

No. 656,362.

Patented Aug. 21, 1900.

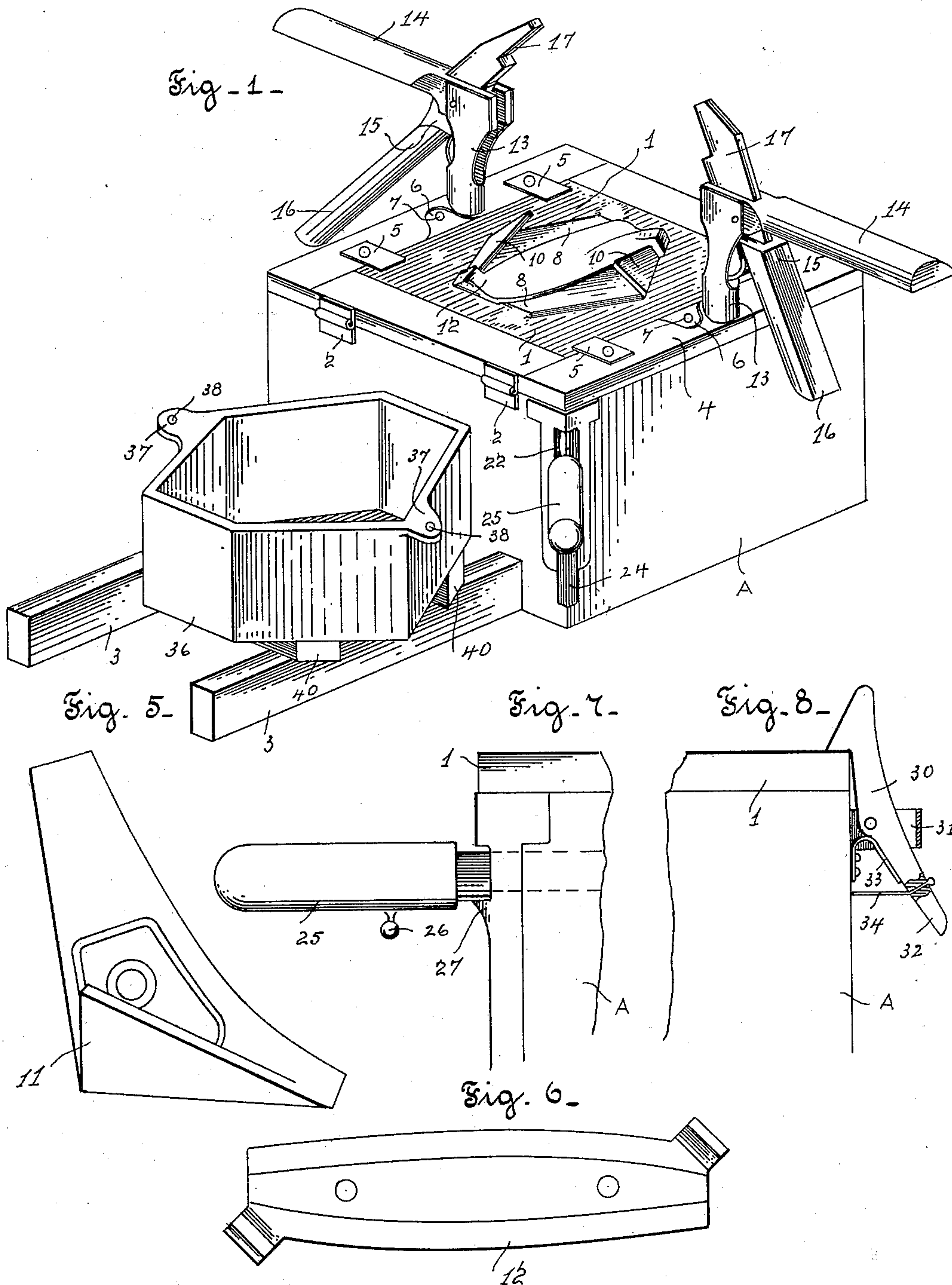
J. W. MURRAY & C. W. FIELD.

MOLDING MACHINE.

(Application filed Apr. 2, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
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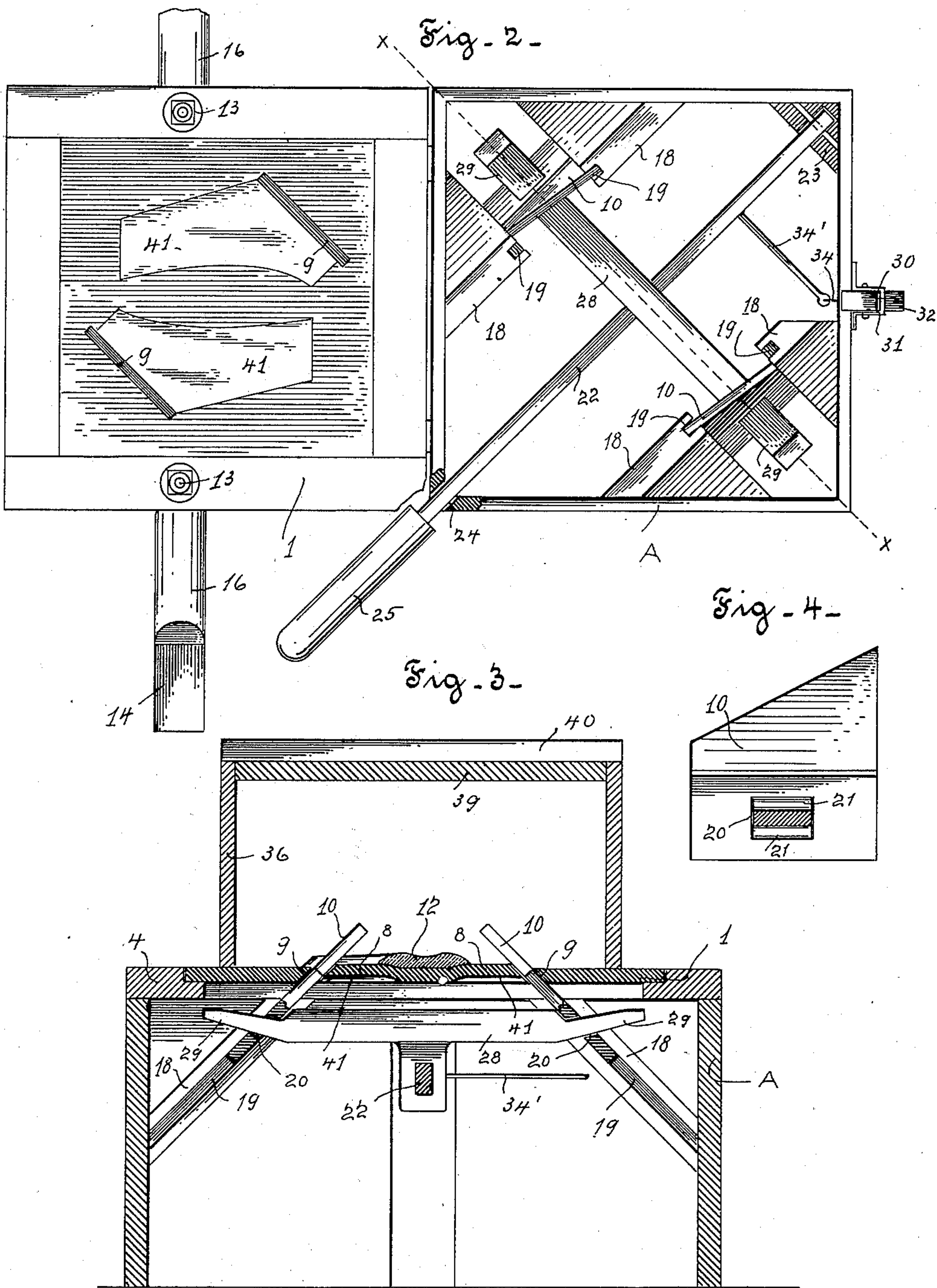
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J. W. MURRAY & C. W. FIELD.
MOLDING MACHINE.

(Application filed Apr. 2, 1900.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

JOHN W. MURRAY AND CYRUS W. FIELD, OF TOLEDO, OHIO.

MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 656,362, dated August 21, 1900.

Application filed April 2, 1900. Serial No. 11,047. (No model.)

To all whom it may concern:

Be it known that we, JOHN W. MURRAY and CYRUS W. FIELD, citizens of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented a new and useful Improvement in Molding-Machines, of which the following is a specification.

Our invention relates to improvements in a molding-machine for making molds for casting plowshares, and has for its objects to provide a machine of the kind whereby, first, the patterns may be readily withdrawn from the compacted sand without injury to the impressions of the patterns; second, whereby the making of the molds is greatly facilitated and the expense thereof greatly reduced, and, third, to produce a machine of the kind whereby perfect molds for casting plowshares may be readily and rapidly produced by persons unskilled in making molds in the customary way.

In the drawings, Figure 1 is an isometric view of our invention, showing a pattern-plate adapted to make separate impressions for the top sides of two plowshares, with a chill-plate imposed thereon. Fig. 2 is a top view of our invention with the pattern-plate turned over on its hinges. Fig. 3 is a transverse section of our invention, with a flask in position thereon, through line *xx* of Fig. 2. Fig. 4 is a side elevation of a movable mold-plate. Fig. 5 is a perspective view of a plowshare-casting from a mold made by our machine. Fig. 6 is a view of a chill-plate. Fig. 7 is a side elevation of one corner of our molding-machine, showing locking-latch for lever-handle. Fig. 8 is a similar view showing locking-latch for pattern-plate.

In the drawings, A is the machine-casing, having a match-plate 1, hinged to and forming a top cover for the casing A by hinges 2 2, and 3 3 are parallel stringers framed into and projecting from the base of the casing A on the side to which the pattern-plate is hinged, forming supports for the flask. Match-plate 1 is preferably a solid metal plate of a size to form a top cover for the casing A, resting on its sides, but may be provided, as shown in Figs. 1 and 3, with a frame 4, into which it is set and secured by plates 5, pivotally attached to the frame, and with lugs or ears 6, oppositely disposed and let into the sides of the

frame 4, having orifices 7. Match-plate 1 has molded or formed thereon in reversed position duplicate patterns 8 of the top portion of a plowshare, and with inclined rectangular orifices 9, cut through the plate at the edge of the patterns, through which are inserted draw-plates 10 to form the triangular projection 11, inclined upwardly over the body portion of the share and adapted to fit into the mold-board of the plow and to abut the landside of the plow and form a continuation thereof along the plowshare-point.

12 is a chill-plate imposed between the two patterns and resting upon the share and point portions thereof.

Pivotally secured to the top of match-plate 1, on opposite sides thereof, by pivots central to their bases are standards 13, and to the top of each standard, at right angles thereto, are secured handles 14, by which the match-plate 1 may be turned over on its hinges. Handles 14 are each provided with clamping members 15, pivotally secured thereto, having a handle portion 16 extended and movable in the vertical plane of the handle 14, and a clamping portion 17 oppositely extended in the same line beyond the top of standards 12 and the point of their pivotal connection with handles 14. Thus constructed, handles 14 may be turned on their pivots either parallel with or at right angles to the adjacent edges of match-plate 1.

The main body portion of draw-plates 10 is provided with supports 18, suitably secured within the casing, having grooved ways 19, adapted to allow the movement of the draw-plates 10 upward and downward in the plane of their inclination and through the orifices 9 in match-plate 1. Draw-plates 10 are also provided with rectangular orifices 20, within and on opposite sides of which are placed parallel friction-rollers 21, journaled in the plate. As a means to move the upper triangular portions of the draw-plates 10 through the orifices 9 of the match-plate 1 and set them in proper position to complete the pattern and to withdraw them from the compacted sand in the flask there is provided a lever 22, pivoted at one end to a support 23, secured to an inner corner of casing A and extending diagonally across the casing through a slot 24, cut through the opposite corner of the casing and

having its outer end provided with a handle 25 and a spring-latch 26, adapted to engage a suitable ledge 27 in the wall of the casing and lock the lever in a horizontal position and to be withdrawn to allow its depression.

Secured to the lever 22 is a horizontal cross-bar 28, having upwardly and outwardly inclined end portions 29 extended through orifices 20 between the friction-rollers 21 of the draw-plates 10. By this construction it is apparent that the upward movement of the lever 22 to a horizontal position will simultaneously move the draw-plates 10 upward along their ways 19, with their upper portions projecting through the match-plate 1, and that the downward movement of the lever 22 will draw the plates 10 downward along their ways until they are wholly within the casing. The upper terminal of slot 24 is adapted to limit the upward movement of the lever 22 and set the draw-plates 10 in the exact position required to complete patterns 7, and the ledge 27 is located to lock them in such position when the latch 26 is in engagement therewith. The match-plate 1 is also locked against premature turning on its hinges before the draw-plates are withdrawn by a spring-latch 30, centrally pivoted to a bracket 31, secured to the casing A, provided with a lever 32 and a spring 33, actuating the lever to hold the latch normally in position to lock the match-plate, and with a suitable connection 34, between the lever 32 of the latch 30 and the lever 22 within the casing A, whereby when the lever 22 is fully depressed to withdraw the plates 10 the latch 30 will be opened.

When the match-plate 1 is in position, as shown in Fig. 1, with the chill-plate imposed on the patterns 8 and with the lever 22 locked in position to project the draw-plates 10, the upper section 36 of the flask having ears 37 projecting oppositely on the plane of its base, provided with orifices 38, adapted to coincide with the orifices 7 in the match-plate 1, is placed in position on the match-plate 1 and is secured against movement therein by inserting suitable bolts through the coinciding orifices 38 and 7. The flask-section is then filled with the molding-sand in the usual way, and the flask-top 39, adapted to fit into the top end of the flask-section and having cleats 40, adapted to rest on the edges of the flask and support the top therein, is placed in position on the sand and subjected to pressure by a suitable press sufficient to seat the top within the flask and thoroughly pack the sand around the patterns 8. The latch 26 is then withdrawn and the lever 22 is depressed, whereby the draw-plates 10 are drawn out of the sand and the latch 30 is unlocked from the plate 1. This done the handles 14 are turned outward in alinement, bringing the grips 17 above the flask, the handles 14 and 16 are grasped and drawn together, compressing the grips 17 on the top of the flask, and the match-plate 1 is turned over on its hinges

in the position shown in Fig. 3, with the flask resting on the stringer-plates 33 in an inverted position, as shown in Fig. 1. Handles 16 are then released, the bolts are removed from the ears of the flask, and the match-plate lifted by the handles 14 and again turned over on its hinges into its position on top of casing A, thereby withdrawing the patterns 8 from the impacted sand in the flask, leaving the chill-plate 12 embedded therein, thereby completing the upper sections of two distinct plowshare-molds.

Match-plate 1 may also be provided on the reverse side, as shown in Fig. 3, with patterns 41, formed thereon for the lower sections of the molds, and while thus resting on top of the inverted upper section 36 of the flask the lower flask-section 36, which is a duplicate of the upper section, may be placed thereon and secured, as described, for the upper section, and the orifices 9 being closed with suitable plugs the sand may be compacted and pressed therein to form the lower sections of the molds. The lower flask-section is then lifted from the plate inverted and set to one side, after which the match-plate is lifted from the upper flask-section and turned over on its hinges in position on top of casing A, as hereinbefore described, thus completing both sections of the molds in one continuous operation. It is preferred, however, to provide a separate machine of the kind described, having a match-plate on which is formed patterns 41 for the lower sections of the molds, in which the draw-plates 10 are removed from the machine and the orifices 9 are omitted from the plate. The operation of forming the lower section of the mold being then the same as described for the upper section, the operation of forming complete molds is thereby greatly facilitated.

As the molds for plowshares are usually made skilled labor is required to properly set the patterns and withdraw the draw-plates 10 and patterns from the sand without injury to the mold, whereas by the use of our machine the molds may be successfully made by any person however unskilled and the whole operation is greatly facilitated, thereby greatly reducing the expense of molding.

Having thus fully described our invention, what we claim to be new, and desire to secure by Letters Patent, is—

1. In a molding-machine, a casing, having projecting supports for a flask, a match-plate hinged to the top of the casing and normally supported thereon, adapted to open toward the supports, duplicate patterns formed on the upper face of the match-plate, orifices cut through the match-plate, draw-plates having pattern portions adapted to be projected through the orifices in the match-plate and form inclined projections of the patterns, and having body portions within the casing, provided with supports and movable in inclined ways in their supports, orifices in the body portions of the draw-plates, a draw-bar

having its ends in engagement with the draw-plates through the orifices in their body portions, a lever secured to the draw-bar between the draw-plates, having one end pivotally secured within the casing, and the other end free and extended through the casing, adapted, as depressed, to move the draw-bar and thereby withdraw the projecting pattern portions of the draw-plates within the casing, and, as raised to a horizontal position, to move the draw-bar to project them through the match-plate and complete the patterns, substantially as and for the purpose described.

2. In a molding-machine, a casing, having projecting supports for a flask, a match-plate hinged to the top of the casing and normally supported thereon, adapted to open toward the supports, duplicate patterns formed on the upper face of the match-plate, orifices cut through the match-plate, draw-plates having pattern portions adapted to be projected through the orifices in the match-plate and form inclined projections of the patterns, and having body portions within the casing, provided with supports and movable in inclined ways in their supports, mechanical means to move the draw-plates along the ways to project their pattern portions through the orifices in the match-plate and set them in position to complete the patterns on the plate, and withdraw them therefrom, a mold-flask section adapted to be seated on the match-plate around the patterns and to be secured against movement thereon, provided with a top plate adapted to close the flask and compress the sand when filled therewith, handles secured to the match-plate, provided with grips adapted to grip the top of the flask, whereby the match-plate and the flask may be turned over together until the flask rests inverted on the flask-supports, and the match-plate lifted therefrom to draw the patterns from their molds in the sand, substantially as and for the purpose described.

3. In a molding-machine, a casing, having projecting supports for a flask, a match-plate hinged to the top of the casing and normally supported thereon, adapted to open toward the supports, duplicate patterns formed on the upper face of the match-plate, orifices

cut through the match-plate, draw-plates having pattern portions adapted to be projected through the orifices in the match-plate and form inclined projections of the patterns, and having body portions within the casing provided with supports and movable in inclined ways in their supports, orifices in the body portions of the draw-plates, a draw-bar having its ends in engagement with the draw-plates through the orifices in their body portions, a lever secured to the draw-bar between the draw-plates, having one end pivotally secured within the casing and the other end free and extended through the casing, adapted, as depressed, to move the draw-bar and thereby withdraw the projecting pattern portions of the draw-plates within the casing, and, as raised to a horizontal position, to move the draw-bar to project them through the match-plate and complete the patterns, a handle for the lever provided with a spring-latch, adapted to engage a ledge on the casing and lock the lever in a horizontal position, a spring-latch pivotally secured to the top of the casing, adapted to normally lock the match-plate to the casing, provided with a lever to open the latch, having means connecting it with the draw-bar lever, whereby, when the draw-bar lever is depressed, the lever is simultaneously moved to open the latch, a mold-flask section adapted to be seated on the match-plate around the patterns and to be secured against movement thereon, provided with a top plate adapted to close the flask and compress the sand when filled therewith, handles secured to the match-plate, provided with grips adapted to grip the top of the flask, whereby the match-plate and the flask may be turned over together until the flask rests inverted on the flask-supports, and the match-plate lifted therefrom to draw the patterns from their molds in the sand, substantially as and for the purpose described.

In witness whereof we have hereunto set our hands this 31st day of March, A. D. 1900.

JOHN W. MURRAY.
CYRUS W. FIELD.

Witnesses:

ROBT. B. WILSON,
F. S. MACOMBER.