

**No. 664,426.**

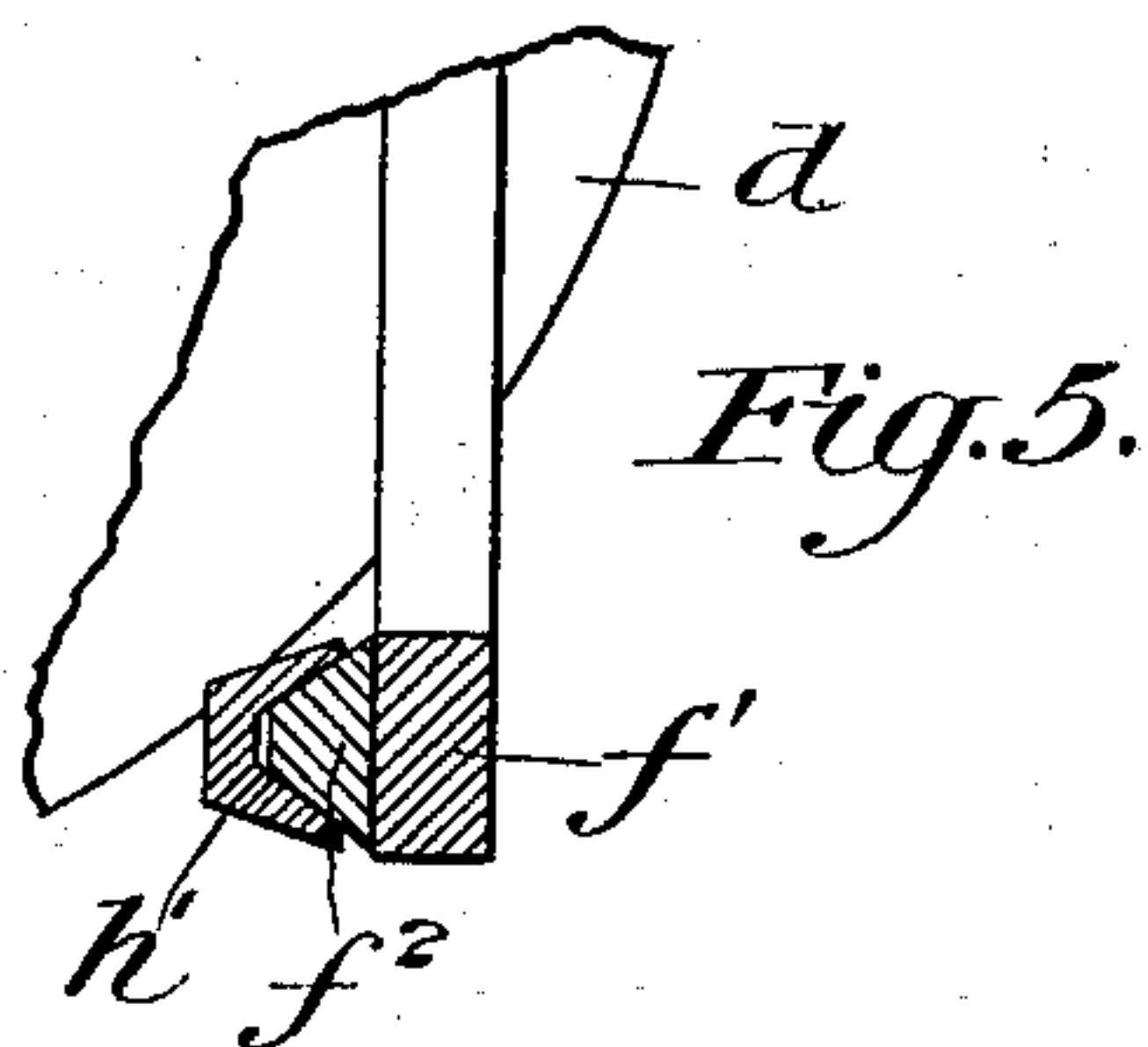
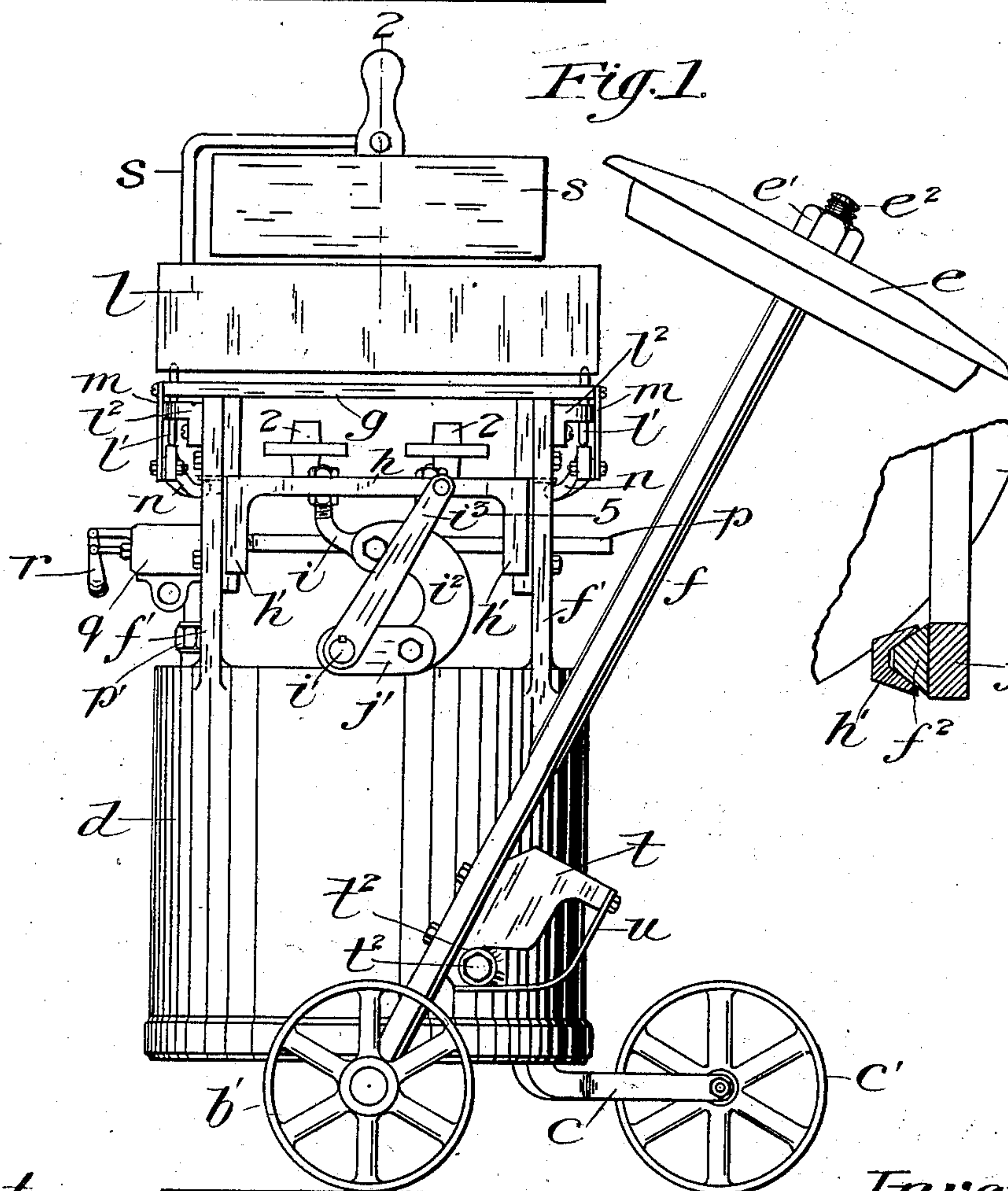
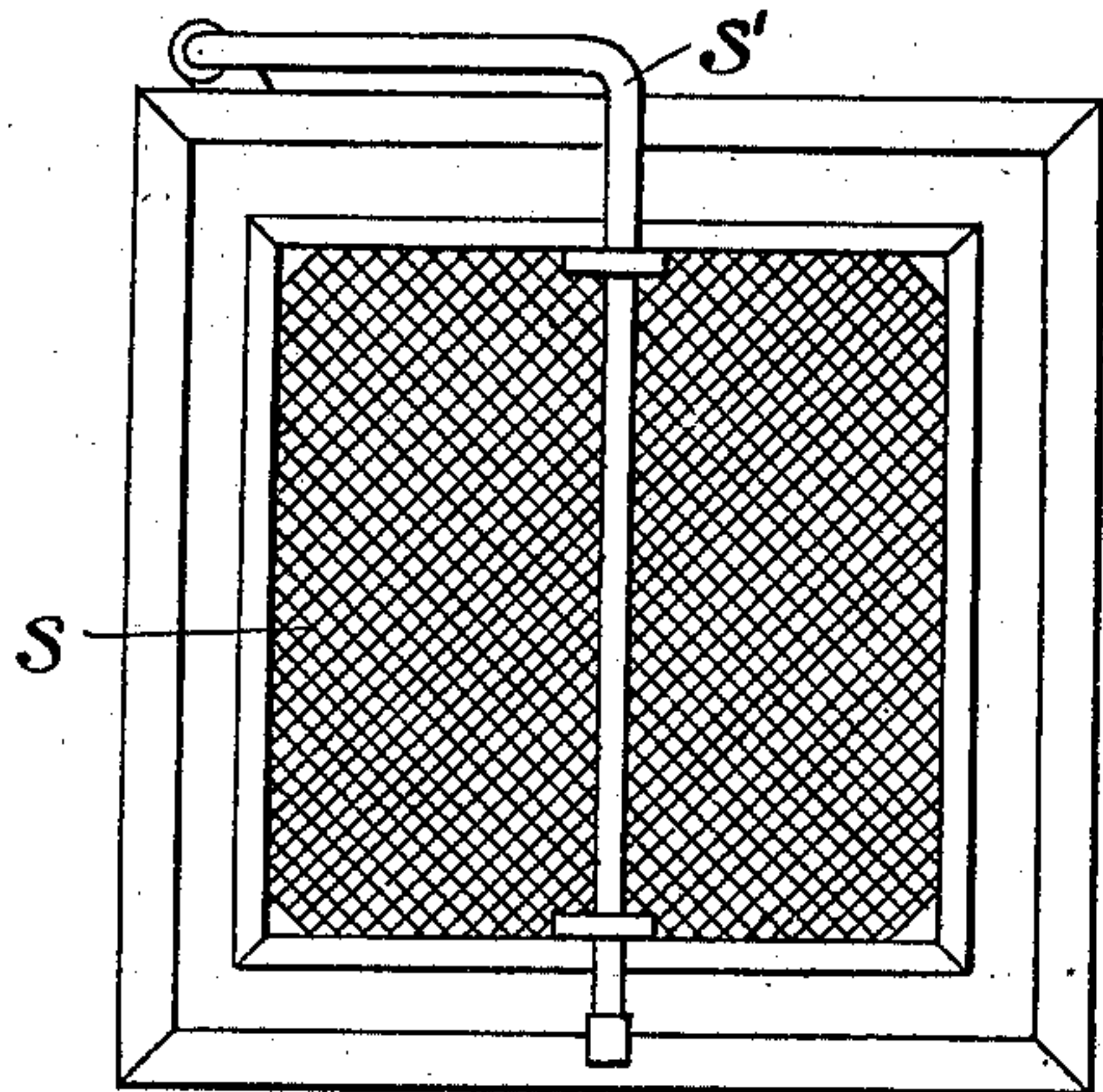
**Patented Dec. 25, 1900.**

**G. W. PACKER.**  
**MOLDING MACHINE.**


(Application filed Sept. 10, 1900.)

(No Model.)

**3 Sheets—Sheet 1.**



Witnesses:  
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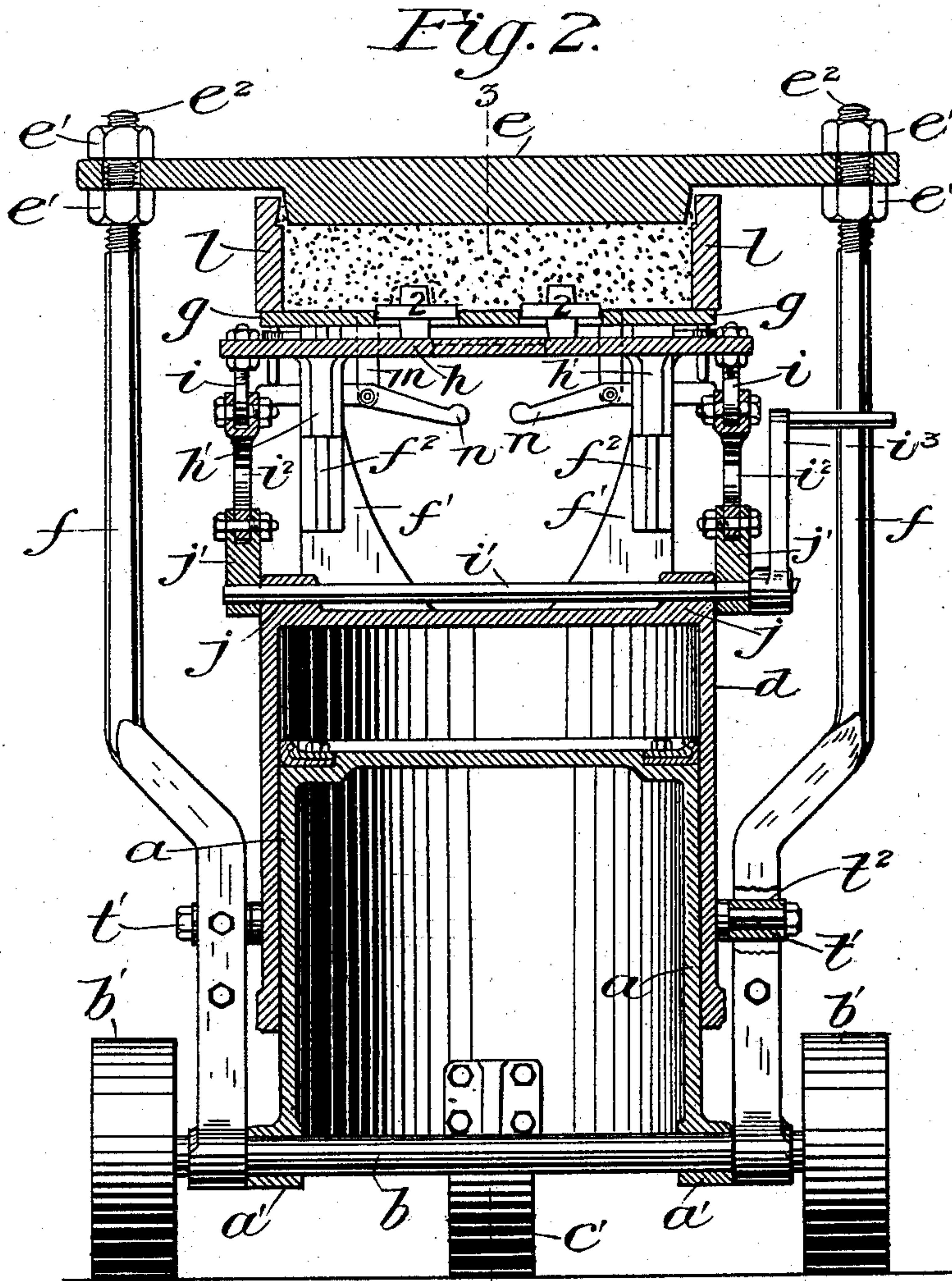
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3 Sheets—Sheet 2.



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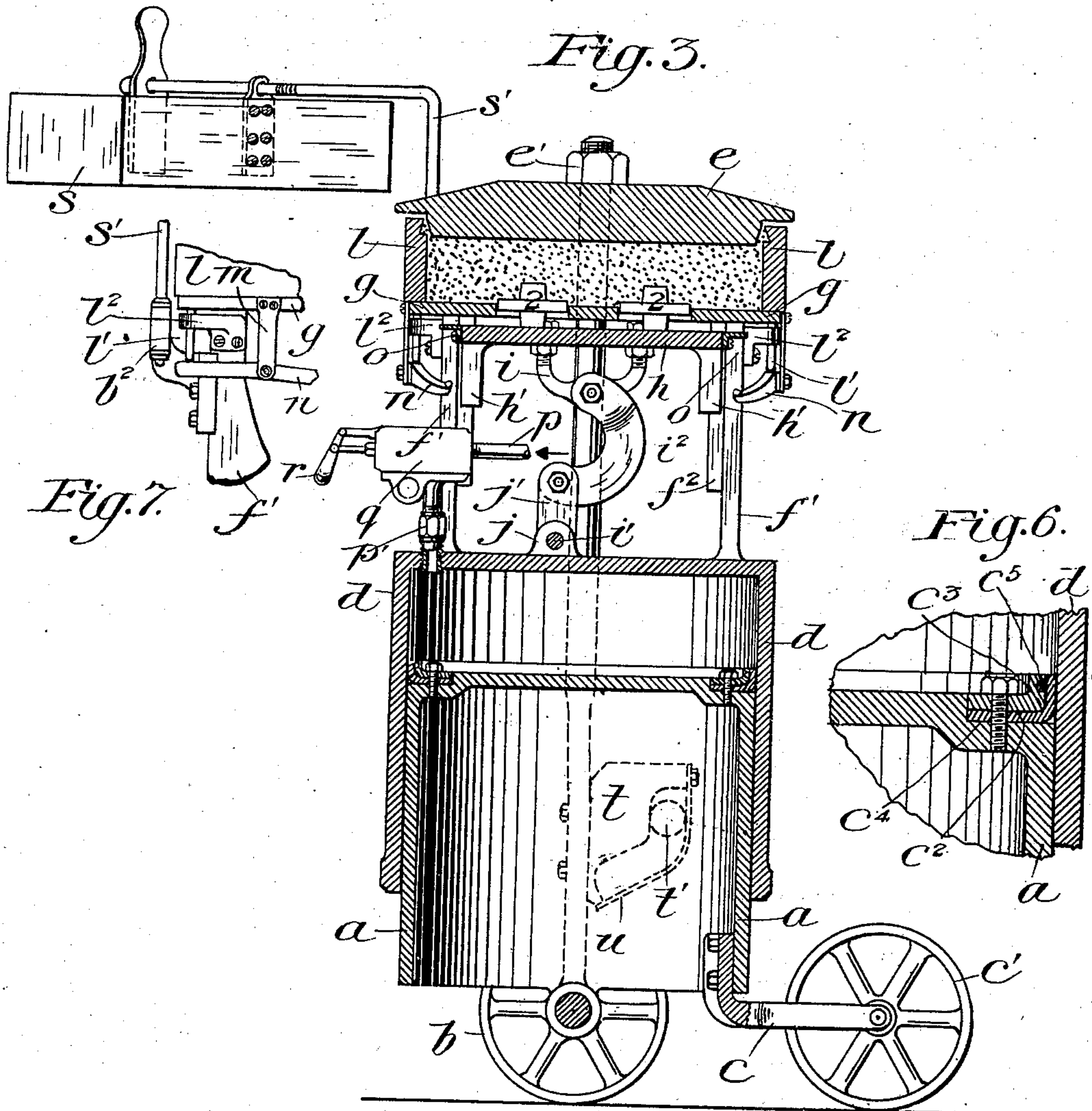
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3 Sheets—Sheet 3.



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# UNITED STATES PATENT OFFICE.

GEORGE W. PACKER, OF CHICAGO, ILLINOIS.

## MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 664,426, dated December 25, 1900.

Application filed September 10, 1900. Serial No. 29,480. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. PACKER, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, 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.

The invention relates to machines for making sand molds, and particularly to that type where the flask is supported on a platen which rises and compresses the sand against an overhead platen that is swung away from over the flask-supporting platen at the completion of the compressing action to permit the flask to be removed and another replaced on the lower platen.

The machine is adapted to be operated by compressed air; but obviously steam or other motive fluid may be employed instead.

The object aimed at has been to devise a machine of strong and simple construction and one that will be capable of rapid, continuous, and efficient operation by molders who are not skilled workmen.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of the complete machine. Fig. 2 is a central vertical section of the same on the line 2 2 of Fig. 1. Fig. 3 is a central vertical section of the machine on the line 3 3 of Fig. 2. Fig. 4 is a plan view of the sand-screen employed in connection with the machine. Fig. 5 is a detail showing how the pattern-board is guided in its movements. Fig. 6 is a detail of the packing between the piston and the cylinder. Fig. 7 is a detail of the mechanism for lifting the flask up from its supporting-platen.

Referring to the views, *a* denotes an upright piston, that is preferably made hollow, with its upper end closed for lightness of construction. At diametrically opposite points on its lower end it is provided with bearings *a' a'* for the through-axle *b* of trundling-wheels *b' b'*. On one side of the axle the piston is provided with an arm *c*, which projects at a right angle to the axle *b* and carries at its outer end a trailing wheel *c'*, which may be a caster, if preferred. This piston

forms the pedestal of the machine and, together with the cooperating cylinder to be presently described, forms the only framework there is. Instead of being mounted on the rollers or wheels above described the piston may be supported on a fixed base or platform; but the wheels greatly enhance the portability of the device and are therefore preferred.

Coöperating with the piston *a* is a cylinder *d*, which is inverted and incloses the piston, as clearly indicated in the sectional figures of the drawings. The closed upper end of the piston constitutes a head, and between it and the inner wall of the cylinder is the packing, which preferably consists of a rubber or leather ring *c<sup>2</sup>*, secured by means of a metallic annulus *c<sup>3</sup>* around the rabbeted edge *c<sup>4</sup>* of the piston, the annulus being screwed or otherwise fastened down and having a wire or cord *c<sup>5</sup>* seated in a groove in an upturned flange around its edge. The cylinder carries and supports all the moving parts of the machine except the overhead platen and, as before stated, forms the entire framework of the machine.

The overhead platen is denoted by *e*. It is of the general shape of the flask and is adjustably connected by nuts *e'* to the threaded upper ends *e<sup>2</sup>* of rods *f f*, that are journaled at their lower ends on the through-axle *b* between the sides of the piston and the wheels *b'*.

Rising from the upper end of the cylinder *d* are four uprights *f'*, carrying at their upper ends the platen *g*, which supports the flask while the sand is being compressed. This platen is cut out, as usual, to permit the patterns 2 to be projected therethrough into the sand. The uprights are provided on their inner sides with V-shaped guides *f<sup>2</sup>*, and a pattern-board *h* is arranged to slide up and down under the platen *g* between the guides, the board itself being provided with dependent keepers or runners *h'*, coöperating with the guides *f<sup>2</sup>*. The ends of the pattern-board *h* project beyond the uprights at opposite sides of the machine and are provided with bow-shaped brackets *i* on their under sides, and in bearings *j j* on the upper end of the cylinder *d* there is journaled a shaft *i'*, having crank-arms *j'* at its ends. These crank-arms are connected by curved links *i<sup>2</sup> i<sup>2</sup>* with



the brackets *ii* of the pattern-board, and on one end the shaft *i'* is provided with a crank-handle *i''*, by means of which the shaft is rocked for the purpose of raising and lowering the pattern-board.

The flask is denoted by *L*. It is of the ordinary construction and is provided with the usual dowel-pins *l'*, which register with perforations in small ears or lugs *l''*, projecting from the upper ends of the uprights *f'*. The flask rests upon the platen *g* while the compressing of the sand is taking place, and in order to lift it free of the platen when the mold is completed I pivot to hangers depending from the platen a couple of levers *nn*, at each side of the machine, having their free ends projecting toward each other, as best shown in Fig. 2. The opposite ends of these levers rest against the lower ends of the dowel-pins *l'*, so that any downward movement of the inner ends of the levers will raise their outer ends and push up the dowel-pins and lift the flask *L* off the upper surface of the platen *g*, so that it may be removed and a new one put in its place.

For the purpose of lifting the flask automatically I secure to opposite sides of the pattern-board *h* lugs or ears *oo*, so located with respect to the levers *nn* that when the board is lowered the inner ends of the levers will be struck and their outer ends thrown up for the purpose of pushing the dowel-pins out of their perforations in the lugs *l''*, thus raising the flask and the mold clear of the platen.

The screen *s* (illustrated in Fig. 4) is for the purpose of sifting the sand as it is filled into the flask. This screen is carried by the horizontal arm of a crane *s'*, which is journaled by its vertical arm in a bracket *b''*, projecting from one of the uprights *f'*, the object of this arrangement being to permit the screen to be swung to one side out of the way after the flask has been filled.

From the above description, taken in connection with the drawings, it will be seen that the piston *a* constitutes the pedestal or base of the machine and that the cylinder *d* carries and supports all the working parts, with the single exception of the swinging arms *ff* and the upper platen *e*. The piston and cylinder therefore make up the frame of the machine, and no other supports, pillars, legs, braces, or framing are required.

As before stated, the machine is adapted to be operated by compressed air or other elastic fluid. Figs. 1 and 3 illustrate the pipe connections for this purpose. In these figures *p* denotes a pipe leading from an air-compressor or other source into a valve-casing *q*, and *p'* denotes a branch leading from the casing into the cylinder *d* at the top. In the casing there is an ordinary three-way valve, (not necessary to be shown,) and a handle *r*, pivoted on the outside of the casing, is connected by a link or rod to this interior valve, so as

to turn the motor fluid into the cylinder or release it therefrom.

It will be understood from the above description that the upper platen must be swung over the flask when the sand is to be compressed and swung off to one side out of the way in order to permit the removal of the flask. In order to do this automatically, I provide on each of the pivoted arms *f*, near their lower ends, blocks *t*, having their peripheries cam-shaped, as shown in the drawings, and projecting from diametrically opposite points near the lower end of the cylinder *d* are studs *t'*, carrying friction-rollers *t''*. These studs project into operative relation to the cam-blocks, and stops or keepers *u* are provided to hold the parts together and prevent the blocks from leaving the cams. The studs also cooperate to prevent the turning of the cylinder *d* with respect to the piston *a*, and thereby preserve the alinement of the pattern-carrying plate, so as to keep the patterns square in the machine.

The construction being as thus described, the operation will be readily understood. The parts being in the position shown in Fig. 1, the pattern-board, having the patterns 2 2 on it, is first raised, so as to position the patterns in the flask, as shown in Figs. 2 and 3. The sand is then filled into the flask through the screen, after which the screen is swung to one side, as shown in Fig. 3, and the air is turned into the cylinder. The cylinder immediately rises, carrying with it the platen *g* and its flask and the pattern-board *h*. As soon as the cylinder begins to rise the studs *t'* travel up the cam-surface of the blocks *t*. This causes the upper platen *e* to swing over into position to meet the rising platen and the flask carried on it. When the sand has been sufficiently packed, the handle *r* is operated and the air released from the cylinder, which then falls, causing the studs to retrace the surface of the cam-blocks *t* and the arms *ff* to swing again into the position shown in Fig. 1. At this time the crank-handle *i''* is operated to lower the board *N* and withdraw the patterns from the mold. As the board goes down the levers *nn* are operated, as already described, and the flask is lifted off the platen and can be carried away and another put in its place.

Having thus described my invention, what I claim is—

1. In a molding-machine, the combination of a stationary piston, a movable cylinder cooperating therewith, and a flask-supporting platen carried by the cylinder, an upper swinging platen, and means cooperating with said cylinder to move said platen over and from said flask.

2. In a molding-machine, the combination of a stationary piston, a movable cylinder cooperating therewith, a flask-supporting platen carried by the cylinder, a pattern-board also carried by the cylinder, and means for ad-



justing the pattern-board relative to the platen, an upper swinging platen, and means coöperating with said cylinder to move said platen over and from said flask.

5 3. In a molding-machine, the combination of an upright stationary piston forming the pedestal of the machine, and a movable cylinder inclosing the piston and forming the support for the flask-carrying platen, the pattern-board, and the mechanism for adjusting and withdrawing the patterns, an upper swinging platen, and means coöperating with said cylinder to move said platen over and from said flask.

15 4. In a molding-machine, the combination of an upright stationary piston forming the pedestal of the machine, and a movable cylinder inclosing the same, the flask-supporting platen, all carried by said cylinder, an upper swinging platen, and means coöperating with said cylinder to move said platen over and from the flask, the pattern-board, the mechanism for adjusting and withdrawing the patterns, the pipes and valves for admitting the motive fluid, and the means for lifting the flask from the platen.

25 5. In a molding-machine, the combination of an upright stationary piston forming the pedestal of the machine, an upper relatively stationary platen pivoted with respect to the piston, a movable cylinder inclosing the piston, a flask-supporting platen and a pattern-board carried by said cylinder, said cylinder being also provided with suitable pipes and valves for admitting the motive fluid for operating the same, and means connecting said cylinder and said upper platen, whereby the same is swung over and away from the flask.

35 6. In a molding-machine, the combination

of an upright stationary piston forming the pedestal of the machine, pivoted arms carrying a relatively stationary platen, a movable cylinder inclosing the piston, a movable flask-supporting platen carried by the cylinder, and a connection between the cylinder and the swinging arms whereby the stationary platen is adjusted toward and from the flask-carrying platen.

7. In a molding-machine, the combination of an upright stationary piston, a movable cylinder inclosing the same, a flask-supporting platen carried by the cylinder on elevated uprights, a pattern-board adjustable up and down between the cylinder and platen, a shaft mounted on the cylinder, and connections between the shaft and the board, an upper platen pivoted to said piston, means connecting said cylinder and said upper platen to swing the latter over and from the flask.

8. In a molding-machine, the combination of an upright cylindrical piston, a movable cylinder inclosing the same and carrying a flask-supporting platen and a pattern-board, a pair of swinging arms pivoted on an axis fixed with respect to the piston, an overhead platen carried by the arms, cam-blocks mounted on the arms, and studs carried by the cylinder and engaging the blocks, whereby the overhead platen is swung over and away from the flask, and whereby also the alinement of the cylinder with respect to the piston is preserved.

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

GEORGE W. PACKER.

Witnesses:

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J. E. HUTCHINSON, Jr.