A. W. LE BOEUF.

LINOTYPE MOLD.

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Fig. 1.

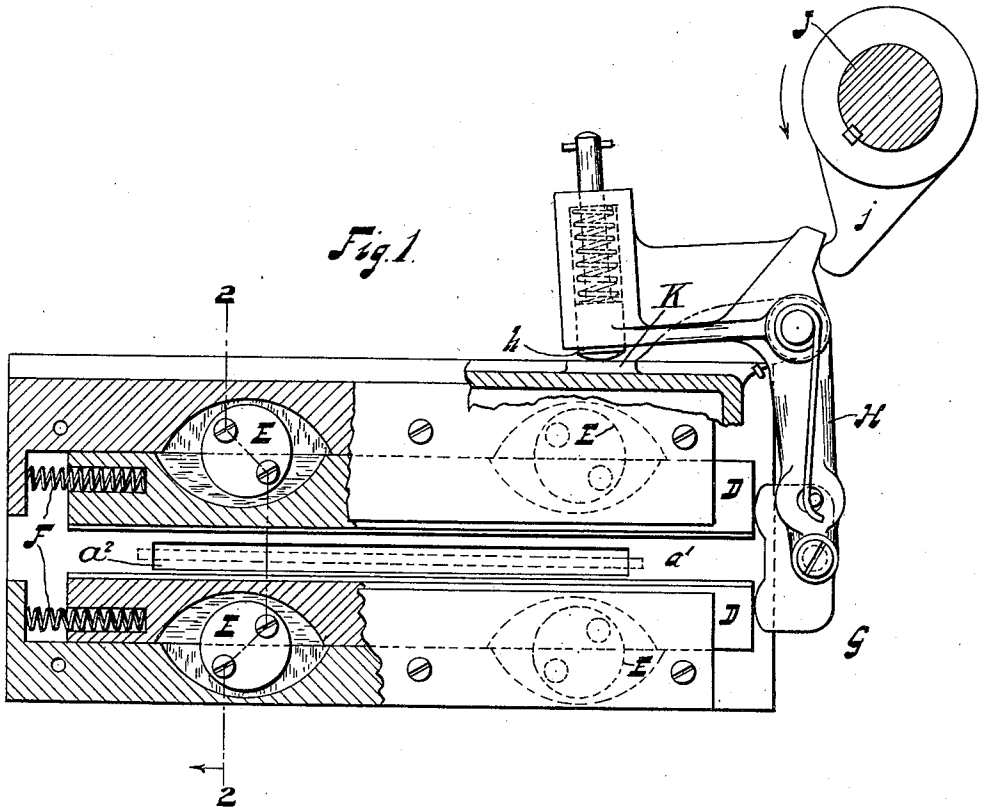
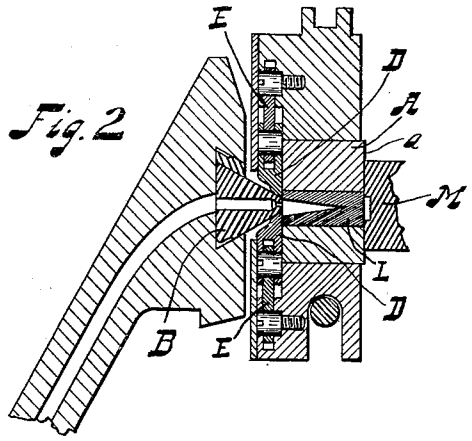


Fig. 2.



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LINOTYPE-MOLD.

1,005,438. Specification of Letters Patent. Patented Oct. 10, 1911.

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To all whom it may concern:

Be it known that I, ARTHUR W. LE BOEUF, a citizen of the United States, residing at Woonsocket, in the county of Providence and State of Rhode Island, have invented a certain new and useful Improvement in Linotype-Molds, of which the following is a full, clear, and exact description.

This invention is designed to be used in and to form a part of a machine which assembles and distributes matrices, and which employs assembled lines of matrices to close the front of a mold in which linotypes are cast.

When a matrix assembling line casting machine is casting linotypes up to about twelve points it is not difficult to cast the linotypes as fast as the machine can perform its other operations, incident to the assembly and distribution of the matrices. But when thicker linotypes are being cast, it is difficult to keep the parts of the casting mechanism at the proper temperatures to do its work as rapidly as the other parts of the machine do their work. To prevent delays in making thick linotypes, due to the slow action of the casting mechanism, various expedients have been suggested and employed.

The object of this invention is to provide a mold and its adjuncts of such construction that thick linotypes may be cast therein without causing much, if any, delay in the operation of the other mechanism of a linotype machine in which it may be employed.

In the drawing, Figure 1 is a view showing the bottom of a mold, partly broken away, and some adjunctive parts, embodying the invention; and Fig. 2 is a vertical transverse sectional view of said mold, and the associated metal injecting nozzle, the section being on line 2—2 of Fig. 1.

The mold A is, or may be, of well known construction. Commonly these molds are built up of several pieces rigidly connected together, and of such shape as to form a rigid metal block having parallel top and bottom faces, a, a', and a linotype slot a^2 extending through it from top to bottom. The two surfaces a and a' are characterized as top and bottom surfaces because the top and bottom of the linotype formed in the slot a^2 are respectively adjacent to these surfaces.

B represents the nozzle which may be like nozzles commonly used except for the fact that its perforated front face is not as wide as the type slot; and additionally the two sides of the nozzle should be beveled so that the nozzle is of increasing width from its perforated face rearward. The nozzle is longer than the slot a^2, as such nozzles commonly are, so that at its ends it may bear against the bottom surfaces of the mold at the ends of the slot. The preferred shape and dimensions of the front face of the nozzle relative to the mold slot a^2 are indicated by dotted lines in Fig. 1.

D, D, represent two mold plates which lie respectively on opposite sides of the slot a^2. The proximate edges of these plates are beveled complementarily to the sides of the nozzle. When they are in the position, as shown in Fig. 2, to perform the function for which they are provided, they respectively overhang the two sides of the slot, their front faces fitting tightly against the bottom surface of the mold, and their beveled edges fitting tightly against the beveled sides of the nozzle. In the construction shown, which is believed to be the best construction, these two mold plates are movably supported by the mold, and against the bottom face thereof, and are each connected therewith by two parallel links E, E. It is obvious, however, that it is not necessary that they should have any connection with the mold, or that they should be movable from the position shown in Fig. 2. The principal reason for making them movable is that they will uncover the bottom of the slot a^2 after a linotype has been cast therein and the mold has been moved into proper relation to the ejector blade, wherefore the bottom of the linotype may be entirely uncovered to the action of said blade.

It is well known that the molds of linotype machines are movable from a suitable position in front of the nozzle to a suitable position in front of an ejector blade. Some of such molds swing about the axis of a supporting shaft between these two working positions, while others reciprocate in straight guide-ways between said positions. The specific mold shown is constructed with special reference to making it adaptable to be reciprocated in a straight path. This is a matter of no consequence in so far as the broad invention herein described is concerned; but certain subordinate mechanism shown in the drawing and now to be de-

scribed, is constructed with special reference to coöperating with a reciprocating mold. If the mold were intended to be turned about a supporting shaft,—a well known construction, as above stated,—this subordinate mechanism, or some of it, might have to be of different specific forms.

A spring F is employed in connection with each mold plate D, and exerts its force to move said plates endwise in that direction which, because of the parallel links which support them, compels them also to move away from the mold slot and uncover the same. The opposite movement of these two plates is produced by endwise pressure from any suitable device against them, in the opposite direction. As shown a block G is pivoted to the end of a lever H and engages with both plates. This lever, in order that the operation of the plates shall be properly timed in relation to the movement of other parts which are concerned in the casting of the linotypes, is controlled by some member concerned in actuating the pump which forces metal through the nozzle into the mold slot. In the construction shown, J represents a rock shaft which rocks in the direction indicated by the arrow adjacent to it when the pump plunger makes its metal discharging stroke. Attached to this shaft is an arm *j*. The lever H is three armed. One arm carries a spring actuated plunger *h* which is forced by the spring against a fixture K, and thereby said lever H is urged to move in the direction which will cause the mold plates D, D, to move to the left as shown in Fig. 1, and also toward each other and the interposed nozzle. This movement of lever H is, however, resisted by the arm *j* with which the third arm of lever H engages.

The described parts are intended to operate in the following order and manner. First, the mold will be moved to the right to the position shown in Fig. 1, where it is in front of the nozzle. Then, the front end of the mold slot being closed by a line of matrices M the nozzle is moved forward so as to engage with the mold bottom at the ends of the slot. Then, the pump shaft will be turned in the direction of the arrow, but at the very beginning of this movement the lever H is released and is moved by its spring plunger *h* so as to push block G to the left, and thereby the mold plates D, D, are moved endwise in the direction which likewise compels them to move toward each other and against the interposed nozzle. The beveled surfaces of the plates and nozzle make tight joints, and also force the plates tightly against the mold bottom. The parts are to reach this position the instant before the pump stroke forces the metal of the nozzle into the mold. The metal entering the mold will immediately chill and harden where it comes in contact with the matrices, the walls of the mold slot, and the front faces of the mold plates. Externally, therefore, the linotype L almost immediately takes permanent form. Now, before the fluid metal in the center of a linotype has hardened, the pump may make its back stroke, and thereby suck out the fluid center of the linotype. As the pump completes its suction stroke the shaft J is to be turned backward, thereby rocking lever H backward so as to withdraw the end pressure on the mold plates, whereupon their springs F retract them; and substantially simultaneously the nozzle is to be drawn backward.

With the means described, operated in the manner above set forth, a hollow linotype is produced of the required external form. It is produced almost instantly, and the nozzle has only to remain in the described position for injecting the metal for an exceedingly short time. Its temperature is hardly changed in so doing. The temperature of the mold is not greatly increased, or, at any rate, is not increased to such a degree that it will not regain its former temperature during the time it is moving to the ejecting position and then back again.

It is not necessary that the parts referred to shall act in precisely the manner described, unless a hollow linotype is to be formed. There are, however, good reasons why a hollow linotype *per se* is desirable, the principal of which are that to make it the mold and nozzle need be held in contact only long enough for the outer shell of the linotype to cool; and it is not so heavy as a solid linotype, and therefore a form made by assembling a number of them is not so difficult to handle.

The main advantage of operating the parts in the manner described is that they may be so operated quickly and without such delays as are unavoidable in the ordinary practice of making thick linotypes, and the linotype thereby produced is certainly as useful and from some view points even more desirable than a solid linotype.

Having described my invention, I claim:

1. The combination of a linotype mold having a linotype slot, a nozzle movable relative to the mold toward and from the same, the front face of said nozzle being narrower than the linotype slot, and two relatively movable mold plates lying against the bottom of the mold and on opposite sides of said slot and adapted when moved toward each other to overhang the slot and engage with the sides of the nozzle.

2. The combination of a linotype mold having a linotype slot, a nozzle movable relative to the mold toward and from the same, the front face of said nozzle being narrower than the linotype slot, and two relatively movable mold plates lying against

the bottom of the mold and on opposite sides of said slot and adapted to be moved toward each other, whereby they will overhang said slot and will engage with the sides of the nozzle,—the sides of the nozzle being beveled, whereby the nozzle is of increasing width from its front end rearward and the edges of the plates being complementarily beveled.

3. The combination of a linotype mold having a linotype slot, a nozzle movable relatively to the mold toward and from the same, the front face of said nozzle being narrower than the linotype slot, and two movable mold plates lying against the bottom of the mold and on opposite sides of said slot overhanging the slot and engaging with the sides of the nozzle, and means for moving said plates in opposite directions away from said nozzle so as to uncover said slot and toward the nozzle so as to engage therewith while overhanging the slot.

4. A linotype mold having parallel top and bottom faces and a linotype slot, two mold plates each of which is connected with the mold by parallel links, and a nozzle whose front face is of less width than the slot, which nozzle is relatively movable toward and from said mold, and mechanism for moving said mold plates into and out of engagement with the nozzle.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

ARTHUR W. LE BOEUF.

Witnesses:
T. L. CLARK,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."