C. F. COSFELDT, Jr., & T. T. PEARS.

Melting Metals.

No. 43,071. Patented June 7, 1864.

Fig. 1.

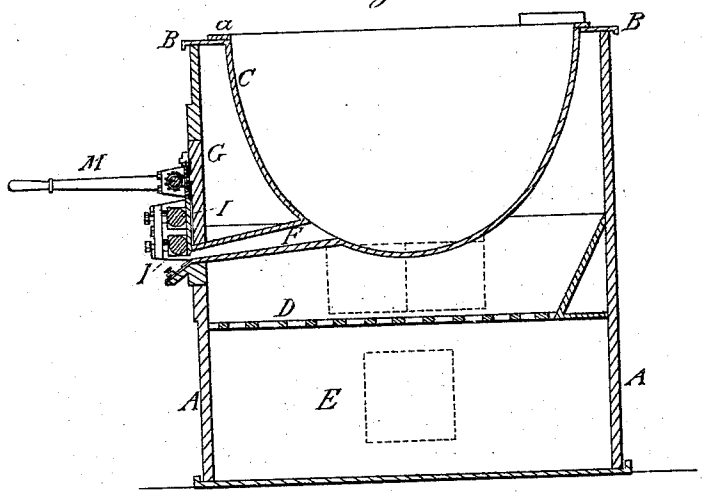


Fig. 2.

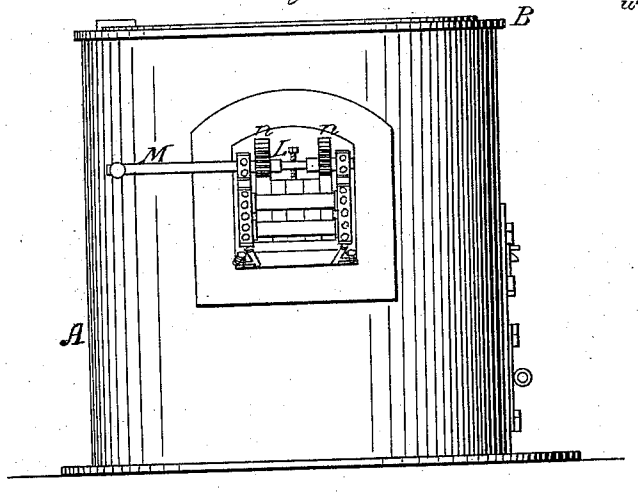


Fig. 3.

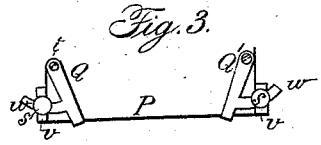
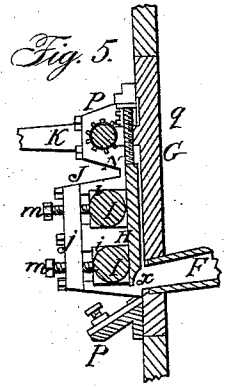


Fig. 4.



Fig. 5.



Witnesses:

W. Albert Stall
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Inventor:

Henry Howson
(per C. E. Foster)
Atty. for Cosfeldt & Pears.

AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

CLEMOIRE F. COSFELDT, JR., AND THOMAS T. PEARS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO THEMSELVES AND ALFRED MARTIN, OF SAME PLACE.

IMPROVED APPARATUS FOR MELTING METALS FOR CASTING STEREOTYPE-PLATES.

Specification forming part of Letters Patent No. **43,071**, dated June 7, 1864.

To all whom it may concern:

Be it known that we, CLEMOIRE F. COSFELDT, Jr., and THOMAS T. PEARS, of Philadelphia, Pennsylvania, have invented an Improved Apparatus for Melting Metals and Regulating the Flow of the Same; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Our invention relates to a certain construction of apparatus whereby metals for casting stereotypes, &c., may be economically melted, and the flow of the same to the mold readily regulated; and our invention consists, first, in the combination of a melting-pot and a spout with a sliding door, whereby the flow of the metal can be started or cut off instantaneously; secondly, in a sliding door with a beveled edge arranged and operating in respect to a spout, substantially as described hereinafter, for regulating the flow of metal to the mold; thirdly, in a plate with adjustable arms so situated in respect to the spout as to regulate the width of the stream of metal flowing from the latter; fourthly, in the combination of the sliding door and certain rollers, bearings, and set-screws, hereinafter described, for guiding the door in its movements; fifthly, in a combination and arrangement of parts, hereinafter described, for operating the sliding door; sixthly, in the combination of the sliding door with a set-screw, or any equivalent device for limiting the movement of the said door.

In order to enable others skilled in the art to make and use our invention, we will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a vertical section of our apparatus for melting metals and regulating the flow of the same; Fig. 2, a front view; Figs. 3 and 4, detached views of part of the apparatus, and Fig. 5 a vertical section of part of the apparatus drawn to an enlarged scale.

Similar letters refer to similar parts throughout the several views.

A A represent the side walls or plates of a furnace, in the top plate, B, of which is a circular opening for admitting the melting-pot C, the flange *a* of the latter resting on and being secured to the said top plate, B. Beneath the pot C is the grate D, and beneath the latter the ash-pit E. The ash-pit and fire-place are provided with suitable doors, and at one corner of the furnace is an exit-opening through which the products of combustion pass to the chimney. From the melting-pot C, near the bottom of the same, projects an inclined spout, F, the end of which fits snugly in an opening in the plate G, which is secured to or forms a part of the front plate or wall of the furnace. The spout does not project entirely through this plate, but terminates a short distance from the latter, the opening in the plate at the front of the same being a continuation of the interior of the spout. The front of the plate G is made perfectly true and smooth, as are also both faces of the sliding door H, which is caused to bear against the said plate G by rollers I I, the journals of which turn in boxes or bearings *i i*, arranged to slide in guide-pieces J, projecting from the plate G, plates *j* being secured to these guide-pieces, and set-screws *m* passing through the plates and being so arranged that one of the screws shall bear with its end against each of the boxes *i*. On the front of the sliding door H are two racks, *n n*, which may either be secured to or form a part of the said door, and into each rack gears a pinion, K, on the shaft L, the latter turning in projections *p p* on the plate G, and one end of the shaft, which projects beyond one of these bearings, being furnished with a suitable lever, M. Through a projection, *q*, on the plate G passes a set-screw, which is so situated as to limit the upward movement of the sliding door H.

To the front of the plate G, and a short distance beneath the under edge of the opening in the same, is secured an inclined plate, P, on which are the two arms Q and Q′, (see Fig. 3,) one arm being situated near each end of the plate and being connected thereto by a pin, *t*. Each arm has a segmental projection, *w*, which passes through a staple-like projection, *v*, on

the plate P, a set-screw, *s*, passing through the top of this staple and serving to secure the arm after adjustment.

It will be observed on reference to Fig. 5 that the inner lower edge of the sliding door H is hollowed out or beveled. The purpose of this will be alluded to hereinafter.

It is well known that molten metals—such as zinc, tin, and lead—and alloys—such as solder and type and stereotype metals—become oxidized at the surface, where the dross accumulates in considerable quantities.

In stereotype-casting by the usual process the molten metal is removed from the pot in ladles and poured into the molds. As more or less of the dross accompanies each ladleful of molten metal, portions of it are apt to gain access to the mold, so that an imperfect cast is the result.

In making stereotype-castings, especially in paper-machine molds, it is important that the flow of metal into the molds should be uniform, and that the depth and width of the stream of metal should be regulated to suit the size of the mold. As the molten metal is drawn from near the bottom of the melting-pot through the spout F in our improved apparatus, it will be evident that no dross can accompany it. At the same time this plan of drawing off the metal permits us to cover its surface with a layer of powdered charcoal, or other material which retains the heat within the vessel, and at the same time prevents its oxidization and consequent waste from the collection of an undue quantity of dross. On depressing the lever M the sliding door H will, through the pinions K K and racks *n n*, be suddenly raised until its upward movement is retarded by the set-screw N. The molten metal flowing through the spout F will in the first instance strike against the hollow lower edge of the sliding door H, and this hollow or beveled edge will direct the stream of metal onto the inclined plate P, from whence it flows into the mold or other receptacle. The depth of the stream of metal flowing onto and down the inclined plate P will depend upon the distance of the lower edge of the sliding door H from the under edge, *x*, of the opening in the plate G, while the width of the stream is regulated by the position of the arms Q Q, these arms being adjustable to any desired angle, so as to allow for a wider or narrower stream, as desired.

We claim as our invention and desire to secure by Letters Patent—

1. The melting-pot C and its spout F, combined with a sliding door, H, substantially as set forth, for the purpose specified.

2. The sliding door H, with its beveled lower edge arranged and operating in respect to the spout F, and the inclined plate P, substantially as and for the purpose herein set forth.

3. The plate P with its adjustable arms Q arranged in respect to the spout F, substantially as described.

4. The sliding door H, rollers I I, their sliding boxes or bearings *i i*, and set-screws *m m*, arranged in respect to each other substantially as set forth.

5. The sliding door H, with its racks *n n* arranged in respect to the shaft L, with its pinions K K and lever M, substantially as and for the purpose specified.

6. The sliding door H, in combination with the set-screw *q* or its equivalent.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

C. F. COSFELDT, JR.
THOS. T. PEARS.

Witnesses:
JOHN WHITE,
DENNIS MEAD.