No. 630,917. Patented Aug. 15, 1899.

# E. C. McFARLAND.

## TYPE MOLD.

(Application filed Apr. 9, 1898.)

(No Model.) 2 Sheets—Sheet 1.

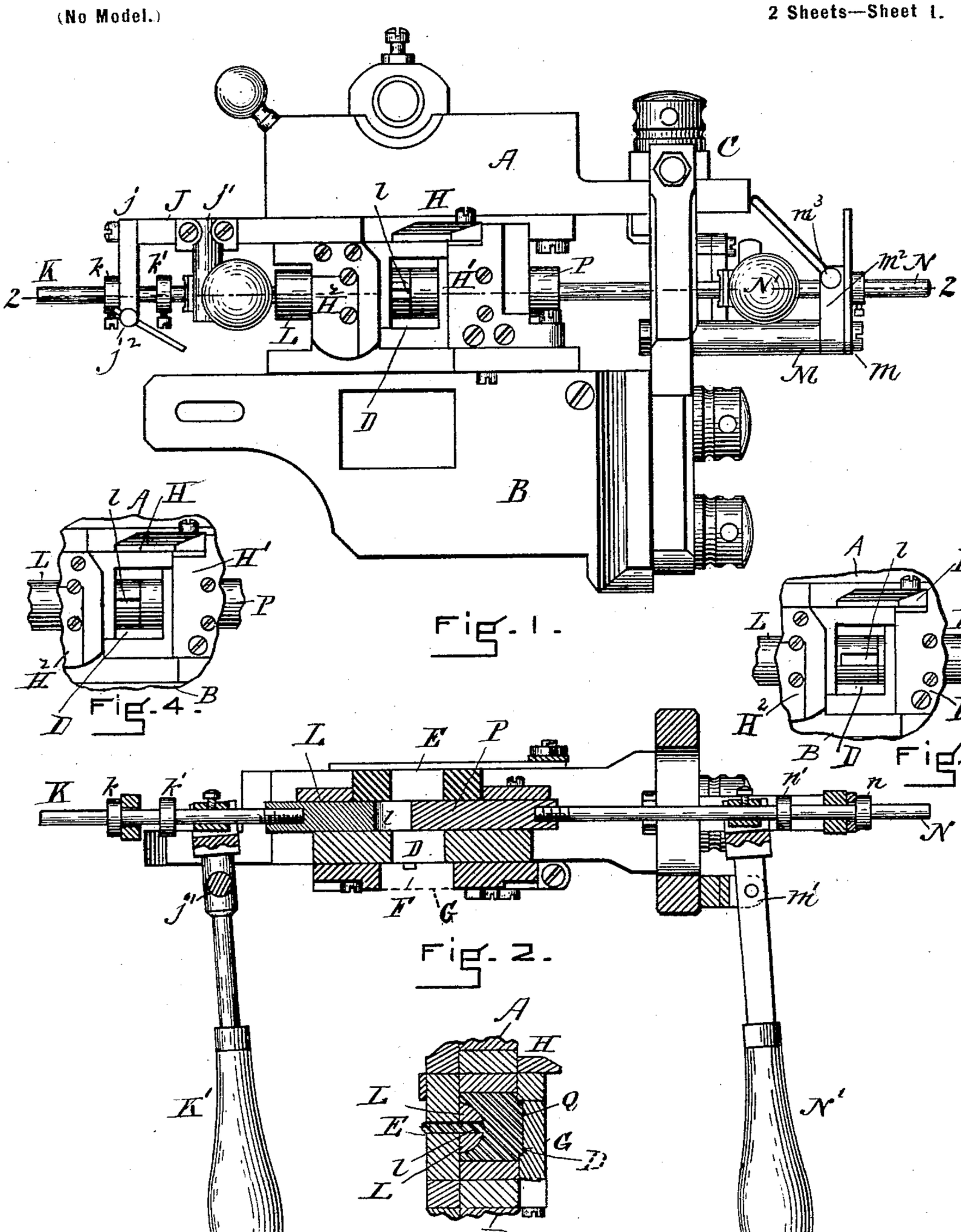



Fig. 1.




Fig. 4.




Fig. 5.

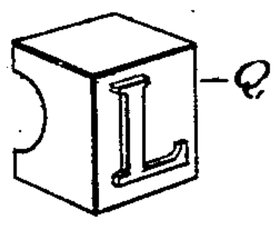



Fig. 2.




Fig. 3.

Fig. 6.




WITNESSES
C. F. Guild
K. F. Butler.

INVENTOR
Edwin C. McFarland
by George O. G. Coale
his attorney.

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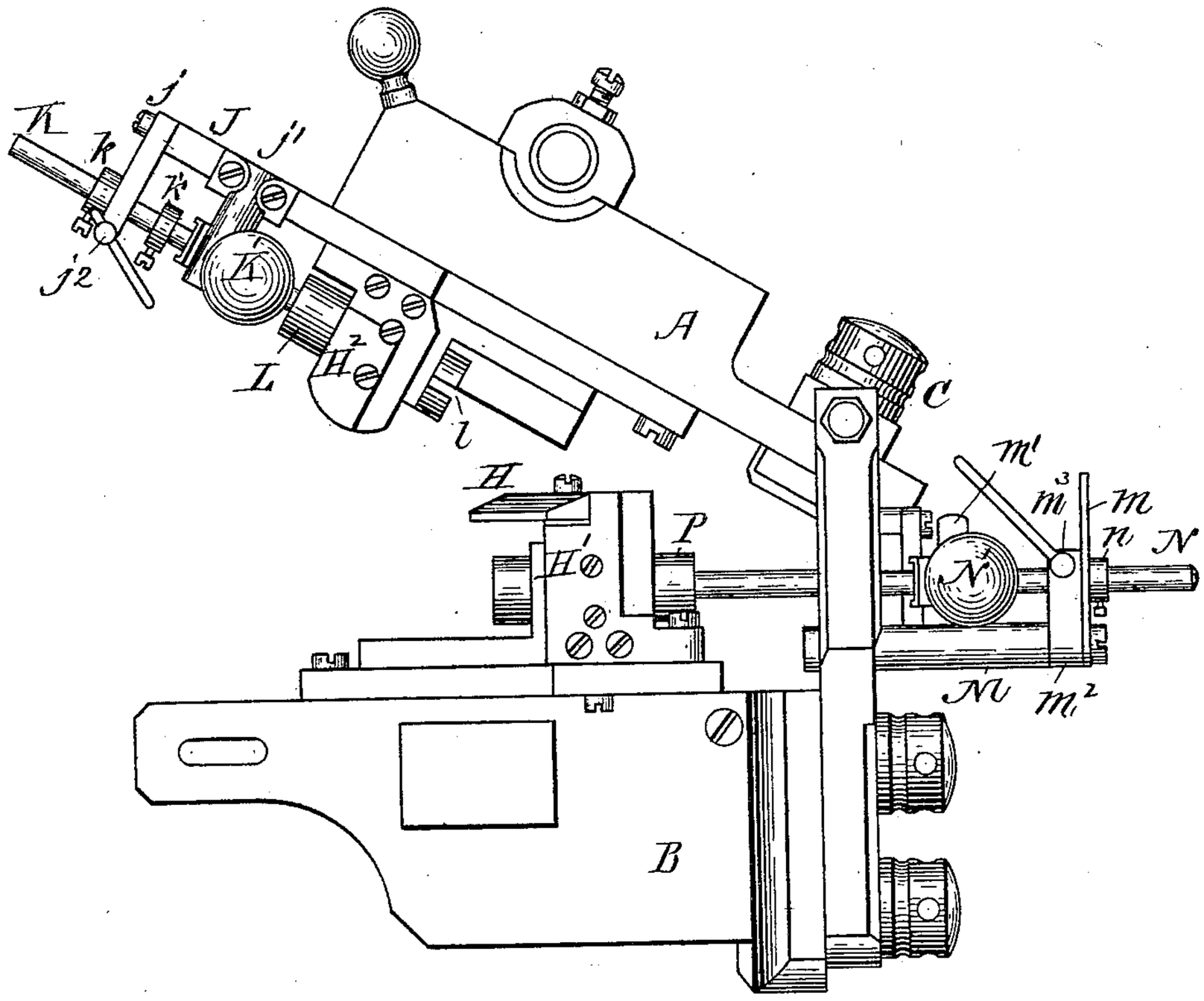


Fig. 7.

WITNESSES
E. A. Guild
K. T. Butler.

INVENTOR
Edwin C. McFarland
by Thos. O. G. Brown
his attorney.

# UNITED STATES PATENT OFFICE.

EDWIN C. McFARLAND, OF MELROSE, MASSACHUSETTS, ASSIGNOR TO THE AMERICAN TYPE FOUNDERS' COMPANY, OF NEW YORK, N. Y.

## TYPE-MOLD.

SPECIFICATION forming part of Letters Patent No. 630,917, dated August 15, 1899.

Application filed April 9, 1898. Serial No. 677,062. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN C. McFARLAND, of Melrose, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Type-Molds, of which the following is a specification.

In making type, more especially type of the larger sizes, it is desirable to relieve the finishers from as great a proportion of the finishing work as is possible. Heretofore after the type has been taken from the mold it has been still necessary to prepare the groove so as to properly finish the bottom or feet of the type and to remove the jet. This has been a matter requiring considerable care and corresponding expense in the employment of skilled labor, as well as considerable time. My invention is intended to do away with the greater part of this hand-work and produce in the mold a type which shall be substantially finished and, especially in the larger sizes, shall be materially lighter in weight than those generally cast. Moreover, a type cast in the best form of my mold will be more perfect, for the reason that in such a mold the stream of metal may be adjusted in size and also directed to one side or the other of the mold-cavity, according as the shape of the matrix requires more or less metal on one side or the other to fill it or so that it may strike a counter in the matrix, and thus prolong the life of the matrix.

My invention consists in providing the mold with a core shaped to form the groove in the bottom of the type and adapted to be moved in a plane parallel with the matrix and in contact with the entrance-wall of the mold, so that it may be withdrawn from the mold when necessary—for example, just after the metal has set and before the mold is opened, so that the newly-cast type may easily drop out from the cavity. As the faces of the larger-sized types, because of their design, often require more metal on one side than on the other, it is desirable that the stream of metal shall so flow into the mold-cavity as to insure the complete filling of the corresponding cavity in the matrix. The core shown has an opening through which the stream of metal will flow into the mold-cavity, and by making the core movable in the manner described the force of the stream may be thrown to either side of the mold-cavity, as thought best, and by adjusting the length of the opening the size of the stream may be adjusted.

My core is made, preferably, in two pieces, a portion of the core being slotted, and as the core-pieces abut they form practically a single core which is adjustable both as to the location and the size of the stream of metal. If the slot is short in proportion to the width of the mold-cavity, the change in its position will change merely the location of the stream. If long, a greater or less portion may lie within the entrance of the cavity to form an entrance for the stream.

My invention will be understood by reference to the drawings, in which—

Figure 1 is an elevation of the mold embodying my invention, the matrix and various attaching parts being omitted. Fig. 2 is a horizontal section on line 2 2 of Fig. 1, the matrix being in place. Fig. 3 is a cross-section of the mold-cavity, the matrix being in position. Figs. 4 and 5 are elevations of the mold-cavity, the matrix being removed, showing different adjustments of the core. Fig. 6 is a perspective view of the product of this mold. Fig. 7 is an elevation of the mold open for the ejection of type, the matrix being omitted in order that the relative position of the cores may be understood.

A is the top section of the mold, and B is its bottom section. They are pivoted together at C in the usual manner. The mold-cavity is indicated at D and has an entrance E in its rear through which the stream of metal is forced into it from the metal-pot.

F is the space in which the matrix G is set, the matrix being clamped in the usual manner at the sides and top by the clamps H, H′, and $H^2$, its bottom being also supported in the usual manner. (Not shown.)

From the upper part of the mold A projects an arm J, carrying two hangers. One of these hangers *j* serves as the support for the rear end of the rod K, upon the front end of which is mounted a core-piece L, which slides in a suitable opening in the top section of the mold, having a tight sliding fit therein and being sufficiently long to get an easy bearing therein. This core-piece is somewhat nar-

rower than the vertical width of the mold-cavity, as will be seen from the drawings, and is forked at its front end to form a slot or jet-opening *l*. The rod K is provided with two adjusting-collars *k k'*, which may be set to limit the throw of the core-piece.

It is desirable, of course, that the core-piece L shall have a movement in a straight line at right angles to the entrance-wall of the mold-cavity. For this purpose a handle K' is provided, which is pivotally mounted upon the hanger *j'*, carried by the arm J. As the movement of the front end of the handle K' will be in the arc of a circle it should be attached to the rod K by any one of a number of forms of pivotal connection providing for lost motion, such as are well known to mechanics. I have shown, in fact, a short sleeve held to the rod K by a set-screw, and to this sleeve the forked end of the handle K' is attached by a slotted connection.

The bottom section B of the mold is provided with an arm M, carrying a support *m* for the rear end of the rod N, and a second pivotal support *m'* is provided for the handle N', which is attached to the rod N in the same manner as the handle K' is attached to its rod K and for the same purpose. Upon the rod N are also carried adjustable collars *n n'*, which limit the stroke of the rod N. At the front end of this rod N is carried a second core-piece P, which, as shown, differs from the first core-piece L in being solid instead of forked, but otherwise is of exactly the same dimensions and slides in a groove in the bottom section of the mold, in which it has a sliding fit. The two grooves referred to form a continuous passage of uniform size, so that the core may slide easily therein.

The hanger *j*, as shown, is a clamp—*i. e.*, a split bearing—which straddles the shaft and is provided with a clamp-screw $j^2$, which may be tightened so that the jaws of the bearing may be brought together to clamp the rod K in any desired position—as, for example, while the casting operation is taking place. A similar clamp $m^2$ is carried by the arm M and serves by means of the clamp-screw $m^3$ to clamp the rod N.

To operate my mold, the matrix being in place, for example, as shown in Fig. 3, the desired position of the core is first determined in order that the jet-opening *l* may properly admit the stream of metal, according to the letter or character to be cast. Three positions of the jet-opening are shown (see Figs. 1, 4, and 5) to illustrate the adjustable feature of my invention, the adjustment being made as the operator thinks best under the given circumstances. In any case the opposing ends of the core-pieces are in contact when the casting is to take place. After the position of the core has been determined the collars *k* and *n* are set to limit the forward throw of the core-piece and so determine the meeting place of the cores. The collars *k' n'* are adjusted so that the cores may be withdrawn sufficiently far to leave the mold-cavity free. The matrix being in place the mold is now ready for use, and the cores are thrown into the mold-cavity as far as they can go and so that their opposing ends are in contact, and they are clamped in that position by means of the clamp-screws $j^2$ $m^3$. The casting operation then takes place in the usual manner, the metal passing through the entrance E and slot *l*. The core being narrower than the rear wall of the mold-cavity will allow the metal to flow against the upper and lower portions of that wall to form the feet of the type. (See Fig. 3.) The clamp-screws $j^2$ $m^3$ are then turned to release the core-pieces, and the core-pieces are withdrawn by the handles K' N' and the mold opened to throw out the type.

The adjustable feature of my core is useful where, as is almost universally the case, the mold itself is adjustable, and while I have shown two movable core-pieces forming for casting purposes a single core it is evident that if one of the core-pieces is rendered stationary, with its face in the same plane with the wall through which it moves, the other or forked core-piece may be moved up against it, thus forming, in fact, a single core, which will answer all the purposes in many cases of the two core-pieces which I prefer to use. Moreover, the jet-opening may be made shorter than shown, the location of the incoming stream in this case being adjustable rather than its width. This is desirable, because where, for example, a large ornamental type of a decorative character having a number of fine lines upon it is to be cast the type is very much more accurate and sharply defined where the metal is thrown from the entrance directly into that part of the matrix which is to form these lines.

Where two core-pieces are used, as shown, their direction of movement into and out of the mold-cavity is immaterial so long as when in place they will form a core having the characteristics described, and the shape of the abutting ends of the core-pieces and the plane in which they unite is also immaterial so long as they correspond, my purpose being to so shape the ends of the core-pieces that when together within the mold-cavity they will form a continuous core.

The product of this mold will be a type which will have the characteristics indicated in Fig. 3, where such a type (marked Q) is shown in section—namely, a type having a groove cast in it, from which may project a slight jet which is easily removable, leaving possibly a slight bur which requires but one finishing operation to clean off. The finished type is shown in Fig. 6, the jet having been removed, and the groove serving not only to lighten the type, but also to finish the feet, without further manipulation.

What I claim as my invention is—

1. In a type-mold of the kind described having a suitable mold-cavity provided with an entrance for the metal in one of its walls

and an adjustable opening to receive a matrix in its opposing wall, a movable core normally located within said cavity and removable therefrom and in contact with said entrance-wall only, said core being provided with an inlet through it for the metal, of substantially the size of the entrance in said mold-wall and adapted to register in whole or in part therewith, as and for the purposes set forth.

2. The type-mold above described having a suitable mold-cavity, one side of said mold being adapted to receive a matrix to form one of its walls, said mold being provided with an entrance for the metal on the wall opposite to the opening for said matrix, in combination with a movable core normally located within said cavity and removable therefrom and in contact with said entrance-wall, said core being provided with a jet-opening of substantially the size of said entrance, and with means for adjusting the location of said core and of said jet-opening therein, whereby the stream of metal from said entrance-wall may be constricted or thrown against either side of the face of said matrix, as and for the purposes set forth.

3. The type-mold above described, having a suitable mold-cavity provided with an entrance for the metal in one of its walls, in combination with a pair of sliding core-pieces located in line with each other and adapted to slide into said mold and meet within said cavity and form a single core in contact with said entrance-wall, one of said core-pieces being forked for a distance substantially equal in length to the opening in the entrance-wall of said mold, and means whereby said core-pieces may be moved toward and from each other, as and for the purposes set forth.

4. In a type-mold, a mold-cavity having an entrance in one of its walls, and a core normally located within said mold-cavity and across the entrance thereto and in contact with said entrance-wall, said core having a jet-opening therethrough of substantially the size of the entrance to said mold and being adjustable in position, whereby the point of entrance into the mold-cavity may be adjusted, in combination with means whereby the position of the said core may be adjusted to adjust its opening with relation to the entrance in the wall of said mold-cavity, all as set forth.

5. In a type-mold, a mold-cavity having an entrance for the metal in one of its walls, and a movable forked core in contact with said wall and adapted to slide across and partially close the entrance therein, and means whereby the throw of said core may be rendered adjustable and said core may be moved, in combination with a suitable clamp whereby the core may be clamped in position during the casting operation, all as set forth.

6. The type-mold above described consisting of two parts hinged together, each part carrying a section of the mold-cavity and a core-piece, said core-pieces being movable and in contact with one wall of said cavity and suitably located within said mold to form a single core when the parts of said mold are closed together and means whereby each core-piece may be moved toward and from the other, as set forth.

In testimony whereof I have hereunto set my name this 1st day of April, 1898.

EDWIN C. MCFARLAND.

Witnesses:

WILSON FISKE,

F. E. LOVEJOY.