

C. D. CLARK.  
MOLDING MACHINE.

Patented Jan. 21, 1890.



# UNITED STATES PATENT OFFICE.

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## MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 419,639, dated January 21, 1890.

Application filed September 29, 1888. Serial No. 286,742. (No model.)

*To all whom it may concern.*

Be it known that I, CHARLES D. CLARK, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements for Molding-Machines, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part thereof.

In the drawings, Figure 1 is a plan of my molding-machine with the patterns for a common hand-wheel secured therein, a piece of the follow-board being broken away about one pattern. Fig. 2 is a longitudinal section through the same, showing the molding-sand in position about the pattern in one half of the machine, and showing the sand mold withdrawn from the pattern and bearing the reverse impress of it in the other half of the machine. Fig. 3 is a side elevation of the parts in the position shown in Fig. 2. Fig. 4 is a section at the line 4 4 on Fig. 1.

A is the frame, which is an oblong parallelogram comprising the vertical sides A' and the ends A<sup>2</sup>, and supported by four standards D D D, secured to it at the four corners. The ends A<sup>2</sup> have the outwardly-extending flanges A<sup>20</sup>. The side bars A' are joined by the transverse bars A<sup>10</sup> A<sup>10</sup>, which are joined at the top by the horizontal web A<sup>11</sup>, and the said side bars are further connected by the transverse flat bars A<sup>12</sup> A<sup>12</sup> A<sup>12</sup> A<sup>12</sup>. The ends A<sup>2</sup> and the transverse bars A<sup>10</sup> guide the follow-boards. The lower edges of the side board A' are cut away at a' a' a' a', and between said cut-away portions are turned outward and up to form the channeled slide-bearing A<sup>13</sup>, in which devices for lifting the follow-board obtain bearing, as hereinafter particularly described.

B B are follow-boards formed with the downwardly-extending flanges B' B', which fit between and are guided by the ends A<sup>2</sup> and the vertical cross-bars A<sup>10</sup>, respectively. The follow-boards extend out over the upper edges of the side bars A' A' and have downwardly-extending flanges B<sup>2</sup> B<sup>2</sup> outside said side bars, which flanges are cut away, leaving the wedge-shaped cam portions B<sup>20</sup> B<sup>20</sup>, having the slanting under edges b<sup>20</sup>, as seen in Fig. 3. Said flanges directly overhang the channeled slide-

bearings A<sup>13</sup> of the frame A, and between them and said bearings, respectively, is located the slide C, comprising the two wedge-shaped cams C' C' correlative to the wedge-shaped cam portions B<sup>20</sup> B<sup>20</sup> of the flanges B<sup>2</sup>. These cams C' are connected by the cross-bars C<sup>2</sup> C<sup>2</sup>, which extend underneath the frame A from side to side, crossing the under edge of the side bars A' in the cut-away portions a', and to the under side of said cross-bars midway in the width of the frame A there is secured the rack C<sup>3</sup>.

In the two standards D D, at each end of the machine, there is journaled a shaft E, to which there is secured a handle E' and a segment-gear E<sup>2</sup>, which meshes with the rack C<sup>3</sup>, the handle serving to rock the shaft and segment-gear and cause the latter to actuate the rack and to carry with it longitudinally the slides C'. To the upper side of said follow-boards B there is secured the flask F, for retaining the molding-sand and mold when completed. The flasks F have the horizontal flanges F', which lap the flanges A<sup>20</sup> and the web A<sup>11</sup> of the frame A. One of the flasks has the dowel-pins f' secured in its flange F', and the other has in a corresponding position holes adapted to admit similar dowel-pins f', which are secured in the web A<sup>11</sup> and flange A<sup>20</sup> of the frame. These pins are for the familiar purpose of guiding the two flasks together when they are placed face to face. They also serve to fix the exact position of the flasks on the follow-boards, so that when two flasks are united the two parts of the mold formed in them respectively are accurately matched together.

The operation of this mechanism will be obvious upon inspection; but for further certainty it will be described. The patterns, which are made in mated pairs, each of which is adapted to produce one half of a mold for casting the desired article, are secured to the cross-bars A<sup>12</sup> of the frame, as shown in Fig. 2. Preferably the machine is made double, as shown, so that in each half there may be formed a mold of the two parts of the article to be cast, said parts being arranged in opposite order in the two portions of the machine, so that the double half-molds thus made, being applied to each other face to face, form

two complete molds of the desired article. The apparatus being first in the position shown in the left half of Fig. 2, the follow-board being at its lowest position and the flask resting upon the frame A, patterns being secured in position and the sand tamped in above them, the operator, by means of the handle E', rocking the shaft E and the segment-gear E<sup>2</sup>, causes the slides C<sup>2</sup> to move longitudinally in their bearings A<sup>13</sup>, and their upper sloping edges C', engaging the lower sloping edges B<sup>20</sup> of the flanges B<sup>2</sup>, force the follow-boards and flasks directly upward, carrying the mold away from the pattern. The mold being thus completely freed of the pattern and the corresponding half being at the same time in a similar manner formed in the other half of the machine, the two half-molds are ready to be applied face to face and made ready for the metal.

I claim—

1. In a molding-machine, in combination with the frame A, having the patterns secured thereto, and the horizontal slide-bearings A<sup>13</sup>, the follow-board B, having the cams B<sup>20</sup> overhanging said slide-bearings, respectively, and

the slide-cams C' interposed between said slide-bearings and said cams B<sup>20</sup> on the follow-boards, substantially as and for the purpose set forth.

2. In a molding-machine, in combination with the frame having the side bars A', and supports for securing the pattern thereto and having the horizontal slide-bearings A<sup>13</sup>, the follow-boards having vertical guide-bearings on said frame and having the cams B<sup>20</sup> overhanging said guide-bearings A<sup>13</sup>, and the correlated sliding cams C' interposed between the cams B<sup>20</sup> and the slide-bearings, respectively, said correlated cams being rigidly connected, and means, substantially as described, for actuating them longitudinally with respect to said slide-bearings, substantially as set forth.

In testimony whereof I have set my hand in the presence of two witnesses, at Chicago, Illinois, this 24th day of September, A. D. 1888.

C. D. CLARK.

Witnesses:

A. L. UPTON,  
ARTHUR JOHNSON.