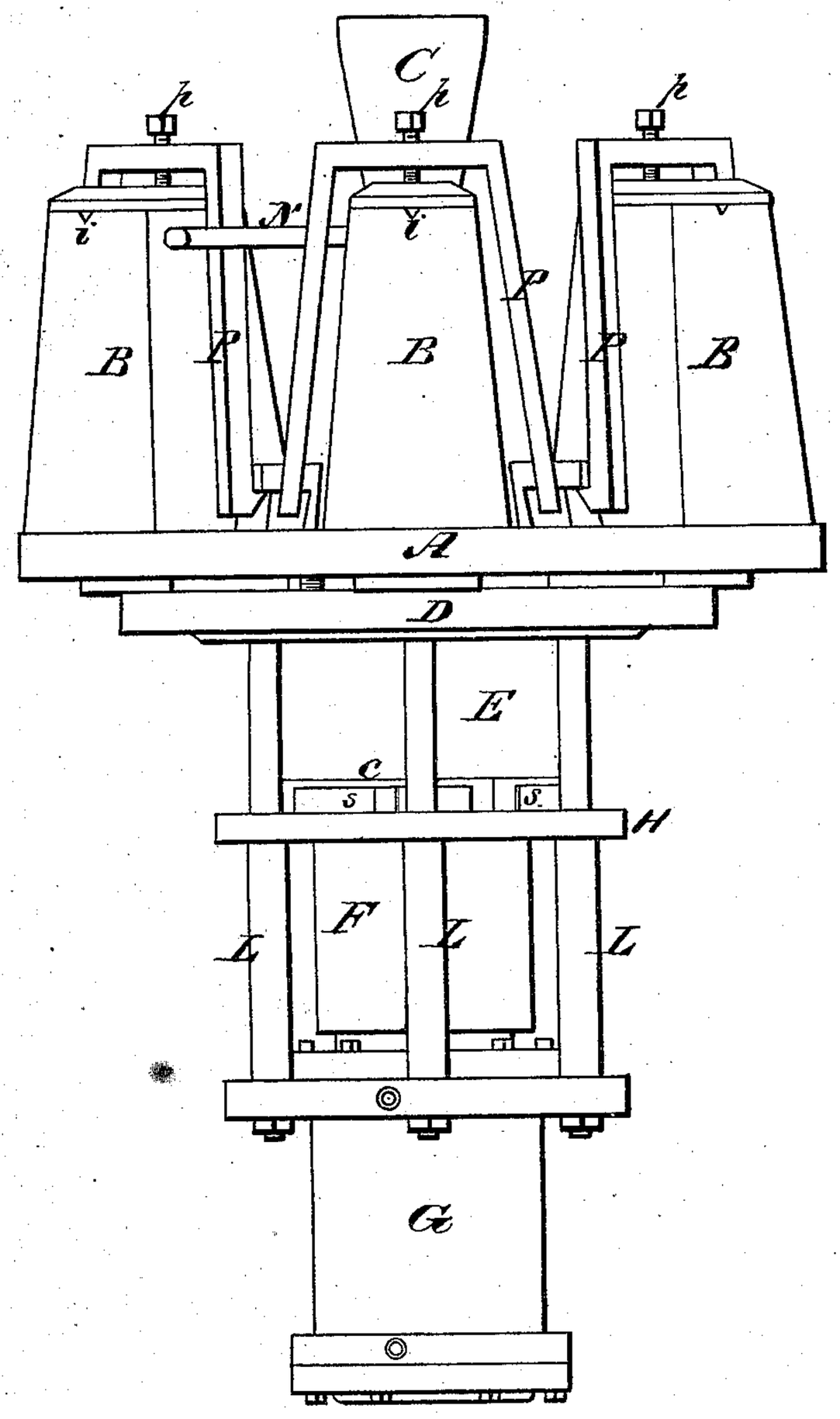
4 Sheets--Sheet 1.

J. B. TARR.

Apparatus for Casting Ingots.

No. 159,472. Patented Feb. 2, 1875.

Fig. 1.



WITNESSES

E. H. Bates

Frank. J. Masi

INVENTOR

John Blake Tarr

Chipman Fosmer & Co

Attorneys

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Fig. 2.

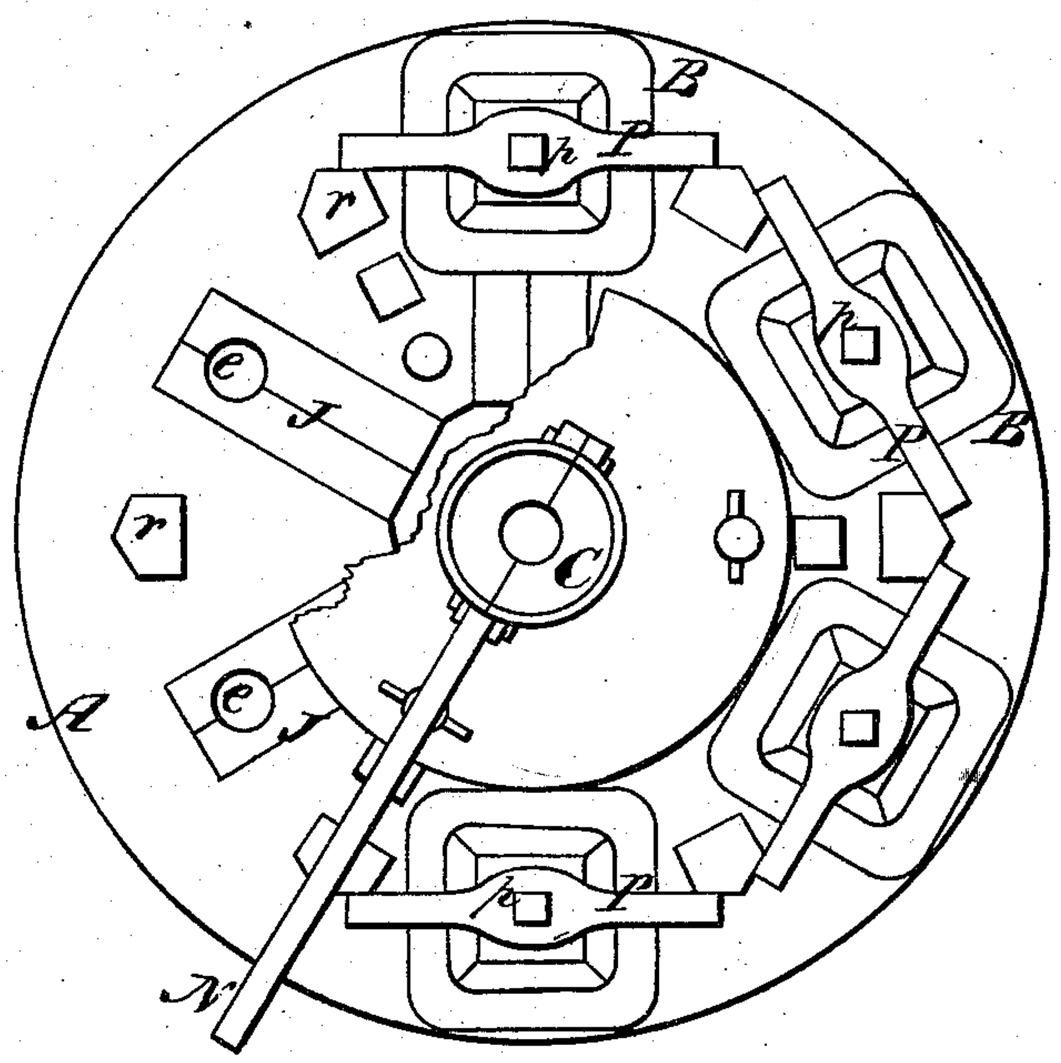
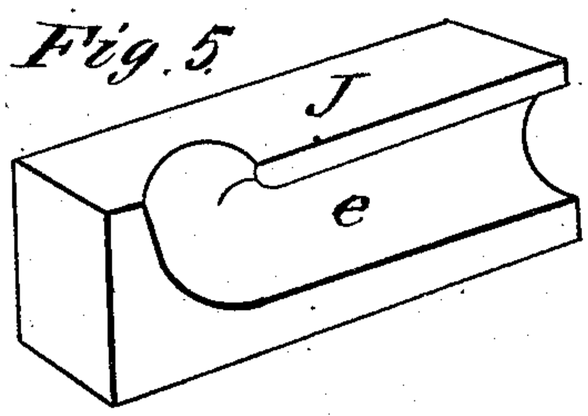


Fig. 5



WITNESSES

E. H. Bates

Frank. J. Masi

INVENTOR

John Blake Tarr

Chipman & Fosnir & Co

Attorneys

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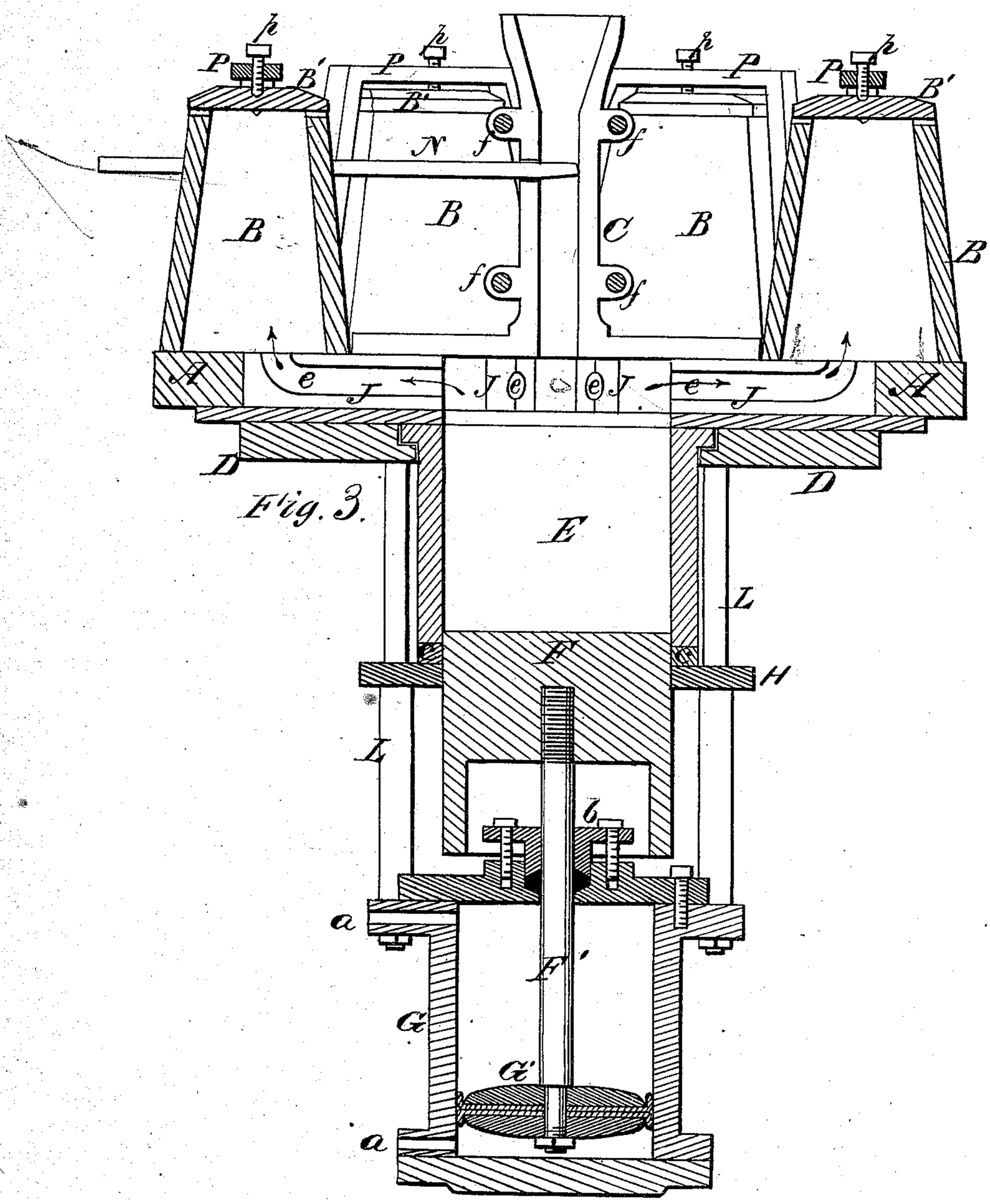

Fig. 3.

WITNESSES

E. H. Bates

Frank J. Masi

INVENTOR

John Blake Tarr

Chipman & Bowers & Co

Attorneys

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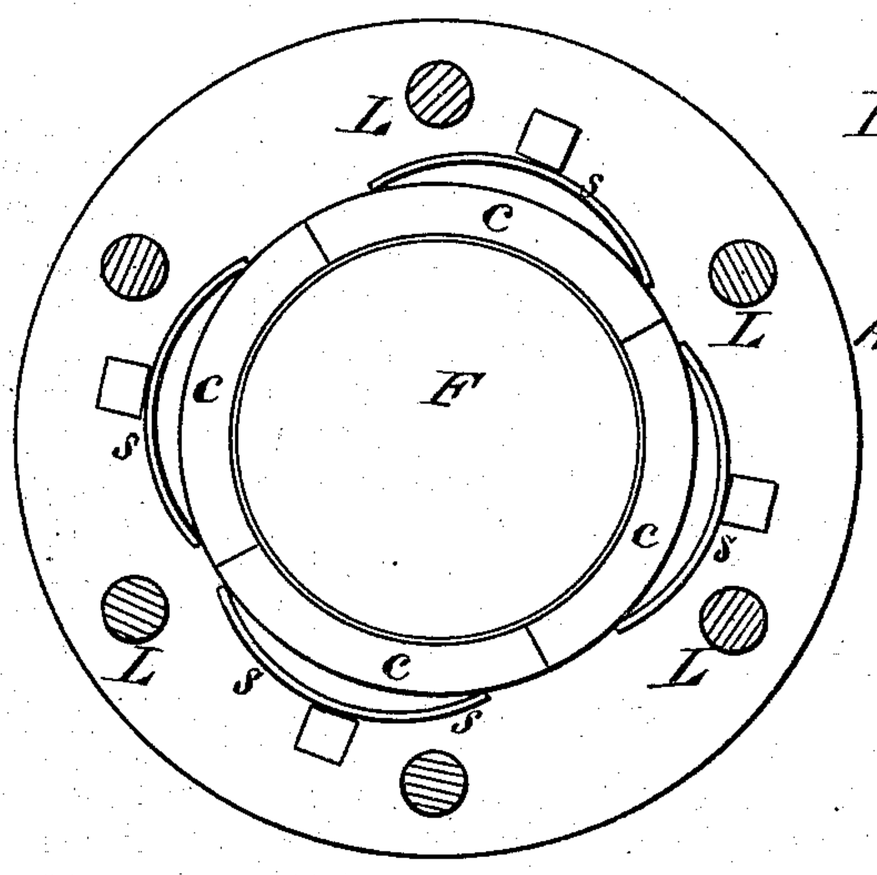

Fig. 4.

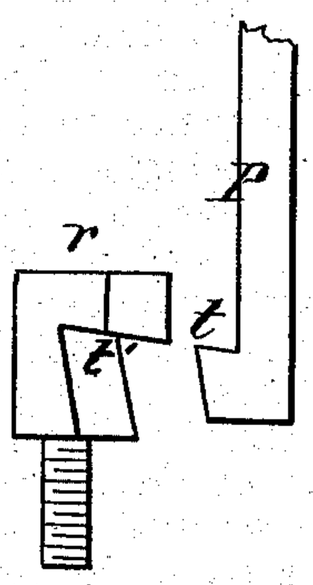

Fig. 6.

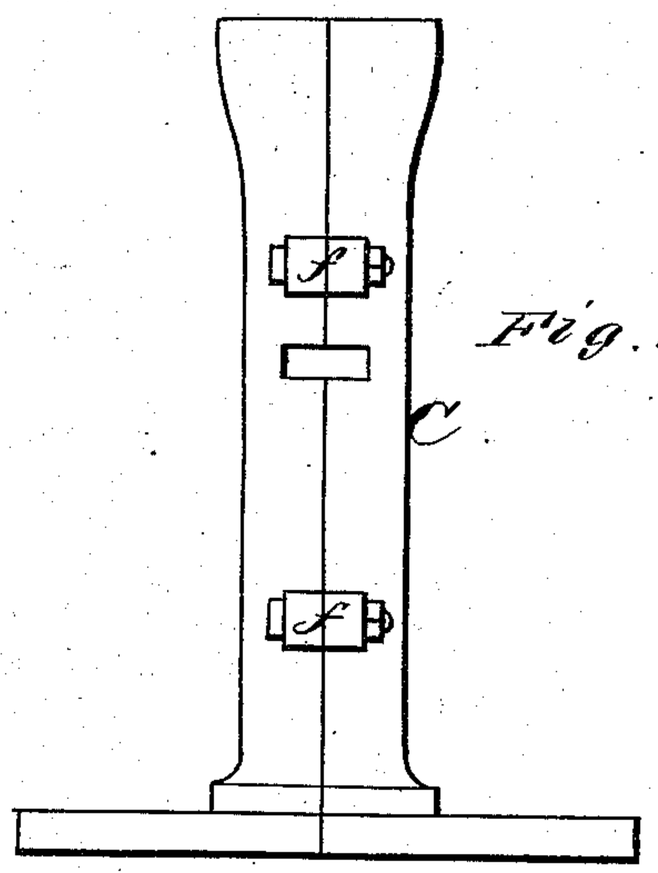

Fig. 7.

WITNESSES

E. H. Bates

Frank J. Dlasi

INVENTOR

John Blake Tarr

Chipman Fosmer & Co

Attorneys

UNITED STATES PATENT OFFICE.

JOHN BLAKE TARR, OF FAIRHAVEN, MASSACHUSETTS.

IMPROVEMENT IN APPARATUS FOR CASTING INGOTS.

Specification forming part of Letters Patent No. **159,472**, dated February 2, 1875; application filed August 17, 1874.

To all whom it may concern:

Be it known that I, J. BLAKE TARR, of Fairhaven, in the county of Bristol and State of Massachusetts, have invented a new and valuable Improvement in Machine for Pressing Cast Metal; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a side elevation of my machine for pressing cast metal. Fig. 2 is a top view, partly broken away. Fig. 3 is a diametrical section. Fig. 4 is a horizontal section, showing the expansible packing. Fig. 5 shows one of the runner-boxes; Fig. 6, detail of hooks; Fig. 7, sprue-tube.

This invention has relation to the pressing and condensing of the metal while in molds in a fluid or semi-fluid state; and my object is to improve the press for which Letters Patent of the United States were granted to me, bearing date the 31st day of October, 1871.

The nature of my invention and improvement consists mainly in the employment, in combination with a follower which presses with upward strokes, of a reservoir for containing a surplus amount of metal after the mold or molds are filled, so that during the act of pressing and condensing the metal in the molds there will be a certainty of having the molds properly filled, in connection with a funnel-shaped sprue or filling-tube, passages or runners leading to molds, said sprue or tube being provided with a cut-off, and also so constructed with relation to the molds that when the sprue is filled it will indicate that the molds are also filled. It finally consists in novel means for confining the covers on the mold-boxes, and at the same time firmly holding these boxes down upon their bed during the pressing and condensing process, as will be hereinafter explained.

In the annexed drawings, I have represented upon the press-bed A a number of molds, which are designed for casting ingots, but I desire to be understood as not limiting myself to the casting of ingots, nor to the number of molds used. The bed A, on which the molds B are secured, is firmly secured upon a circular head, D, and constructed with a central opening through it, leading down into a reservoir, E, of cylindrical form. Radiating from the center of the bed A are a number of recesses made in this bed, which recesses are filled flush with the surface of the bed, with centrally-divided blocks J of some suitable refractory substance, having passages *e* through them leading into the bottoms of the mold-boxes. These blocks J can be removed at any time, and others substituted in their places. C designates a sprue or pouring-tube, which is diametrically divided, and the two parts secured together by means of bolts passed through ears *f f*, shown in Figs. 3 and 7. This sprue-tube is constructed with a flanged base, and is secured upon the bed A in the center thereof by means of posts and keys. The sprue-tube is readily detachable from the bed, and when detached it can be divided, and any adhering metal removed from it. In practice the sprue-tube will be higher than the mold-boxes, and it will have an opening through one side of it to receive a cut-off bar, N, for a purpose hereinafter explained. The upper flanged end of the cylinder, which forms the reservoir E, should fit loosely in the head D for allowing free expansion, and inside of this reservoir works a follower or pressing-head, F, which is surrounded by a collar, composed of expansible segments *c* acted on by springs *s*. These segments constitute a packing for the follower F, and prevent metal leaking out at the bottom of the reservoir E while filling the press. The follower F is guided by a circular head, H, on which the packing-segments *c* rest, and to this follower a piston-rod, F′, is secured, which rod passes through a stuffing-box, *b*, in the upper head of a cylinder, G, and is secured to a piston, G′, working therein, as clearly shown in Fig. 3. The cylinder G, and the two heads D H, are secured together in a substantial manner by means of tie-rods L, which will resist the strain on the press during the pressing operation. The pressing is performed by means of a hydrostatic pump, not shown in the drawings, with which the cylinder G communicates by means of pipes, substantially as shown, and described in my

Letters Patent above referred to. P P designate bails having screws *p p* tapped through their upper ends, and hooks *t t* formed on their lower ends; and *r r* designate under-beveled hooks, which are firmly secured to the bed A in proper positions with respect to the press-boxes when in place for operation, for receiving the hooks *t* on the bails P, when these bails are adjusted on the mold-boxes, as shown in Fig. 1. The set-screws *p* are used for firmly confining down the covers B′, and holding the boxes B securely upon the bed A over their respective runners *e*. The follower F is depressed to the position shown in Fig. 3, and the melted metal is poured into the sprue C, first filling the reservoir E, then rising through the runners *e*, and filling the several mold-boxes. The pouring is continued until the metal completely fills the sprue-tube C, and, as this tube is higher than the mold-boxes, it is known with certainty that the mold-boxes are all filled with the metal. The cut-off bar N is then forced into the sprue-tube, and the pressure is applied beneath the piston G′, which moves up the follower in the reservoir E, and condenses the metal in all of the mold-boxes at the same time.

It will be seen from the above description that I always have a surplus of metal in the reservoir E after the operation of pressing, which insures the proper filling of the mold-boxes, and the making of solid castings. The surplus metal left in the reservoir, as well as the metal in the runners *e*, can be used without recasting, as it will be condensed like the metal in the mold-boxes.

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

1. A bed-plate A, perforated as described, for a cluster of mold-boxes, B, a pouring-sprue, *c*, provided with gate N, a surplus metal chamber, E, arranged beneath the plate A, communicating with the mold-boxes and a pressing-head, F, a piston, G, arranged beneath the pressing-head F, all combined and constructed in the manner and for the purpose described.

2. The bails P, hooked as described, and provided with the set-screws *p*, in combination with the hooks *r*, rigidly secured to the bed A, and the mold-boxes B B′, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOHN BLAKE TARR.

Witnesses:

D. D. KANE,

H. C. HOLLINGSHEAD.