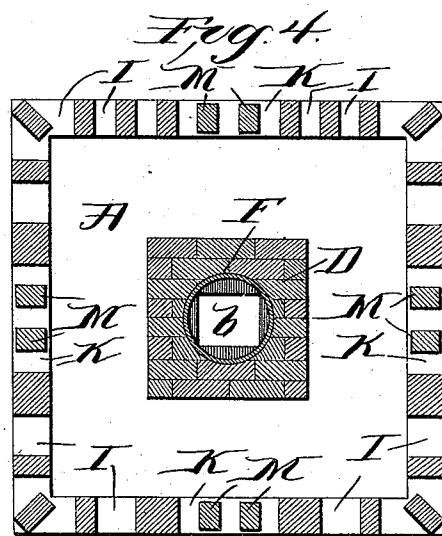
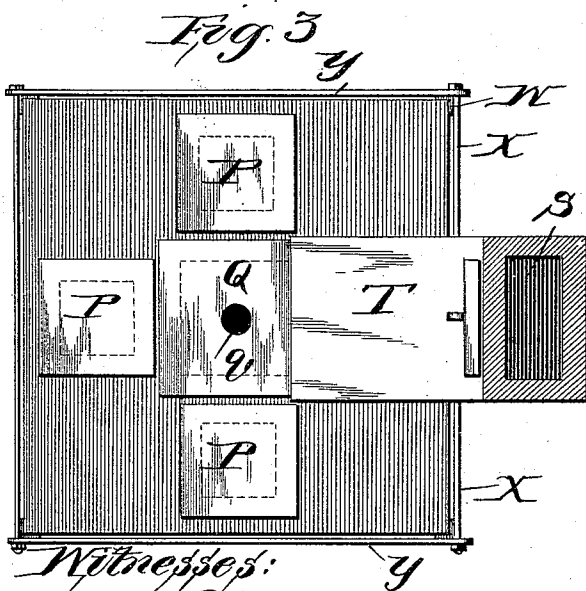
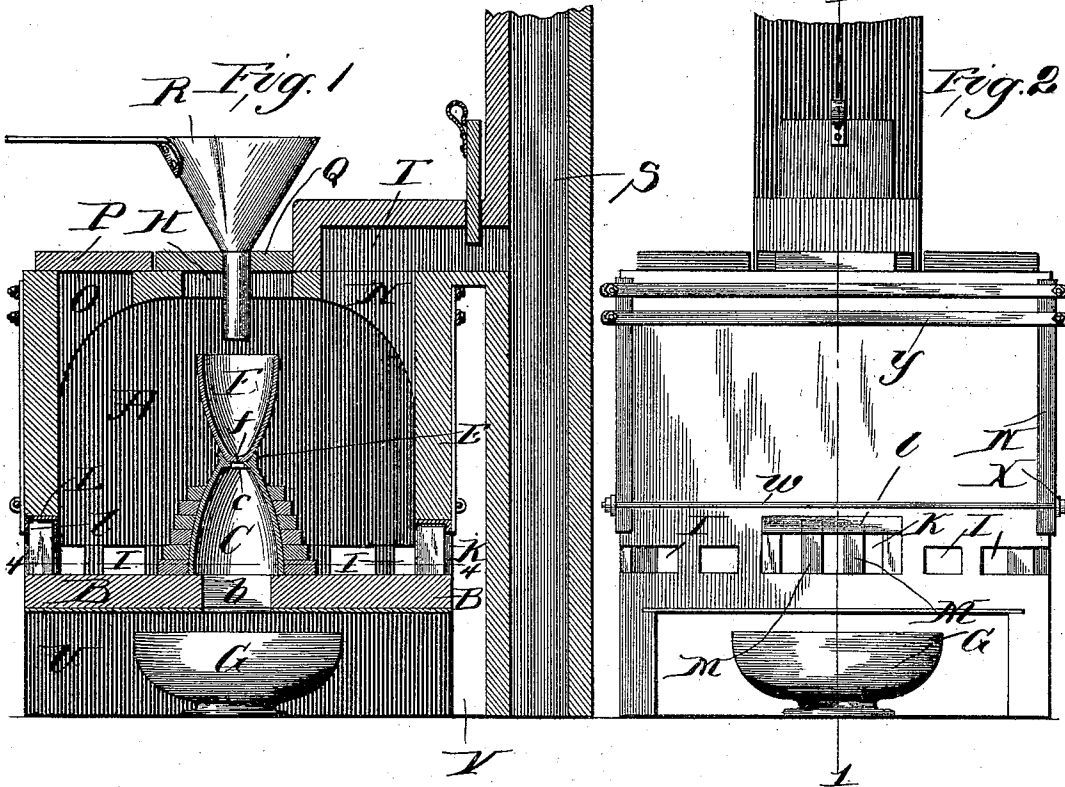


(No Model.)

W. REBMANN.
MELTING FURNACE.

No. 488,661.

Patented Dec. 27, 1892.



Witnesses:
Wm. M. Rheims
J. H. Fort

Inventor
Wm. Rebmann
By Elliott & Quinlan, Attys

UNITED STATES PATENT OFFICE.

WILLIAM REBMANN, OF CHICAGO, ILLINOIS.

MELTING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 488,661, dated December 27, 1892.

Application filed December 15, 1891. Serial No. 415,109. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM REBMANN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Melting-Furnaces, of which the following is a specification.

My invention relates to melting furnaces generally, but more particularly it has reference to improvements especially applicable to the melting of enamels. Heretofore furnaces for this purpose, so far as I am aware, have been provided with a fire chamber having an ordinary bottom grate, and in which the melting crucible of ordinary pattern is situated, the enamel being removed from the crucible through the top of the fire chamber. Such prior arrangements however, have many disadvantages, foremost among which may be named the rapid cooling of the crucible and the loss of heat entailed by removing the cover or top of the fire chamber in recovering the enamel from the crucible, thus not only greatly retarding the melting process, but subjecting the workmen to the intense heat that rises from the crucible and the incandescent fuel when the top of the fire chamber is open. A further disadvantage of the old process is, that none of the enamel can be recovered from the crucible until the whole mass is fully melted, because otherwise the unmelted would, or might be, removed alike with the melted.

The prime object of my invention therefore, is to avoid the necessity of opening the furnace for the recovery of the melted enamel from the crucible, and to cause the enamel to discharge from the crucible as fast as it reaches a fluid consistency.

My invention consists in certain features of novelty in the combination and construction of parts by which this object and certain other objects of minor importance are accomplished, all as hereinafter more fully described with reference to the accompanying drawings, and particularly pointed out in the claims.

In the said drawings—Figure 1, is a vertical section of my improved furnace taken on the line 1, 1, of Fig. 2. Fig. 2, is a front elevation thereof. Fig. 3, is a plan view, and Fig. 4, is a sectional plan taken on the line 4, 4, Fig. 1.

In the drawings, wherein like signs of ref-

erence indicate like parts throughout the several views, A, is the fire chamber of any suitable exterior and interior contour, constructed of fire brick or clay in the usual manner. This chamber is provided with a closed bottom B, which has preferably at or near its center an aperture *b*, over which aperture is situated a hollow pedestal C, held in place by any suitable means, such for instance as a bank or tier of fire brick or clay D, packed around it. This pedestal C, is provided with an aperture *c*, in its crown or top which is surrounded by a rim or flange E, thus forming a seat or socket in which rests the bottom of a melting crucible F. The crucible F may be of the ordinary form, and is provided in its bottom with a small drain duct or perforation *f*, preferably disposed concentric with the aperture *c*, in the pedestal, and through which duct the enamel drips as fast as it reaches a fluid consistency, and thence falls into a receiving vessel or catch-basin G, located under the orifice *b*, in the floor, and being preferably partially filled with water or other cooling substance. The crucible is thus held at the requisite elevation in the fire chamber with capability of being readily removed for repairs through an opening H, immediately above it in the crown of the fire chamber, without removing or disturbing the pedestal C. The pedestal C, is preferably provided with a downwardly flaring interior as clearly shown in Fig. 1, so that the fluid enamel in descending therethrough cannot by any possibility strike against the sides of the pedestal and clog its interior; and for the same reason, the orifice *c*, is of much greater diameter than the duct *f*.

Formed in the side walls of the fire chamber A, preferably in all four sides and flush with the floor or bottom D, are a number of draft holes or ports I, which supply the requisite draft to promote combustion, and also serve as poker holes through which to rake the fire and discharge the ashes.

In order to provide for the removal of the large cinders and clinker, and also to afford means for increasing the draft, I form preferably in both sides, as well as in the front and back walls of the fire chamber, also flush with the floor or bottom, a large hole or port K, whose top is spanned by an angle iron L,

having an outer downwardly projecting flange *l*, and in these holes *K*, I arrange removable bricks *M*, which stand on end therein and rest on the floor *B*, behind the flange *l*, so as not to be pushed out of place by the weight of the fuel above, the holes *K*, being slightly greater in vertical extent than the bricks *M*, so as to permit the latter to be removed and replaced.

The crown of the furnace which may be supported by a suitable arch *N*, is provided at the front and on both sides of the crucible with fuel feeding holes *O*, which latter have independent removable covers *P*. Thus the chamber *F*, may be charged with fuel and the same banked up on all sides of the crucible, without danger of displacing the crucible, and without opening the whole top of the fire chamber.

The hole *H*, above the crucible is provided with a removable cover *Q*, which has formed through it a small aperture *q*, for the passage or insertion of the spout of a removable funnel *R*, by means of which the crucible may be charged with enamel to be melted, without removing the cover *Q*, or otherwise opening the fire chamber.

The fire chamber is connected with the up-take *S*, by means of a dampered flue *T*, of any suitable form.

The catch basin *G*, is situated in a chamber *U*, under the floor, which chamber is preferably open at front and back so as to provide for a free circulation of air in and about the basin, to keep the water as cool as possible,—the chamber *Q*, communicating at its rear end or side with a space *V*, left between the rear wall of the furnace and the stack or up-take, and through this space *V*, the ports *I*, at the rear of the furnace are also supplied with air.

For the sake of greater strength and rigidity in the structure, the corners of the furnace may be provided with angle irons or bearing plates *W*, extending vertically there along, and the four sides of the structure firmly tied together by means of tie-rods and straps *X*, *Y*, respectively, which have bearing against said angle plates.

Having described my invention what I claim and desire to secure by Letters Patent is—

1. In a furnace, the combination of a melting crucible having a perforation in its bottom and a fire chamber in which said crucible is arranged, the bottom of such fire chamber having an upright opening or passage therein of greater diameter than said perforation in the crucible and located, directly under said perforation, substantially as set forth.

2. In a furnace, the combination of a melting crucible having a perforation in its bottom, a fire chamber in which said crucible is arranged and a cooling chamber arranged under said fire chamber, the bottom of said fire chamber having an upright opening or pas-

sage of greater diameter than said perforation in the crucible, leading directly into said cooling chamber, and said passage being located directly under the said perforation in the crucible, substantially as set forth.

3. In a furnace, the combination of the fire chamber having an opening or passage in its bottom, a cooling chamber arranged immediately under said fire chamber, a hollow pedestal arranged over said opening and communicating directly with said cooling chamber and a crucible supported on said pedestal and having a perforation in its bottom, said perforation being remote from the sides of the pedestal and of smaller diameter than the interior of the latter, substantially as set forth.

4. In a furnace, the combination of a fire chamber having an opening in its bottom, a hollow pedestal arranged over said opening and having a downwardly flaring interior, and a perforated crucible supported on said pedestal, substantially as set forth.

5. In a furnace, the combination of a fire chamber having an opening in its bottom, a hollow pedestal arranged over said opening and being provided with an opening in its upper end surrounded by a flange, and a crucible, having a perforation in its bottom, resting within said flange, substantially as set forth.

6. In a furnace, the combination of the fire chamber having a closed bottom, a melting crucible in said chamber having a discharge opening extending to the exterior of said chamber, said chamber being provided with ash and air ports around its sides flush with its bottom, leading directly to the external atmosphere and fuel feeding ports in its top, substantially as set forth.

7. In a furnace, the combination of the fire chamber having a closed bottom, a melting crucible in said chamber having a discharge opening extending to the exterior of said chamber, said chamber being provided with ash and air ports around its sides, and its top being provided with fuel feeding ports, and an opening above said crucible, removable independent slabs or covers for closing said feeding ports, and a removable cover having a perforation, for covering said opening above the crucible, substantially as set forth.

8. In a furnace, the combination of a fire chamber having an opening in its bottom, a melting crucible arranged over said opening, and having a discharge duct communicating therewith, said chamber having air inlet ports in its sides and on a level with its bottom, the ash holes *K*, the angle irons *L*, arranged across said ash holes, and the removable bricks arranged behind said angle irons in said ash holes, substantially as set forth.

WILLIAM REBMANN.

Witnesses:

R. C. OMOHUNDRO,
F. A. HOPKINS.