3 Sheets—Sheet 1.

J. HACKETT.

Molding-Machine.

No. 209,256. **Patented Oct. 22, 1878.**

Fig. 1.

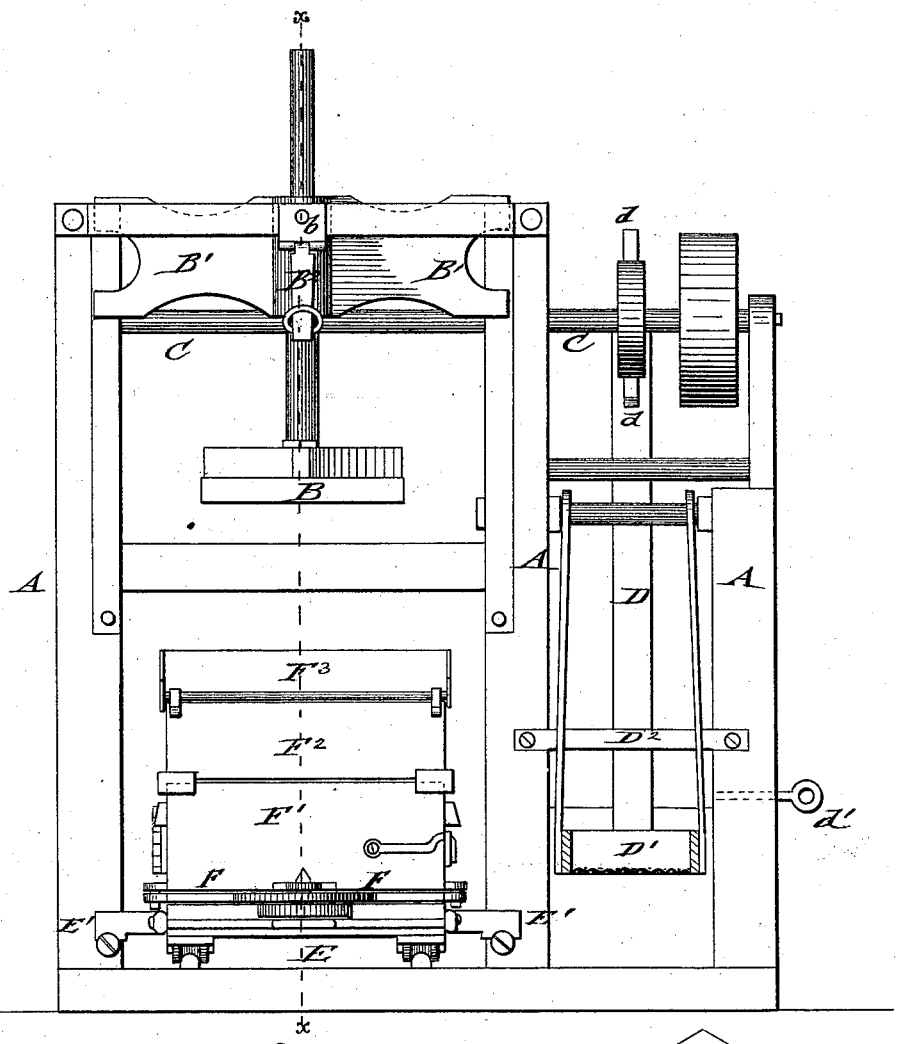


Fig. 2.

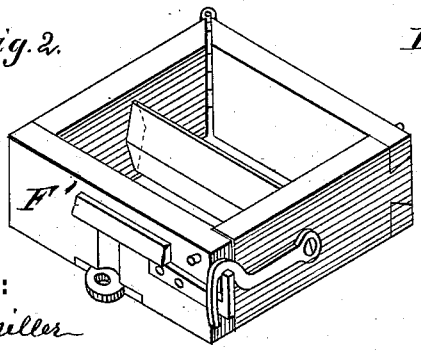
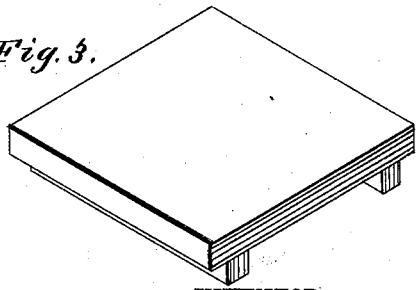


Fig. 3.



WITNESSES:

Henry N. Miller

C. Sedgwick

INVENTOR:

J. Hackett

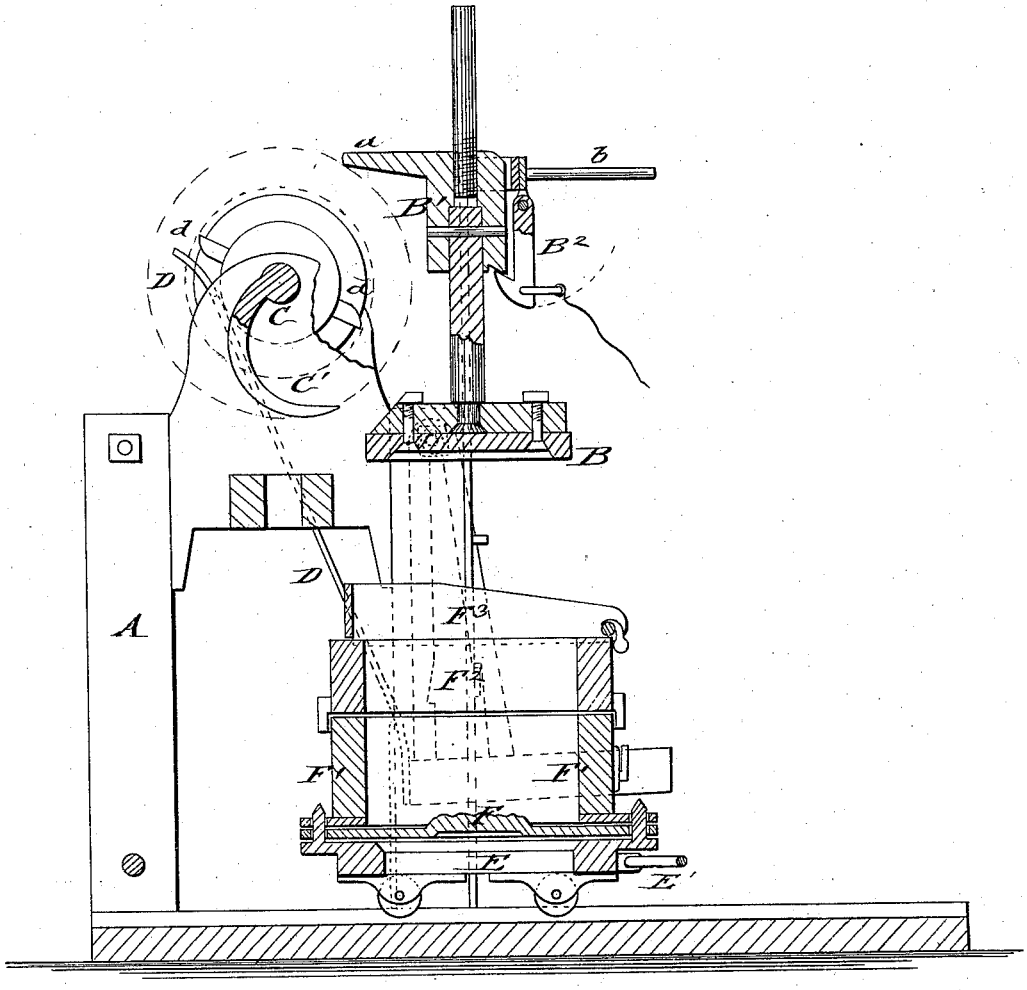
BY Munn & Co

ATTORNEYS.

J. HACKETT.
Molding-Machine.

No. 209,256. Patented Oct. 22, 1878.

Fig. 4.



WITNESSES:

Henry N. Miller

C. Sedgwick

INVENTOR:

J. Hackett

BY Munn & Co

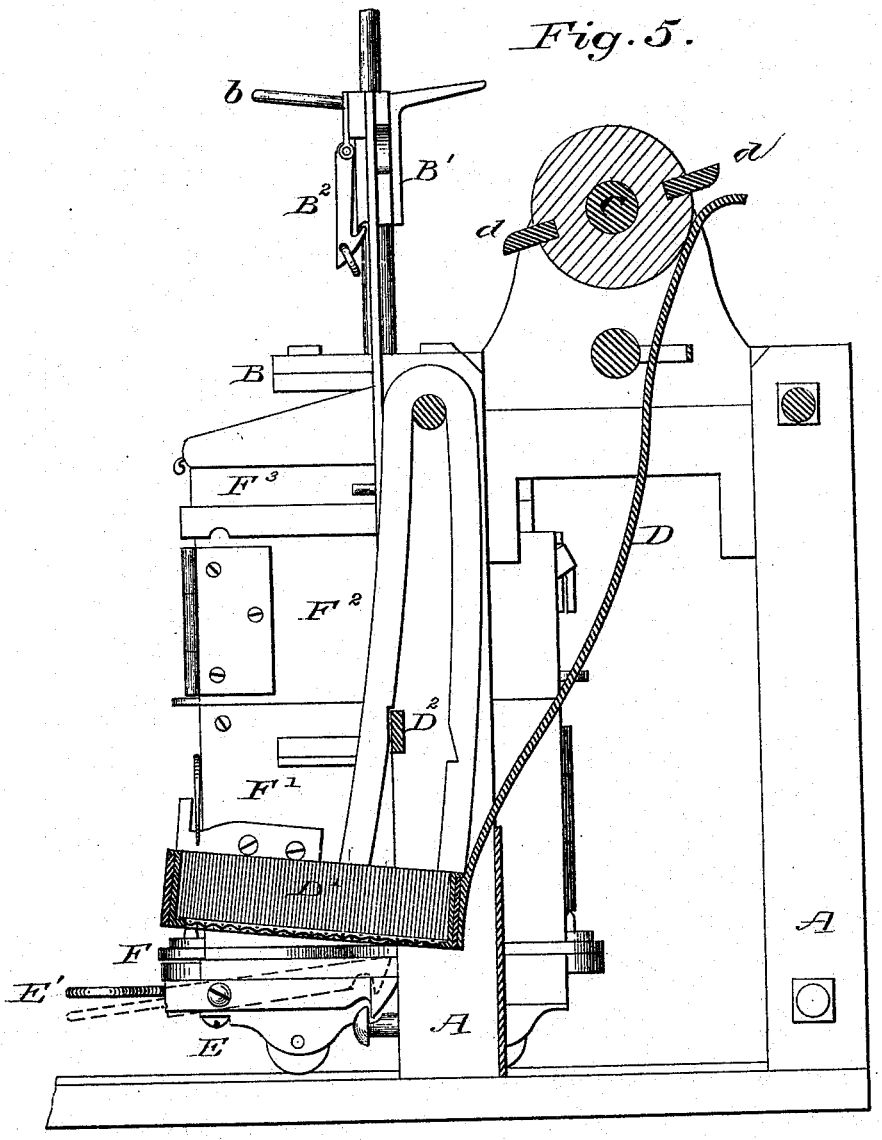
ATTORNEYS.

3 Sheets—Sheet 3

J. HACKETT.
Molding-Machine.

No. 209,256. Patented Oct. 22, 1878.

Fig. 5.



Witnesses:

Henry N. Miller

C. Sedgwick

Inventor:

J. Hackett

BY Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOSEPH HACKETT, OF LOUISVILLE, KENTUCKY.

IMPROVEMENT IN MOLDING-MACHINES.

Specification forming part of Letters Patent No. **209,256**, dated October 22, 1878; application filed May 4, 1878.

To all whom it may concern:

Be it known that I, JOSEPH HACKETT, of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and Improved Molding-Machine, of which the following is a specification:

In the accompanying drawings, Figure 1 represents a front elevation, partly in section, of my improved molding-machine; Fig. 2, a perspective view of a flask-section; Fig. 3, a perspective view of the supporting-platform for the flask; and Fig. 4, a vertical transverse section of the molding-machine on line *x x*, Fig. 1, showing the bottom flask-section in position on the truck for being rammed. Fig. 5 is a vertical section.

Similar letters of reference indicate corresponding parts.

This invention relates to an improved molding-machine for light castings, by which the molds may be made in quick and superior manner.

Referring to the drawing, A represents a suitable supporting-frame, of wood and iron, of which two upright standards are provided with guides for the vertically-reciprocating frame B^1 of the plunger B. Back of the upright standards are arranged bearings for a top shaft, C, that is revolved either by a hand-crank or by pulley-and-belt connection with a suitable power-shaft. The top shaft, C, is provided with a curved arm, C′, that engages a straight backwardly-extending arm, *a*, of the sliding plunger-frame, so as to raise the plunger by revolving the shaft, the frame being then automatically locked in raised position by a pivoted drop-hook, B^2, that is released in suitable manner for dropping the plunger, and when not required for use hung by a ring at its end to a horizontal front rod, *b*, of frame B^1. The bottom plate of the plunger is exchangeable, to provide for different sizes of flasks. On the top shaft are further arranged one or more arms, *d*, that engage a spring, D, which is attached to the rear part of an oscillating sifter, D^1, which is hung by two supporting-bars at each side to the top pivot, and worked in connection with a cross check-bar, D^2. The arm or arms of the top shaft engage the actuating-spring, and impart, in connection with the check-bar, an oscillating motion to the sifter, so as to quickly sift the sand required for molding. When the sifter is not required for use, a stop-pin, *d′*, is inserted between the supporting-bars, and thereby the sifter locked in position, the actuating-spring giving sufficiently for the top arms. Between the upright guide-standards of the plunger is arranged a track, on which a truck, E, is run, so as to assume a position vertically below the plunger. The truck is locked by means of pivoted and weighted pawls E′ dropping into hooks of the upright standards, and readily detached by lifting the pawls therefrom.

To guide-pins of the truck is applied the bottom pattern-plate, F, to which again, by side pins, is connected the lower flask-section or drag, F^1, on which is placed, by suitable guides, grooves, and registering-pins, a gage, F^2, and on the gage a fender or doctor, F^3. The gage F^2 serves for the purpose of holding the sand that is to be rammed into the flask-section F^1, while the doctor is intended to strike off the surplus sand and prevent it from falling on the platform. The flask-sections (cope and drag) are provided with a cross-bar or diamond-shaped cross-section, that may be removed from the flask, and admits of molding two patterns at the same time.

The operation of the machine is as follows: The sifter is first started by withdrawing the stop-pin *d′* of the same until sufficient sand is obtained for molding. The bottom plate, with the patterns on it, is then placed on the truck, face side up, and then the lower flask-section secured by the side pins to the bottom plate. The gage F^2 is placed then on top of the flask-section, and the doctor F^3 on top of the gage. The flask-section is then filled up with sifted sand and the gage with common sand, and the surplus sand removed by the doctor F^3 even with the top of the gage F^2. The truck is then run under the plunger, and locked automatically to the side standards of the same. The plunger is then allowed to drop by removing its retaining drop-hook B^2. If one dropping of the plunger is not sufficient to ram the sand tightly enough, the plunger may be lifted and dropped again. The plunger may, however, be made heavy enough to make one ramming sufficient. The plunger is

then lifted by the shaft, and locked again by its drop-hook B^2, and the truck drawn out from below the plunger. The gage F^2 is then removed from the flask-section, so as to leave the sand on top of the flask-section, and then the flask-section and bottom plate are lifted and turned over on a supporting board or platform, which is shown in Fig. 3. The bottom plate and patterns are then lifted off the flask-section, and, if the molding needs facing, some of the sand shaken on the same. The bottom plate and the patterns are then returned to the truck, and placed thereon with the side upward which in the previous operation had been underneath. Next, the top section of the flask is placed thereon, followed by the same operation of filling and ramming as before, except that the bottom plate is not lifted, but the upper section of flask slid vertically off and placed on the bottom section. The mold is thus finished ready for casting, the ramming of the same being accomplished in rapid and superior manner. The machine furnishes the required quantity and fineness of sand for molding, and accomplishes the operation of molding with greater power and effect than if done by hand.

In molding, the melted metal is often forced out between the two parts of flask, the sand not being able to resist the metal successfully at the outside edge of the mold. It is to overcome this difficulty that I have made the edge rim to the plunger. The diamond or double-wedge shape of the cross-bar is the only form that can be used in a machine where the sand is all pressed into the mold at once.

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

1. In a molding-machine, the combination of a suspended sifter having an actuating band-spring with the radial arms of a revolving top shaft and with a cross check-bar to impart an oscillating motion to the sifter, substantially as described.

2. In a machine for forming sand molds, a truck on ways locked by means of pivoted and weighted pawls to hooks in the upright standards.

JOSEPH HACKETT.

Witnesses:
N. H. BEYMER,
JOHN SCHICK.