

No. 716,958.

Patented Dec. 30, 1902.

S. H. STUPAKOFF.
METHOD OF INSERTING OR WITHDRAWING PATTERNS.

(Application filed Nov. 10, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 2

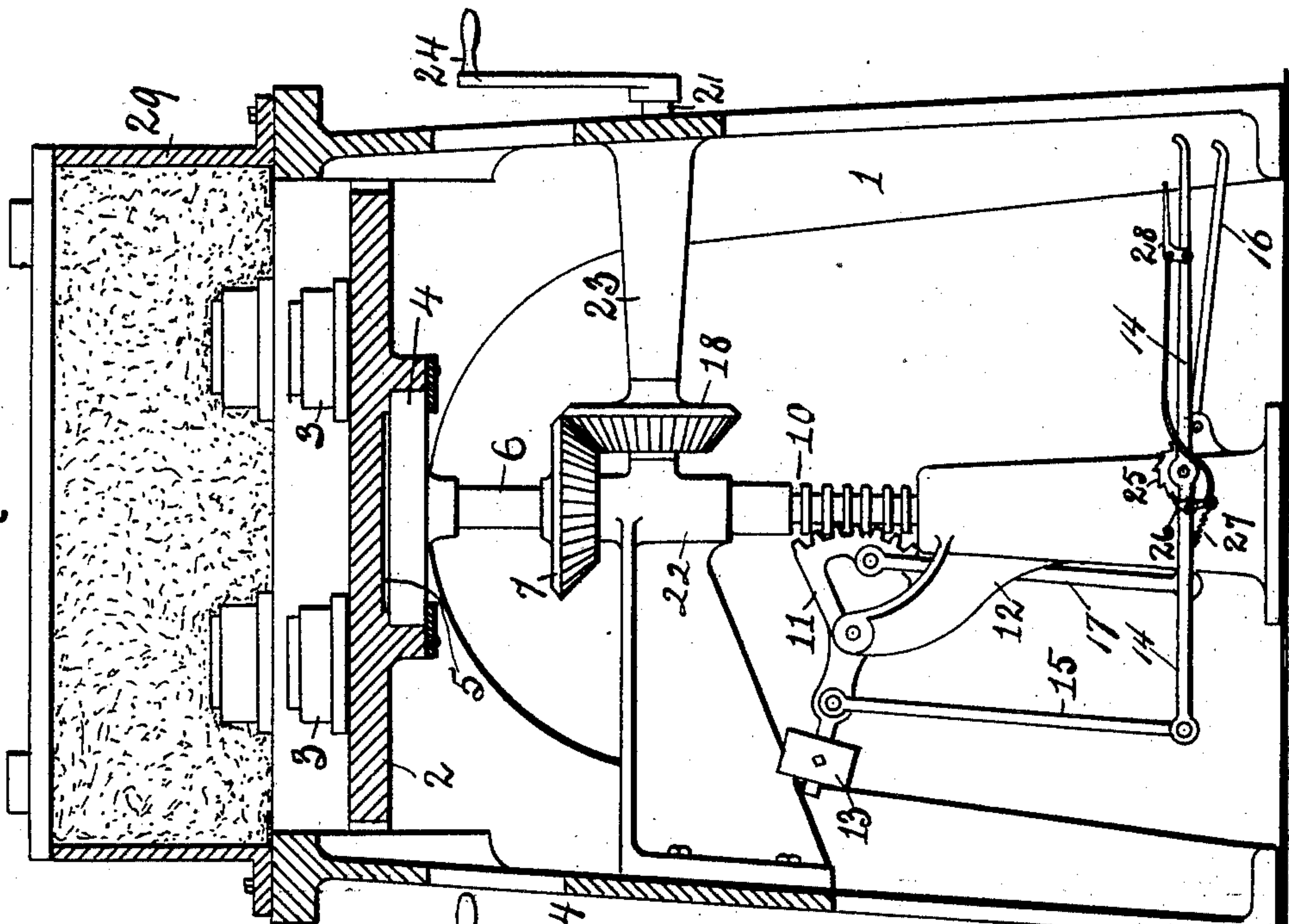
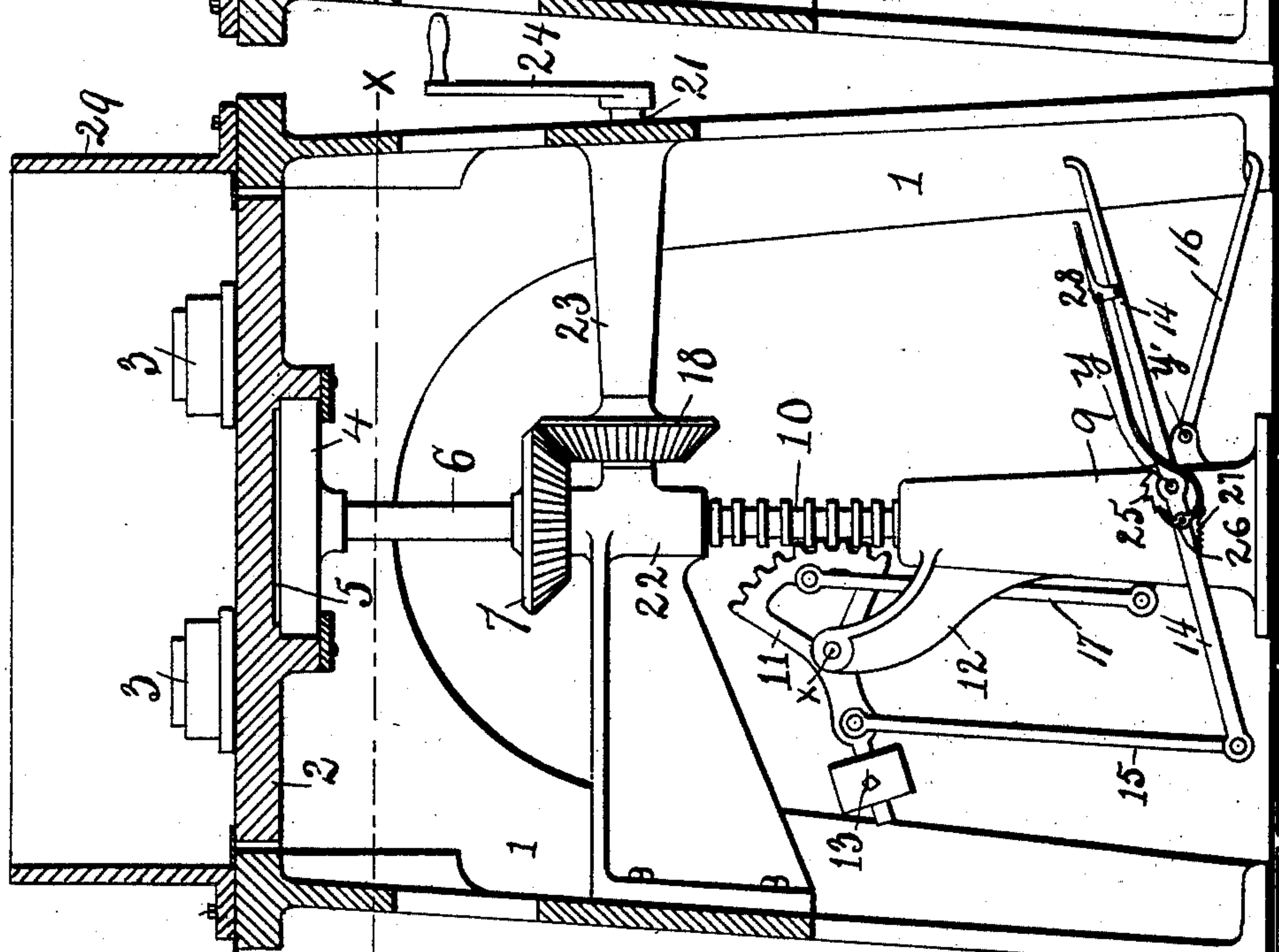


Fig. 1



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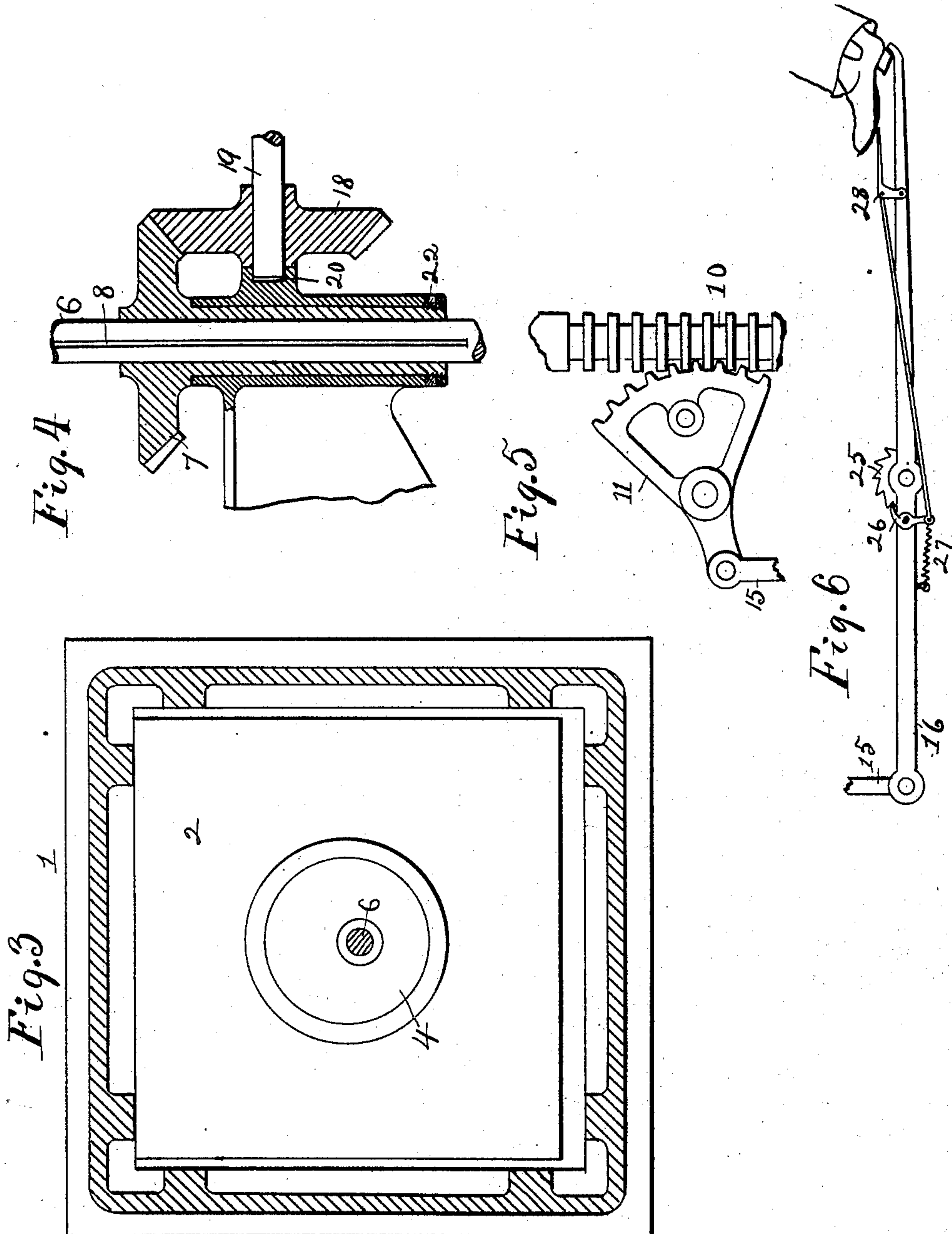
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UNITED STATES PATENT OFFICE.

SIMON H. STUPAKOFF, OF PITTSBURG, PENNSYLVANIA.

METHOD OF INSERTING OR WITHDRAWING PATTERNS.

SPECIFICATION forming part of Letters Patent No. 716,958, dated December 30, 1902.

Application filed November 10, 1899. Serial No. 736,552. (No model.)

To all whom it may concern:

Be it known that I, SIMON H. STUPAKOFF, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny, State of Pennsylvania, have invented or discovered certain new and useful Improvements in Methods of Inserting or Withdrawing Patterns from Flasks for Producing Castings, of which the following is a specification.

My invention relates to methods of inserting or withdrawing patterns from flasks for producing castings; and it consists, broadly stated, in first fixing firmly the pattern or set of patterns upon a table or platform; secondly, securing the flask over and around the same, compacting the sand in the flask around the pattern or patterns, then imparting to the table to which the patterns are secured a rotary reciprocating or planetary movement in a plane parallel to the face of the flask, the flask being held rigid or stationary, whereby the patterns are uniformly loosened or rapped at all points of their outline or surface, and finally withdrawing the patterns from the flask.

Heretofore, so far as I am aware, patterns have been placed in flasks for molding castings and have been withdrawn therefrom in the following manner, to wit: The patterns are detachably placed on a board, the flask placed over and around the same and secured in such wise as to prevent the same moving in any direction. The sand is then filled into the flask and compacted around the patterns and leveled off on the top, the excess being stricken off with a board, and a board, called a "follow-board," placed on the top of the flask and the flask reversed—i. e., turned right side up—in order to withdraw the patterns therefrom. The operation of withdrawing the patterns cannot be accomplished without freeing or loosening the patterns from the sand and the flask, and this is accomplished by an operation called "rapping," which consists in shaking the patterns to and fro in the sand. This operation is usually performed by inserting a pin or peg into the pattern and by striking the same, which is usually inserted at different points in the pattern, and this rapping repeated in order to free the entire

surface of the pattern from the sand to permit of its being withdrawn therefrom without injury to the impression formed therein, the result being not infrequently a lack of uniformity in the castings produced—as, for instance, when a split pattern is used, i. e., a pattern in which one half is formed in one half or portion of the flask and the other half in another half of a flask. Owing to the unevenness or lack of uniformity in the rapping operation, a portion of one of the halves of the casting may project slightly beyond the other half or corresponding part, and this is unavoidable where rapping is accomplished manually, and consequently ununiformly. Another method consisted in fixing the patterns rigidly upon a movable plate, then projecting the same through an opening or openings in a fixed and immovable plate, the openings corresponding in outline with the patterns therein inserted. The flask was then placed over and around the patterns in the usual way and the patterns withdrawn through the openings in the immovable plate which stripped the sand from around the patterns, the plates in consequence being called "stripping-plates." In this method the rapping operation was not employed. In the use of this last-described method each separate pattern or set of patterns were provided with corresponding stripping-plates, which, being expensive and as a matter of course as numerous as the patterns used, made this method of withdrawing patterns from flasks very expensive and its use in jobbing foundries almost prohibitive.

I will now describe a machine adapted to the application of my method, reference being had to the accompanying drawings, 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 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 eleva-

tion 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 thereof.

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. Supported on the frame 1 is the mold box or flask 29. 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 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 14 by means of the vertical rod 15 and at the upper inner segmental portion thereof with the lever 16 by means of the vertical rod 17. The said levers 14 and 16 are respectively pivotally secured upon said standard 9 at y 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 2 by means of the eccentric disk 4, mounted on the column.

The lever 14 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 14 near the outer end of the same.

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

1. The herein-described method for inserting and withdrawing patterns from molding-flasks, which consists, first, in securing a pattern or patterns firmly upon a table, secondly, placing a flask around and over said pattern or patterns filling the same with sand and compacting the sand therein around the patterns, thirdly, shifting the table in an approximately circular path in a plane parallel with the face of the flask the flask being held stationary during such movement, whereby the pattern or patterns are uniformly freed at all points of their outline from the sand, and finally, withdrawing the table with patterns from the flask.

2. The method of inserting and withdrawing patterns from molding-flasks which consists, first, in placing the pattern in the flask, second, in compacting the sand around and directly against the said pattern and, third, after the mold is completed by said second step, in imparting to the entire pattern a uniform, lateral movement in relation to the flask and in an approximately circular path to uniformly free the sand from the pattern at all points of its outline and afterward withdrawing the pattern from the flask.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

SIMON H. STUPAKOFF.

In presence of—

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