Z. S. Durfee.

Ingot Mold.

No. 107,766. Patented Sept. 27, 1870.

Fig: 2.

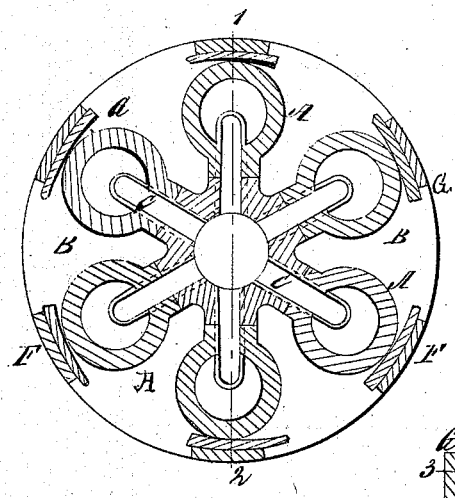


Fig: 1.

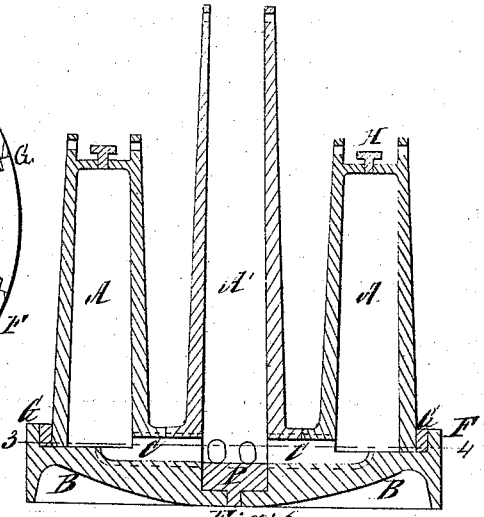


Fig: 3.

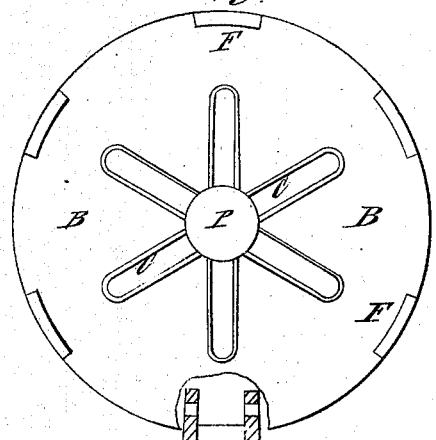


Fig: 6.

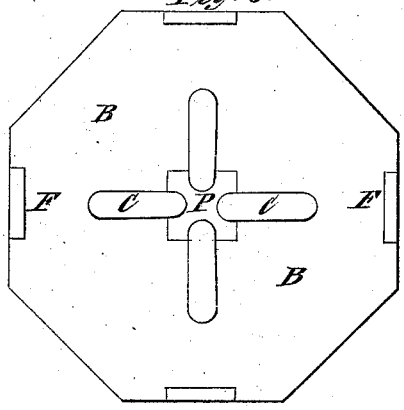


Fig: 4.

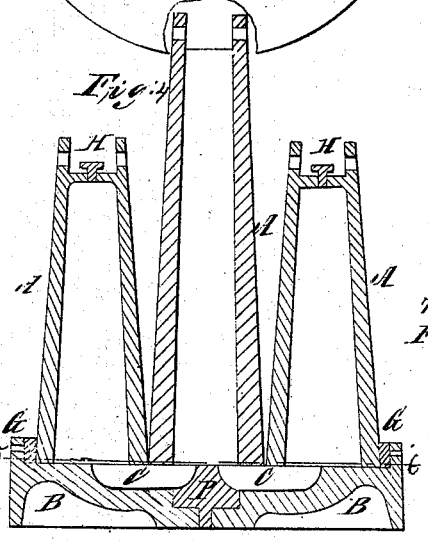
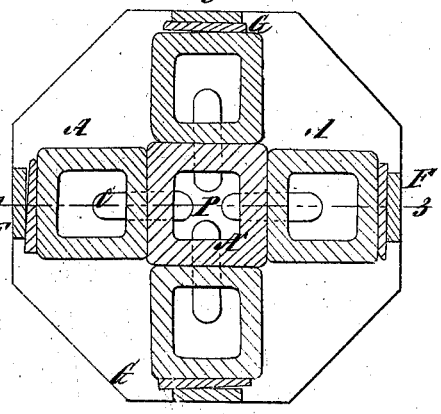


Fig: 5.



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

Z. S. DURFEE, OF TROY, NEW YORK.

IMPROVEMENT IN INGOT-MOLDS.

Specification forming part of Letters Patent No. **107,766**, dated September 27, 1870.

To all whom it may concern:

Be it known that I, Z. S. DURFEE, of Troy, in the county of Rensselaer, in the State of New York, have invented a new and Improved Mode of Casting Ingots of Steel; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists in a novel arrangement and construction of cluster or compound ingot-molds, whereby they are made more cheaply and are more easily and economically worked, and whereby, also, the ingots made therein can be cast sounder and more perfect at their tops.

Figure 1 of the drawings is a vertical section of the molds on the line 1 2 of Fig. 2. Fig. 2 is a transverse section on the line 3 4 of Fig. 1. Fig. 3 is a plan of the base; and Figs. 4, 5, 6, 7, and 8 show other plans of arranging the molds and the runners in them.

A A A′ are the molds; B, the base-plate, on which they rest; C C, the passages or channels for the flow of the metal, which may be partly in the molds and partly in the surface of the base-plate B, or entirely in the base-plate, as may be preferred, and may be lined or not with refractory non-conducting material, as may be found convenient. P is a movable plug, to take the weight and wear of the stream of metal, which is poured in at A′. F F are projections on the base-plate B, by means of which and the keys G G the molds may be keyed together; and H H are stoppers for closing the tops of the outside molds A A.

The channels D D may run to the centers of the outside molds or entirely across them, or they may simply pass just into the areas of the base covered by these molds.

The molds may be of any desirable section, but it is preferable to have them taper a little in their length, unless they are made in halves and jointed together, as in the old plans.

The operation of the molds is as follows: The molds are placed upon the base in their proper positions, as indicated in the plans, and are keyed into place by the wooden keys G G.

Wooden or other elastic keys are desirable, as otherwise the expansion of the molds would be likely to break off the projections F F; but it is not, in general, necessary to key the molds together, as their weight is sufficient to keep them in place.

The surfaces of the base-plates B B, on which the molds rest, should be made even and smooth, as also the bottoms of the molds; but no other precaution need be taken to prevent a leakage of the metal between the two unless a very high sinking-head is used in the central mold, in which case it will be necessary to wedge or fasten the outside molds sufficiently to counteract the tendency of the ferrostatic pressure to raise them. A little sand may, however, be thrown about the outside of the molds on the base-plate to take up any small leakage or droppings of metal which may take place in the casting operation.

The metal will be tapped or allowed to flow into the top of the central mold, A′, (a funnel of fire-clay being used when desirable,) and, falling upon the plug or button P, will be distributed through the runners C C and rise in the outer molds, A A, all the molds being filled simultaneously until the outside molds are full, after which the central mold may be filled as nearly as may be necessary to produce the desired pressure in the outer molds, and thus prevent piping, and render the ingots more solid and uniform.

The holes in the tops of the outside molds should be kept open while the metal is rising in the molds, so as to allow the gases to escape, the plugs or stoppers H H being inserted just before the molds are full.

When the ingots are set, the wedges holding the molds together may be driven out, and the molds removed from the ingots in the usual way.

Casting ingots in cluster or compound molds is an old plan; but in all cases in which I have known this to be attempted or practiced the molds were of much more complicated construction than mine, as it has probably been

supposed that either the metal would not run through grooves so arranged as are mine, or that it would leak between the bottoms of the molds and base-plate unless much more expensive measures than I have taken should be used to prevent it. I do not therefore claim, broadly, the use of cluster or compound molds in casting steel or other metals; but

What I do claim is—

Cluster or compound molds constructed and operated substantially as herein described, and shown in the accompanying drawings.

Z. S. DURFEE.

Witnesses:

JONAS S. HEARTT,

H. G. CLARK.