brickwork *a'*, as shown clearly in Figs. 4 and 5. The combustion-chamber C extends over the pot, as shown in Fig. 2, and communicates with down-flues *c* at the front of the furnace in the present instance, and these flues communicate with return-flues *c'*, which pass directly under the melting-pot and communicate with a chamber E under the main portion of the combustion-chamber C, this chamber E constituting an oven and being used for heating the ladles into which the metal is run.

The chamber E is provided with a suitable door E', hinged at *e*, and communicating with the chamber is a flue c^2, which carries the waste gases to the chimney.

D' is the charging-door of the furnace, opening into the combustion-chamber directly above the melting-pot D, so that the metal to be melted can be readily placed in the pot, and directly opposite the charging-opening in the present instance is a flue *d*, which has a damper *d'*. This flue leads to the chimney and serves to carry off the fumes that accumulate in the combustion-chamber, the area of opening of the flue being regulated by the damper *d'*.

Directly above the melting-pot is a detachable cover A', and on removing this cover access can be had to the combustion-chamber and the melting-pot, the cover being provided with a suitable ring *a'*, so that the hook of a crane or hoist can engage the cover-plate and lift it off its seat.

A spout *f* communicates with the outlet d^2 at the bottom of the melting-pot D, and a passage *f'* is formed in a block F, built in the wall of the furnace, so that the molten metal when the plug is withdrawn will flow from the pot through the spout into the ladles, which are placed directly under the spout.

The chamber or oven E is of such a size that the ladles can be placed therein while the metal is being melted in the melting-pot, so that the metal will not be chilled when the furnace is tapped.

The atomized oil when it enters the combustion-chamber is ignited, and the ignited gases pass over the melting-pot and down the flues under the melting-pot into the oven E, having parted with their available heat before they reach the flue which leads to the chimney.

When the metals are introduced into the furnace and give off fumes, the valve *d'* in the flue *d* can be opened, so as to allow the fumes to pass away to the chimney.

I claim as my invention—

1. The combination of a furnace with a melting-pot and a burner, said furnace having in it an opening for the burner, a combustion-chamber extending from said opening to and over the melting-pot, said chamber increasing in area of cross-section from the burner-opening until it reaches said pot, and flues beyond the melting-pot forming a continuation of the combustion-chamber and leading down the side of the pot, and then re-

turning under the melting-pot to an outlet, substantially as described.

2. The combination of a melting-pot with a furnace having a combustion-chamber extending over said pot, down-flues at the front of the melting-pot, return-flues communicating with the down-flues, an oven with which the return-flues communicate, and an oil-burner discharging into the combustion-chamber, substantially as described.

3. The combination of a melting-furnace having a combustion-chamber and an inlet communicating therewith, an extension to the combustion-chamber, a melting-pot built into the furnace below said extension of the combustion-chamber, down-flues extending along one end of the melting-pot and return-flues extending under the melting-pot, a charging-opening for the melting-pot, a flue communicating with the extension of the combustion-chamber over the melting-pot, a damper for the said flue, and an oil-burner in front of the inlet to the combustion-chamber, substantially as described.

4. The combination in a melting-furnace, of a melting-pot built in the furnace, a tap-hole at the bottom of the melting-pot, a spout communicating with the tap-hole, a combustion-chamber back of the melting-pot and having an extension directly over the melting-pot, an inlet-opening to the combustion-chamber, an oil-burner directly in front of the said opening, down-flues and return-flues passing around the melting-pot, an oven with which the return-flues communicate, said oven being situated directly under the main portion of the combustion-chamber, a flue from the oven to the chimney, a flue from the combustion-chamber to the chimney, a charging-opening communicating with the combustion-chamber directly above the fire-pot, and a door closing said opening, substantially as described.

5. The combination in a melting-furnace, of a combustion-chamber, a melting-pot having an opening in its lower part and located beyond the combustion-chamber, the space above said pot forming a continuation of said chamber in the same straight line, flues extending down the end of the melting-pot and under the same, an opening in the furnace directly above the melting-pot, a cover for said opening, a charging-opening in the side of the furnace communicating with the space above the melting-pot, and a spout for carrying off the molten metal from the melting-pot, said spout running through the side of the furnace and connecting with the opening in said pot, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM J. BROWN.

Witnesses:
WILL. A. BARR,
JOS. H. KLEIN.