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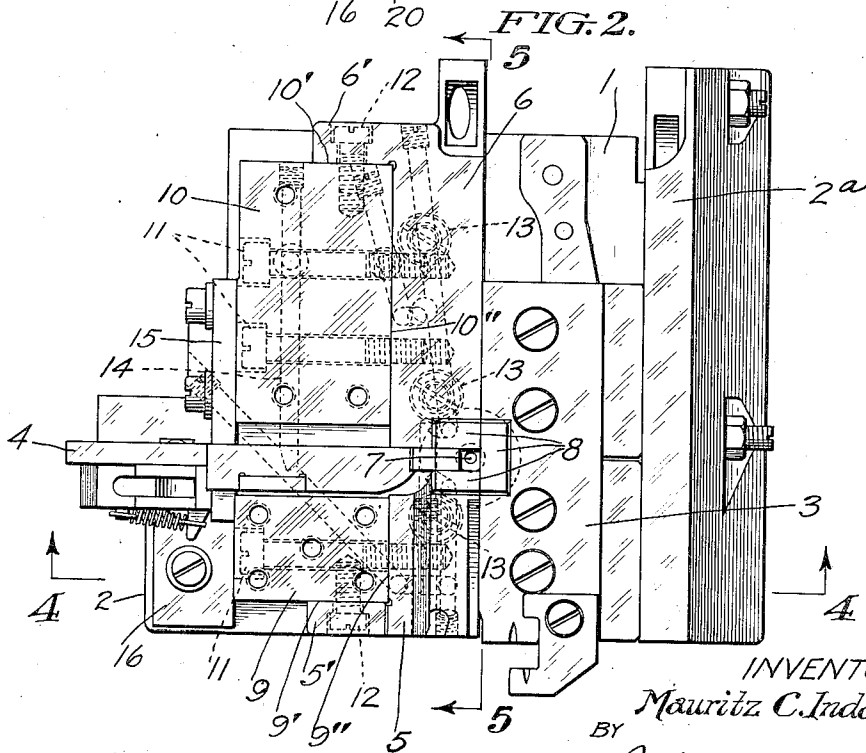
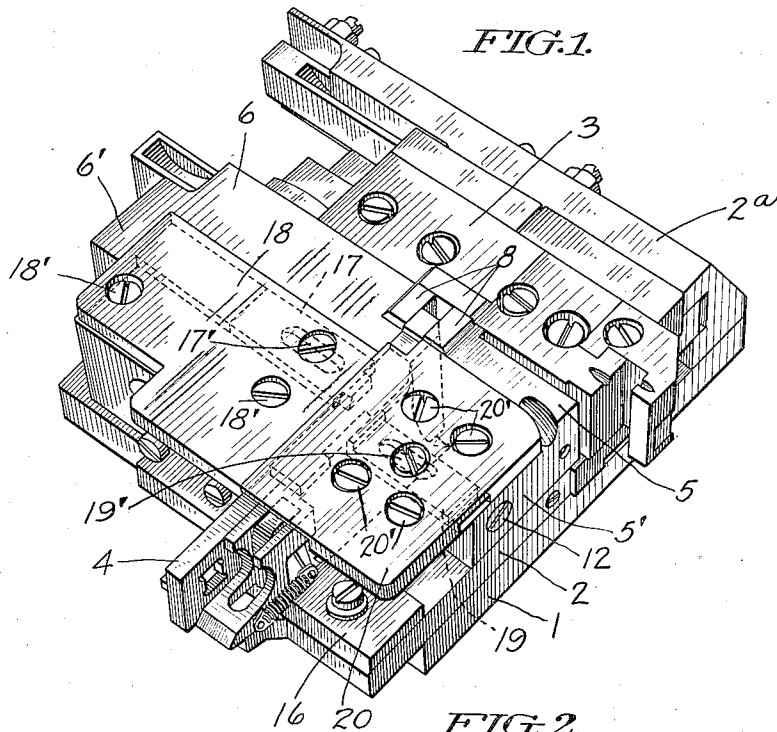
M. C. INDAHL

2,029,529

TYPOGRAPHIC MOLD

Filed Aug. 9, 1934

2 Sheets-Sheet 1



INVENTOR:  
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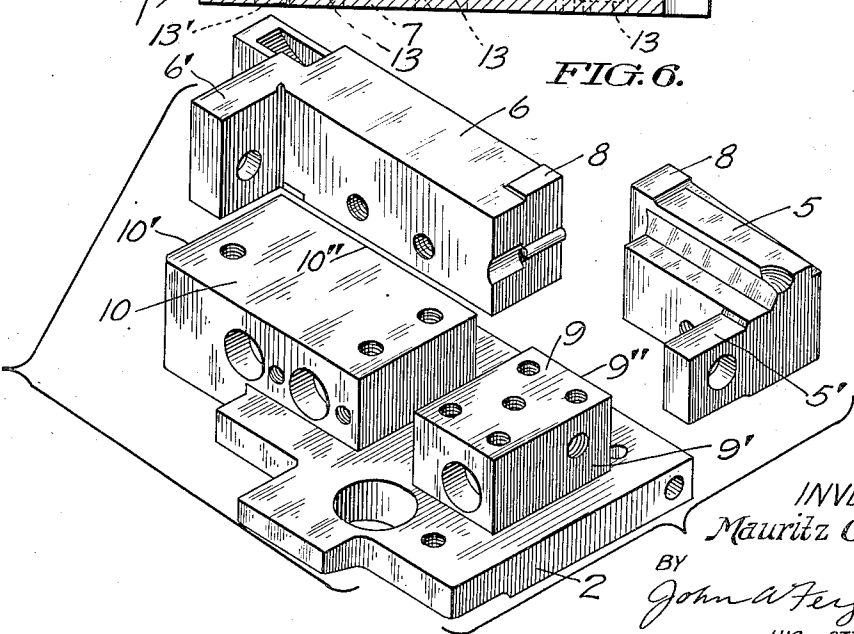
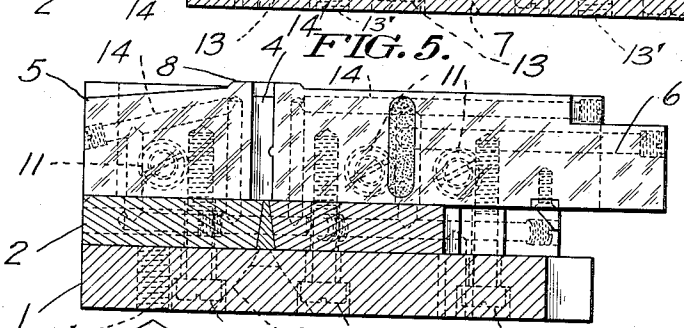
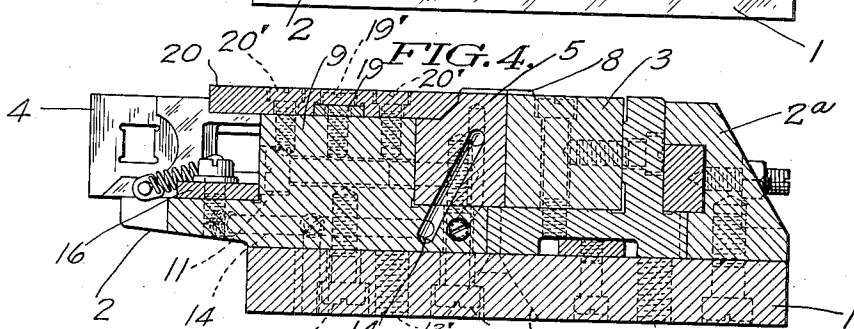
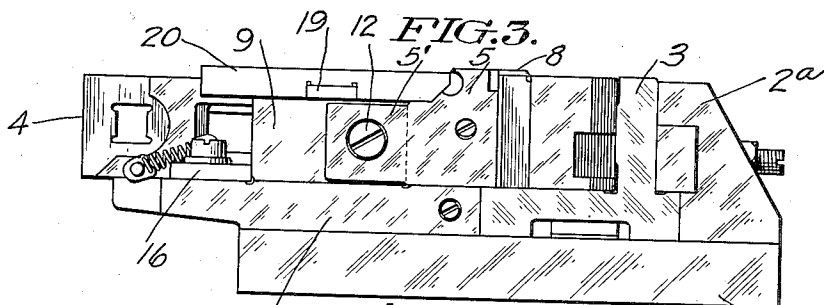
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TYPOGRAPHIC MOLD

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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,029,529

## TYPOGRAPHIC MOLD

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Application August 9, 1934, Serial No. 739,066

9 Claims. (Cl. 199—92)

The present invention relates to molds for casting elements of printing forms, such as printers' types and has for its principal object the production of a mold which will be extremely accurate in the adjusted position of its parts, which will be easy of precise manufacture in the various point sizes required and which is adaptable to being taken apart and put together again without losing any of the accuracy of adjustment. Other objects will be pointed out hereinafter or will otherwise appear in connection with the description of the embodiment of the invention shown in the accompanying drawings. Molds of this kind are adapted to be used with a suitable typographic casting machine and the mold shown is for use in connection with typesetting machines well-known in the art as being the product of Lanston Monotype Machine Company. Such a machine is provided with a pot for molten metal, a metal pump and nozzle and mechanism connected with the mold blade and with the cross block of the mold, as well as being provided with other necessary mechanisms for the casting of type, all of these mechanisms operating in properly timed relation, as will readily be understood by those skilled in the art. A further description of this well-known typographic machine and its operation in association with the mold is unnecessary at this place.

An embodiment of the invention is shown in the accompanying drawings, in which

Fig. 1 is a perspective view of the top of the mold.

Fig. 2 is a plan view of the mold, the top plates being removed.

Fig. 3 is a side elevation looking at right angles to the mold blade.

Fig. 4 is a cross section on substantially the line 4—4 of Fig. 2.

Fig. 5 is a section on substantially the line 5—5 of Fig. 2, and

Fig. 6 is a perspective view of the water base and point block sections, together with similar views of the type blocks in displaced relation.

The mold shown is generally of the construction illustrated in U. S. Patent No. 1,219,956, issued in the name of A. L. Knight and patented March 20, 1917. In both the patented mold and the mold shown there are, for example, the base which comprises a base plate 1 and a water base 2 and a front abutment 2a. There is also common to the two molds a cross block 3, slidably mounted above the base plate to operate at right angles to the mold blade 4, the end of which nearest the cross block is slidable between adjacent ends of type

blocks 5 and 6, to be more particularly described later. The base is also provided in molds of this class with a conical nozzle opening 7, shown in dotted lines in Figs. 4 and 5, through which the molten metal is introduced from the pump nozzle seated in the nozzle opening, so that the metal injected into the type cavity of the mold is formed as to its four sides by the four walls consisting of the type block ends, the mold blade end and a portion of the side wall of the cross block. These parts in the neighborhood of the type forming cavity are provided with upraised surfaces 8 (Figs. 1 and 2) which form a matrix seat for the accommodation of the matrix which would ordinarily be used with this mold to define the top face of the type. These molds are also provided with a jet cavity in the cross block and with a jet blade, associated with the cross block for cutting off the jet. The mold blades in either case may be a single blade or may be of the low-quad variety, in which a lower or main blade is surmounted by an upper or low-quad blade. The latter form of blade is shown in the drawings, but does not need special description because it is similar to that shown in the patent, and is well-known in the art.

The base plate 1 of the mold illustrated is surmounted by a water base 2, which has projecting upwardly from its upper surface two rectangular blocks 9 and 10 which are integral with the water base either by being milled out of the same block of metal or by being welded or otherwise permanently secured to the upper surface of the water base. These sections 9 and 10 constitute a point block and they rise above the water base to a height slightly lower than that of the type blocks 5 and 6. The point block sections 9 and 10 have adjacent vertical walls which are parallel and between which the mold blade vibrates. Their outer walls 9' and 10' are parallel to each other and also parallel to their adjacent walls. The front vertical walls 9'' and 10'' are at right angles to the walls 9' and 10' and are adapted to form an aligning seat for the contacting aligning walls of the type blocks 5 and 6. The latter are L-shaped, being provided at their outer ends with lateral lugs or extensions 5' and 6', respectively, the inner positioning walls of these lugs being adapted to contact with the point block positioning walls 9' and 10', respectively, when the side walls of the type blocks are located in contact with the longitudinal walls 9'' and 10'' of the point block sections. When thus assembled and positioned, the type blocks, each embracing two sides of the point block, are securely fastened to

the point block by lateral screws 11 which extend horizontally through the point block sections and are screwed into holes provided therefor in the type blocks. The lugs 5' and 6' are provided with holes for the accommodation of screws 12 which extend through the lugs into holes suitably provided therefor in the point block walls 9' and 10'. The screws 12 are also horizontal but are at right angles to the screws 11. It will be seen that the integral point block sections serve as a means for securing and maintaining the type blocks firmly in proper location, the point block sections being a combined aligning and point block, and that the aligning and positioning walls thereof in contact with the aligning and positioning surfaces of the type blocks and their lugs ensure the proper squaring relationship of the type blocks, so that when assembled in this manner, the adjacent or cast forming ends of the type blocks are parallel and spaced at the proper and definite point size distance from each other. The lugs 5' and 6' are located at a distance from the cast forming surfaces and the positioning surfaces of the lugs are the inner lug surfaces or those nearest to the cast forming surfaces and are parallel thereto. It will readily be observed that to manufacture molds of different point sizes it is only necessary to grind off the inner walls of the lugs 5' and 6' of the type blocks or the outer walls 9' and 10' of the point block 9, 10 until the proper point size spacing between the adjacent ends of the type blocks has been attained; for increasing the point size said adjacent ends may be ground off. Likewise, if the adjacent ends become worn, due to the extensive use of the mold, they can be brought to proper relationship again merely by smoothing them off and then appropriately grinding off the inner surfaces of the two lugs or the walls above mentioned.

The base 1 is provided with holes for the accommodation of vertically extending screws 13, which extend through these holes and are screw-threaded into the bottom of the type blocks 5 and 6, it being understood that the bolt holes for bolts 11, 12 and 13 are slightly enlarged to provide for free positioning at all times of the type blocks against the point block sections. The base plate 1 is also provided with screw-threaded holes 13' (Figs. 4 and 5) for cooperation with bolts which are adapted to extend through the base of the typographic machine (not shown) and to be screw-threaded into the above mentioned holes for the purpose of securing the mold firmly on the machine.

It may also be pointed out at this time that in case the mold is desired to be dismantled for cleaning or other purposes, this can be done by removal of the bolts 11, 12 and 13 and when it is desired to place the mold back into operating condition, the replacement of these bolts would ensure the accurate positioning of the mold blocks, no adjusting or manipulation of any kind being necessary to accomplish this accurate re-assembling of parts.

The base is provided in its lower surface with holes for admitting cooling water to the mold and discharging it therefrom in accordance with well-known construction and usage. These water holes are connected with conduits 14 provided in the water base, which lead the cooling water into the type blocks, particularly that portion of each block which is adjacent to the type cavity and these conduits then lead back through the water base to the discharge aperture. This arrangement of water cooling conduits is also well-known

in the art, but it is referred to herein particularly to call attention to the fact that the conduits are intended to produce a cooling effect in the type blocks while the water base is practically non-cooled, being provided only with inlet and outlet conduits for conducting the cooling agent to and from the type blocks. Since none of the conduits traverse the point block sections 9 and 10, the latter are not subjected to the water cooling action and the object and effect of this will be more particularly referred to hereinafter.

The mold blade shown in the drawings is provided with the usual carrier for the top blade. The blade is guided at its front end by its slidable relationship between the type block ends and the blade and carrier are guided at the rear end by the usual guide plates 15 and 16. It is held down in the usual manner by the plate 17 shown in dotted lines in Fig. 1 and secured to the top of the point block section 10 by the screw 17'. Above this plate 17 is provided a top plate 18 which is secured to the point block section 10 by screws 18'. The mold blade carrier is guided at its top by the plate 19 shown in dotted lines in Fig. 1, which plate is secured to the point block section 9 by the screw 19', the screw hole in the plate 19 being large enough to provide for adjustment of the plate against the carrier. Above this guiding plate 19 is a cap or top plate 20 which is secured by screws 20' to the point block section 9. It will be observed that the mold blade is thus guided and held in position so that its forward end is smoothly slidable between the type blocks 5 and 6.

It has already been pointed out that the particular construction of the mold shown permits its easy manufacture and the accurate positioning of its type blocks and mold blade. When properly made, the mold blade has a sliding fit between the ends of the type blocks which is sufficiently tight to prevent type metal from being forced between the side bearing surface of the mold blade end and the type block ends. When the mold has been worn and requires readjustment to compensate for wear at this point, it is only necessary to grind down the inside surfaces of the lugs 5' and 6' of the type blocks in order to produce the proper point size dimension between the type block ends. There is provided sufficient space between the point block sections or, in other words, the point block is properly channeled so that the mold blade is provided with room in which to slide no matter what the point sizes of the particular mold may be.

In addition to the advantages referred to, the mold is enabled by its new construction to operate without the binding of the blade when the mold has been run a considerable period of time and has become heated up due to the continued injection of molten metal into the type cavity of the mold. Molds of the construction used heretofore have had a tendency to hold up or bind when placed in hot running condition. They had to be set, therefore, to run when cool with a fit which was unduly loose. It is important to note that molds of the kind under consideration are made with extreme accuracy; the fitting is in each case made by hand lapping and the degree of accuracy is measured in ten-thousandths of an inch. In the present construction, a mold can be set for operation at ordinary temperatures and will continue to operate just as easily, or even more easily, at the higher temperature which it attains after having run over a considerable length of time. This result is due to the compensation of expansion of the parts

which would produce a binding effect. It is to be observed that while the type blocks are cooled in the vicinity of the type cavity by reason of the fact that cooling water is led directly thereto in a continuous stream, the point block is not water cooled and the net result is that the latter has the effect through its expansion when heated to push apart the type blocks to counteract their expansion tendency to move their cast forming surfaces toward each other, and to counteract also the lateral expansion of the mold blade which is also uncooled. In this way, the tendency of binding or hanging up of the mold blade is prevented.

Due to its novel construction, the mold, in addition to advantages of accurate manufacture, repair and of easy and correct assembly after being taken apart for cleaning, may be operated at higher speeds and at lower metal temperatures than common in the art, advantages which increase the amount of type or other elements produced.

I claim:

1. A typographic mold comprising type blocks, each having a cast forming surface and each provided with a lateral positioning lug extending parallel to said cast forming surface, and a point block having positioning surfaces adapted to contact with said lugs to position and maintain the cast forming surfaces of said type blocks at definite point size positions.

2. A typographic mold comprising type blocks, each provided with a cast forming surface and a positioning surface located at a distance from the cast forming surface and a point block located between the positioning surfaces of the type blocks and provided with positioning surfaces adapted to contact with the positioning surfaces of the type blocks to position and maintain the type forming surfaces of the type blocks at definite point size positions.

3. A typographic mold comprising type blocks, each provided with aligning, cast forming and positioning surfaces and a combined aligning and point block located between the positioning surfaces of the type blocks and provided with aligning surfaces adapted to contact with the aligning surfaces of said type blocks and with positioning surfaces adapted to contact with the positioning surfaces of said type blocks whereby the cast forming surfaces of said type blocks are maintained in parallel relation and at definite point size positions.

4. A typographic mold comprising type blocks, each provided with aligning and cast forming surfaces and with a lateral positioning lug and a combined aligning and point block located between the positioning surfaces of the type blocks and provided with aligning surfaces adapted to contact with the aligning surfaces of said type blocks and with positioning surfaces adapted to contact with the positioning lugs of said type blocks, whereby the cast forming surfaces of said type blocks are maintained in parallel relation and at definite point size positions.

5. A typographic mold comprising type blocks, each provided with aligning and cast forming surfaces and with a lateral positioning lug located at a distance from the cast forming surfaces and extending parallel to said cast form-

ing surfaces, the positioning surface of said lug being the surface thereof nearest the cast forming surface of each type block and a combined aligning and point block provided with aligning surfaces adapted to contact with the aligning surfaces of said type blocks and with positioning surfaces adapted to contact with the positioning surfaces of said lugs, whereby the cast forming surfaces of said type blocks are maintained in parallel relation and at definite point size positions, and whereby the point size positions may be readjusted for wear by appropriately grinding off the positioning surfaces of said lugs.

6. A typographic mold comprising water-cooled type blocks, having cast forming walls, and provided with lateral lugs at a distance from said walls and a nonwater-cooled point block, having walls to contact with said lugs, whereby the expansion of said point block, due to the heating up of the mold in operation, will tend to move said cast forming walls of said type blocks away from each other.

7. A typographic mold comprising water-cooled type blocks, having cast forming walls, and provided with lateral lugs at a distance from said walls, a base comprising a base plate and a water base formed with separated point block sections integral with the water base, a cross block, a mold blade slidable on the water base between said point block sections, water-cooled L-shaped type blocks, each contacting with two right angled walls of one of said sections, whereby the raising of the temperature of the various blocks by the injection of molten metal into the type cavity formed by the adjacent ends of the type blocks, one end of the mold blade and one of the walls of the cross block, will result in maintaining the dimensions of the type cavity and ensure the easy operation of the mold blade.

8. A typographic mold comprising a base, a point block integral therewith and projecting upwardly therefrom, L-shaped type blocks mounted on said base and each embracing two sides of said point block, and having adjacent cast forming surfaces, whereby the point block definitely positions said type blocks, and maintains their cast forming surfaces at definite point size positions, and a mold blade slidably mounted on said base and between the cast forming surfaces of said type blocks.

9. A typographic mold comprising a base, type blocks mounted thereon with their adjacent ends in position to form walls of the type forming cavity, said type blocks being provided with lateral lugs at a distance from said ends, a point block mounted above said base and having walls distant from the cast forming surfaces of the type blocks in contact with the lugs of the latter to maintain the latter in separated relation with their cast forming surfaces in definite point size positions, and a mold blade slidably mounted on the base between the cast forming surfaces of the type blocks, the type blocks being water-cooled and the point block being non-water-cooled, whereby the effect of the expansion of the type blocks and the point block when these parts have been heated due to the operation of the mold, will prevent the binding or hanging up of the mold blade.

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