

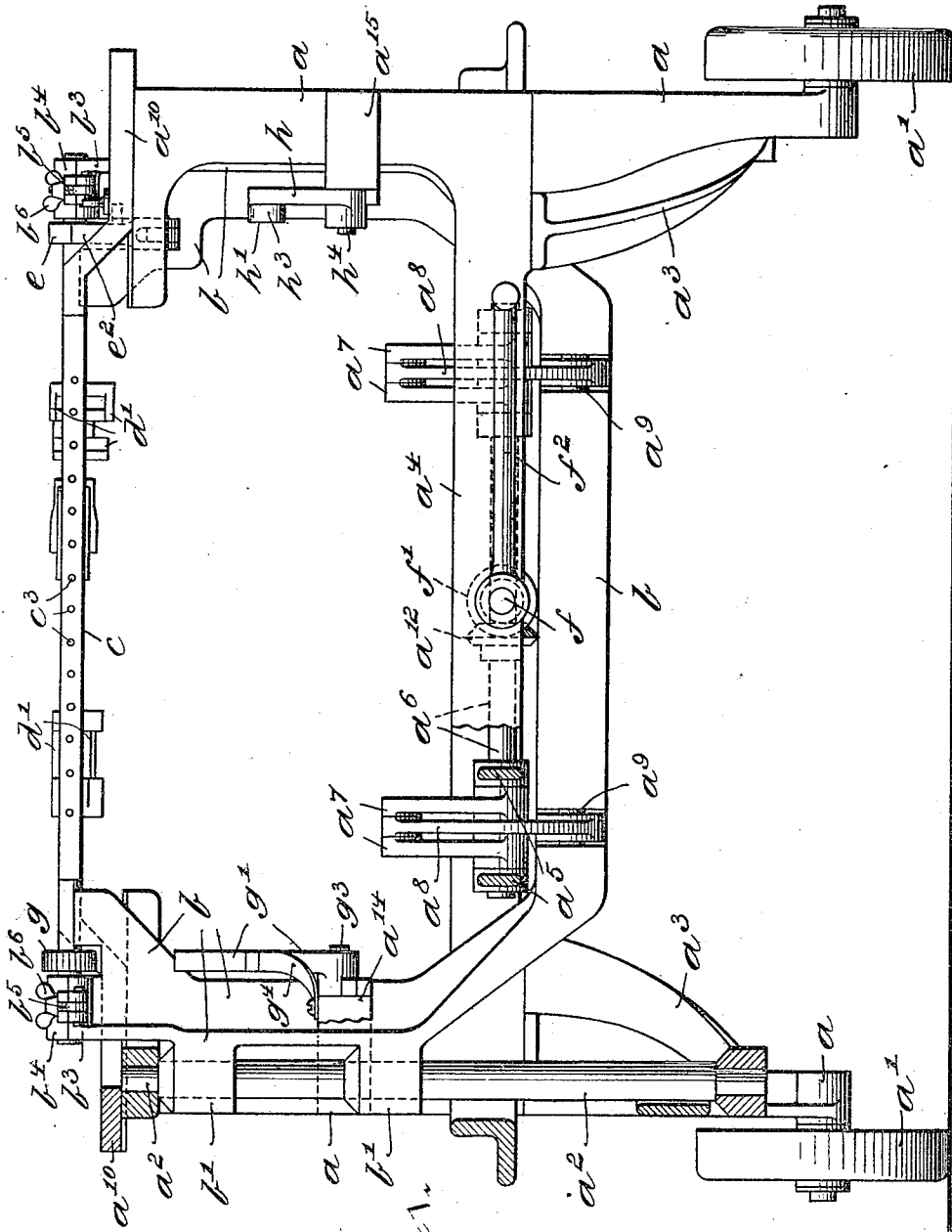
No. 824,965.

PATENTED JULY 3, 1906.

E. E. WAITE.
MOLDING MACHINE.

APPLICATION FILED JUNE 20, 1905.

3 SHEETS—SHEET 1.



Witnesses:
Wilhelm Vogt
Thomas M. Smith

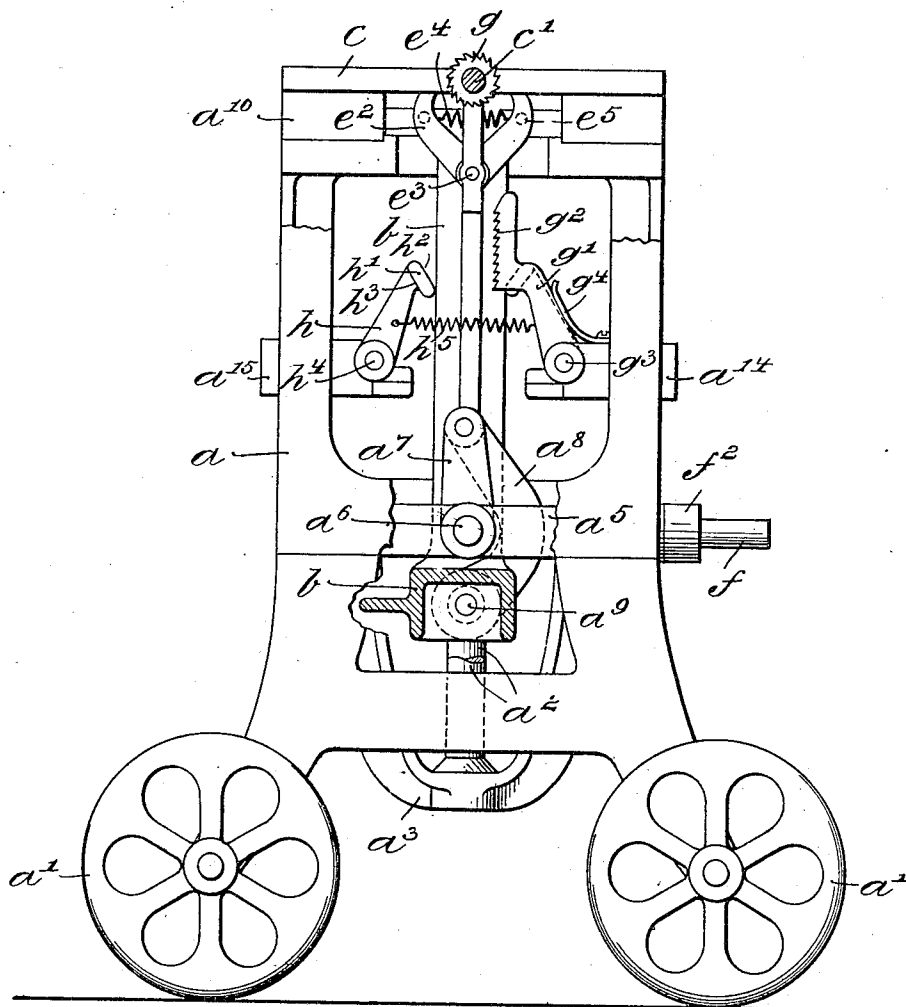
Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.



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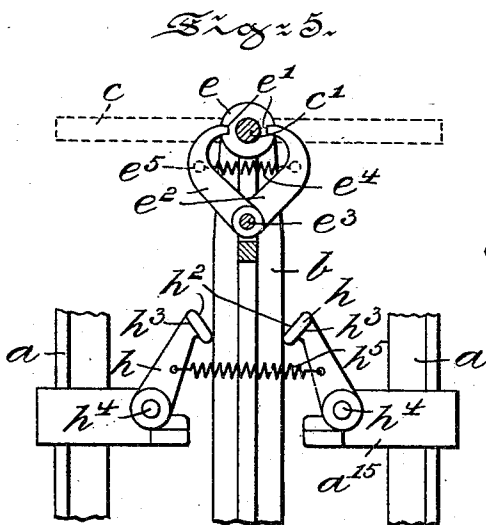
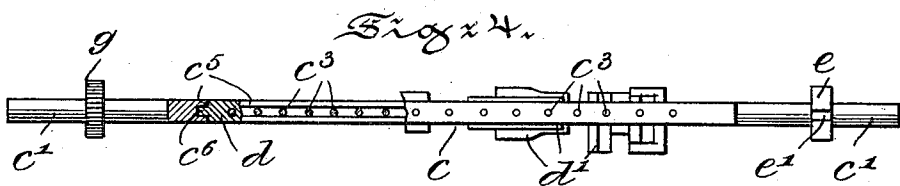
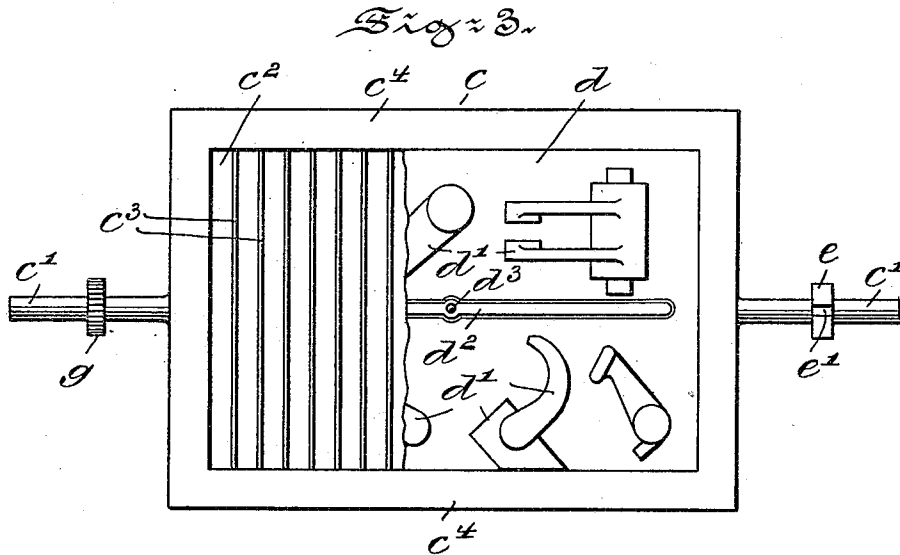
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No. 824,965.

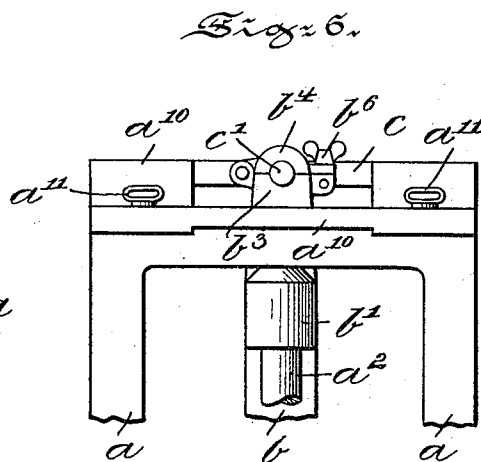
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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MOLDING-MACHINE.

No. 824,965.

Specification of Letters Patent.

Patented July 3, 1906.

Application filed June 20, 1905. Serial No. 266,161.

To all whom it may concern:

Be it known that I, EDWIN E. WAITE, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Molding-Machines, of which the following is a specification.

My invention has relation to a molding-machine, and in such connection it relates more particularly to a pattern-plate and to means for raising and lowering as well as turning such a plate in the machine.

The principal objects of my invention are, first, to provide a pattern-plate from either side of which projects one half or section of a pattern or gate of patterns formed integral therewith; second, to provide a frame surrounding and supporting said pattern-plate and forming a portion thereof, and, third, to provide means engaging the frame to raise and lower as well as to turn said pattern-plate to bring successively both sides of the pattern-plate into an operative position and to hold the same, so as to permit of the formation of a mold from the pattern or patterns projecting from the said plate.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a side elevational view, partly sectioned, of a molding-machine, illustrating the frame surrounding the pattern-plate, a frame slidably arranged in a standard supporting the pattern-plate by engaging its frame, means partially carried by the standard and by the supporting-frame adapted to raise and lower the pattern-plate and to turn the same to bring alternately each side thereof into an operative position and all forming main features of my said invention. Fig. 2 is an end elevational view of the molding-machine, partly sectioned. Fig. 3 is a detail view illustrating in top or plan view a portion of the pattern-plate and its supporting-frame. Fig. 4 is an end elevational view thereof, partly sectioned. Fig. 5 is a detail view illustrating, partly in elevation and partly in section, the clamping means for holding the pattern-plate in operative position and means for disengaging the clamping means therefrom; and Fig. 6 is a detail view

illustrating in front elevation a portion of the standard of the machine and the slidable frame mounted therein and the means for removably connecting the pattern-frame carrying the pattern-plate with the supporting-frame.

Referring to the drawings, *a* represents the standard of the molding-machine, preferably supported by wheels *a'*. In the standard *a* and at each end thereof are arranged rods *a²*, the upper end of which engages the standard proper, whereas the lower ends are supported by brackets *a³*, carried by the horizontal members *a⁴* of the standard *a*, as shown in Fig. 1. Between the horizontal members *a⁴* are arranged transverse members *a⁵*, serving as the support for a shaft *a⁶*, to which are rigidly secured crank-arms *a⁷* and by means of curved links *a⁸* and bolts *a⁹* are pivotally connected to a U-shaped frame *b*, adapted to support the same in the manner shown in Figs. 1 and 2. The frame *b*, by means of bosses *b'*, is slidably connected with the rods *a²* of the standard *a* and is held by the same in a vertical position within the standards. As shown in Figs. 1 and 6, at its upper end the frame *b* is provided with bearings *b³*. One portion *b⁴* thereof is hinged to the portion *b³* and is connected with the same by a threaded bolt *b⁵* and thumb-nut *b⁶*, which permit of the ready opening of the bearings so formed to introduce therein or to remove therefrom shafts *c'* of a frame *c*, supporting a pattern-plate *d* for a purpose and in a manner to be presently more fully described. In order to hold the pattern-frame *c* in a horizontal position and in alinement with the plates *a¹⁰*, carried by the standard *a*, to one of the shafts *c'* of the pattern-frame *c* is rigidly secured a disk *e*, which is provided with notches *e'*, engaged by clamping-arms *e²*, pivotally secured in the point *e³* to the supporting-frame *b*, as shown in Fig. 5. The clamping-arms *e²* being held in engagement with the notches *e'* of the disk *e* by means of a spring *e⁴* will prevent a turning of the shaft *c'* and the pattern-frame *c* and the pattern-plate *d*, carried by the same, and will hold the plate *d* in a position at a right angle to the standard *a* in alinement with the abutting plates *a¹⁰*, which by means of clamping-bolts *a¹¹*, are slidably secured to the standard *a*.

The pattern-plate *d* and the pattern or patterns *d'* thereof projecting from each side

of the plate d , as shown in Figs. 3 and 4, are formed by placing between a drag and cope (not shown) the frame c , in which drag and cope were previously formed a mold from wooden or plaster master-patterns. (Not shown.) As shown in Fig. 3, the frame c , preferably consisting of steel, is provided with an opening c^2 , which is spanned by a series of wires c^3 , the ends of which in the present instance are secured to the horizontal members c^4 of the frame c . In addition thereto in the walls c^5 of the frame is arranged a groove c^6 , communicating with the opening c^2 therein. In the mold formed by the drag and cope (not shown) and in the frame c is now poured molten metal, preferably consisting of metal alloy, which by readily passing between the wires c^3 fills out the mold (not shown) and the opening c^2 , as well as the groove c^6 in the frame c , and thus form a plate d within the frame c , from each side of which projects one portion of a pattern or patterns d' , forming the exact counterpart of the master-pattern. The metal pattern d' and its plate d are rigidly connected with the frame c by the wires c^3 embedded therein and by the portion of the plate d which engages the groove c^6 thereof. The metal alloy or a special metal composing the pattern-plate d and patterns d' can be readily melted, and thus removed from the frame c when the required number of molds have been made therefrom. In addition to the metal pattern d' there are formed on the plate d projections d^2 and d^3 , which when a mold is made from each side of the pattern-plate d a runway and pour-hole are formed by these projections in the sand, and thus the mold is rendered complete for pouring the metal. From the pattern-plate so formed an unlimited number of molds can quickly be made in the following manner. The frame c and the pattern-plate d , held in the position shown in Figs. 1 and 2, permit of the placing of a drag (not shown) onto the same, which drag is preferably of the same size as the frame c . After a mold has been made from the patterns d' , projecting from the upper side of the plate d in the usual well-known manner, the drag is removed therefrom, and the lower side of the plate d is now brought into an operative position by the following preferred mechanism. In one of the horizontal members a^4 of the standard a is arranged a shaft f , provided at one end within the standard a with a bevel-gear f' , meshing with a bevel-gear a^{12} , secured to the shaft a^8 , carrying the supporting-frame b , which supports the pattern-frame c and pattern-plate d , as shown in Fig. 1. At its outer end and in front of the standard a the shaft f is provided with a hand-crank f^2 , which when turned from right to left in Fig. 1 swings the crank-arms a^7 from left to right in Fig. 2 by turning the shaft a^9 through the intervention of the bevel-gears f' and a^{12} .

The crank-arms a^7 so actuated swing the upper ends of the links a^8 outward, and thus permit of the lowering of the supporting-frame b , pattern-frame c , and pattern-plate d in the standard a until the lower bosses b' of the frame b , which slides on the rods a^2 , abut against the brackets a^3 of the standard a , which support the same in its lower position. In addition to the clamping-disk e , and preferably arranged on the other side of the pattern-frame c , the shaft c' at this side of the frame is provided with a ratchet-wheel g , which when the frame b is lowered slides freely over the downwardly-inclined teeth g^2 of a rack-arm g' , which in the point g^3 is pivotally secured to a boss a^{14} of the standard a and is held in the path of the ratchet-wheel g by a leaf-spring g^4 , as shown in Fig. 2. At the same time bolts e^5 , projecting from the clamping-arms e^2 , by the downward movement of the frame b have been brought into engagement with the upper inclined faces h^2 of the projections h' of the arms h , pivotally secured in the point h^4 to bosses a^{15} of the standard a , which are held in the path of the bolts e^5 by a spring h^5 . The bolts e^5 by sliding over the faces h^2 move the arms h outward, and thus the clamping-arms e^2 are not released from the clamping-disk e . When, however, the hand-crank f^2 is moved backward into the position shown in full lines in Fig. 1, and the supporting-frame b by the intervention of the shafts f and a^9 , bevel-gears f' and a^{12} , and the crank-arms a^7 and links a^8 is raised to its normal position, as shown in Fig. 1, the bolts e^5 by being brought into engagement with the lower inclined faces h^3 of the projections h' of the arms h are slid upward over the same, forcing the clamping-arms e^2 outward, by which movement the same are brought out of engagement with the notches e' of the clamping-disk e . At the same time the clamping-arms e^2 are disengaged from the notches e' of the clamping-disk e the ratchet-wheel g is brought into engagement with the teeth g^2 of the rack-arm g' , which through the upward movement of the supporting-frame b rotates the ratchet-wheel g and by the same turns the pattern-frame c and pattern-plate d and brings the lower side thereof into an operative position. By the turning of the shafts c' of the pattern-frame c in a semicircle and at the completion of this movement the clamping-arms e^2 by the intervention of the spring e^4 are brought into reengagement with the notches e' of the clamping-disk e , and thus the frame c and pattern-plate d are locked and securely held in a horizontal operative position. A mold can now be completed from the patterns d by placing the cope on the frame c . By the hereinbefore-described mechanism the pattern-plate d can be quickly turned and a complete mold formed from the same, which does not require any

handwork when removed, but is ready for the pouring of the metal to form a casting.

Instead of using the pattern-frame *c* and pattern-plate *d* in conjunction with the herein before-described machine, the same may be used with good results without this machine, in which instance the pattern-frame *c* may be placed upon a convenient support to prevent possible damage to that portion of the pattern projecting from the under side of the plate.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a molding-machine, a standard, a frame slidably arranged in said standard, a pattern-plate having means adapted to permit of the locking and turning of said plate, and means carried by said standard and frame adapted to engage the turning and locking means of said plate to first unlock and then turn and relock the same, when elevated to an operative position by said frame.

2. In a molding-machine, a standard, a frame slidably arranged therein, a pattern-plate having trunnions engaging said frame,

a clamping-disk and a ratchet-wheel, each of which is arranged on one of said trunnions, clamping-arms carried by said frame and engaging said clamping-disk, a rack-arm and unlocking-arms carried by said standard, a spring adapted to hold said clamping-arms in engagement with said disk, and means for raising and lowering said frame and plate to permit of the engagement of said unlocking-arms with the clamping-arms and of the rack-arm with the ratchet-wheel of said plate so as to first unlock the clamping-arms from said clamping-disk to permit of the turning of said plate by said ratchet-wheel and then to permit of the relocking of the plate by said clamping-arms under the influence of said spring upon said plate being elevated to an operative position.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

EDWIN E. WAITE.

Witnesses:

J. WALTER DOUGLASS,
THOMAS M. SMITH