

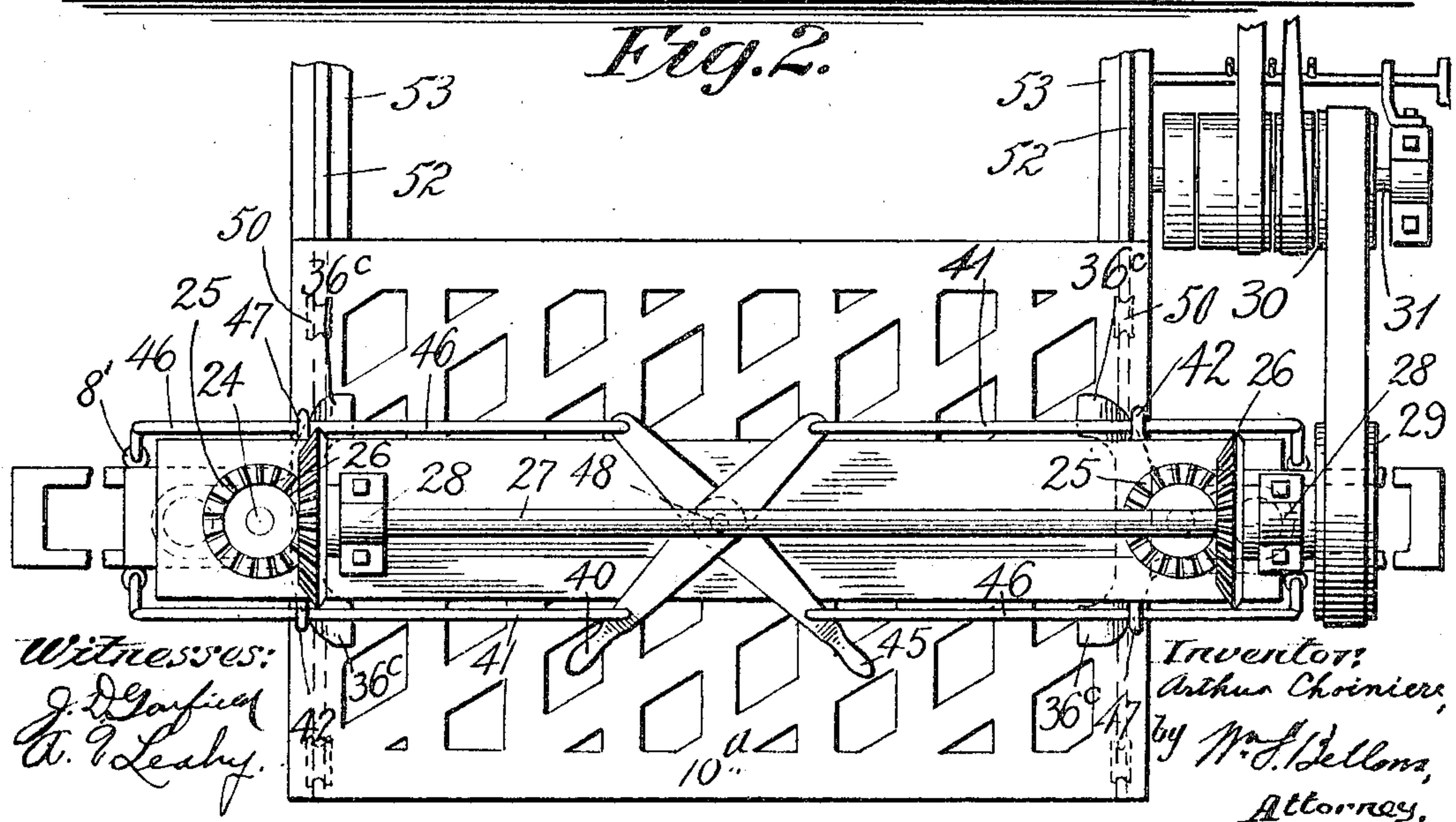
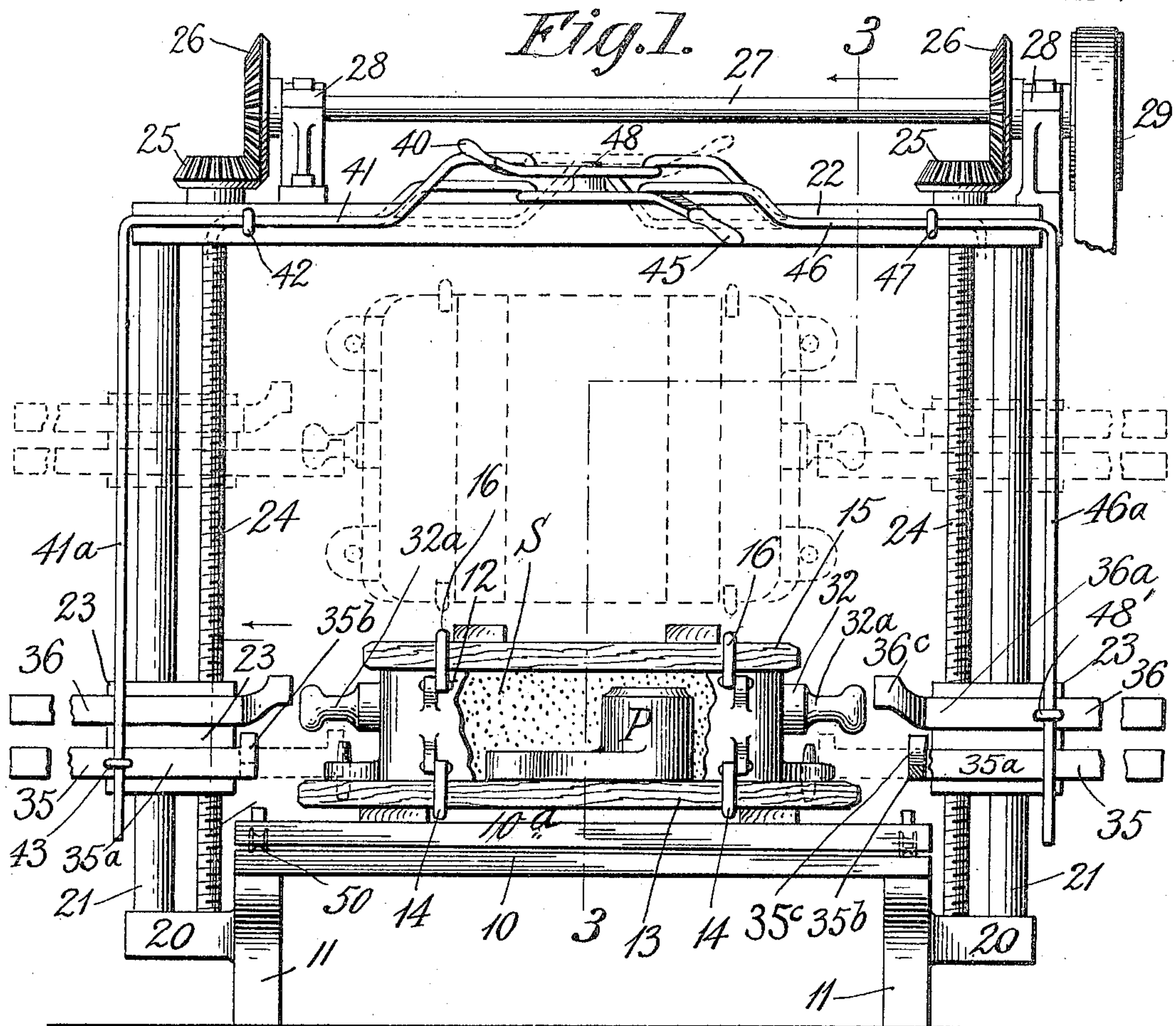
No. 812,979.

PATENTED FEB. 20, 1906.

A. CHOINIERE.  
MOLDING MACHINE.

APPLICATION FILED JULY 18, 1904.

2 SHEETS—SHEET 1.

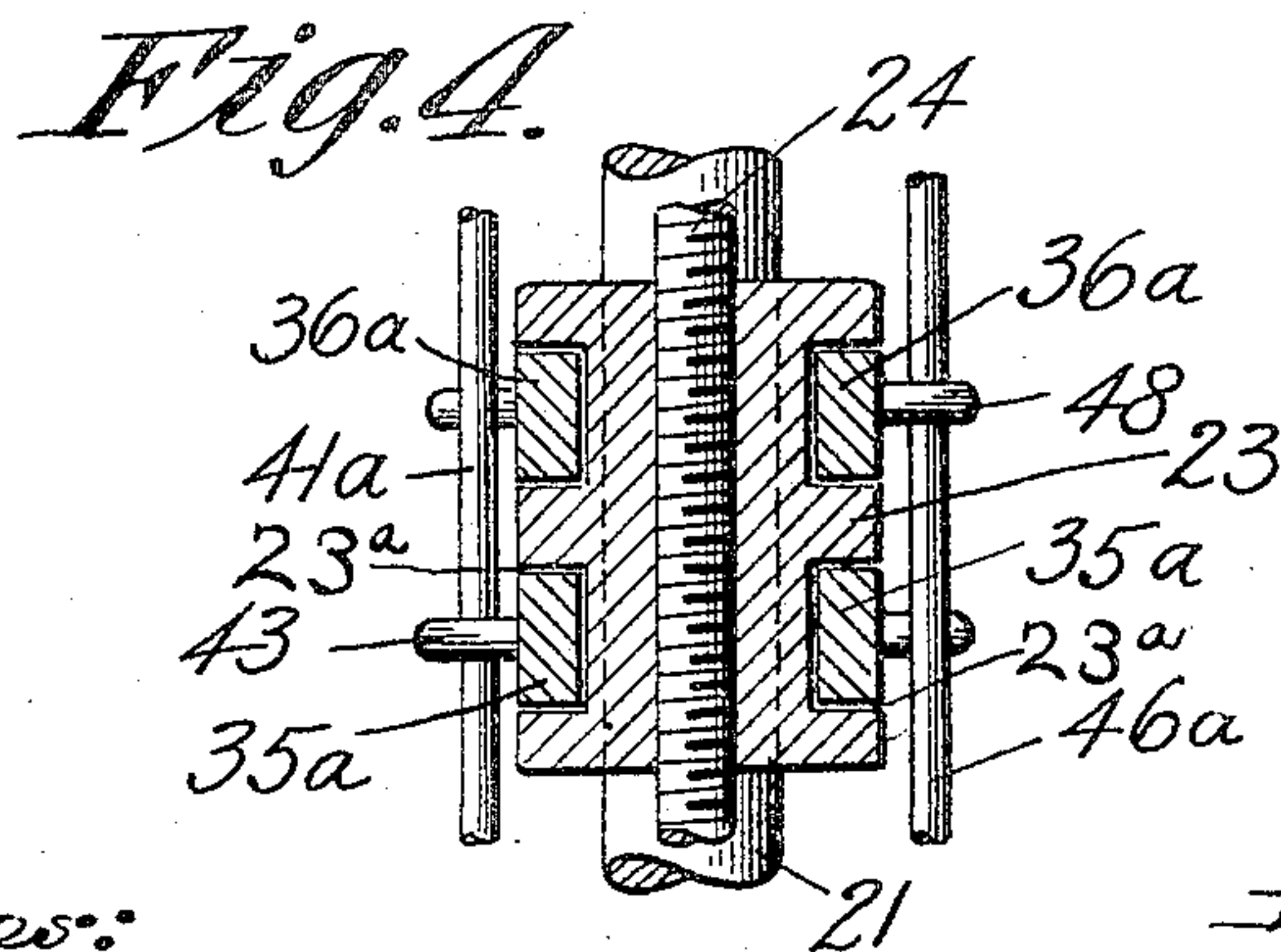
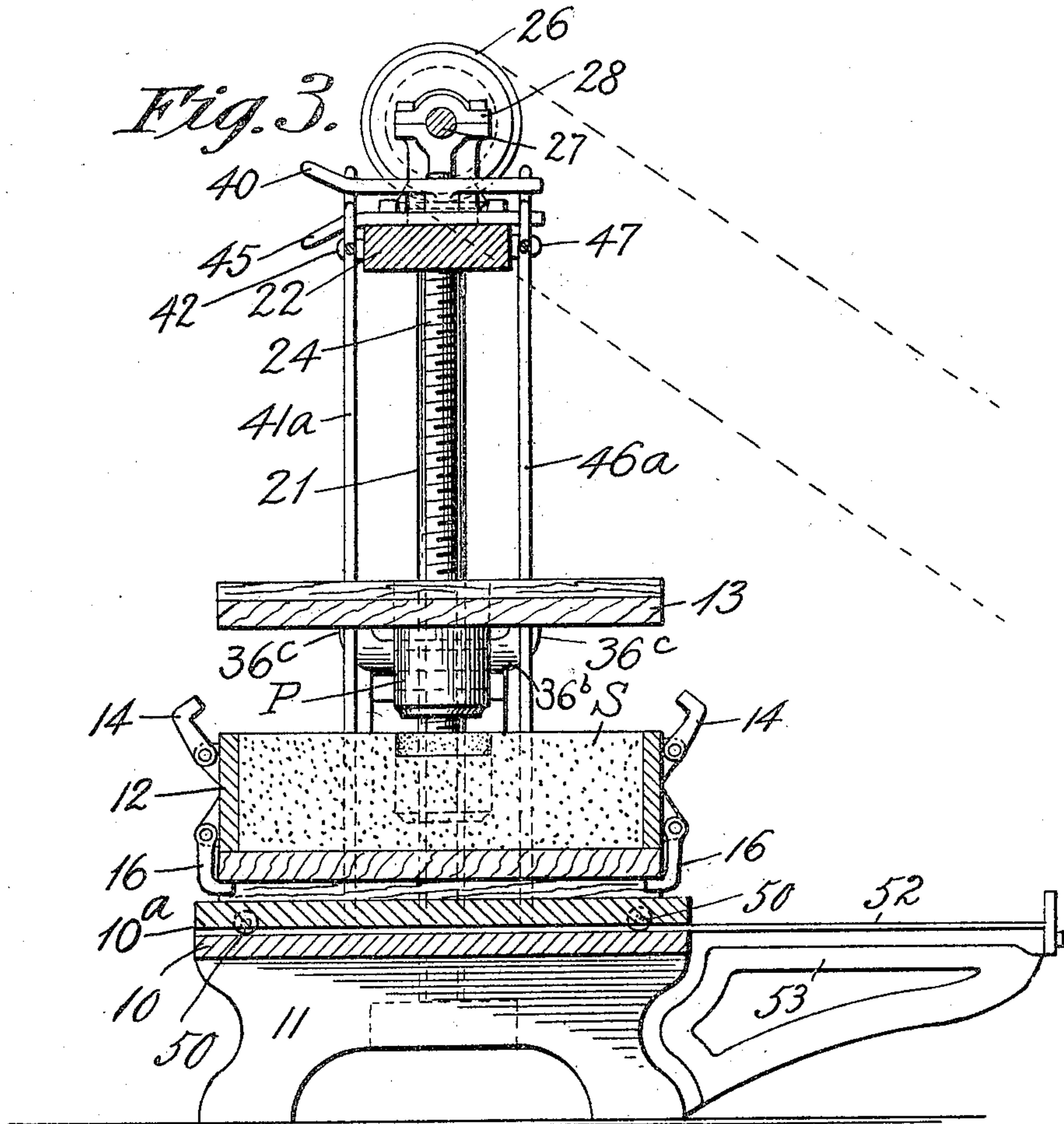


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MOLDING MACHINE.  
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

ARTHUR CHOINIERE, OF HOLYOKE, MASSACHUSETTS.

## MOLDING-MACHINE.

No. 812,979.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed July 18, 1904. Serial No. 217,044.

*To all whom it may concern:*

Be it known that I, ARTHUR CHOINIERE, a citizen of the United States of America, and a resident of Holyoke, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Molding-Machines, of which the following is a full, clear, and exact description.

This invention relates to molding-machines, and more especially to that class thereof which are employed in metal foundries; and it has for one of its objects the provision of a machine in which the flask may be manipulated by mechanical devices and in such a manner that the liability of inadvertently breaking the mold will be reduced to a minimum.

My invention has, furthermore, for its object the provision of means for raising the flask from the table and to hold the same in its raised position to allow the reversal thereof preparatory to the completion of the upper part of the mold.

My invention has, furthermore, for its object the provision of a mechanism for lifting either of the flask-closing boards from the flask to permit the removal of the pattern from the mold.

Further objects of my invention may be found in the particular construction and organization of the several component elements of my improved machine, as will be hereinafter described, and is illustrated in the accompanying drawings, in which similar characters denote similar parts, and in which—

Figure 1 represents a front view of a molding-machine embodying my invention. Fig. 2 is a top view thereof. Fig. 3 shows a cross-section on line 3 3, Fig. 1, illustrating the flask reversed from the position shown in Fig. 1 and showing the base-board raised; and Fig. 4 is a detail view of one of the flask-manipulating devices in section.

It should be stated at this time that while my improved machine is adapted for use in connection with flasks comprising several parts I have illustrated a one-part flask to simplify the description and the understanding of the several coöperative elements.

In the drawings, 10 denotes a suitable table supported by legs 11 and adapted to serve as a flask-receiving table. The flask 12 consists substantially of a unitary casing open

at the top and bottom and rests on a base-board 13, which may be firmly clamped thereto—as, for instance, by clamping-hooks 14, as shown in Fig. 1. For the sake of illustration I have shown a pattern P resting on the base-board 13 and embedded in a body of molding-sand S, which is solidified or tamped in the usual manner and surfaced by a top board 15, which may be clamped in place on the flask 12 by hooks 16 or other suitable devices.

In order to remove the pattern from the mold, means are provided for raising the flask bodily from the table, so that it may be turned over to bring the base-board on the top, as follows: Each of the legs 11 has preferably a lateral projection 20, carrying guide-rods 21, which are secured with the upper ends to the top bar 22. Mounted for vertical sliding movement on the rods 21 are heads 23, having a threaded connection with vertically-disposed screws 24, journaled in the projections 20 and the top bar 22, above mentioned. Both screws 24 are similar in pitch and are adapted to be rotated in unison to raise or lower the heads 23, as desired, by pinions 25, engaged by gears 26, mounted on a shaft 27, which may be journaled in bearings 28, secured to the bar 22. The shaft 27 may be rotated by hand or by a pulley 29, driven from a pulley 30 on a counter-shaft 31, rotatable in opposite directions by open and cross belt driving mechanism of usual construction and as indicated in Fig. 2. Each of the heads 23 carries two independently-operable flask-manipulating devices 35 and 36, the former 35 of which consists substantially of a rectangular frame comprising a pair of side bars 35<sup>a</sup>, guided for longitudinal movement in grooves 23<sup>a</sup> of the head. The inner ends of the bars 35<sup>a</sup> are connected by an end or cross bar 35<sup>b</sup>, having a depression 35<sup>c</sup> for receiving the neck portion 32<sup>a</sup> of a trunnion 32, secured to or forming a part of the flask 12, both trunnions 32 being as a matter of course in axial alinement with each other, and therefore constituting members on which the flask may be rotated to reverse the same somewhat after the manner shown in dotted lines in Fig. 1.

The flask-lifting devices 35 are, as before stated, mounted for movement toward and away from each other in the grooves 23<sup>a</sup> and



may be thus actuated by a hand-lever 40, pivoted on the bar 22 and having oppositely-disposed connecting-rods 41, the horizontal portions of which may be guided in ears 42, while the vertical portions 41<sup>a</sup> thereof are in constant engagement with ears 43, projecting from the devices 35, so that the vertical movement of the heads 23 will not influence the position of said devices relative to each other.

Disposed above the flask-lifting devices 35 and also slidably supported in the heads 23 for movement toward and away from each other are a pair of cooperative lifters 36, consisting of rectangular frames which comprise a pair of side bars 36<sup>a</sup>, united at their inner ends by a bar 36<sup>b</sup>, having extensions 36<sup>c</sup> for engaging the under side of either the base or top board of the flask according to which side of the flask is uppermost.

The lifters 36 may be moved toward and away from each other in manner similar to that above described in connection with the flask-raising devices 35 and by a handle 45, connected with the lifter 36 by connecting-rods comprising horizontal sections 46, guided in ears 47 and having vertical portions 46<sup>a</sup> in constant engagement with ears 48', projecting from the bars 36<sup>a</sup>, the pin 48 carrying both of said levers, so that a vertical movement of the heads 23 may take place without causing any inward or outward movement of the lifters 36 relative to each other.

The operation of my improved machine is as follows: The base-board 13 is placed on the table 10, and the pattern P is properly thereon within the flask 12, it being preferred that the pattern be removably secured on the base-board, which may also be provided with dowels, as usual. Molding-sand is then rammed around the pattern and surfaced by the top board 15, which may be firmly clamped in place by hooks 16. The mold is now ready for reversal. The flask-raising devices 35 are moved toward each other by throwing the handle 40 from left to right, thus bringing the bars 35 into position below the trunnions 32, as shown by dotted lines in the lower portion of Fig. 1. The shaft 27 is then set in motion to rotate the screws 24, so as to raise the heads 23, and with them the flask, until the latter has been elevated sufficiently to permit its being turned over on the trunnions (see dotted lines, Fig. 1) until the base-board 13 will be disposed at top of the flask, whereupon the movement of the shaft 27 may be reversed to rotate the screws 24 in the opposite direction, thereby lowering the heads 23, and consequently the flask, until the latter rests upon the table, but now in reversed position. The flask-raisers 35 may now be withdrawn from below the trunnions

by returning the handle 40 to its original position. (Shown in Fig. 2.) The lifters 36 are then advanced toward each other by throwing the handle 45 from right to left, thus bringing the extensions 36<sup>c</sup> to a position below the edges of the base-board 13, (now at the top.) and the latter may after the hooks 14 have been loosened be carried upward by again rotating the screw 24 to raise the heads 23 in the manner above described. It will now be evident that if the pattern P is secured to the board 13 the rising movement of the latter will result in withdrawing the pattern from the sand without liability of breaking the mold, so that a sand top may be put in place to complete the mold ready for casting.

Many changes may be made in the construction and organization of the devices constituting my invention without altering their operation and function.

The table 10 is shown as having a sliding top section 10<sup>a</sup>, which is provided with under-running grooved rollers 50 to run on trackways 52 therefor, provided on the main table-section 10, said trackways being extended forwardly over the tops of brackets 53, enabling the initial part of the molding operation to be performed on the drawn-out tabletop, it being understood that after the flask has been filled and rammed with the sand, inverted, and the plate or cover 15 brought to place and clamped these parts inverted on the extension-top of the table are, with the latter, carried centrally over the main table 10 to be subject to the action of the hereinabove-described machine.

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

1. The combination, with a table and a flask, having trunnions, of heads having grooves, and mounted for vertical movement relative to said table, and devices movable in said grooves, and for raising said flask bodily.

2. The combination, with a table and a flask, having trunnions, of heads mounted for vertical movement relative to said table, and devices carried by said heads, and means for moving said devices toward and away from each other.

3. The combination, with a table, and a flask having trunnions, of devices for raising said flask bodily, comprising a pair of heads arranged for vertical movements relatively to said table, a pair of vertically-arranged screws in threaded engagement with said heads, and having bevel-gears at their ends, a horizontally-mounted shaft having bevel gear-wheels in mesh with the gears on the vertical screws, and means for rotating said horizontal shaft.

4. The combination, with a table and a  
flask, having trunnions, of guide-rods, heads  
movable on said rods, devices carried by said  
heads, and for raising said flask bodily, rela-  
5 tive to said table, means for moving said de-  
vices toward and away from each other, and  
a pair of screws in threaded engagement with  
said heads.

Signed by me at Springfield, Massachu-  
setts, in presence of two subscribing wit-  
nesses.

ARTHUR CHOINIERE.

Witnesses:

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