

919,600.

E. J. LAHAN.
MACHINE FOR MAKING SAND MOLDS.
APPLICATION FILED NOV. 26, 1908.

Patented Apr. 27, 1909.

3 SHEETS—SHEET 1.

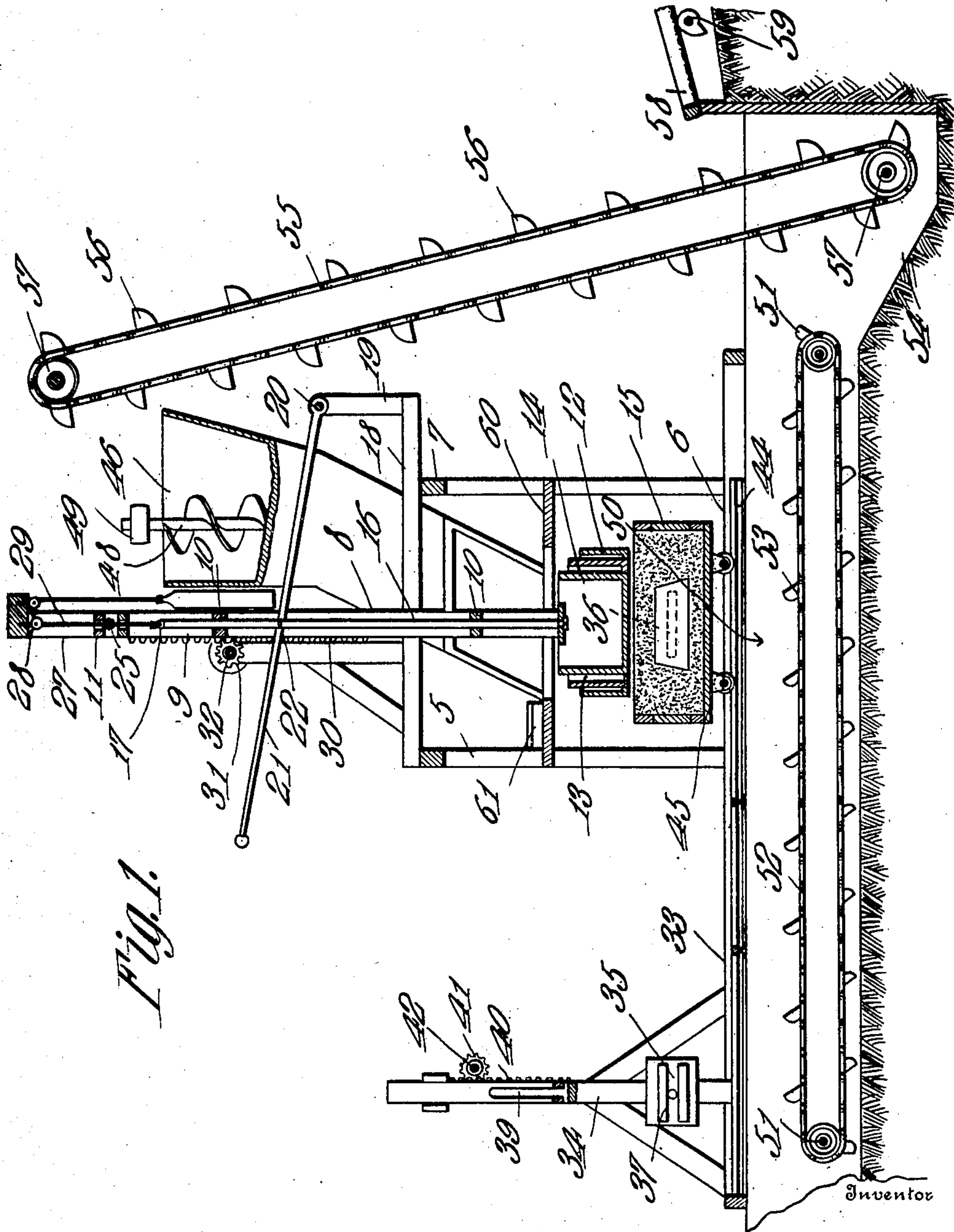


Fig. 1.

Witnesses.

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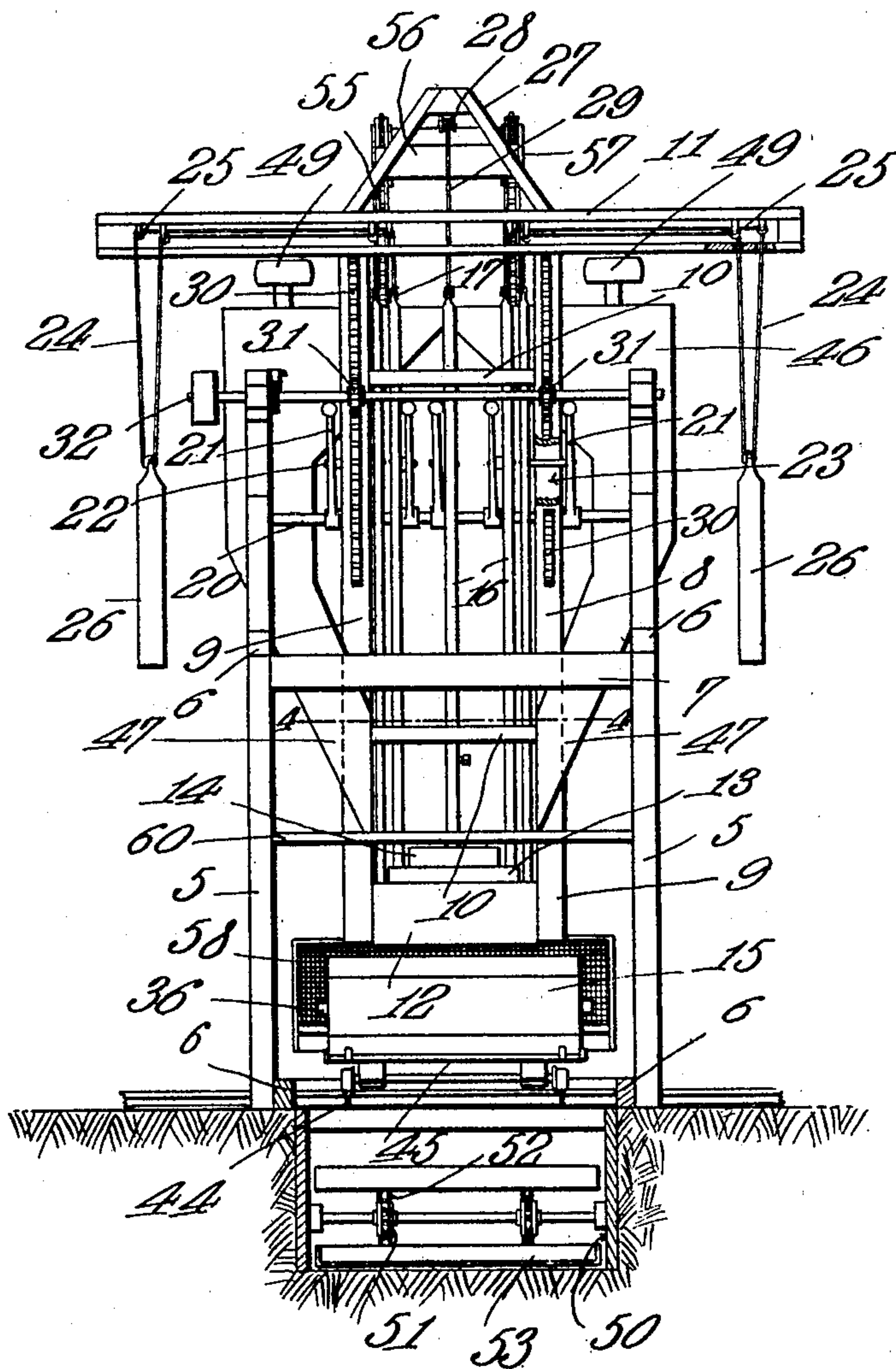
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3 SHEETS—SHEET 2.

Fig. 2.



Witnesses

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3 SHEETS—SHEET 3.

Fig. 3.

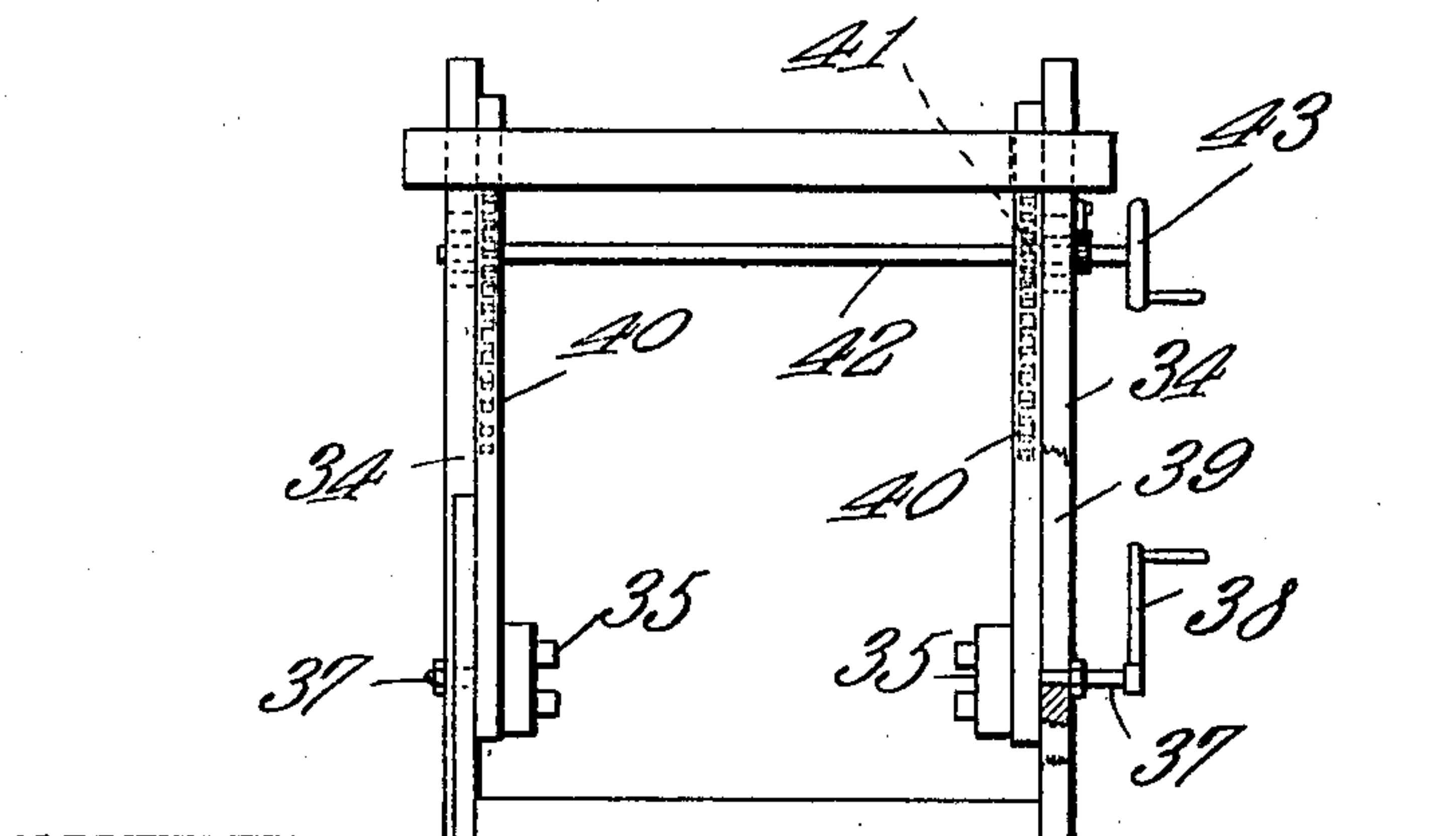
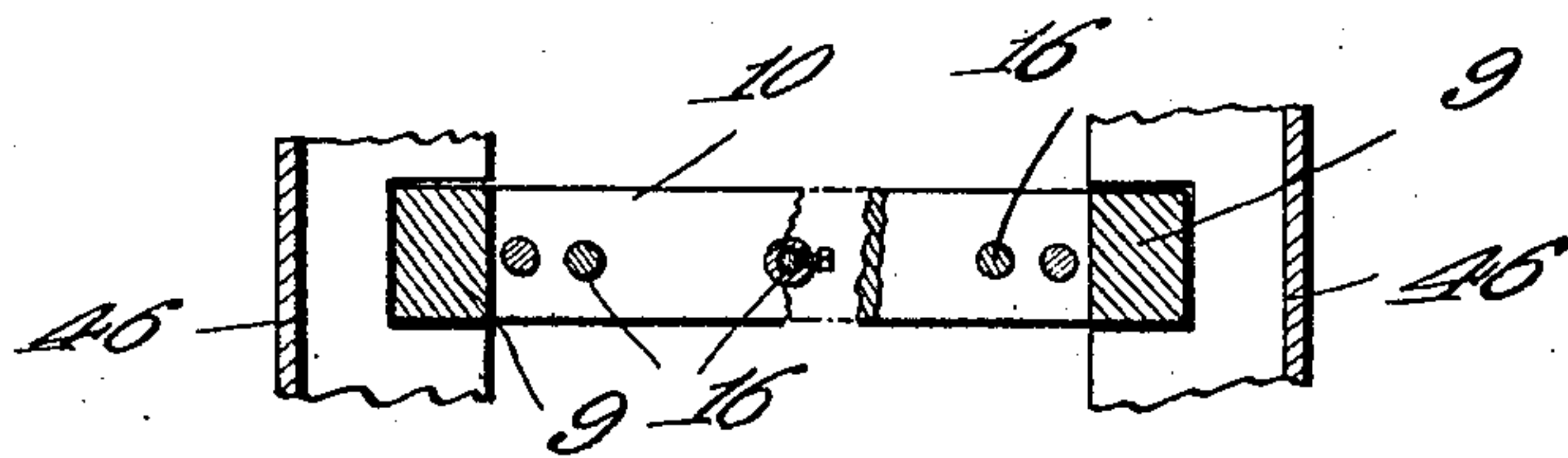


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWARD JAMES LAHAN, OF QUINCY, ILLINOIS.

MACHINE FOR MAKING SAND MOLDS.

No. 919,600.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed November 25, 1908. Serial No. 464,376.

To all whom it may concern:

Be it known that I, EDWARD JAMES LAHAN, a citizen of the United States, residing at Quincy, in the county of Adams and State of Illinois, have invented a new and useful Machine for Making Sand Molds, of which the following is a specification.

This invention relates to machines for making sand molds and has for its object to provide a strong, durable and thoroughly efficient device of this character by means of which the formation of sand molds may be effected with greater rapidity and with less labor on the part of the operator than heretofore.

A further object of the invention is to provide improved means for tamping or packing the sand in the molding flask, and means for transferring the flask from the tamping mechanism to the pattern drawing device.

A further object is to provide means for adjusting the tamping elements or rammers vertically of the supporting frame, thereby to vary the pressure exerted by said tamping elements on the contents of the flask.

A further object is to provide means for feeding the sand to the flask, and means for conveying the surplus or waste sand back to the feed hopper after each molding operation.

A still further object of the invention is generally to improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

In the accompanying drawings forming a part of this specification:—Figure 1 is a longitudinal sectional view of a sand mold making machine constructed in accordance with my invention. Fig. 2 is an end elevation of the same. Fig. 3 is an end view partly in section of the pattern drawing device. Fig. 4 is a detail transverse sectional view taken on the line 4—4 of Fig. 2.

Similar numerals of reference indicate corresponding parts in all of the figures of the drawings.

The improved machine forming the subject matter of the present invention includes a substantially rectangular supporting frame including corner posts 5 connected by longitudinal and transverse beams 6 and 7.

Slidably mounted on the stationary supporting frame is a movable frame 8 comprising vertically disposed side members 9 connected by one or more spacing strips 10 and to the upper end of which is secured an elongated frame 11. Mounted for vertical movement between the side members of the frame 8 are a plurality of telescopic tamping elements 12, 13 and 14, said tamping elements being substantially rectangular in shape and adapted to tamp or pack the sand in the flask 15. Secured to the tamping elements are vertically disposed rods 16 which pass through aligned openings in the guide strips 10 and are provided with terminal eyes 17, for the purpose hereinafter referred to. The upper longitudinal connecting beams 6 of the main supporting frame are extended laterally to form supports 18 for a pair of standards 19 in which is journaled a transverse shaft 20. Secured to the shaft 20 are a series of hand operating levers 21 each having its intermediate portion pivotally connected at 22 with the adjacent rods 16.

The tamping elements 12 and 15 are provided with oppositely disposed actuating rods 16, while the central tamping element 14 is provided with a single actuating rod, the actuating rod of the outer tamping element 12 being arranged to bear against the inner faces of the side members 9 for connection with the adjacent operating levers 21, there being vertically disposed slots 23 formed in the side members 9 to permit the passage of the pivot pins 22.

Secured to the eye 17 of each actuating rod 16 is one end of a cord or other flexible medium 24, the opposite end of which passes over suitable rollers or pulleys 25 secured to the upper wall of the transverse frame 11 for attachment to a weight or counter-balance 26 which serves to return the operating levers 21 automatically to elevated position after said levers have been depressed to effect the tamping of the sand in the flask 15.

Secured to the upper wall of the frame is a substantially triangular auxiliary frame 27 to the apex of which is secured a pulley or roller 28 similar in construction to the pulley or roller 25 and over which passes a flexible cable 29, one end of which is connected with the actuating rod of the central tamping element 14, while the opposite end thereof is also secured to a counter balance or weight, as shown.

The side members 9 of the vertically mov-

able frame are provided with racks 30 for engagement with suitable pinions 31 carried by a transverse shaft 32 journaled on the main supporting frame, whereby the movable
5 frame may be adjusted vertically of the stationary supporting frame so as to vary the drop of the tamping elements and thus regulate the tamping action of the same.

The outer tamping element 12 is for the
10 purpose of tamping the sand around the inside edges of the flask so as to prevent the metal from bursting through the several parts of the sand mold, while the inner tamping member 14 is designed to pack the sand
15 in the drag and around the core, the intermediate tamping element 13 being designed to pack the sand and hold the same in the flask. Thus it will be seen that the tamping elements 12, 13 and 14 being each pivoted to
20 an operating lever are movable independently of each other, while the several tamping elements are movable simultaneously to raised and lowered position by means of the pinions 31 and rack 30.

25 The lower sills 6 of the main supporting frame are extended longitudinally to form spaced horizontally disposed bars 33 to which are connected the uprights 34 of the pattern drawing device.

30 Fastened to the inner walls of the standards 34 are blocks 35 having transverse grooves formed therein for the reception of correspondingly shaped cleats 36 formed on the flask 15, said blocks being provided with
35 stub shafts 37, one of which is provided with a crank or handle 38 so that when the flask is positioned between the uprights 34 and the handle 38 rotated, said flask may be revolved between the standards to permit the draw-
40 ing of the pattern.

The standards 34 are provided with vertically disposed slots 39 for the reception of the stub shaft 37 so as to permit vertical
45 adjustment of the bearing blocks 35 and flask 15.

Slidably mounted on the inner faces of the standards 34 are spaced rack bars 40 having their lower ends connected with the bearing
50 blocks 35 and which are adjusted vertically of the standards 34 to effect the vertical adjustment of the flask 15 by means of pinions 41 journaled on the transverse shaft 42, as best shown in Fig. 4 of the drawings, there being a hand wheel 43 secured to one end of
55 the shaft 42 for rotating said shaft to effect the adjustment of the flask. Thus it will be seen that by positioning the flask 15 between the standards 34 of the pattern drawing device with the cleats 36 in engagement with
60 the grooves of the blocks 35 and rotating the hand wheel 43, the flask may be adjusted vertically of the standards so that by revolving the crank 38 the flask may be rotated to permit the withdrawal of the pattern.

65 Arranged between the horizontal bars 33

is a track 44 on which is mounted for travel a carriage 45 adapted to receive the flask 15 and transfer the latter from the tamping device to the pattern drawing device.

Above the main supporting frame is a hop- 70 per 46 having its lower end bifurcated at 47 and arranged to discharge into the flask 15, there being an agitator 48 mounted for rotation in the hopper 46 for the purpose of agitating the same and allowing the latter to 75 flow freely to the flask.

The agitator 48 is preferably in the form of a worm screw, one end of which is provided with a pulley 49 which may be connected through the medium of a belt with an engine 80 or other suitable source of power.

Arranged beneath the main supporting frame is a pit 50 having spaced sprocket wheels 51 journaled therein and on which is mounted for rotation an endless conveyer 52 85 carrying a plurality of buckets 53 adapted to receive the surplus or waste sand when filling the flask and convey the same to a receiving pocket 54 from whence it is delivered on a conveyer 55 to the hopper 46. 90

The conveyer 55 is preferably in the form of an endless belt or chain having buckets 56 similar in construction to the buckets 53, said conveyer being arranged to travel on suitable sprocket wheels 57 and actuated 95 from any suitable source of power. Arranged at the base of the conveyer 55 is a shaking screen or riddle 58 for removing any particles of dirt, gravel or other foreign matter from the sand before the latter is delivered to the flask 15. The screen 58 is preferably inclined in the direction of the conveyer 55 and oscillated through the medium of a cam 59 arranged to bear against the bottom of said screen, as best shown in Fig. 1 of 105 the drawings.

Extending transversely across the main supporting frame and secured in any suitable manner to the uprights 5 is a track 60 for the reception of a snap flask, indicated at 110 61, the latter to be worked out under the tamping element 12 and rammers 13 and 14 when the flask 15 is not in use.

In operation the flask is placed upon the carriage 45 and the latter moved to a posi- 115 tion beneath the tamping elements. Sand is then deposited on the screen 58 and is taken up by the conveyer 55 and discharged into the hopper 46 from whence it flows through the discharge spouts 47 of the hop- 120 per into the flask, the surplus or waste sand falling into the pit 50 from whence it is again conveyed to the hopper in the manner before stated. After the flask is filled with sand the tamping elements are actuated by 125 manipulating the operating levers 21. The flask is then moved on the carriage 45 to the pattern drawing device and said flask secured to the bearing blocks 35 and elevated by actuating the hand wheel 43, the rotation 130

of the flask 15 being effected by revolving the crank 38, as will be readily understood.

From the foregoing description it is thought that the construction and operation of the device will be readily understood by those skilled in the art and further description thereof is deemed unnecessary.

Having thus described the invention what is claimed is:—

1. In a machine for making sand molds, a flask, means for feeding sand to the flask, and a plurality of telescopic tamping elements movable to operative position within the flask.
2. In a machine for making sand molds, a flask, means for feeding sand to the flask, and a plurality of telescopic tamping elements movable simultaneously or independently to operative position within the flask.
3. In a machine for making sand molds, a flask, means for feeding sand to the flask, a plurality of telescopic tamping elements movable to operative position within the flask, and operating levers connected with the tamping elements for actuating the same.
4. In a machine for making sand molds, a flask, means for feeding sand to the flask, a plurality of telescopic tamping elements movable to operative position within the flask, rods connected with the tamping elements, operating levers pivotally connected with the rods, and means for normally and yieldably supporting the tamping elements in elevated position.
5. In a machine for making sand molds, a flask, means for feeding sand to the flask, a plurality of telescopic tamping elements, rods secured to the tamping elements, operating levers connected with the rods, and a flexible

element secured to each rod and provided with a counter balance.

6. In a machine for making sand molds, a flask, means for feeding sand to the flask, and a plurality of telescopic tamping elements, said tamping elements being movable simultaneously or independently to operative position within the flask, and means for automatically returning said tamping elements to inoperative position.

7. In a machine for making sand molds, a stationary frame, a movable frame, a flask disposed beneath the movable frame, a plurality of telescopic tamping elements carried by the movable frame, means for adjusting the movable frame vertically of the stationary frame, and operating levers pivotally mounted on the stationary frame and operatively connected with the tamping elements for actuating the latter.

8. In a machine for making sand molds, a stationary frame, a movable frame, a plurality of telescopic tamping elements carried by the movable frame, a flask disposed beneath the tamping elements, rods secured to said tamping elements, means for adjusting the movable frame vertically of the stationary frame, operating levers connected with the rods, and a flexible element secured to each rod and provided with a counter-weight.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

EDWARD JAMES LAHAN.

Witnesses:

ELMER SCHROEDER,
JOHN B. BERNBROCK.