E. B. BARBER.

TYPE METAL POT.

APPLICATION FILED MAY 31, 1910. RENEWED NOV. 11, 1911.

1,011,718.

Patented Dec. 12, 1911.

2 SHEETS—SHEET 1.

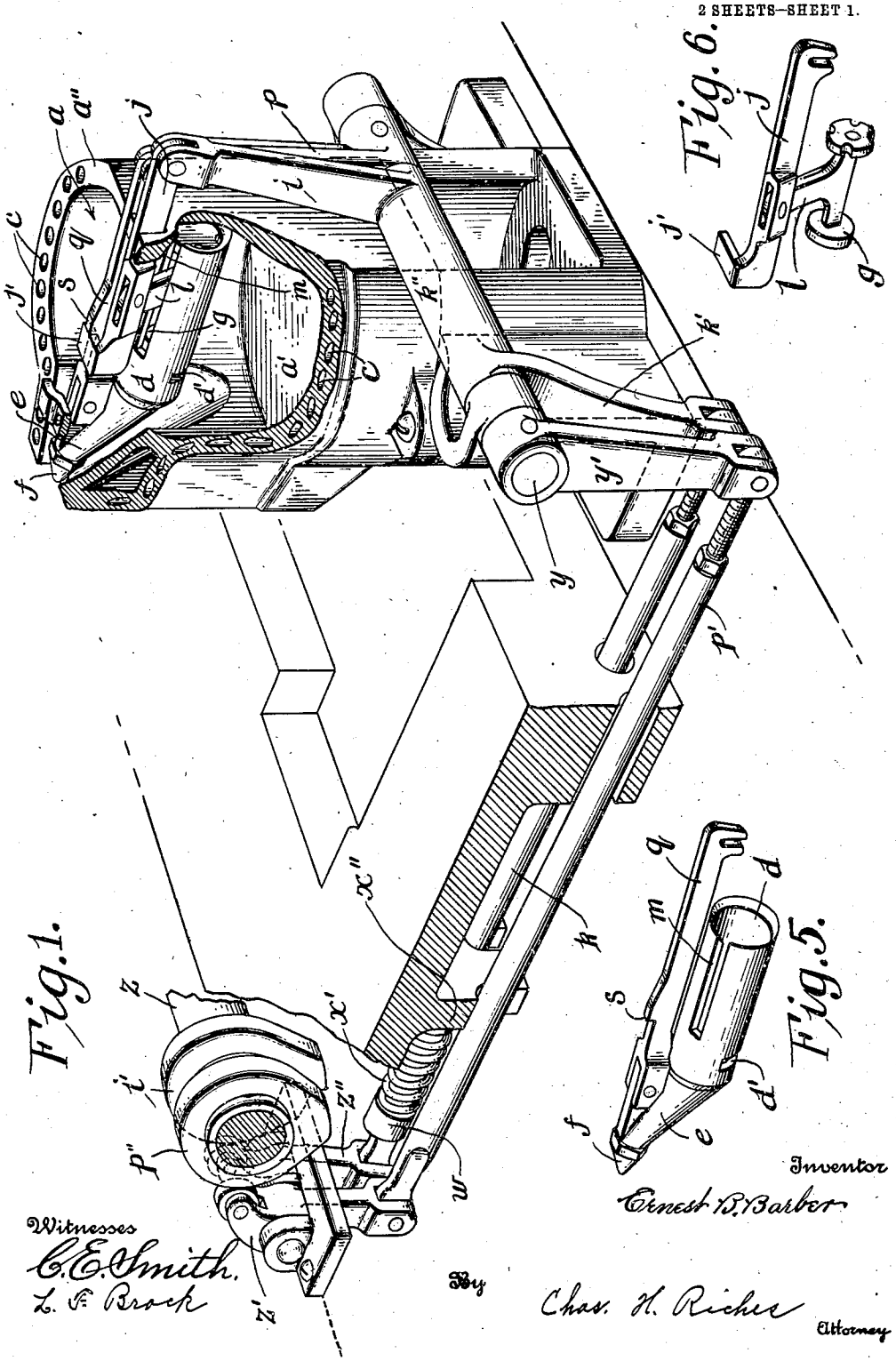

Fig. 1.

Fig. 6.

Fig. 5.

Witnesses

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2 SHEETS—SHEET 2.

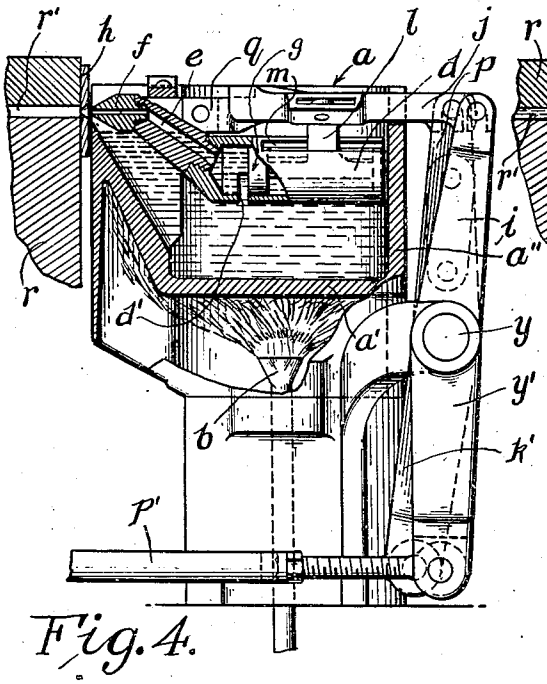

Fig. 4.

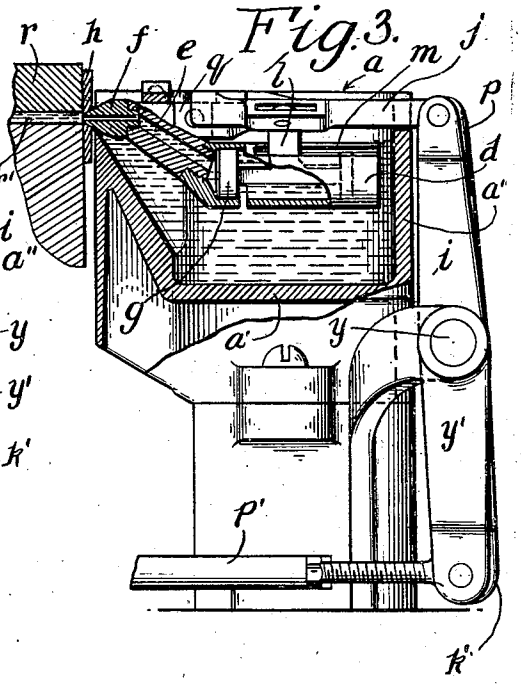

Fig. 3.

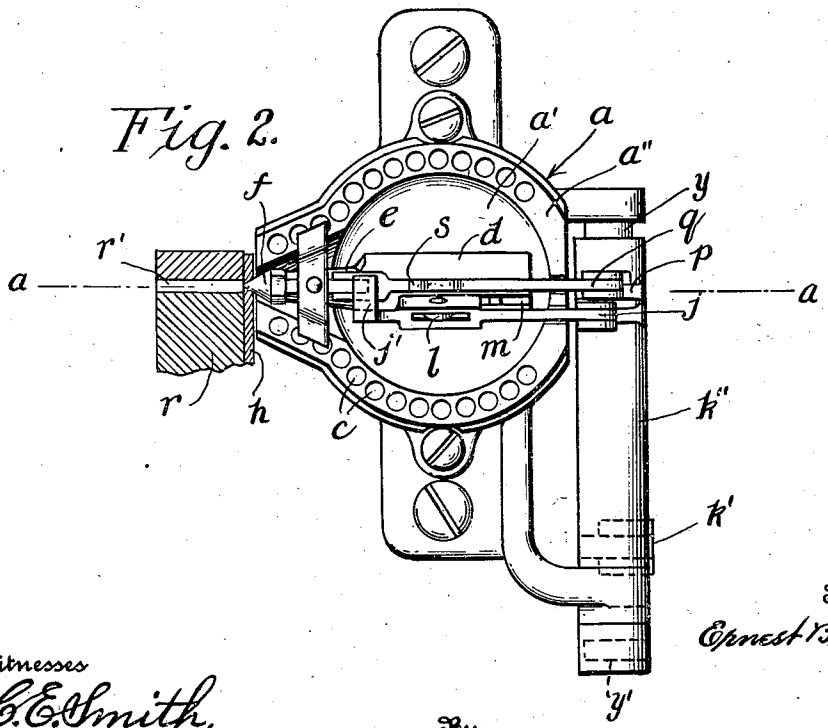

Fig. 2.

Witnesses

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UNITED STATES PATENT OFFICE.

ERNEST B. BARBER, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE ONTARIO TYPE MACHINE COMPANY LIMITED, OF TORONTO, CANADA, A CORPORATION.

TYPE-METAL POT.

1,011,718. Specification of Letters Patent. Patented Dec. 12, 1911.

Application filed May 31, 1910, Serial No. 564,289. Renewed November 11, 1911. Serial No. 659,841.

To all whom it may concern:

Be it known that I, ERNEST BENJAMIN BARBER, of the city of Brooklyn, in the county of Kings and State of New York, one of the United States of America, have invented certain new and useful Improvements in Type-Metal Pots; and I hereby declare that the following is a full, clear, and exact description of the same.

In my application for machines for casting and composing type, filed March 2nd, 1909, Serial Number 480,828, I have shown and described two melting pots, one a large supply pot from which the molten metal is pumped to the smaller or working pot, both pots being supplied with suitable burners for heating and means whereby the overflow returns from the working pot to the supply pot, the working pot having a vertical well, piston and outlet to the type body mold, in which, and at proper intervals, the piston displaces the whole body of molten metal in the type metal well and forces a stream of it into the type body mold.

In my concurrent application 564,290 I have shown and described certain structural changes in the type casting machine forming the subject matter of my said application 480,828, and as a result of these and other structural changes in the original machine I found it necessary to redesign the working melting pot to increase the capacity of the type producing mechanism and make a working melting pot suitable for a high-speed operating machine, producing either single type or plural types. In redesigning my working melting pot I abandoned the use of the vertical type metal well shown in my former application, owing to the retardation of the piston ejector by the relatively large body of molten metal therein, and I now use a horizontal type metal well with a capacity equal only to the largest type body size, which does not require any considerable exertion of power or strain of the parts for the ejection and reduces to a minimum the displacement of metal necessary for the cast.

In carrying out my invention I have provided the working melting pot with a horizontally arranged type metal well and a horizontally acting piston ejector, both of which are loosely suspended in the metal chamber and in parallel relation to the type body mold, the type metal well having inlets below the level of the type metal which are so disposed with regard to the scum surface that the metal dirt and oxids are prevented from entering them, thus obviating the difficulties heretofore experienced therefrom.

I have also provided the type metal well and the piston ejector with an actuating mechanism moving the type metal well in the direction of the type body mold until the nozzle enters the aperture in the foot plate and then moving the piston ejector to force a stream of type metal through the nozzle into the mold cavity, afterward retracting the piston ejector and type metal well to return them to their normal or passive position, this operation of the actuating mechanism preventing either a premature discharge of the type metal before the nozzle and type body mold are locked up or a leakage of the type metal when the cast is made. By these changes and others that I have made in the working melting pot hereinafter described, I have reduced the moving parts, in weight, to the least possible, and have obtained a commensurate increase of speed and efficiency in operation, and have produced a casting apparatus which is practically self adjusting and of uniform action, and I have obtained a straight line movement for locking the nozzle to the foot plate of the type body mold securing thereby a reciprocating movement for the type metal well in parallel relation to the mold cavity.

For an understanding of the invention reference is to be had to the following description and to the accompanying drawings in which:

Figure 1, is a perspective view of a working melting pot made in accordance with my present invention. Fig. 2, is a plan view of the same showing the nozzle locked in the casting position. Fig. 3, is a vertical section on the line *a*—*a*, with the parts in the same position as in Fig. 2. Fig. 4, is a similar view to Fig. 3, with the parts in their retracted position, and Figs. 5 and 6 are perspective views of the type metal well and piston ejector respectively.

Like characters of reference refer to like parts throughout the specification and drawings.

The capacity of the metal reservoir *a* of

the working melting pot is small in comparison to the quantity of type metal used during the operation of the type casting machine, but it will be understood that this metal reservoir is continually recharged from a constantly running supply pot of large capacity, suitable flow and overflow ducts being provided for the circulation of the type metal between the two melting pots, the supply melting pot and the flow and overflow ducts not being shown or described as they form no part of the present invention.

The type metal in the metal reservoir *a* is kept in a molten condition, at a substantially uniform temperature, by a burner *b* from which the heat passes, across the bottom *a'*, and upward through suitable vents *c*, in the wall *a''*, for the upward circulation of the heat.

A type metal well *d* is horizontally suspended in the metal reservoir *a*, below the normal level of the type metal, and is provided with an inlet *d'* below the scum surface for the exclusion of the metal dirt and oxids.

The type metal well is provided with a spout *e* and nozzle *f* through which a stream of metal is forced by the operation of the piston ejector *g*. The forward movement of the piston ejector occurs when the nozzle has entered the aperture in the foot plate *h*, forming one side of the mold cavity, and the retraction occurs before the return of the type metal well to its normal position as hereinafter described. The ejector is provided with a lug *l* connected by a link *j* to the crank *i*, actuated by a cam *i'* through the agency of the link *k* crank *k'* and hollow rock shaft *k''*. The lug *l* extends through an elongated slot *m* in the type metal well, which permits the ejector to move forward and back independently of the type metal well when the working melting pot and mold are locked up. The cam *i'* is mounted on the high speed shaft *z*, and this shaft is provided with a cam *p''* actuating the rock shaft *y* through the agency of the lever *z'* link *p'* and crank *y'*. The rock shaft *y* is provided with a crank *p* moving the type metal well back and forth during the oscillation of the rock shaft. During the operation of the type casting machine the crank *p* when actuated moves the type metal well toward the type body mold *r*, the stroke of the crank and connected parts being such as to project the nozzle into the aperture in the foot plate *h*. Provision is made whereby the ejection of the type metal is prevented until the nozzle is locked in the aperture of the foot plate. This provision in the present instance consists in forming the link *q* connecting the type metal well to the crank *p* with a shoulder *s* normally engaging the lug *j'* forming part of the link *j*, to carry the latter and the piston ejector forward until the type metal well is locked to the type body mold, the movement of the piston ejector then being continued by means of the cam *i'*, lever *z''*, link *k*, crank *k'* hollow rock shaft *k''*, crank *i* and link *j* to force a stream of type metal into the mold cavity. The movement of the link *k* under the influence of the cam *i'* compresses the spring *x'*. When the levers *z'* and *z''* are free from the influence of the cams *p''* and *i'*, the spring *x'* pressing against the fixed stop *x''* and collar *w* on the link *k* effects the return of all the movable parts to their normal position.

Other means may be provided for effecting the same ends within the scope of the appended claims without departing from the principle of the invention but by means of a working melting pot constructed as above described, I am enabled to overcome the disadvantages resulting from, the necessity of moving the entire body of type metal, and, the presence of the metal dirt and oxids in the type metal well and mold cavity.

Having thus fully described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a working metal pot for a type casting machine, a metal reservoir, a type metal well horizontally suspended therein, a piston ejector operating horizontally in the type metal well, operable means to bring the type metal well into operative relation with the type body mold, and operable means causing the actuation of the piston ejector.

2. In a working melting pot for a type casting machine, a metal reservoir, a type metal well horizontally suspended therein and having a nozzle to deliver a stream of molten type metal in a substantially straight line with the type metal well, a piston ejector operating horizontally in the type metal well, operable means to bring the type metal well into operative relation with the type body mold, and operable means causing the actuation of the piston ejector.

3. In a working melting pot for a type casting machine, a metal reservoir, a type metal well horizontally suspended therein, a piston ejector operating horizontally in the type metal well to deliver a stream of molten type metal in a substantially straight line therefrom, a link connected to the type metal well, operable means actuating the link to bring the type metal well into operative relation with a type body mold, a link connected to the piston ejector, operable means actuating the link and piston ejector, and means causing the retraction of the piston ejector link and type metal well when the cast is made.

4. In a working metal pot for a type casting machine, a metal reservoir, a type metal well horizontally suspended therein and

having an inlet submerged below the normal level of the metal in the metal chamber, and an elongated slot extending lengthwise of the type metal well above the metal level, a piston ejector operating horizontally in the type metal well and having a lug projecting through the elongated slot, a link connected to the type metal well in front of the slot and having a projecting shoulder, operable means actuating the link to bring the type metal well into operative relation with a type body mold, a link connected to the lug of the piston ejector, a lug for the link engaging the shoulder when the working melting pot is moving into operative relation with, and during its retraction from, the type body mold, operable means actuating the link and piston ejector, and operable means causing the retraction of the piston ejector and type metal well when the cast is made.

5. In a working melting pot for a type casting machine, a metal reservoir, a piston well horizontally and reciprocatingly supported in the metal reservoir and a piston ejector operating in the piston well, the piston well having a nozzle to deliver the metal horizontally to a type body mold.

Brooklyn, N. Y. May 21st, 1910.

ERNEST B. BARBER.

Signed in the presence of—
M. S. SCUDDER,
M. KAZMAREK.