

No. 672,542.

Patented Apr. 23, 1901.

S. H. STUPAKOFF.

MOLDING MACHINE.

(Application filed Nov. 10, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 2

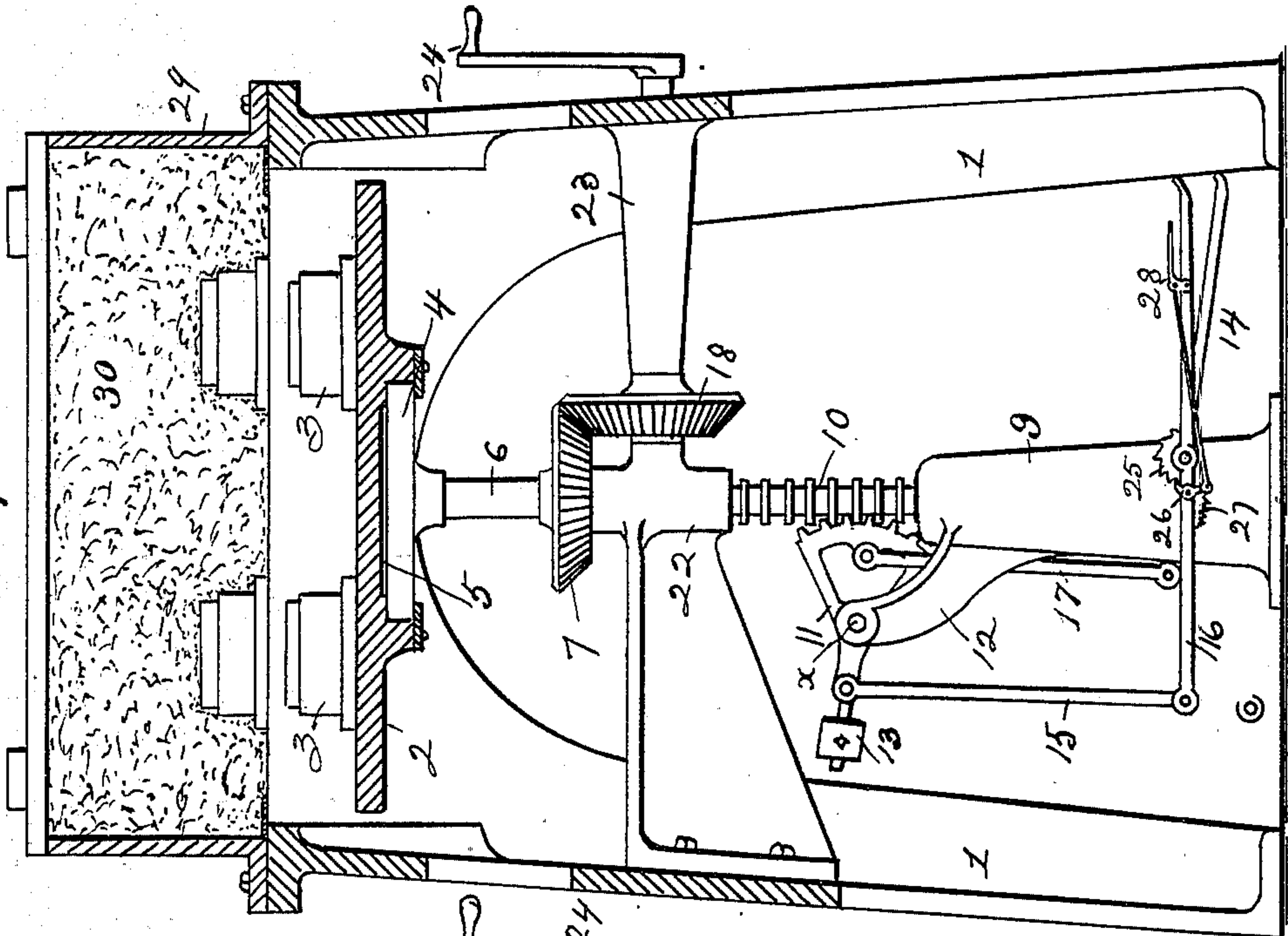
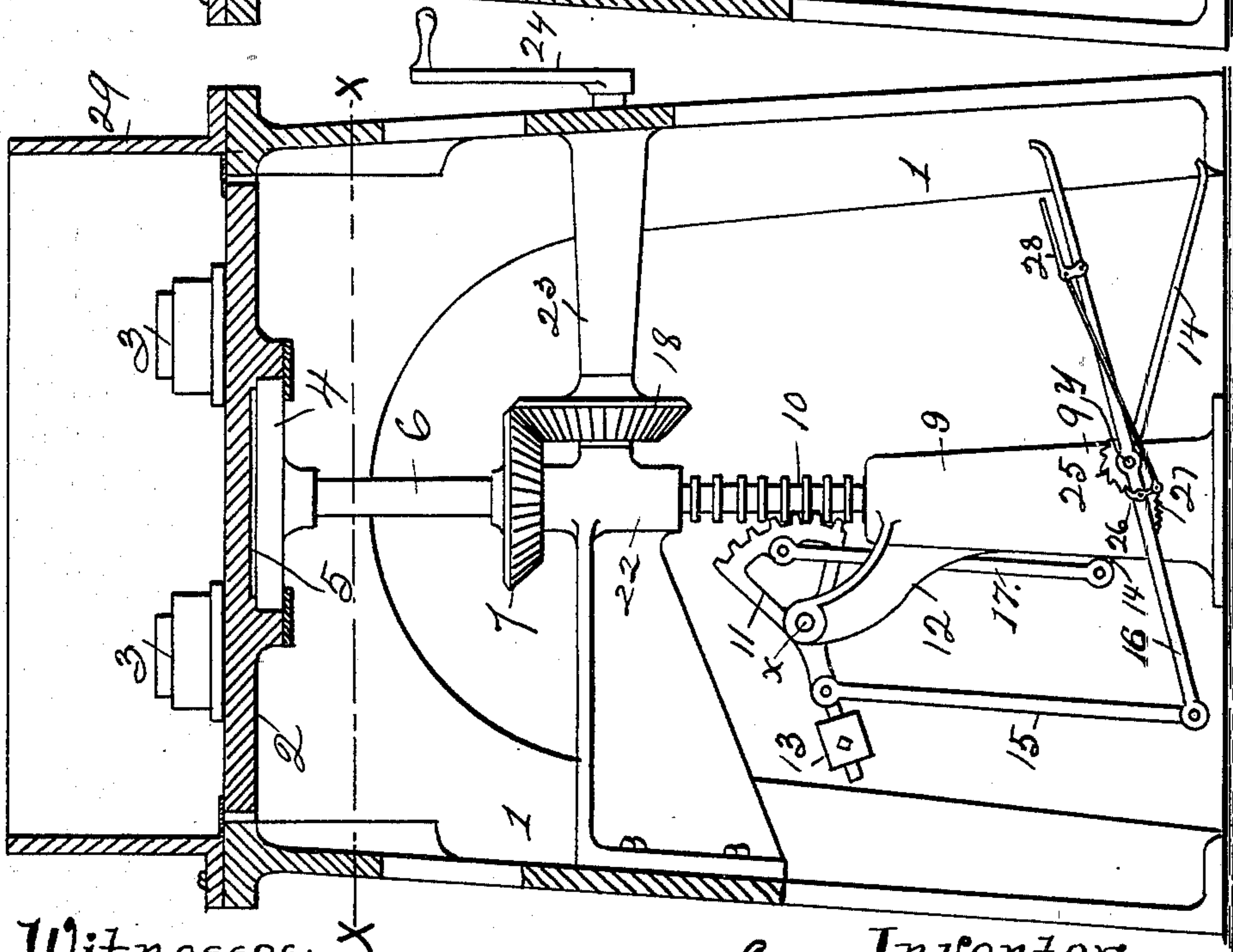


Fig. 1



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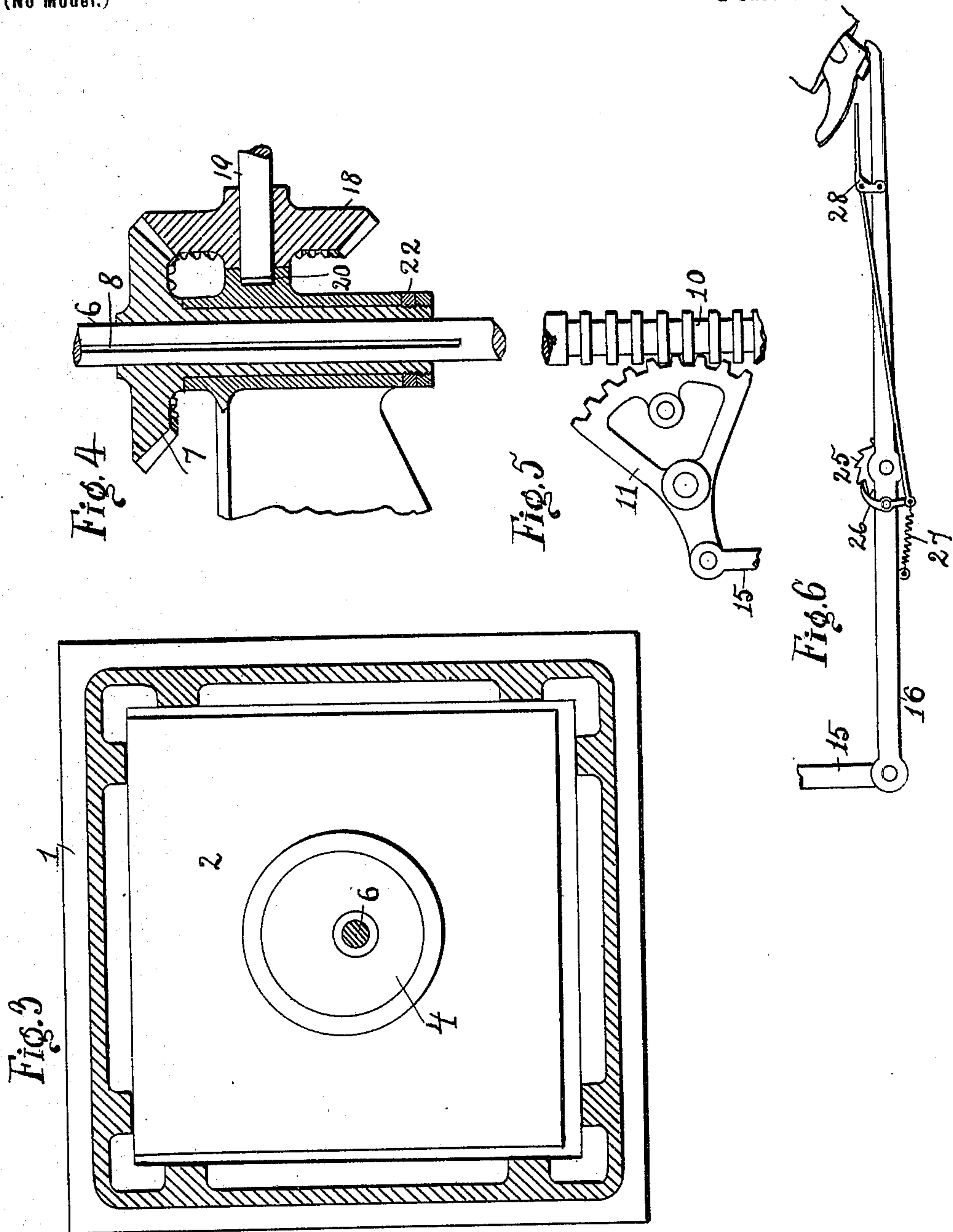
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WITNESSES:
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UNITED STATES PATENT OFFICE.

SIMON H. STUPAKOFF, OF PITTSBURG, PENNSYLVANIA.

MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 672,542, dated April 23, 1901.

Application filed November 10, 1899. Serial No. 736,551. (No model.)

To all whom it may concern:

Be it known that I, SIMON H. STUPAKOFF, a citizen of the United States, residing at Pittsburg, in the county of Allegheny, State of Pennsylvania, have invented certain new and useful Improvements in Molding-Machines, of which the following is a specification.

My invention relates to improvements in machines called "molding-machines."

The object of my present invention is to produce a simple and efficient machine adapted to facilitate the withdrawal of patterns from sand in molding-flasks without the use of numerous and expensive stripping-plates heretofore used in connection with molding-machines. Heretofore, so far as I am aware, molding-machines of this general character adapted to perform this operation have been provided with a table or movable support for the patterns and a fixed portion, called a "stripping-plate," in which openings corresponding exactly with the outline of the pattern were formed, the patterns on the movable table projected in the openings in the stripping-plate, and upon the withdrawal of the patterns from the sand they were stripped or freed from the sand by the stripping-plate, the stripping-plate also serving to retain the sand in the flask. The objection to machines of this character is the necessity of using numerous and expensive stripping-plates from the fact that each stripping-plate must conform in outline with the patterns with which it may be used, and this of necessity requires the use of separate and particular plates for each pattern or set of patterns, which make the use of such machine in a jobbing-foundry almost prohibitive.

The object of my present invention is to provide a simple and efficient machine which will dispense with the use of stripping-plates; and to this purpose my invention consists, broadly stated, in producing a machine by the use of which the patterns are inserted in the flask and at the proper time an operation similar to rapping performed by hand-molding obtained, which loosens the patterns in the sand without in any wise impairing the impression of the sand therein and making it possible to withdraw the pattern or patterns

from the flask without the use of stripping-plates.

My invention further consists in the novel construction, arrangement, and combination of parts hereinafter more particularly pointed out with reference to the accompanying drawings, which form a part of this specification, in which—

Figure 1 indicates a vertical longitudinal section of my improved molding-machine, the table, with the patterns thereon, being in position to receive the molding-sand in the flask. Fig. 2 is the same, showing the table, with the patterns, withdrawn from the sand in the flask. Fig. 3 is an inverted plan view of the bottom of the table, showing the guides and rapping eccentric disk. Fig. 4 is a sectional view of the rapping-gear. Fig. 5 is an elevation of the table-reciprocating gear. Fig. 6 is an elevation of the lock mechanism.

Like reference characters indicate like parts wherever they occur throughout the several views.

Referring to said drawings, 1 is the frame of the machine, the upper end of which is open and forms guides for the table 2, secured and adapted to move or to be reciprocated vertically therein, as hereinafter set forth.

3 is a pattern or set of patterns secured to the table in any suitable manner. The said table 2 is supported on an eccentric disk 4, which is movably seated in the recess 5, formed in the bottom of the table, at the center of the same. The said disk 4 is mounted in the top of the shaft or column 6, on which is mounted the bevel-gear 7. The said column 6 is loosely fitted in the bore of said bevel-gear. A key or keyway 8 in the column serves to fasten said gear thereto and enables the said column to slide or move vertically, as hereinafter described. The lower end of said column is seated in the standard or bearing 9 and is provided with a rack 10, which is adapted to engage the toothed quadrant 11, which is pivotally secured to the bracket 12 at X. The end of said quadrant opposite the toothed end thereof is provided with a counterweight 13, and near the end connected to said counterweight said quadrant is connected to the lever 16 by means of the vertical

rod 15 and at the upper inner segmental portion thereof with the lever 14 by means of the vertical rod 17. The said levers 14 and 16 are respectively pivotally secured upon said standard 9 at *y*.

18 is a vertically-disposed bevel-gear mounted on the shaft 19, which is journaled in bearings 20 and 21, formed in the sleeve 22 and hollow bracket 23, respectively. The outer end of said shaft is provided with the crank 24, whereby motion is transmitted to the horizontally-disposed gear-wheel 7, which meshes with the gear-wheel 18, and to the table by means of the eccentric disk mounted on the column.

The lever 16 is provided with a segmental rack 25, which is adapted to be engaged by the pawl 26 and to be held in engagement therewith by the spring 27. The upper end of the pawl is connected with a latch-lever 28, pivoted upon the lever 16 near the outer end of the same.

The operation of my apparatus is as follows, to wit: The table, with the pattern or patterns thereon, is in the position shown in Fig. 1, which is accomplished by the operator pressing upon the outer end of the lever 14, connected to the quadrant which engages the end of the column provided with the rack, thereby carrying the column and the table into the position shown in Fig. 1. In this position the pawl engages the rack and prevents the table descending. The sand 30 is then filled into the flask 29, which has previously been placed on the table over the pattern or patterns and rigidly secured thereon with dowel-pins or in any other suitable manner. The sand is then compacted around the pattern or patterns and the column rotated by turning the crank. Due to the eccentricity of the disk the table is given a rotary reciprocating or planetary movement, which tends to slightly enlarge the impression of the pattern or patterns in the sand and completely freeing the pattern or patterns from the sand and enabling the pattern or patterns by a subsequent movement of the table to be withdrawn from the sand without in any wise impairing the impression thereof therein. This movement imparted to the table as described resembles the operation of "rapping" employed by molders by hand to free the patterns from the sand. With this difference, however, in rapping by hand the operation is not as by my apparatus uniformly applied over the entire surface of the pattern, which enables the production of a casting or castings of uniform weight and size. In the operation of rapping by hand the molder strikes the pattern or patterns, or, rather, inserts pins, which he strikes for the purpose of loosening the pattern or patterns. As a matter of course, this rapping is not distributed over the entire surface of the pattern-outline, which tends to throw the outline slightly out of true. After this operation is completed the operator, pressing his foot upon

the latch-lever, withdraws the pawl from engagement with the rack and enables the table to be lowered, which is accomplished by pressing upon the end of the lever 16, which places the table in the position shown in Fig. 2.

It is obvious that any form of power may be utilized to operate the machine instead of manual power and that the machine may be disposed horizontally instead of vertically, as shown, without departing from the spirit of my invention.

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

1. In a molding-machine, the combination of a table carrying patterns, means to reciprocate the table toward and from a flask, means to hold the table stationary when the patterns are in the flask, and means for shifting the table in an approximately circular path whereby the patterns are loosened in the sand, substantially as set forth.

2. In a molding-machine, the combination of a suitable frame, a table carrying patterns movably secured therein, a flask secured to said frame in alignment with the table, means to move the table toward and from the flask, means for shifting the table in an approximately circular path in a plane parallel with the face of said flask, and means to hold the said table stationary while the sand is being compacted around the patterns therein, substantially as set forth.

3. In a molding-machine, the combination of a frame, a plate carrying patterns, an eccentric disk or cam movably connected to the plate, means to rotate said cam and thereby shift the plate, and means to advance and withdraw the table from a flask, substantially as set forth.

4. In a molding-machine, the combination of a frame open at the rear end, a table movably secured therein carrying patterns and provided with a circular recess on the lower side of the same, an eccentric disk or cam mounted on a shaft or column and movably seated in the recess in said table, means to rotate said cam and thereby shift the table, and means to move the table toward and withdraw the same from the flask, substantially as set forth.

5. In a molding-machine, the combination of a frame open at the upper end, a table movably secured therein and provided with a circular recess on the lower surface of the same, an eccentric disk in said recess, a column or shaft connected to said disk and provided with a rack on the lower end thereof, a toothed quadrant adapted to engage said rack, levers suitably connected to said quadrant adapted to elevate and lower the shaft, and means to rotate said shaft and thereby shift the table laterally, substantially as set forth.

6. In a molding-machine, the combination of a frame open at the upper end, a table movably secured therein and provided with a cir-

cular recess in the lower surface of the same,
an eccentric disk or cam in said recess, a
shaft the upper end of which is connected to
said disk and its lower end provided with a
5 rack and having a bevel-gear thereon near
the upper end, a toothed quadrant adapted
to engage said rack, levers suitably connect-
ed to said quadrant adapted to elevate and
lower the shaft, a bevel-gear mounted on a
10 horizontal shaft adapted to mesh with the

gear on the column, and means to drive said
last-mentioned shaft and thereby shift the
table laterally, substantially as set forth.

In testimony whereof I have hereunto set
my signature in the presence of two subscrib- 15
ing witnesses.

SIMON H. STUPAKOFF.

In presence of—

C. A. WILLIAMS,
JNO. H. RONEY.