

UNITED STATES PATENT OFFICE.

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PORATION OF MAINE.

MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 756,102, dated March 29, 1904.

Application filed December 4, 1903. Serial No. 183,751. (No model.)

To all whom it may concern:

Be it known that I, ROYAL E. DAVIS, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Molding-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

10 This invention has for its object the production of a novel, simple, and efficient machine for facilitating the construction of molds for metal-founding, the machine forming the subject-matter of this application being so constructed and arranged as to permit the construction of both drag and cope thereon.

To this end the machine embodies some of the characteristics of the type of molding-machine wherein a stripper-plate and pattern-carrier are used, as well as the features of the technically termed "flat back," the latter being a flat plate with such portions of a pattern rigidly secured thereto as can be readily drawn from the mold.

25 By means of my invention the drag is first made, the stripper-plate and pattern-carrier of the machine being used in usual manner. The operative then "draws" the pattern by retracting the pattern-carrier from the stripper-plate, the latter providing for the parting face of the mold, and I have arranged means to automatically lock the pattern-carrier in retracted position. Then the molder reverses the machine, bringing the flat back uppermost, 35 and constructs the cope, thereby completing the two parts of the mold.

The various novel features of my invention will be fully described in the subjoined specification, and particularly pointed out in the following claims.

40 Figure 1 is a side elevation and partial section of a molding-machine embodying one form of my invention in readiness for the construction of the drag. Fig. 2 is a top or plan view thereof, but with the stripper-plate omitted at the left-hand side to show the pattern-carrier; and Fig. 3 is a right-hand end view

of the apparatus, half in section and half in elevation.

In the present embodiment of my invention 50 I have shown two parallel sides a rigidly secured to a flat plate a' , which has secured to its outer face the parts P^x of the pattern, which can be readily drawn, said plate and the pattern portions thereon constituting a 55 flat back.

As best shown in Fig. 2, inturned ears a^x on the sides a are provided with preferably cylindrical guides a^2 at right angles to the plate a' and serving to guide the pattern-carrier to be described. 60

The upper ends of the guides when the machine is in the position shown in Fig. 1 support a second plate a^3 , corresponding in shape to and parallel with the plate a' and firmly secured to the ends of the guides by screws 2, Fig. 2. 65

At one end of the plate a^3 a dowel-pin 3 is fixed, and at its other end a hole 4 is made to position the flask during the molding operation, as is customary, and the plate a' is provided with a dowel-pin 5 and hole 6, but arranged reversely, as shown in Fig. 1. 70

The plate a^3 is cut out to form a stripper-plate, the openings therein being shaped to correspond accurately to the contour of the parts P of the pattern, which are secured to the pattern-carrier, and said stripper-plate provides for the parting face of one-half of the mold in well-known manner. By providing different stripper-plates according to the patterns to be used the machine is adapted for a wide range of work. 75

The sides a and connected plates a' and a^3 constitute a firm and rigid frame, one or the other of the plates being uppermost and supporting a flask when either half of the mold is being constructed. 85

A pattern-carrier is herein shown as an elongated plate C , interposed between the plates a' and a^3 and having openings c^x , (shown at the left, Fig. 2,) through which extend the guides a^2 , the latter providing for accurate movement of the pattern-carrier toward and 90

from the stripper-plate at right angles thereto. I prefer to surround the guides with strong spiral springs S, interposed between the plate a' and the pattern-carrier to move
5 the latter to operative position.

As shown herein, the pattern P is sustained on thickened portions $c'c^2$ of the pattern-carrier, the tops of such portions being flush with the face of the stripper-plate when the pattern
10 is set or in readiness for the construction of the mold. Stool-supports p are rigidly secured to the plate a' and extend through openings c in the pattern-carrier for use when necessary.

15 The pattern-carrier is extended longitudinally at each end and narrowed in width, as at C^x , each extension having a transverse opening c^5 adjacent a rounded portion c^6 , which forms one member of a compressible handle
20 or grip. The coöperating member c^7 of the handle is secured to or forms a part of rocker-arms c^8 , fast on a rock-shaft c^9 , pivoted at 8 in the slot c^5 , a spring s^x , interposed between the members c^6 and c^7 of the handle, normally
25 maintaining them separated.

As shown clearly in Fig. 1, a longitudinally-slidable locking-bolt d is supported in a bearing 10 on the under side of each extension C^x of the pattern-carrier, the outer ends of
30 the bolts being pivotally connected with short arms c^{10} , depending from the rock-shafts c^9 .

The springs s^x normally tend to slide the bolts inward into engagement with notches d' or d^2 in keepers d^x , (shown as strong posts
35 rigidly secured to the plate a' ,) the upper ends of said posts passing through holes 12 in the pattern-carrier and entering sockets 13 in the stripper-plate. (Shown at the left, Fig. 1.)

When the pattern P is to be molded, the
40 machine is placed on cross-bars B, Fig. 1, on a base-board B^x , the pattern members P^x of the flat back being thereby protected, and a flask is placed on the stripper-plate with the pattern-carrier locked in operative position,
45 the bolts d then entering the notches d' of the keepers. Sand is then rammed in the flask about the pattern P, and the drag is completed, after which the operator grasps the handles of the pattern-carrier. The compressive ac-
50 tion of his hands contracts the springs s^x , and the handle members c^7 are moved toward their fellow members c^6 , thereby rocking the shafts c^9 and withdrawing the bolts. The pattern-carrier C is then pressed down against the ac-
55 tion of its springs S, drawing the pattern from the mold, and the bolts d are permitted to enter the notches d^2 . The drag is then removed and set up. Then by compressing the hand-
60 pieces the pattern-carrier is unlocked from its retracted position and is lifted by the springs S to operative position, when it is locked, as has been described, and another drag is made as before. This operation is repeated until the desired number of drags is completed, and
65 while the pattern-carrier is locked in retracted

position the molder reverses the machine, bringing the flat back $a' P^x$ uppermost. The
copes are then made, one for each of the pre-
viously-constructed drags, the pattern P be-
ing protected from injury because the pattern-
carrier is retracted and locked in such posi-
tion. Thus by means of one machine both
parts of a mold can be readily constructed,
economizing in floor-space as well as machines.

If the machine is of moderate dimensions,
75 one molder can easily operate it, but if larger patterns are used with a greater length and breadth of machine the drawing of the patterns P can be accomplished by two men, one
80 at each end of the pattern-carrier, each man operating one of the compressible handles or grips.

The locking means operate automatically to lock the pattern-carrier in one or the other
position by virtue of the springs s^x and con-
85 nections between them and the bolts d when the latter are brought opposite either of the notches of the keepers, while the handles constitute manually-operated devices to release
90 or unlock the pattern-carrier.

My invention is not restricted to the precise construction and arrangement herein shown and described, as the same may be modified or rearranged in various particulars
95 by those skilled in the art without departing from the spirit and scope of my invention.

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

1. In a molding-machine, a stripper-plate,
100 means to support it, fixed guides rigidly mounted on said means at right angles to the stripper-plate, a pattern-carrier slidable on the guides toward and from the stripper-
105 plate, means to automatically lock the pattern-carrier from movement, and manually-operated devices to release the locking means, said locking means and the releasing devices being mounted to move with the pattern-car-
110 rier.

2. In a molding-machine, a stripper-plate,
means to support it, fixed guides rigidly mounted on said means at right angles to the
stripper-plate, a pattern-carrier slidable on
115 the guides toward and from the stripper-plate, and manually-released locking means bodily movable with the pattern-carrier to lock the same in operative or in retracted po-
sition.

3. In a molding-machine, a stripper-plate,
120 means to support it, fixed guides rigidly mounted on said means at right angles to the stripper-plate, a pattern-carrier slidable on the guides toward and from the stripper-
125 plate, springs to move the pattern-carrier into operative position, and means manually operated at both ends of the pattern-carrier and bodily movable therewith to lock it in operative or in retracted position.

4. In a molding-machine, a stripper-plate, 130

means to support it, guides rigidly mounted on said means at right angles to the stripper-plate, a pattern-carrier movable on the guides toward and from the stripper-plate, springs to move the pattern-carrier into operative position, and a combined handle and locking means at each end of the pattern-carrier to retain the latter in operative or retracted position.

10 5. In a molding-machine, a stripper-plate, means to support it, guides rigidly mounted on said means at right angles to the stripper-plate, a pattern-carrier movable on the guides toward and from the stripper-plate, a compressible handle at each end of the pattern-carrier, and means to lock the latter in operative position, compression of the handles operating to unlock the pattern-carrier and permit it to be retracted to draw the pattern.

20 6. In a molding-machine, two parallel, connected plates one constituting a flat back and the other a stripper-plate, a pattern-carrier movable toward and from the latter and located between it and the flat back, means to

guide the pattern-carrier and manually-released means at opposite ends of and bodily movable with the pattern-carrier to automatically lock the pattern-carrier in operative or in retracted position. 25

7. In a molding-machine, a reversible frame, a stripper-plate and a flat back forming opposite sides thereof, a pattern-carrier movable between them and toward and from the stripper-plate, guides on the frame for the pattern-carrier, positioning-springs for the latter, means to automatically lock the pattern-carrier in operative or retracted position, and manually-operated releasing devices for the locking means, said devices serving also as handles to retract the pattern-carrier and draw the pattern. 30 35 40

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROYAL E. DAVIS.

Witnesses:

GEORGE OTIS DRAPER,
ERNEST W. WOOD.