

No. 689,148.

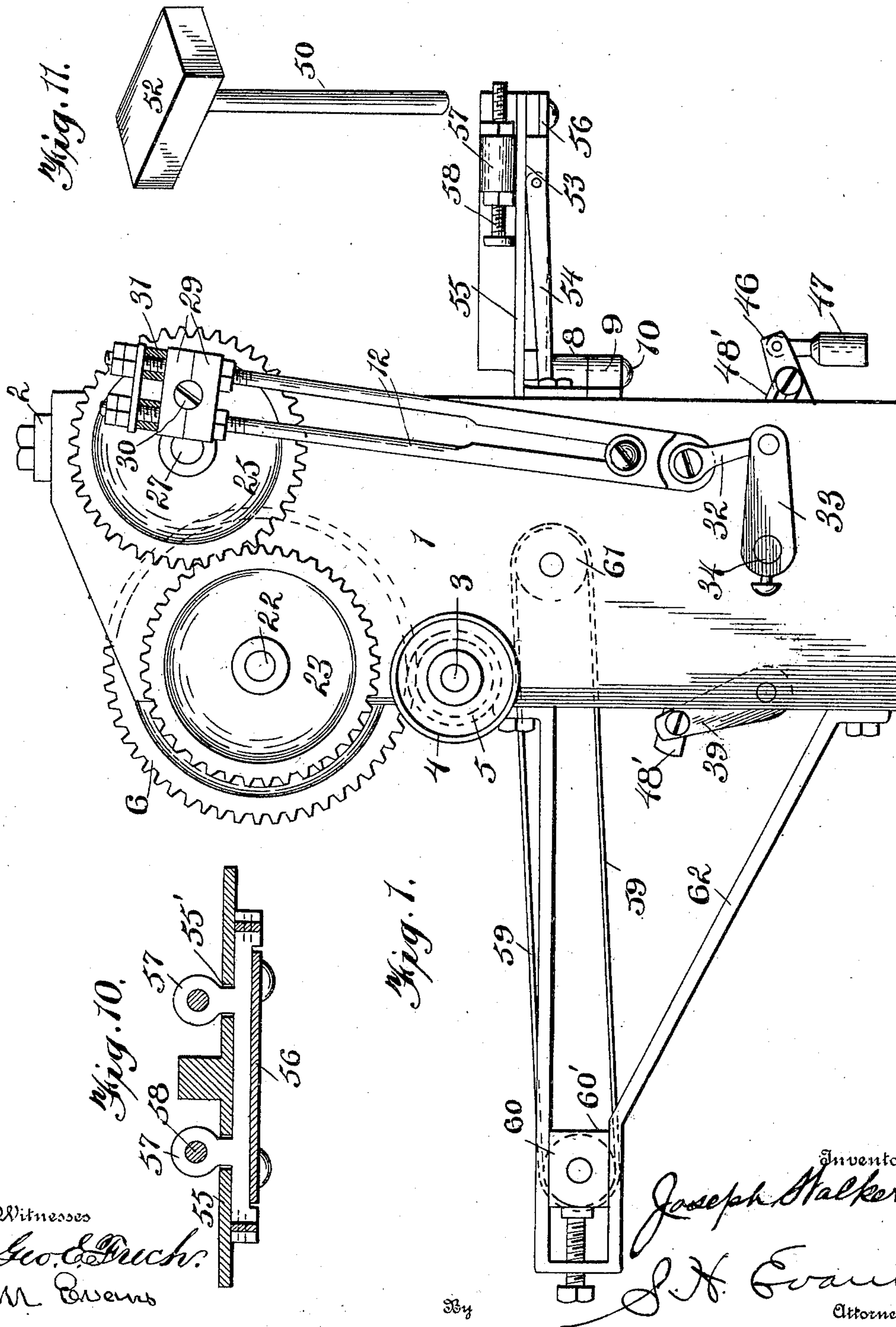
Patented Dec. 17, 1901.

J. WALKER.
RE-PRESS BRICK MACHINE.

(Application filed June 8, 1901.)

(No Model.)

4 Sheets—Sheet I.



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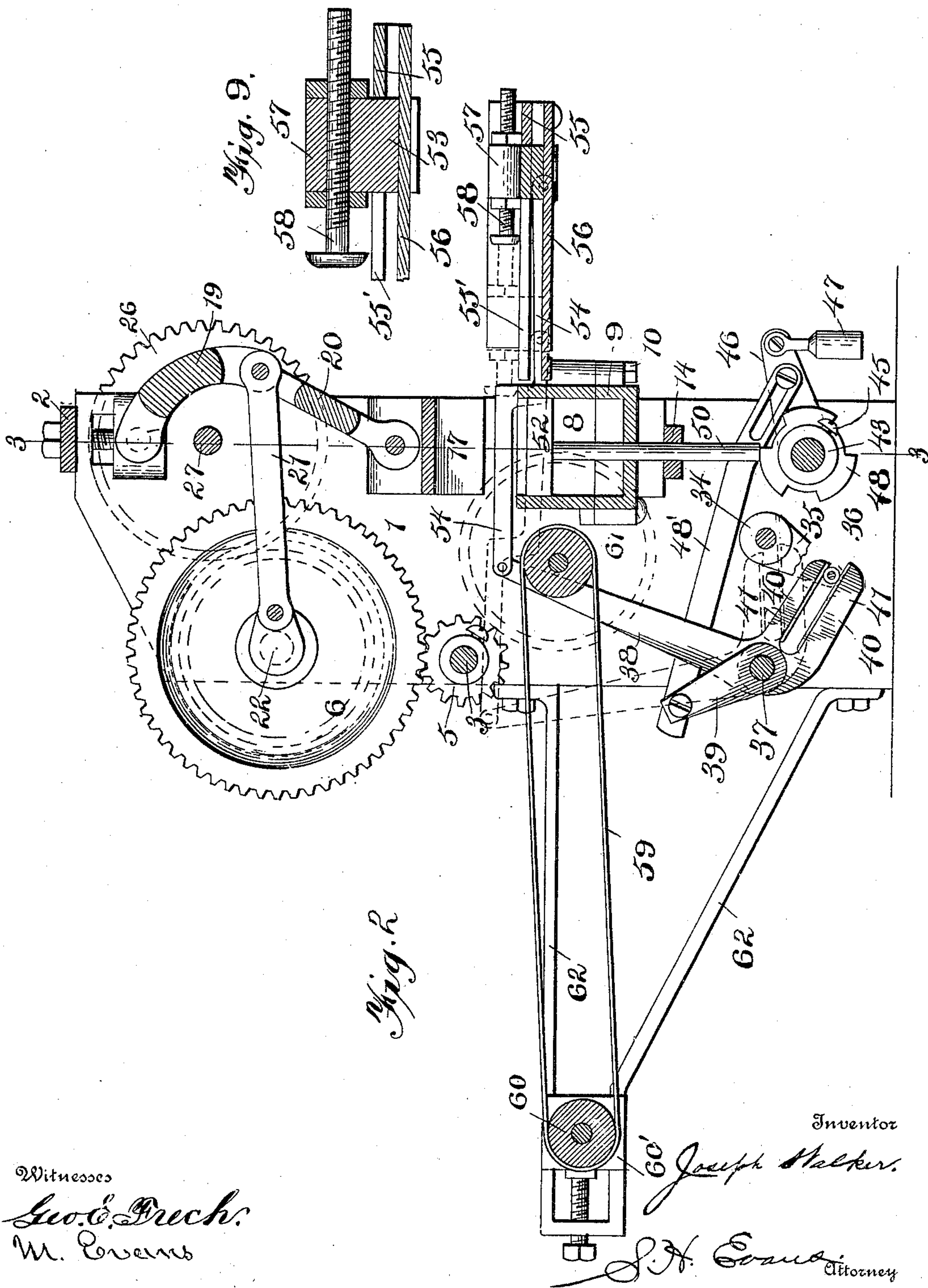
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RE-PRESS BRICK MACHINE.

(Application filed June 6, 1901.)

(No Model.)

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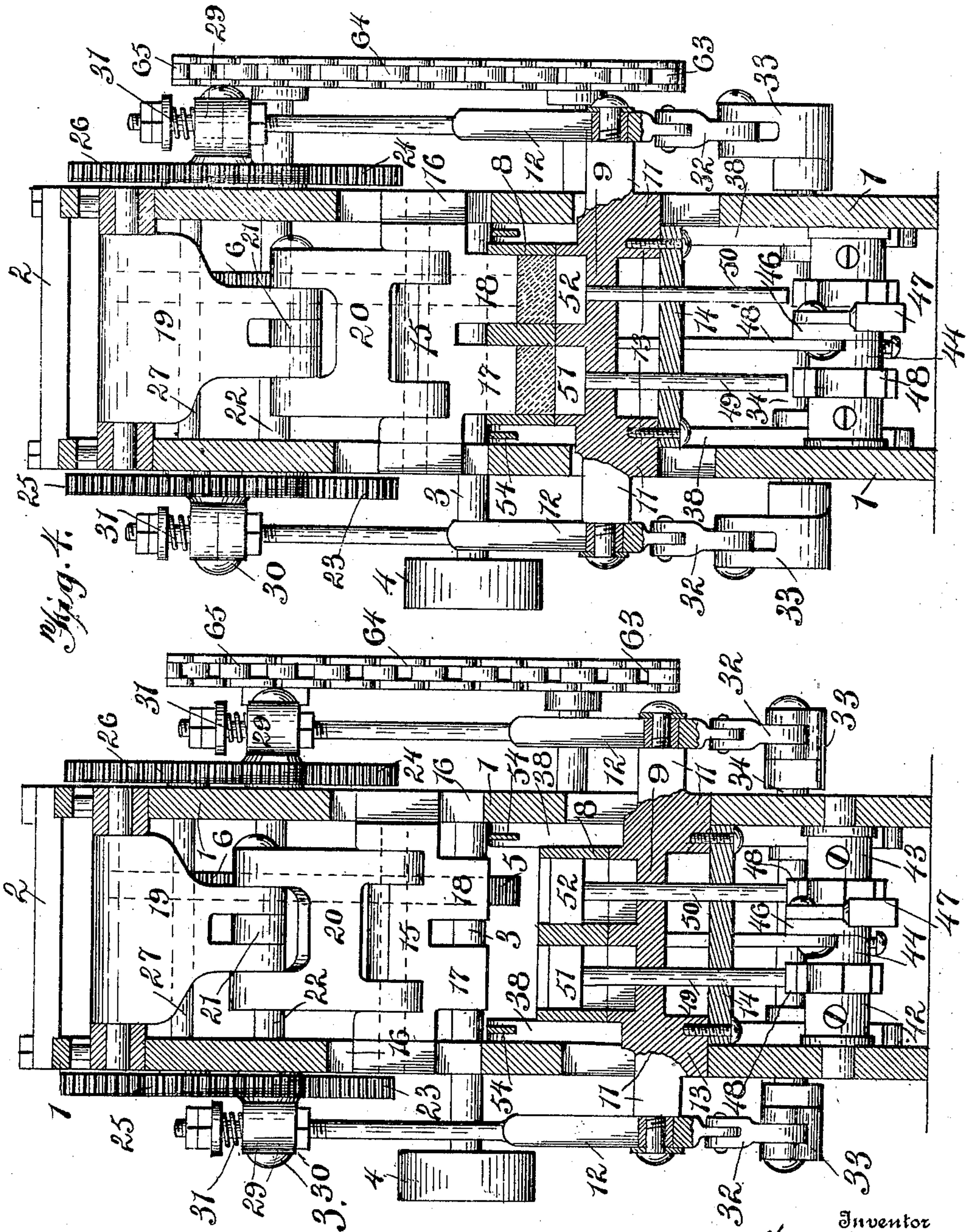
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4 Sheets—Sheet 3.



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Fig. 3.

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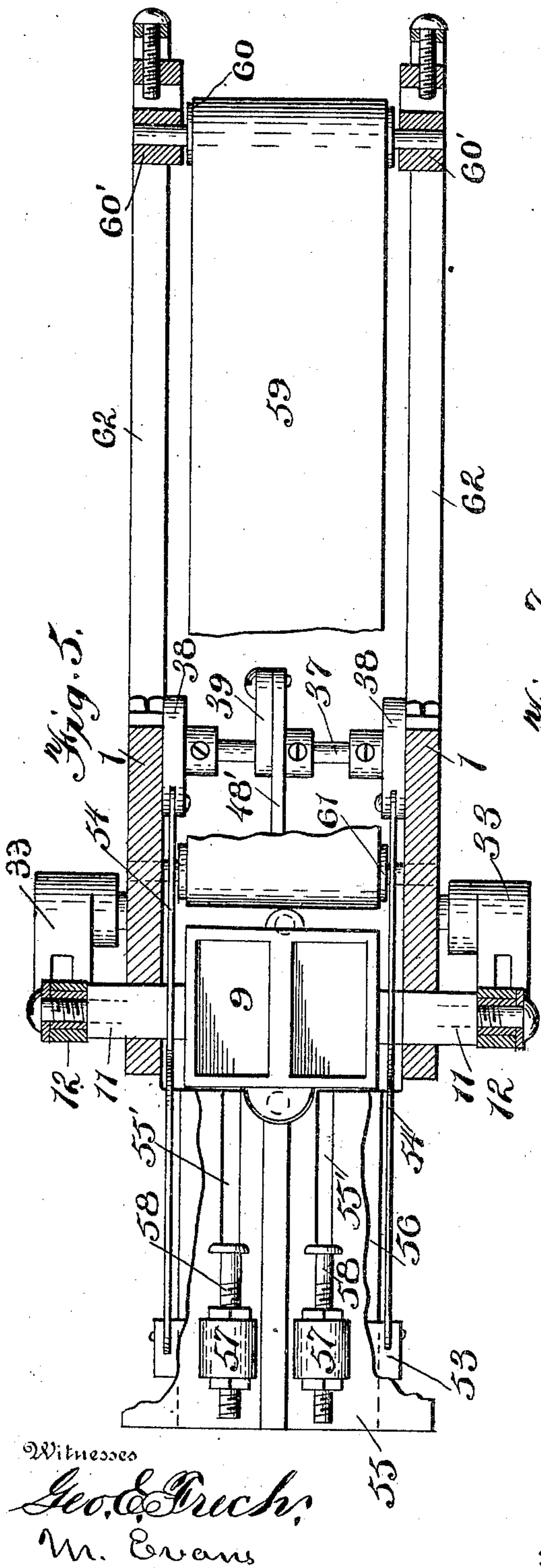


Fig. 2.

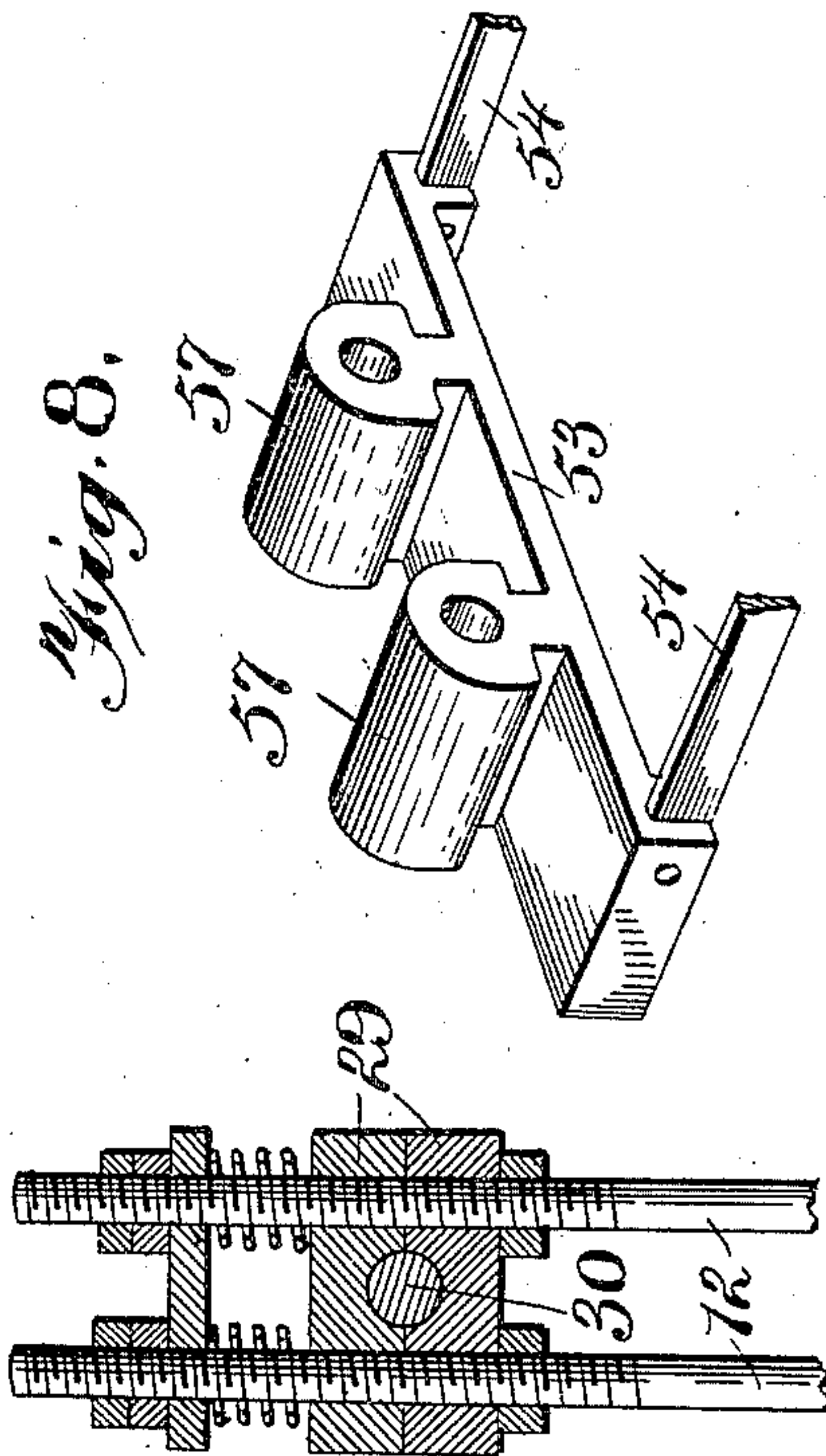
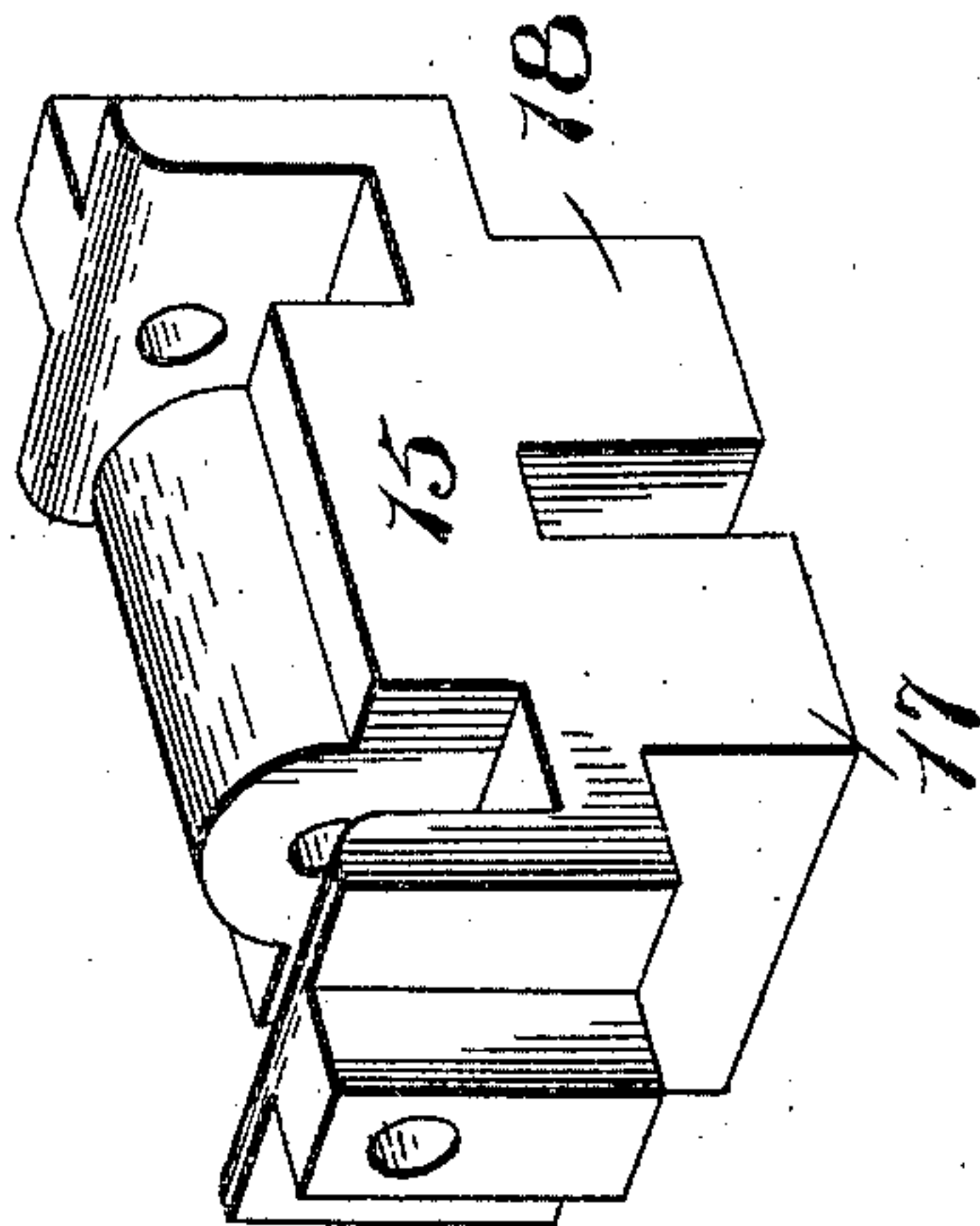


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOSEPH WALKER, OF ST. ELMO, VIRGINIA, ASSIGNOR OF ONE-HALF TO
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RE-PRESS BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 689,148, dated December 17, 1901.

Application filed June 6, 1901. Serial No. 63,360. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH WALKER, a citizen of the United States, residing at St. Elmo, in the county of Alexandria and State of Virginia, have invented certain new and useful Improvements in Re-Press Brick-Machines, of which the following is a specification.

My invention relates to improvements in re-pressing brick-machines, and pertains to a re-press by which a top and bottom pressure is secured.

One object of my invention is to operate the travel of the brick in the mold by a lever in a simple manner without cams or complicated gearing, as is usually employed.

A further object is to provide adjustable means for holding the vertically-movable plungers which form the bottom of the mold-box flush with the receiving-table until the re-pressed bricks have been partly forced off by the entry of the unpressed bricks, when the plungers are automatically tripped, so as to prevent the bricks from being forced over the ends or edges of the mold-box.

A further object of my invention is to provide simple and durable means for conveying the brick to and from the re-pressing molds, all of which will be fully described hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my invention. Fig. 2 is a longitudinal sectional view, the forward movement of the brick-conveyer shown in dotted lines. Fig. 3 is a transverse vertical sectional view. Fig. 4 is a transverse vertical sectional view showing the plungers within the molds. Fig. 5 is a horizontal sectional view. Fig. 6 is an enlarged detail view of the upper plungers. Fig. 7 is a detail view of the upper portion of the open connecting-rods. Figs. 8, 9, and 10 are detail views of the device for conveying the brick into the molds. Fig. 11 is a detail view of one of the lower plungers.

Referring now to the drawings, the numeral 1 indicates two vertical side plates which are rigidly braced across their upper ends by a cross-bar 2. Journaled through the side plates is a power-shaft 3, carrying on its outer end a band-wheel 4 and at a

point intermediate the side plates a gear-wheel 5, which meshes with the main gear-wheel 6.

7 indicates the mold-frame, which extends horizontally between the sides 1 and consists of two sections 8 and 9. The upper section 8 constitutes the mold-box proper and is rigidly attached to the section 9 by bolts 10, thus permitting the removal and replacement of the molds should they become worn. The number of molds may be increased without departing from the spirit of my invention. The lower section of the mold-frame is provided with two laterally-extending arms 11, in the outer ends of which are bearings for engagement with the open connecting-rods 12, and depending from the mold-frame are two flanges 13, to which I attach a cross-plate 14. The arms 11 pass through vertical slots or recesses in the side plates and are provided with heavy shoulders which extend to the lower edge of the flanges 13 and serve as guides and greatly increase the strength of the mold-frame.

15 indicates the upper reciprocating die or plunger plate, which is pivotally connected with a toggle-lever 20 and with ends formed to fit the vertical slots 16. The curved toggle-lever 19 is journaled in suitable bearing-plates set in corresponding sockets in the upper ends of the side plates 1, and the two toggles 19 and 20, which form a knuckle-joint, are connected at their inner ends with a pitman 21, as clearly illustrated.

22 is a crank-shaft which operates the pitman 21 and carries the main gear 6, meshing with the gear 5 on the power-shaft 3. On the outer ends of the crank-shaft 22 I provide two gear-wheels 23 and 24, which mesh with and operate the gear-wheels 25 and 26, which are attached to the outer ends of a cross-shaft 27.

On each side of the machine I provide open connecting-rods 12, and on the upper screw-threaded ends are two bearing-plates 29, which form a cuff for stub-shafts 30, carried by the gear-wheels 25 and 26, as shown in Figs. 1, 3, and 4. Heavy rubber washers or springs 31 are adapted to give and release the tension on the rods 12 should a large brick enter the molds. The lower ends of the rods 12 are pivotally connected on each

side of the machine by arms or links 32 with the crank-arms 33 of a rock-shaft 34, which extends transversely through the lower portion of the machine, whereby the vertical reciprocating motion of the rods 12 is imparted to the crank-arms 33.

Between the sides 1 and rigidly attached to the rock-shaft 34 are two depending crank-arms 35, the free ends of which are provided with laterally-extending lugs 36, preferably, though not necessarily, provided with friction-reducing rollers.

The numeral 57 indicates a cross-shaft carrying two bell-crank levers 38, located within the frame 1 and on each side of an upwardly-extending crank-arm 39, which is rigidly attached to the shaft 37. The laterally-extending lugs on the crank-arms 35 enter and travel in slots or grooves in the lower or short arms of the bell-crank levers 38, thus imparting a rocking movement to the shaft 37. The members 40 of the crank-lever 38 are preferably provided with a flanged upper face 41, to which a steel face or bearing-plate is removably attached.

42, 43, and 44 are three sleeves attached to a rock-shaft 45 by set-screws. The sleeves or cuffs 42 and 43 are each provided with a series of shoulders or projections 48 and the intermediate sleeve 44 with an arm 46, carrying on its free end a swinging weight 47 and a laterally-extending stud or pin engaging a slotted lever 48', which is pivotally connected with the crank-arm 39. Circular recesses or openings are provided in the bottom of the mold-box to permit the vertical movement of rods or guide-pins 49 and 50, depending from the plungers 51 and 52.

The upwardly-extending crank-arm 38 serves to reciprocate the brick conveyor or follower 53, being pivotally connected therewith by two arms 54, having an intermediate shoulder to clear the shaft which operates the discharge-belt. The arms or cranks 54 travel in a plane horizontal to the receiving-table, the levers having a direct pull, thus avoiding the wear and strain on the parts, as is the case with the mechanism usually employed to accomplish this purpose. The follower consists of a plate 53, which is adapted to slide longitudinally between two plates 55 and 56 and is provided on each end with downwardly-extending flanges, with which the arms 54 are pivotally connected. The plate 55, which forms the receiving-table, is secured to the vertical sides 1 by bolts or screws and is provided with two slots or grooves 55' to permit the longitudinal reciprocation of the upwardly-extending members 57, through which pass adjustable plungers 58.

The re-pressed bricks are conveyed from the molds on a belt or apron 59, which is carried over rollers 60 and 61. The roller 60 is provided with an adjustable journal 60' and is located between the outer ends of rearwardly-extending brackets 62. The shaft of the roller 61 carries on its outer end a sprocket-wheel

63 and is driven by the chain 64, which passes over the sprocket-wheel 65 on the outer end of the crank-shaft, as clearly illustrated in Figs. 3 and 4.

It will be readily understood from the above description that when the bricks are being pressed the controlling mechanism will be in the position shown in Figs. 1 and 4. The pitman 21 having reached the limit of its inner stroke, the dies or plungers 17 and 18 are forced into the mold-box and at the same time the mold-frame 7 is raised by the rods 12, and the crank-arms 35 bearing down on the members 40 the lever 38 is carried forward, thus forcing the brick-conveyer back to its original position. The guide pins or rods 49 and 50 are raised clear of the sleeves 42 and 43, permitting the weighted arm 46 to rock the shaft 45, thus bringing shoulder 48 forward. When the pitman 21 forces the knuckle or toggle joint outward, as illustrated in Figs. 2 and 3, the plungers 17 and 18 are raised and the mold-frame 7 lowered until the shoulders of the same reach the bottom of the lower slots in the plates 1. The guide-pins 49 and 50 will then rest on the shoulders 48, thus holding the upper surface of the plungers 51 and 52 flush with the receiving-table and discharge-belt until the re-pressed bricks have been partly forced off and new bricks partly placed in the molds, when the crank-lever 48 will raise the arm 46 until the guide-pins 49 and 50 are tripped, which will slightly lower the plungers 51 and 52. This movement is so timed that the plungers will trip just before brick-conveyers 58 reach the limit of their inward travel in order to prevent the newly-admitted bricks from being forced over the end of the molds. As the rods 12 raise the mold-frame 7 the plungers 51 and 52 lower the bricks into the molds before the upper dies or plungers 17 and 18 reach the mold-boxes. Should the shoulders 48 become worn, the sleeves 42 and 43 can be released and turned so as to bring one of the additional shoulders into position.

Particular attention is called to the fact that the connecting-rods 12 are so centered on the pinions 25 and 26 that one half of the revolution of the pinions serves to reciprocate the mold-frame 7 and the other half the brick-conveying mechanism. It will therefore be seen that the pinion accomplishing a double purpose, one-half of the gear-wheels and corresponding parts usually employed are eliminated, which is not only a reduction in the cost of construction, but a great saving in repairs, and while the function performed by the pinion 25 is double the strain is not increased, as it completes the longitudinal reciprocation of the brick-conveyer before it begins the vertical reciprocation of the mold-frame.

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

1. In a re-press brick-machine a vertical

frame, a die or plunger plate, means for vertically reciprocating the same, a mold-frame having laterally-extending arms passing through slots in the vertical connecting-rods, and adapted to be carried thereby in engagement with the upper plungers, a transverse rock-shaft with crank-arms outside of the frame and pivotally connected with the vertical connecting-rods 12, intermediate depending cranks carried by the rock-shaft and adapted to operate the brick-conveyer, substantially as described.

2. In a re-press brick-machine, the upper die or plunger plate, vertically reciprocated by a knuckle-joint, a pitman-rod driven by the main crank-shaft and adapted to operate the knuckle-joint, the depending open connecting-rods carried by the pinions 25 and 26, means for operating the said pinions, pivoted links connecting the solid heads of the rods 12 with the crank-arms 33 and adapted to operate the brick-conveying mechanism, a sectional mold-frame operated by the rods 12, a transverse bar rigidly attached to the depending flanges of the mold-frame, plungers 51 and 52 having depending guide rods or pins, the circular openings in the bottom of the mold-frame and in the bar carried thereby, serving to guide the plunger-rods, sleeves or cuffs 42 and 43, carried by a cross-shaft situated below the mold-frame, and provided with shoulders or lugs 48 for holding the face of the plungers 51 and 52 flush with the receiving-table, the intermediate sleeve 44 provided with a laterally-extending arm carrying a weight, the slotted lever 48 connected with and operated by the crank-arm 39 and adapted to raise the arm 46 and trip the rods 49 and 50, the slotted opening in the crank 48 being adapted to allow the crank to move forward until the guide-rods clear the shoulders 48, the weighted arm 46 completing the forward movement, substantially as described.

3. In a re-press brick-machine comprising a vertical frame, laterally-extending receiving and discharge tables, a plunger-plate with depending dies or plungers, a sectional mold-frame with laterally-extending arms, mold-boxes provided with expelling-plungers, means for vertically reciprocating the mold-frame and die-frame, connecting-rods 12 vertically reciprocated by the pinions 25 and 26, a transverse rock-shaft 34 provided with crank-arms 33, links or arms 32, pivotally connecting the said cranks with the rods 12, intermediate depending crank-arms 35, carried by the rock-shaft 34 and provided with laterally-extending pins or lugs, adapted to engage the arms or legs 40, the intermediate crank-arm 39 carried by the rock-shaft 37 pivotally connected to the slotted lever 48', the said lever engaging the arm 46 for tripping the plungers 51 and 52, the bell-crank levers, carried by the rock-shaft 37, provided with flanged faced arms or legs 40, engaging the crank-arms 35, and the upwardly-extending

arms 38 pivotally connected with the curved or shouldered arms 54, the outer ends of the arms 54 being pivotally connected with the depending flanges of the follower 53, and adapted to travel in a plane normally horizontal to the receiving-table, when reciprocating the said follower, the upwardly-extending members or boxes 57 integral with the plate 53 and provided with adjustable plungers 58, substantially as described.

4. In a re-press brick-machine, the vertical side plates, the crank-shaft for operating the pitman 21, the main gear-wheel 6 meshing with pinion 5, power-shaft 3 carrying the said pinion, cross-shaft 27, carrying on its outer ends gear-wheels 25 and 26 meshing with gear-wheels 23 and 24 on the outer ends of the crank-shaft 22, and adapted to be driven thereby, the open connecting-rods journaled on a wrist-pin on the pinions 25 and 26, and adapted to reciprocate the mold-frame and the brick-conveying mechanism, toggle levers or plates 19 and 20 pivotally connected on their ends with and adapted to be operated by the pitman 21, and on their outer ends with the upper portion of the frame and the die or plunger plate 15, substantially as described.

5. In a re-press brick-machine, the die or plunger plate, means for vertically reciprocating the same, a mold-frame 9 provided with depending flanges, a cross-bar rigidly attached thereto, the laterally-extending shoulders, integral with and extending to the bottom of the said flanges, the socketed plungers 51 and 52 with depending guide-rods 49 and 50, the said rods adapted to rest on the shoulders 48 when the mold-frame is carried downward, thereby expelling the bricks from the molds, shoulders 48 for holding the face of the plungers flush with the receiving-table and discharge-belt, means for tripping the said plungers while the new forms or bricks are being forced onto the face of the said plungers, vertically-disposed rods 12 in engagement with the laterally-extending arms of the mold-frame, one half the travel of the said rods adapted to reciprocate the mold-frame and the other half to operate the brick-conveyer, substantially as described.

6. In a re-press brick-machine, a sectional mold-frame provided with expelling-plungers, means for tripping the said plungers after the new form has partly entered the mold, dies or plungers adapted to register with and enter the said molds, a receiving-table consisting of upper and lower plates, longitudinal grooves 55', the follower 53, pivotally connected with the arms 54, means for reciprocating the follower between the said plates, the upwardly-extending members 57 provided with the adjustable plungers 58 and adapted to travel in the grooves 55', a longitudinal bracket or frame 62, the roller transversely and adjustably journaled therein, roller 61 journaled between the side plates

1, a belt 59 passing over the said rollers and adapted to convey the re-pressed bricks from the molds, a sprocket-wheel 65 attached to the outer end of shaft 22 and connected by a
5 chain 64 with a sprocket on the outer end of the roller-shaft, for driving the belt 59, substantially as described.

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

JOSEPH WALKER.

Witnesses:

S. A. TERRY,
S. H. EVANS.