(No Model.)

T. E. CADDY.

MOLDING MACHINE.

No. 428,590. Patented May 27, 1890.

Fig. 2.

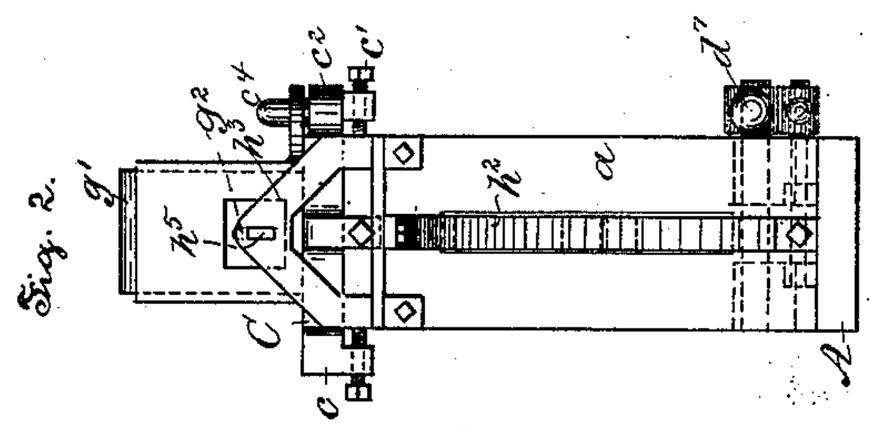


Fig. 4.

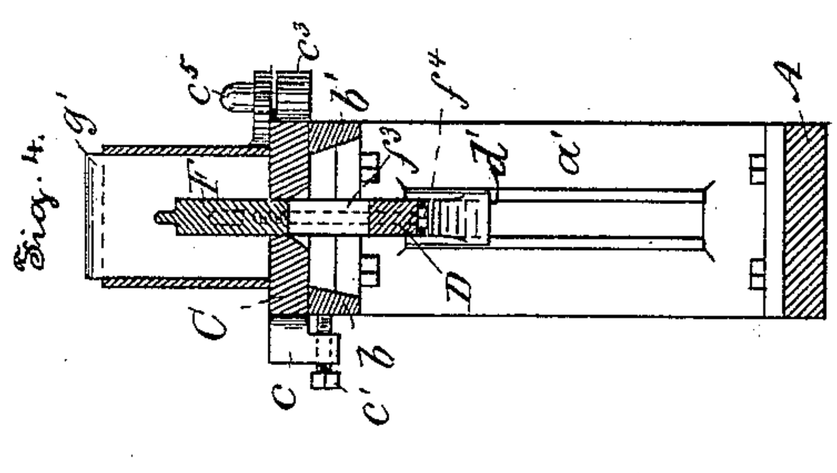


Fig. 1.

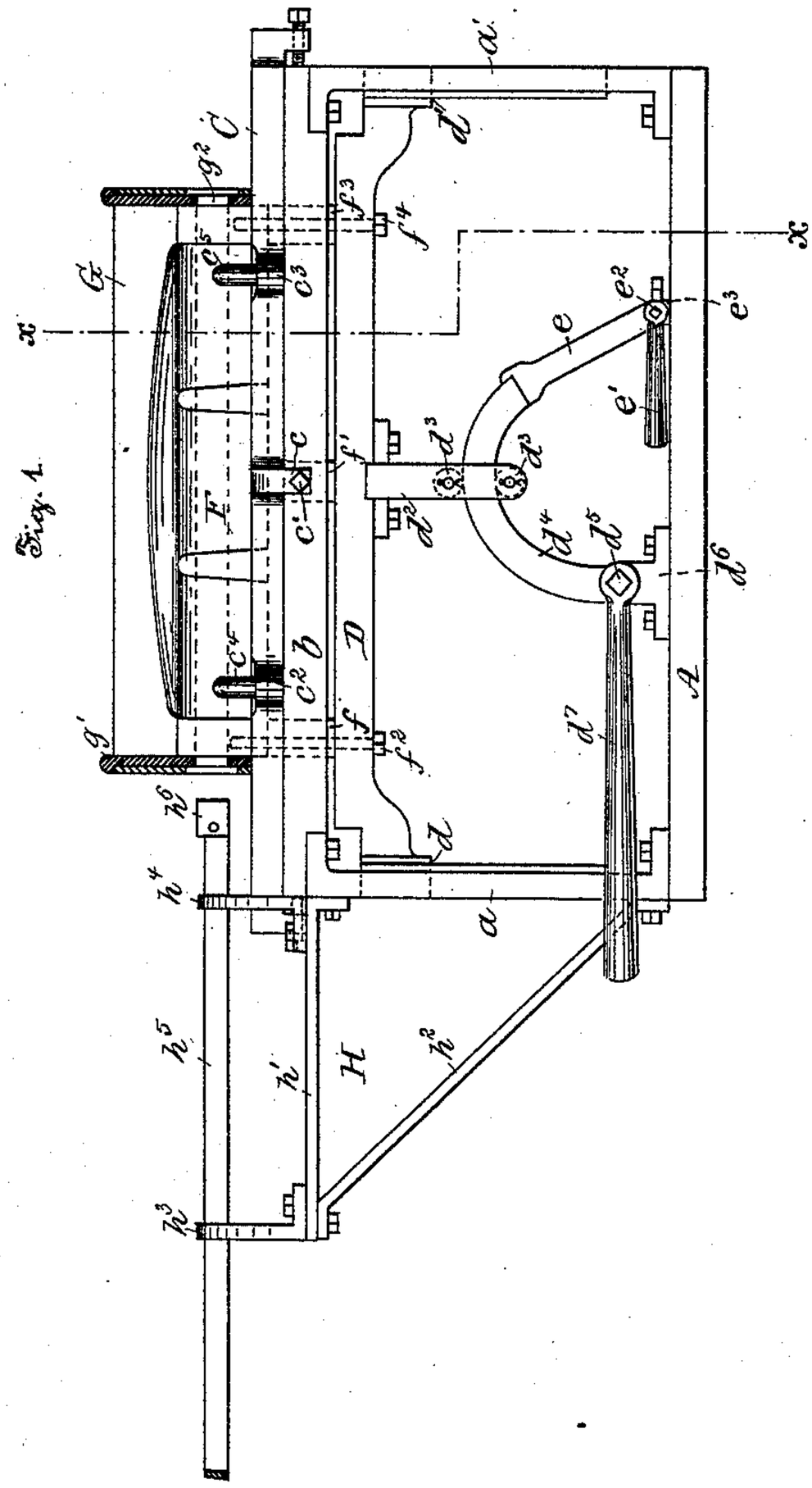
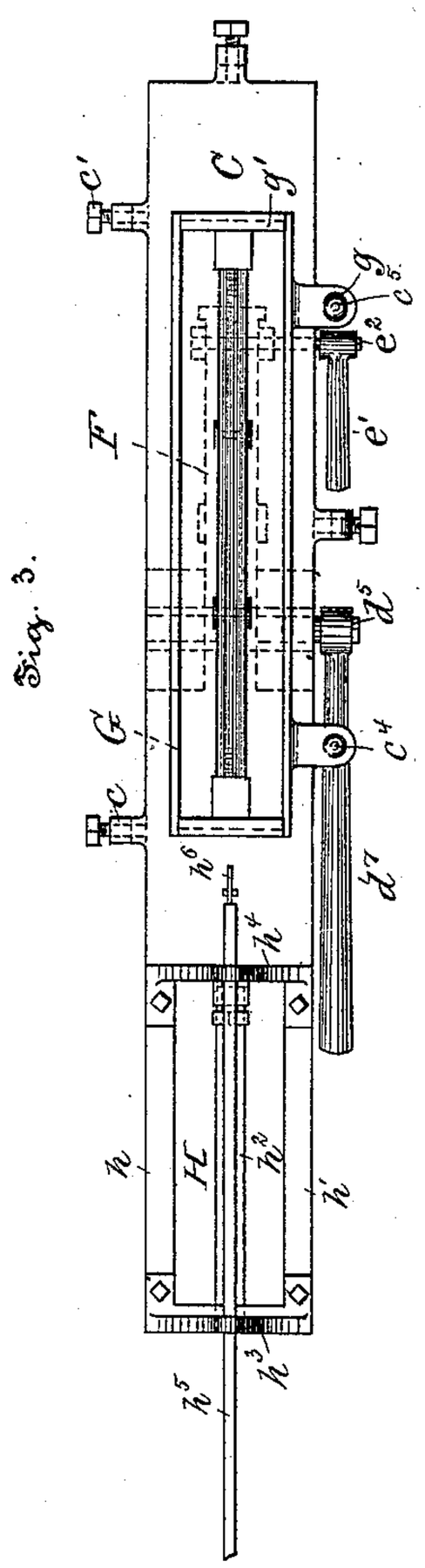


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

THOMAS EDWARD CADDY, OF NEW BASFORD, NOTTINGHAM, ENGLAND.

MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 428,590, dated May 27, 1890.

Application filed December 17, 1889. Serial No. 334,046. (No model.) Patented in England April 12, 1888, No. 5,447.

To all whom it may concern:

Be it known that I, THOMAS EDWARD CADDY, a subject of the Queen of England, residing at New Basford, Nottingham, England, have invented certain new and useful Improvements in Molding-Machines, (for which I have obtained Letters Patent of Great Britain, No. 5,447, dated April 12, 1888,) of which the following is a specification.

My invention relates to a machine for molding or forming molds in sand or the like for casting metallic articles provided with cores.

The principal object of my invention is to provide a molding-machine of comparatively simple construction, and the arrangement of the parts thereof is such as that the operation can be carried out in a more expeditious and efficient manner than has been heretofore possible in such class of machines.

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

Figure 1 is a front elevation of a machine embodying the features of my invention, and showing the molding-box thereof in section. Fig. 2 is an end elevation thereof. Fig. 3 is a top or plan view of Fig. 1, and Fig. 4 is a vertical transverse section on the line $x\ x$ of Fig. 1.

Referring now to the drawings, A is the bed-plate of the machine. a and a' are end standards mounted on and rigidly secured to said bed-plate. The strips b and b' are bolted or otherwise secured to the upper extremities of these standards.

C is a platform provided with depending lugs c.

c' are set-screws inserted through the lugs c for adjusting and securing said table to position. c^2 and c^3 are lugs provided with pins c^4 and c^5, and respectively cast integral with or otherwise secured to the lateral edges of the platform C. The platform C is provided with an opening corresponding accurately with the shape or configuration of the pattern in plan of which it is desirable to form a mold.

D is a movable table or bar adapted to be raised and lowered and guided in its upward and downward movements by the slides d and d'.

d^2 is a bracket centrally secured to the under side of the movable table or bar D and having friction-rollers d^3 journaled therein. These rollers d^3 engage with a cam-shaped arm d^4 for raising or lowering the movable table or bar D. The cam-shaped arm d^4 is rigidly secured to the transverse shaft d^5. This shaft d^5 is journaled to the bracket d^6, mounted on and secured to the bed-plate A. The shaft d^5 has attached thereto a longitudinal hand-lever d^7 for actuating the cam-shaped arm d^4, and thereby elevating or lowering the movable table or bar D.

An arm or a pawl e is rigidly mounted on a shaft e^2, journaled in a bracket e^3, mounted on and secured to the bed-plate A. A hand-lever or treadle e', for actuating the arm or pawl e, is also mounted on the shaft e^2 and forms an acute angle with the pawl e, for retaining by its own weight the latter to position against the extremity of the cam-shaped arm d^4. f, f', and f^3 are blocks interposed between the pattern F and the table D. The pattern F in use in secured to the table D by means of the screw-bolts f^2 and f^4, passing through the blocks f and f^3.

G is a molding box or flask provided with apertures g, which engage with the pins c^4 and c^5, extending above the surface of the platform C. This box or flask G may be made longer than the pattern F, or it may be provided with adjustable metal end pieces g'.

When the casting is to be cored out, the end pieces g' are provided with apertures g^2 of the exact shape or configuration of the periphery of the core to be formed in the finished article.

When the molded or cast article is to be cored out, core-prints may be formed in the mold and the cores inserted in the usual manner; but in some cases—for instance, when casting hollow fire-bars or fire-bars having tubes therein, as shown in the drawings—the following device can be advantageously employed:

To the end standard a is rigidly secured a frame H, consisting of the horizontal pieces h and h' and brace h^2. This frame supports two vertical guide-brackets h^3 and h^4, adapted for the reception of the bar h^5. This bar h^5 is

provided with a flattened extremity h^6, and is guided and afforded a range of longitudinal movement, for a purpose to be presently more fully explained.

The operation of my improved molding-machine is as follows: The pattern F is secured to place upon the movable table D and the platform C adjusted so as to allow said pattern to be raised through and above the matrix or opening formed in the platform C. The platform is then rigidly secured to place upon the horizontal pieces b, and the movable table D is raised by means of the hand-lever d^7 and secured in an elevated position by means of the pawl e, so that the pattern F projects through and above the matrix or opening formed in the platform C. The molding box or flask G is then mounted on the platform and held in position by the pins or studs c^4 and c^5. Suitable molding material—as sand—is then placed in said box and rammed tightly around the pattern. By releasing the cam-shaped arm d^4 from its engagement with the arm or pawl e and then raising the hand-lever d^7 the pattern is caused to assume a depressed position below the platform C. The guide-bar h^5 is then passed longitudinally through the openings or matrices g^2, formed in the end pieces g', and one end of the core or tube fastened to the flattened end h^6 thereof. The bar h^5 is then either drawn backward by hand or pushed backward by the core or tube. When the core or tube is in proper position, it is disengaged from the flattened end h^6 of the bar h^5. The mold having the core or tube in proper position therein may be removed to a bed of sand or other preferred material, or, if a chilled surface is required, to a metal plate, and is ready for the reception of the molten metal as soon as the necessary runners have been formed therein. To form a mold in two boxes separate patterns must be formed for the top and bottom boxes where the molds in both are not identical, the holes in the boxes fitting over the studs or pins c^4 and c^5 of the platform C during their formation, and thus secure the accurate adjustment of the boxes when placed together. By employing a plate or platform through which the patterns project, the sand may be evenly rammed around the pattern instead of forcing the pattern into the sand, thereby producing a better mold. By withdrawing the patterns through the openings in the plate in the manner described the edges of the mold are held intact by the plate, and the mold is removed from the machine ready for receiving the metal without requiring such attention as has hitherto been found necessary.

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 combination, a molding-machine provided with a removable longitudinal plate having an opening therein, a bar or platform located beneath said plate, a pattern mounted on the upper surface thereof and adapted to be introduced through and to engage with the walls of the opening in said longitudinal plate, a box supported upon said longitudinal plate and having perforated end plates, a guide-bar sliding longitudinally in stationary bearings and adapted to be inserted through said box, substantially as and for the purposes set forth.

2. In combination, a molding-machine provided with a removable longitudinal plate having an opening therein, a bar or platform located beneath said plate, a pattern mounted on the upper surface thereof and adapted to be introduced and withdrawn through and to engage with the walls of the opening in said longitudinal plate, a box supported on said longitudinal plate and having perforated end plates, removable and adjustable end plates, and a guide-bar sliding longitudinally in stationary bearings and adapted to be inserted through said box, substantially as and for the purposes set forth.

3. The combination, in a molding-box, of metal end pieces having apertures therein adapted for the reception of a core and a bar sliding longitudinally in stationary bearings and adapted to be inserted through the apertures in said box and end pieces, substantially as and for the purposes set forth.

4. The combination, in a molding-machine, of a movable platform sliding in guides, a cam-shaped arm mounted on a shaft pivoted to the base-plate, a lever-arm mounted on said shaft, a pawl formed integral with an arm pivotally supported above said base-plate and adapted to engage with said cam-shaped arm, and friction-rollers pivotally connected with said platform and normally contacting with said cam-shaped arm, substantially as and for the purposes described.

In testimony whereof I have hereto set my hand in the presence of the two subscribing witnesses.

THOMAS EDWARD CADDY.

Witnesses:
F. C. SHELDON,
WILLIS WAIN.