

No. 707,535.

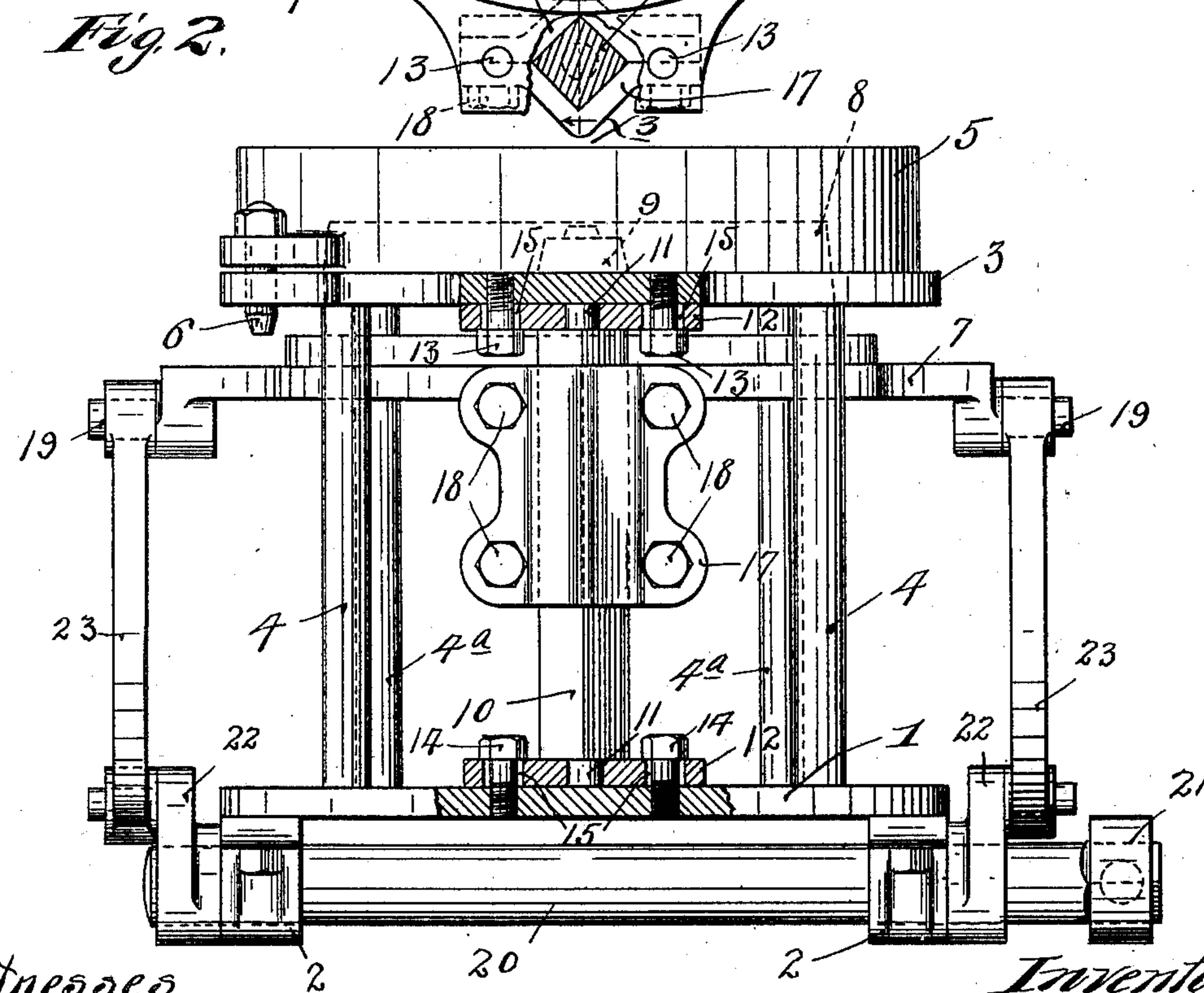
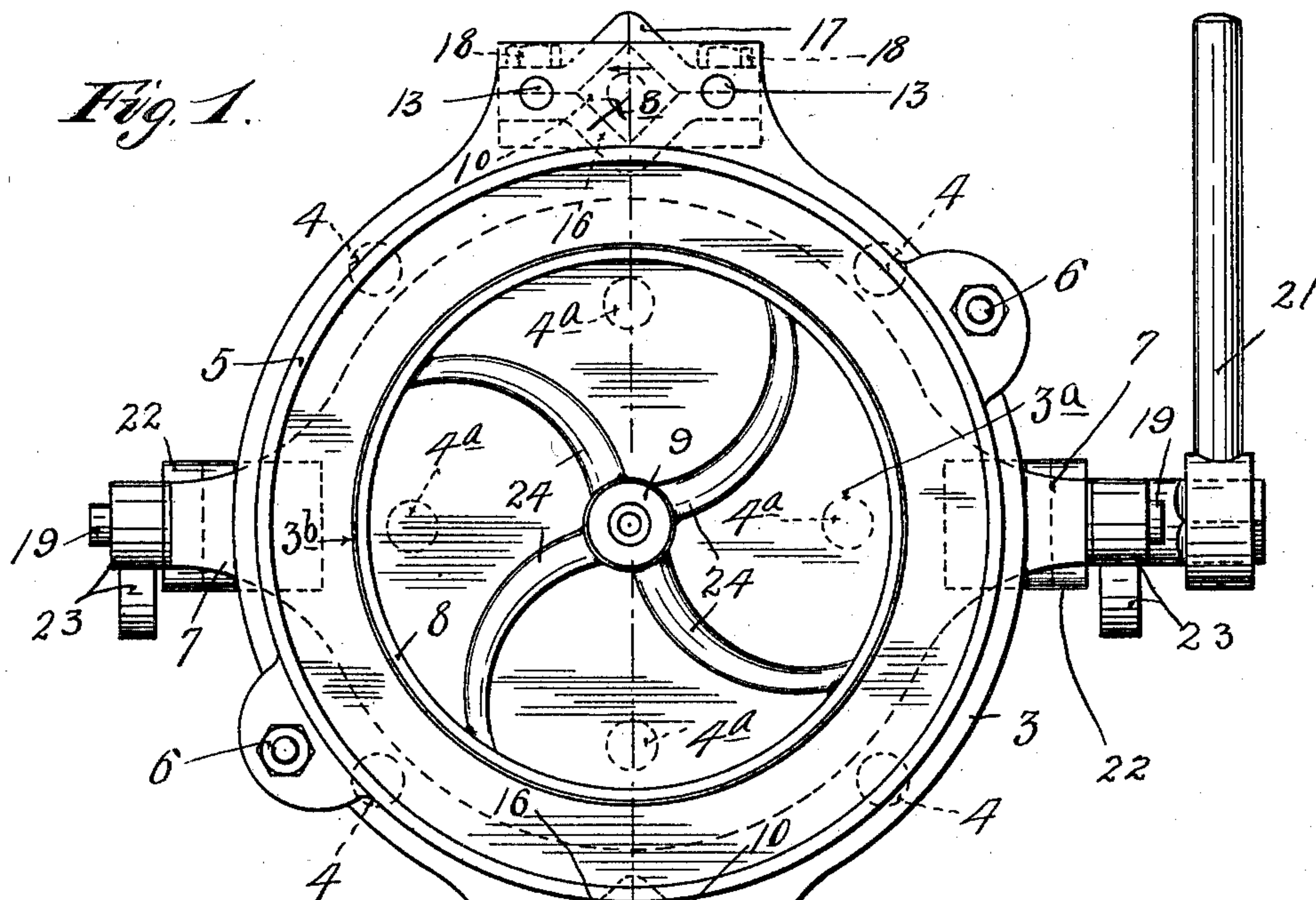
Patented Aug. 26, 1902.

J. P. APPLEBY.  
MOLDING MACHINE.

(Application filed Mar. 31, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.  
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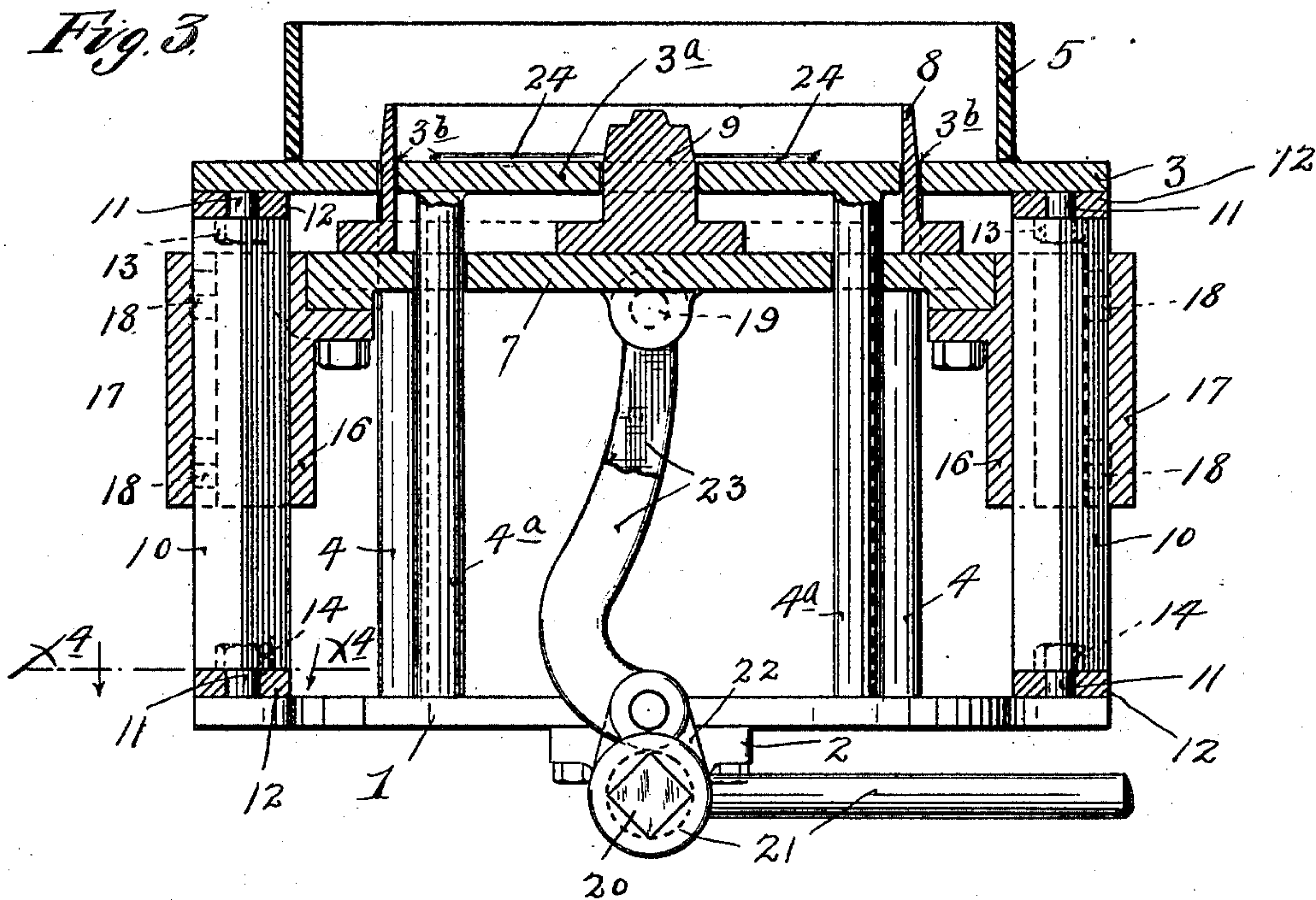
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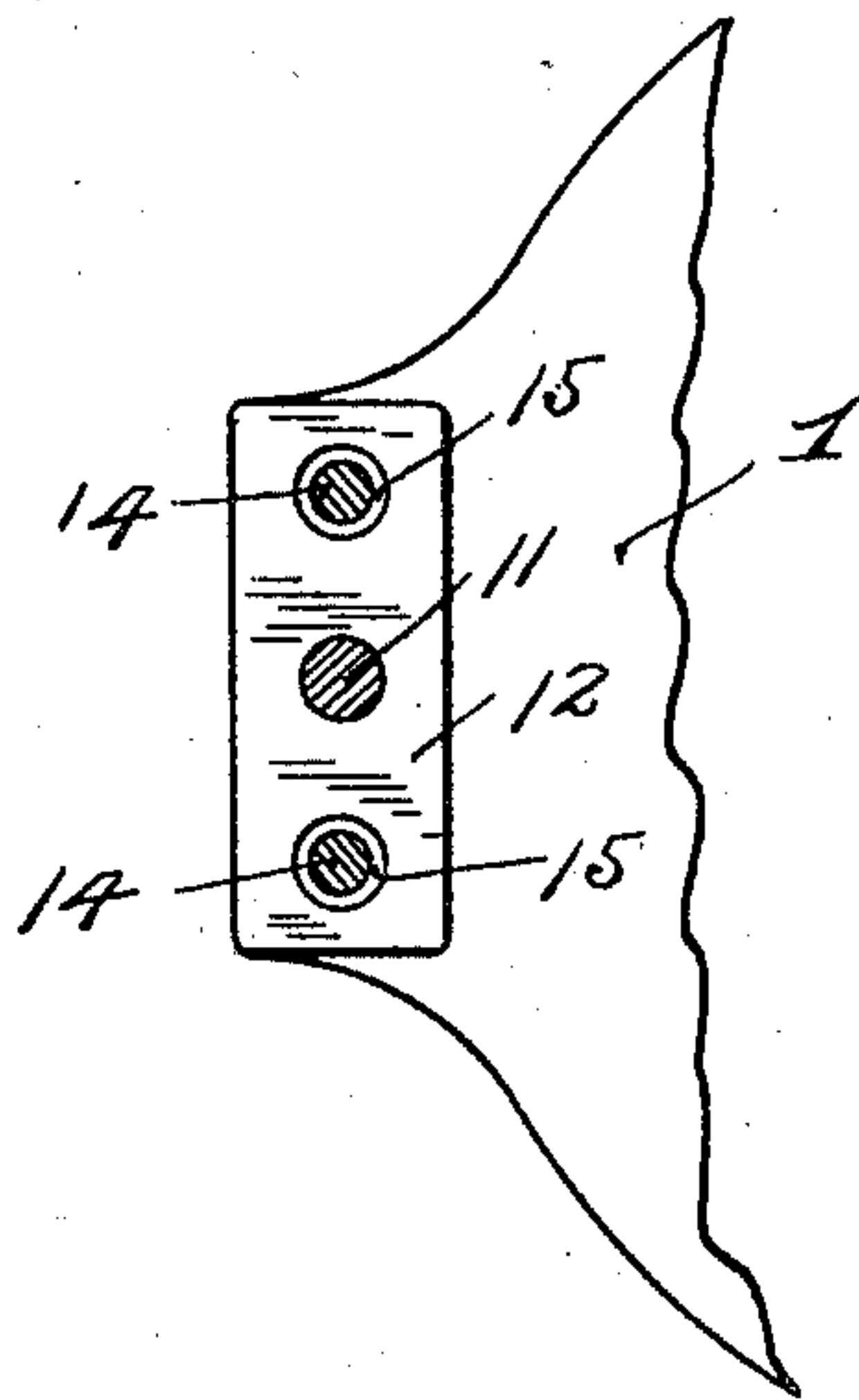
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*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

JAMES P. APPLEBY, OF HOPKINS, MINNESOTA.

## MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 707,535, dated August 26, 1902.

Application filed March 31, 1902. Serial No. 100,886. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES P. APPLEBY, a citizen of the United States, residing at Hopkins, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Molding-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to molding-machines, and has for its object to improve the same in the several particulars hereinafter noted.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a plan view with some parts broken away, showing a molding-machine embodying my invention. Fig. 2 is a side elevation of the machine with some parts shown in section. Fig. 3 is a view, principally in vertical section, on the line  $x^3 x^3$  of Fig. 1, but with some parts left in full; and Fig. 4 is a detail in horizontal section on the line  $x^4 x^4$  of Fig. 3.

The numeral 1 indicates a suitable bed-plate provided with bearings 2. This bed-plate is supported by any suitable means. (Not shown.)

The stripper-plate or mold-board is formed in two sections 3 and 3<sup>a</sup>. The outer section 3 is shown as supported from the bed-plate 1 by four vertical rods or legs 4, while the inner section 3<sup>a</sup> is in a similar manner shown as supported by four vertical posts or legs 4<sup>a</sup>. The said inner section 3<sup>a</sup> is in the form of a disk and is located concentric to a circular opening in the said section 3, so as to leave a narrow annular passage 3<sup>b</sup>, through which the rim of the pulley-pattern is adapted to pass.

The numeral 5 indicates an annular flask detachably secured on the stripper-plate 3 by dowel-pins 6.

The numeral 7 indicates a horizontally-extended and vertically-movable pattern board or plate upon which is rigidly but detachably secured an annular rim-forming pattern 8 and hub-forming pattern 9, the former of which is adapted to work vertically through the annular space 3<sup>b</sup>, above noted, and the

latter of which works through a suitable perforation formed at the center of the stripper-plate 3<sup>a</sup>. To guide the pattern-plate 7 for true vertical movements, I provide a pair of vertical guide-columns 10, which are preferably square in cross-section. The ends of these guide-columns 10 are reduced to form trunnions 11, which closely fit in seats formed in anchoring-brackets 12. The upper anchoring-brackets 12 are secured to projecting portions of the stripper-plate 3 by machine-screws 13, while the lower brackets 12 are secured in a similar manner to the bed-plate 1 by machine-screws 14. It is here important to note that the said machine-screws 13 and 14 work through perforations 15 in the said brackets 12, which perforations are materially larger in diameter than are the said screws. This permits the said brackets to be adjusted or shifted in any direction in a horizontal plane. The importance of this construction will appear later on. To the opposite sides of the pattern-plates 7 are secured keeper-brackets 16, which are formed to closely fit the guide-columns 10. These keeper-brackets are provided with detachable outer half sections or caps 17, secured to the bodies of the brackets by machine-screws 18 or similar devices. Projecting from the opposite sides of the pattern-plate 7 at ninety degrees from the brackets 16 are trunnions 19.

A rock-shaft 20 is journaled in the bearings 2 and provided at one end with a hand-lever 21, by means of which it may be rocked. Just outward of the bearings 2 the shaft 20 is provided with a pair of cranks 22, which are connected to the trunnions 19 of the pattern-plate 7 by links 23.

The annular rim 8 and hub 9, respectively, are adapted to form the rim and hub of the pulley which is to be cast. The spokes of the pulley are formed by curved pattern-strips 24, which are secured on the stripper-plate 3<sup>a</sup> by small dowel-pins or in any other suitable way.

With this machine an impression for one-half of the pulley is adapted to be formed in the sand. The sand is of course rammed or packed in the flask, while the pattern-sections 8 and 9 stand as shown in Fig. 3. To draw the said pattern-sections from the sand, the hand-lever 21 of the rock-shaft 20 is



5 moved so as to rock the said shaft and through the links 23 draw the pattern-plate 7 downward far enough to carry the said pattern-sections below the upper surface of the mold-board formed by the stripper-plates 3 and 3<sup>a</sup>. As the spoke-forming pattern-strips 24 are very thin, they will be readily drawn from the sand in the act of raising the flask.

10 When curved spokes are to be cast, two machines will usually be provided, in which the spoke-patterns curve in opposite directions; but where straight spokes are used a single machine will serve to form both halves of the pulley.

15 It will of course sometimes happen that different pulley-forming patterns will be used in connection with the machine. In setting these patterns on the pattern-plate it will frequently happen that they will not properly align with the openings in the mold-board or stripper-plate. It is at such times that the adjustment of the anchor-brackets 12 becomes important. By slightly loosening the screws 20 13 or 14, or both, the said brackets 12 may be shifted in the one direction or the other until the pattern is brought into the proper alignment with the stripper-plate and the said guide-posts 10 in proper alinement with the keeper-brackets 16.

30 It is evident that the keeper-brackets 16, even if their caps 17 are dispensed with, would by their engagement with the posts 10 properly hold the pattern-plate 7. The said caps or detachable sections, however, assist in more firmly holding the said pattern-plate. The lateral adjustment of the keeper-brackets 12 and guide-posts 10, also permits the said guide-posts to be adjusted laterally inward to compensate for wear between said 35 guide-posts and inner sections of the keeper-brackets 16. Furthermore, when such wear takes place the abutting faces of the brackets 16 and their caps 17 may be filed away, so that the said parts will closely fit the angular

sides of the said guide-posts. Of course the 45 guide-posts 10 might be round in cross-section; but there are nevertheless certain obvious advantages in the use of the square posts.

What I claim, and desire to secure by Letters Patent of the United States, is as follows: 50

1. In a molding-machine, the combination with a frame including a stripper-plate, of vertical guide-posts mounted on said frame with freedom for universal adjustments in a 55 horizontal plane, a pattern-plate guided by said adjustable guide-posts, and means for imparting vertical movements to said pattern-plate, substantially as and for the purposes set forth. 60

2. In a molding-machine, the combination with a frame including a stripper-plate rigidly supported therefrom, of vertical guide-posts provided with trunnions at their ends, anchoring-brackets having seats closely fitting said trunnions, and screws for securing 65 said brackets to said frame, which screws work through relatively large holes in said brackets, whereby said brackets are made adjustable, substantially as described. 70

3. In a molding-machine, the combination with a frame including a stripper-plate 3, of the square guide-posts 10 having the trunnions 11, the brackets 12 having seats closely fitting said trunnions, the machine-screws 13 75 and 14 working through the relatively large perforations 15, in the upper brackets 12 and adjustably securing the same, and the vertically-movable pattern-plate provided with keeper-brackets working on said guide-posts 80 10, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES P. APPLEBY.

Witnesses:

E. H. KELIHER,  
F. D. MERCHANT.