J. BAKER.

INGOT MOLD.

No. 193,591. Patented July 31, 1877.

Fig: 1.

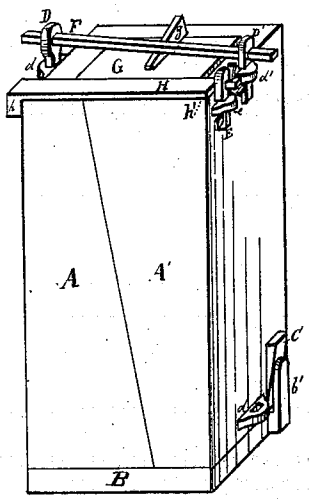


Fig: 4.

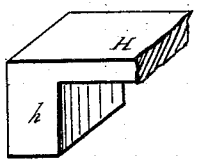


Fig: 5.

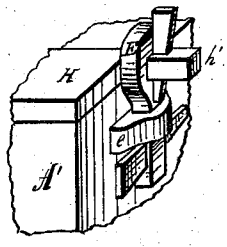


Fig: 6.

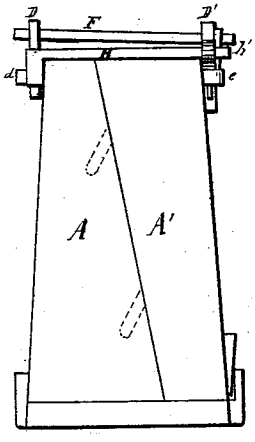


Fig: 2.

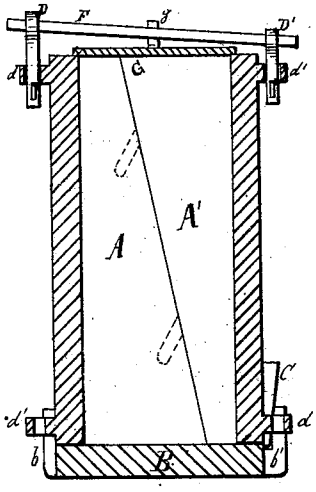
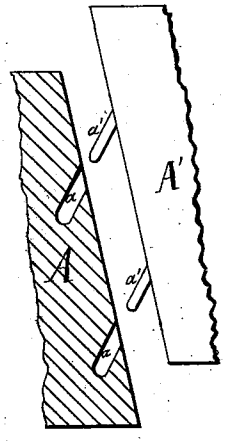


Fig: 3.



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JOSEPH BAKER, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN INGOT-MOLDS.

Specification forming part of Letters Patent No. 193,591, dated July 31, 1877; application filed June 12, 1877.

To all whom it may concern:

Be it known that I, JOSEPH BAKER, of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Ingot-Mold, of which the following is a full and exact description, reference being had to the accompanying drawing, in which—

Figure 1 is a perspective view of the ingot-mold. Fig. 2 is a transverse section of the same. Fig. 3 is a detached view, showing the angular dowel-pin connection of the mold-sections. Figs. 4 and 5 are enlarged perspective views of the ends of the top clamp-bar, and Fig. 6 shows a modification in the shape of a taper or conical ingot-mold.

The nature of my invention relates to a mold for casting steel ingots; and it consists in the peculiar construction and arrangement of the same, as more fully hereinafter described.

A and A′ are the two sections of the mold, which are joined together on an oblique line. A series of holes, *a′*, are drilled into the jointing-faces of section A at a downward angle of about forty-five degrees to the parting-line, and section A′ has projecting dowel-pins *a′* set to an angle corresponding with the angle of holes *a*, into which they enter when put together. B is the bottom plate, having vertically-projecting lugs *b* and *b′* placed opposite to each other, the latter one of which is set off a short distance from the edge of plate B for a clamping wedge, C, to find space between the bottom end of the mold and said lug C′.

Near the top and bottom ends of the mold-sections A and A′ are cast the horizontally-projecting lugs *d*, *d′*, and *e*, lugs *d* and *d′* being opposite to each other and on the central line of the flask, while lug *e* is placed near one corner. Each of these lugs *d*, *d′*, and *e* has a square vertical hole for admitting the shank of a loop, D, D′, and E, each of which is secured in its respective lug by a wedge-key passed through a slot in the shank of said loop. Loop D is about two and one-half inches longer than loop D′, for the purpose hereinafter described.

A bar, F, is placed across the top of the mold, its ends being passed through the loops D and D′, which is to hold down the covering-plate G by means of a wedge, *g*, inserted between said bar F and said cover G. This covering-plate G is secured upon the mold as soon as the metal is poured into it.

A clamp, H, consisting of a bar having a rectangular shoulder, *h*, to one end, and a slotted shank, *h′*, to its opposite end, which is passed through the loop E, and is secured therein by a wedge-key, ties the top ends of the two mold-sections A and A′ firmly together while the mold is being filled with metal, a wedge being driven between one of its ends and the side of the mold.

The lugs *d*, *d′*, and *e*, although required only on the top end of the mold, are duplicated on the lower end, so that both ends are alike, and either end may be used for top or bottom.

After the steel has been poured into the mold, and it begins to chill, the wedge C is loosened, which will relieve the mold of the great stress so often the cause of the breakage of the same at or near its lower corners.

After the ingot is sufficiently solid to permit its turning out of the mold, the wedge C, clamp F, and bar G are removed, and the chain-hooks of the crane being attached to the loops D and D′, the mold is hoisted off the ingot, when, on account of the difference in lengths of the loops D and D′, the section A′ will be raised a little in advance of the section A, thereby causing the mold-sections to open sufficiently for releasing the ingot, without entirely separating the same.

Heretofore ingots were cast in solid conical molds, in which it frequently happened that the cast-steel would adhere to the inner face of the mold, necessitating the breakage of the latter, or, as no yielding was possible, they would break, after short usage, by the unequal expansion of their inner and outer faces. Besides that, a conical ingot is not so desirable as a parallel one, because a uniform heat can not so well be applied, nor has it the proper shape for the rolling process, and where molds were made in two sections these sections were joined on a parallel longitudinal line, and were united by a series of collar-clamps, in which case the mold-sections had to be entirely separated for the removal of the cast ingot, besides the extra time occupied for preparing and handling such molds, while with my arrangement the damaged section of the

mold can be replaced by another, without throwing away the whole mold. The dowels, being placed deflecting, will unite the sections firmly together, and will save additional clamping devices, except those at top and bottom, and the turning out of the ingot and the replacing of the mold is greatly facilitated.

This mold can be arranged for top or bottom cast.

Although I particularly claim as an improvement a mold in which parallel ingots can be cast, I do not wish to be restricted thereto, since my improvements are also applicable to conical molds, as shown in Fig. 6.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An ingot-mold, consisting of the sections A and A′, joining on an oblique line and being united by deflecting dowel-pins *a′*, substantially as and for the purpose set forth.

2. A parallel ingot-mold, consisting of the sections A and A′ joining on an oblique line, and having the lugs *d* and *d′* cast to its sides and near to its top and bottom ends, in combination with the loops D and D′, cover G, bar F, and wedge *g*, substantially as described, and for the purpose specified.

3. A parallel ingot-mold, consisting of the sections A and A′, joining on an oblique line, being united by deflecting dowel-pins *a′*, and having lugs *d* and *d′*, in combination with the loops D and D′ of different lengths, as and for the purpose specified.

4. An ingot-mold, consisting of the sections A and A′, joining on an oblique line, and having lugs *e* to their top and bottom ends, in combination with the loop E and clamp-bar H, as described and shown.

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