

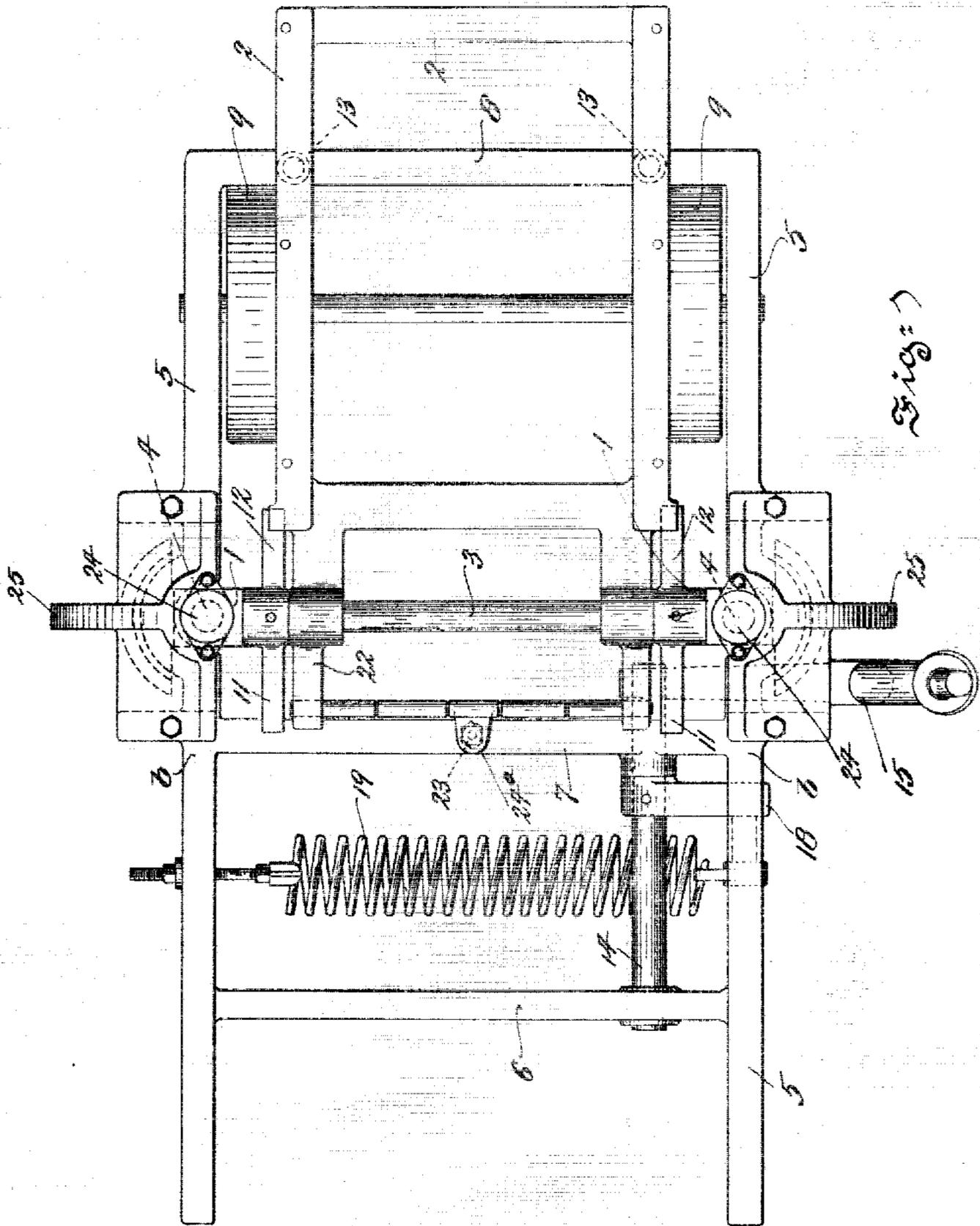
No. 824,317.

PATENTED JUNE 26, 1906.

H. TABOR.  
MOLDING MACHINE.

APPLICATION FILED JAN. 15, 1906.

4 SHEETS—SHEET 1.



*Fig. 1*

Witnesses:  
*[Signature]*  
*R. M. Gilligan*

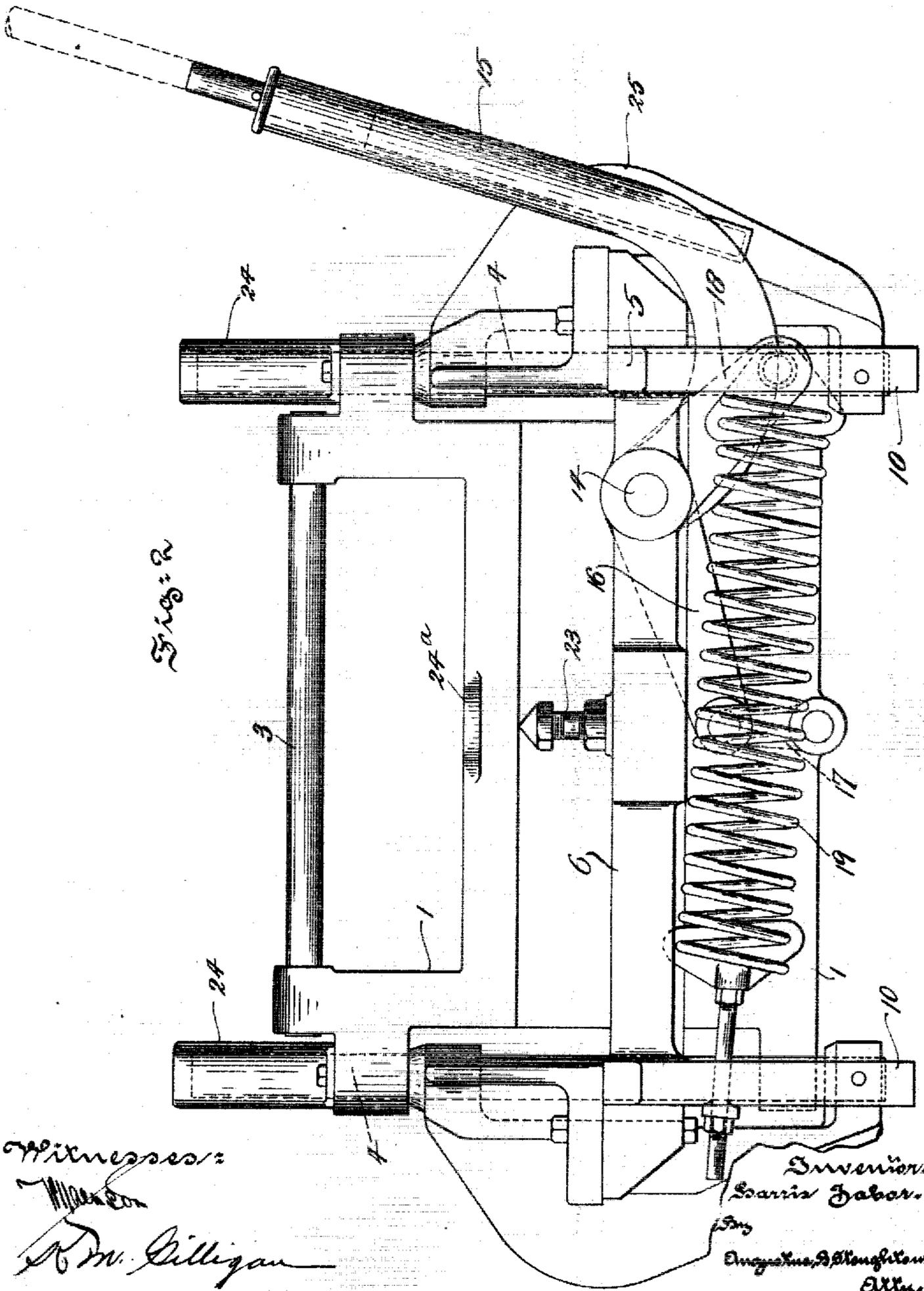
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4 SHEETS—SHEET 2.



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No. 824,317.

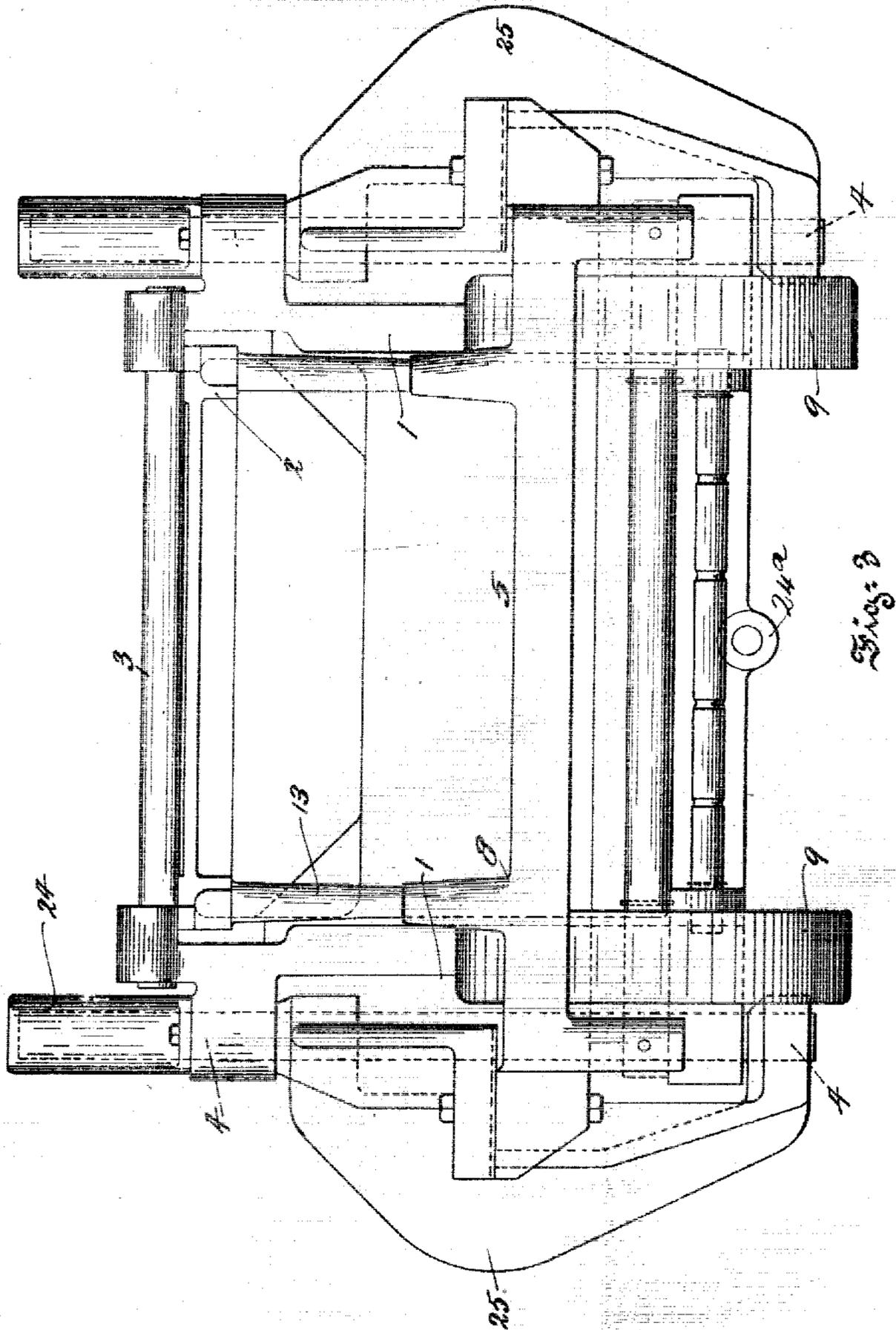
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4 SHEETS—SHEET 3.



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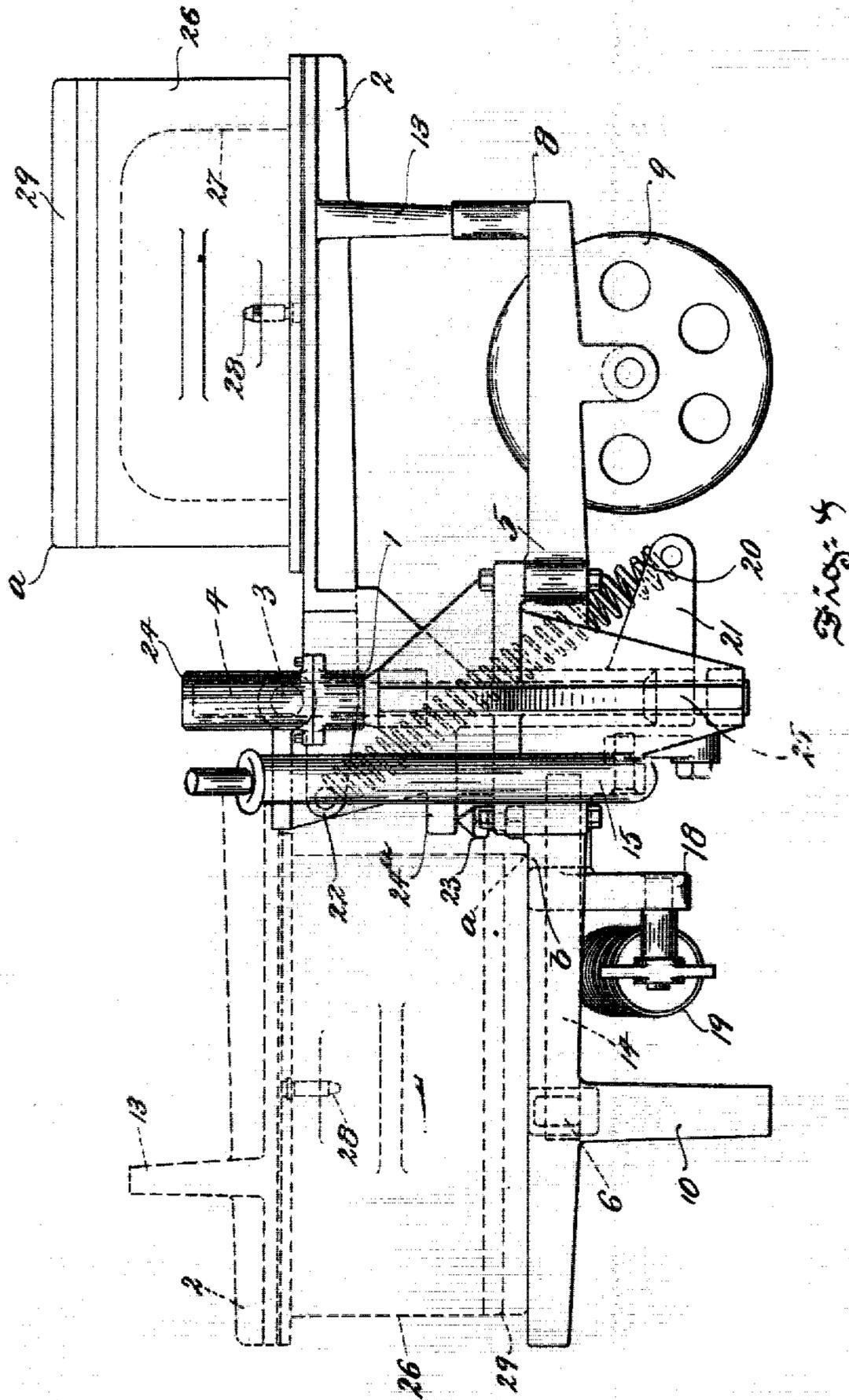
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4 SHEETS—SHEET 4.



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# UNITED STATES PATENT OFFICE.

HARRIS TABOR, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO TABOR MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

## MOLDING-MACHINE.

No. 824,317.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed January 15, 1906. Serial No. 296,018.

*To all whom it may concern:*

Be it known that I, HARRIS TABOR, a citizen of the United States, and a resident of Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Molding-Machines, of which the following is a specification.

The principal objects of the present invention are to provide a comparatively inexpensive, compact, reliable, and efficient rock-over molding-machine and to provide a rock-over molding-machine which shall be adapted for use even in connection with patterns having comparatively straight sides and considerable depth.

To these and other ends hereinafter set forth the invention comprises the improvements to be presently described and finally claimed.

The nature, characteristic features, and scope of the 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 top or plan view of one type of machine embodying features of the invention. Fig. 2 is an end view taken from the left-hand end of Fig. 1 with certain of the parts omitted. Fig. 3 is an end view taken from the right-hand end of Fig. 1, and Fig. 4 is a side view taken from the bottom of the sheet upon which Fig. 1 appears.

In the drawings, 1 is a movable frame. 2 is a carrier marginally hinged to said frame. As shown, the frame is provided with a shaft 3, which passes through trunnions on the frame 2. There are devices for guiding the movements of the frame 1. As shown, they consist of standards or uprights 4, extending above and below the bed 5. The bed 5 is shown as of generally rectangular form and as consisting of side rails and cross-pieces 6, 7, and 8. If desired, the frame may be provided with wheels 9 and legs 10, which when present make the machine portable, although these are not in any sense essential. The cross-piece 6 and the rails adjacent to it constitute when present flask-receiving means; but of course other provisions may be made for receiving the flasks. There is a stop independent of the flasks on which the carrier 2 rests in order to position it for drawing pat-

terns. The ears or lugs 11, which project toward the left in Fig. 1 from the sliding frame, constitute such means. The lugs or ears 12, which project in the opposite direction from the sliding frame, serve to support the carrier 2 and when it is in the position shown in Fig. 1, and in accomplishing this result use may or may not be made of legs 13, which rest upon the bed or, perhaps more accurately, proper provisions on the part 8 of the bed. An example of means for lifting the movable frame, which comprises a rock-shaft 14, supported by the cross-pieces 6 and 7 and having connected with it an operating-lever 15 and an arm 16, which is connected by means of a link 17, Fig. 2, with the sliding frame. The operating-lever is shown as of the telescopic variety; but this is a matter principally of convenience. The rock-shaft 14 is shown as provided with an arm 18, to which is attached a spring 19, connected with the bed of the machine. The purpose of this spring when present is to balance the weight of the movable frame 1 and parts connected therewith or carried thereby.

20 is a spring, and there may be two of them at opposite sides of the machine. This spring is connected at one end with a suitable bracket, as 21, depending from the bed 5 and at the other end with a lug 22 on the carrier 2, the purpose being to balance the weight of the carrier and its connected parts. If desired, the adjustable set-screw 23, projecting upward from the cross-piece 7, may be provided, and when present it cooperates with a projection 24 on the movable frame 1, so as to limit its descent and fix its lowermost position. These springs may be replaced by counterweights or fluid-working cylinders. As matters of machine construction and design caps 24 are provided, and when present they serve to exclude sand and the like from the guides of the movable frame 1. Brackets or braces 25, connected with the standards 4 and with the bed of the machine, are similarly shown, and their purpose when present is to add rigidity and strength to the structure.

In use a flask 26 is placed upon the carrier 2 and the pattern (indicated at 27) is also arranged upon and attached to this carrier and in proper relation with respect to the flask. Guide-pins, as 28, are indicated for position-

ing the flask in respect to the pattern. The flask is filled with sand, which is properly rammed manually or in any desired or appropriate manner. The bottom board 29 is then applied to the flask and suitably secured thereto. No means are shown for this purpose, because any ordinary and well-understood means, such as clamps, can be employed for this purpose. Thereupon the carrier 2, and with it the patterns and flask and its contents, is turned toward the left in Fig. 1 about the part 3 as a center or fulcrum until the carrier rests upon the stop 11, and in this position the carrier is at right angles to the direction of motion of the frame 1, or, in other words, at right angles to the standards 4. The corner *a* of the flask comes to a bearing upon the flask-receiving means or in the present instance, generally speaking, upon the portion *b* of the bed. The result of this is that the movable frame 1, which carries the hinge part of the carrier, rises, while the flask comes to an even bearing upon the flask-receiving means. It will be seen that since the fulcrum or hinge part of the carrier may rise flasks of widely-different depths may be accommodated between the flask-supporting means and the carrier when the latter is in the position indicated by dotted lines in the left of Fig. 1.

Instead of relying upon the corner of the flask in the manner described use may be made of the adjusting-screw 23, which by contacting with the lug 24<sup>a</sup> permits the movable frame to descend only sufficiently far for accommodating the flasks, which for each adjustment of the set-screw should be of the same depth. To draw the patterns, the clamps are removed and the movable frame 1 is raised, for example, by means of the lever 15, although it may be raised in any convenient way and by means of any appropriate mechanism. Since the carrier is held at right angles to the frame, as has been described, the result of raising the frame is to draw the patterns at right angles in respect to the plane of the flask, so that they may be successfully drawn even though they are relatively deep. Of course during the drawing operation use may be made of a vibrator or rapping may be resorted to, or they may be drawn without the use of either of these. The finished mold may then be removed, and the described operations repeated with other flasks. It may be remarked that the accuracy of the alinement of the draft is such in respect to the sand that the deep patterns may not only be successfully drawn, but they

may even be returned to the sand when it is necessary or desirable to do so.

It is not my intention by the use of words or language in the foregoing description to limit the invention further than the state of the art may require; but,

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

1. A molding-machine comprising a movable frame, a flask-carrier hinged to said frame, and devices for permitting said frame to move automatically during the turning movement of the carrier to suit flasks of varying depth, substantially as described.

2. In a molding-machine flask-receiving means and a marginally-hinged carrier between which flasks are positioned for drawing patterns, and means for permitting the hinge part or fulcrum of the carrier to automatically move during the turning movement of the carrier whereby flasks of different depths are properly positioned between the receiving means and the carrier, substantially as described.

3. A molding-machine comprising a slidable frame, a carrier marginally hinged to said frame, and standards upon which the movable frame freely slides automatically during the turning movement of the carrier, substantially as described.

4. In a molding-machine flask-receiving means, an automatically-movable frame and a carrier marginally hinged to said frame and between which and said receiving means flasks are positioned for drawing patterns, substantially as described.

5. A molding-machine comprising a generally rectangular bed provided with upright standards, an automatically-movable frame slidably connected with said standards, a carrier marginally hinged to the sliding frame, and stops for positioning the carrier in respect to the frame, substantially as described.

6. In a molding-machine the combination of a movable frame, means for elevating it, a carrier marginally hinged to said frame, and stops for holding the carrier at right angles to the direction of motion of the frame, substantially as described.

In testimony whereof I have hereunto subscribed my name.

HARRIS TABOR.

Witnesses:

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