

No. 682,383.

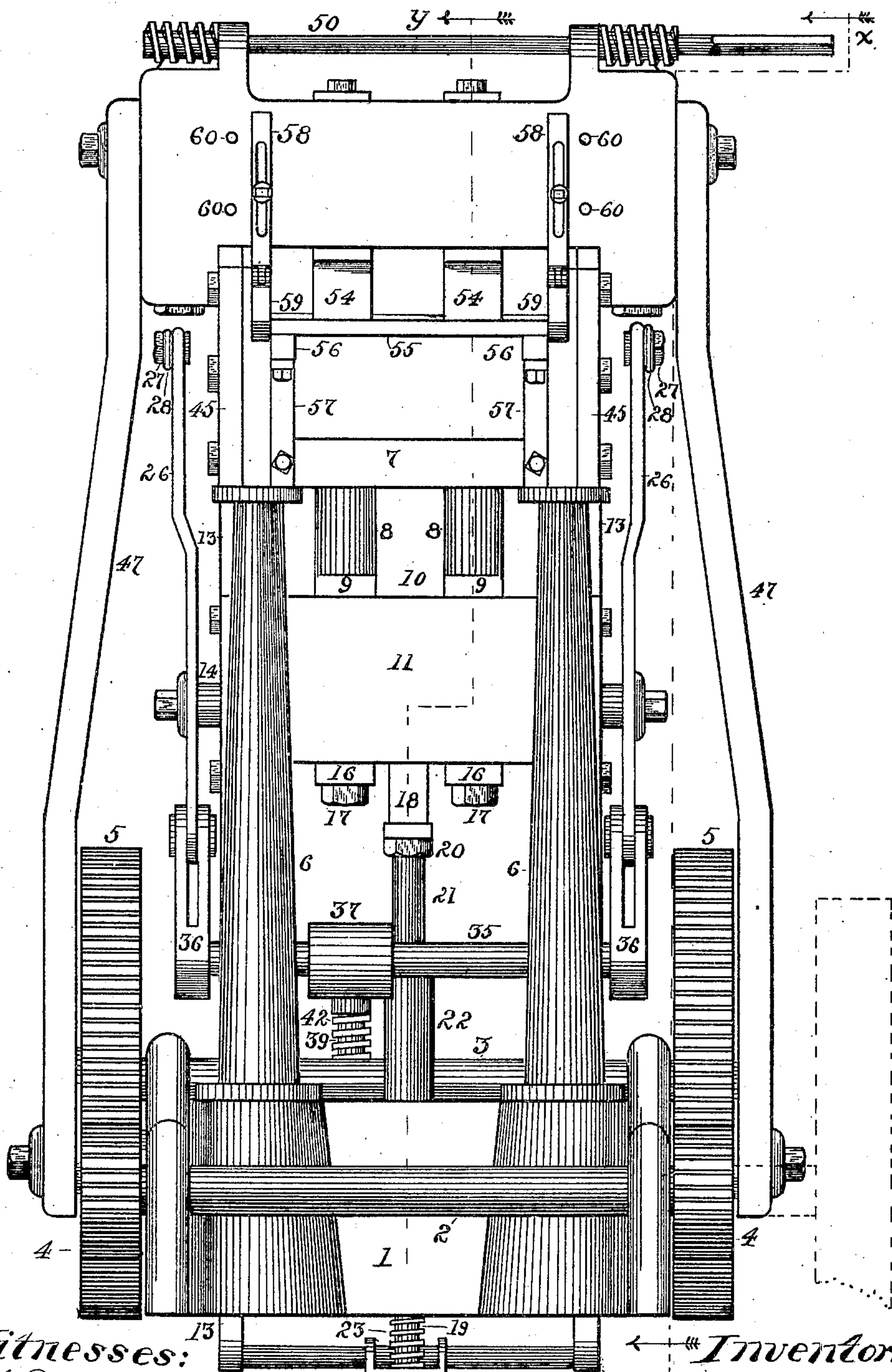
Patented Sept. 10, 1901.

J. R. LONG.
BRICK PRESSING MACHINE.

(Application filed Aug. 13, 1900.)

(No Model.)

5 Sheets—Sheet 1.



Witnesses:
L. S. Bittner
Bessie Crook

Fig. 1.

Inventor:
J. R. Long
by Humphrey Humphrey
attys.

No. 682,383.

Patented Sept. 10, 1901.

J. R. LONG.
BRICK PRESSING MACHINE.

(Application filed Aug. 13, 1900.)

(No Model.)

5 Sheets—Sheet 2.

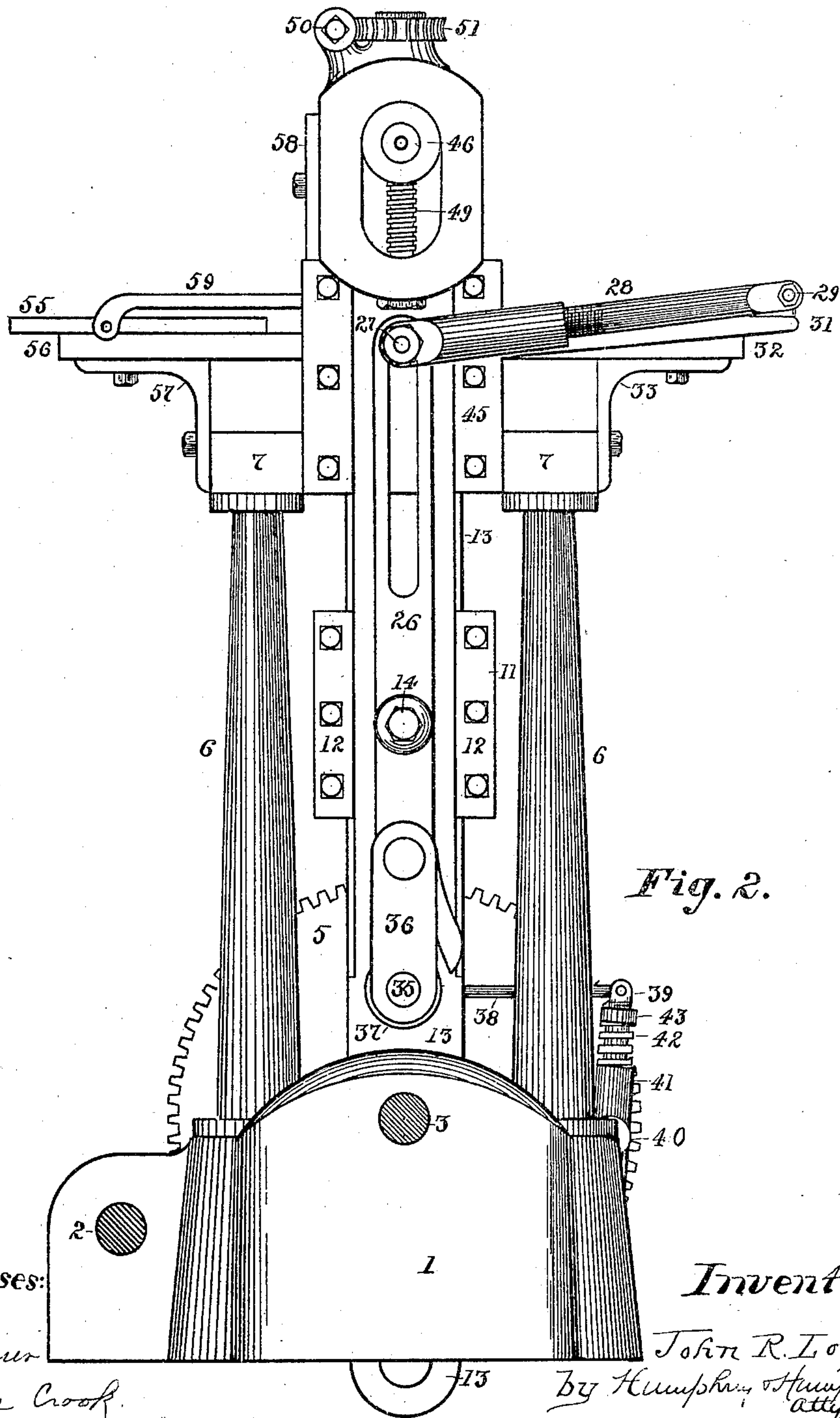


Fig. 2.

Witnesses:

L. B. Pittner
Bessie Crook.

Inventor:

John R. Long
by Humphrey & Humphrey
attys.

No. 682,383.

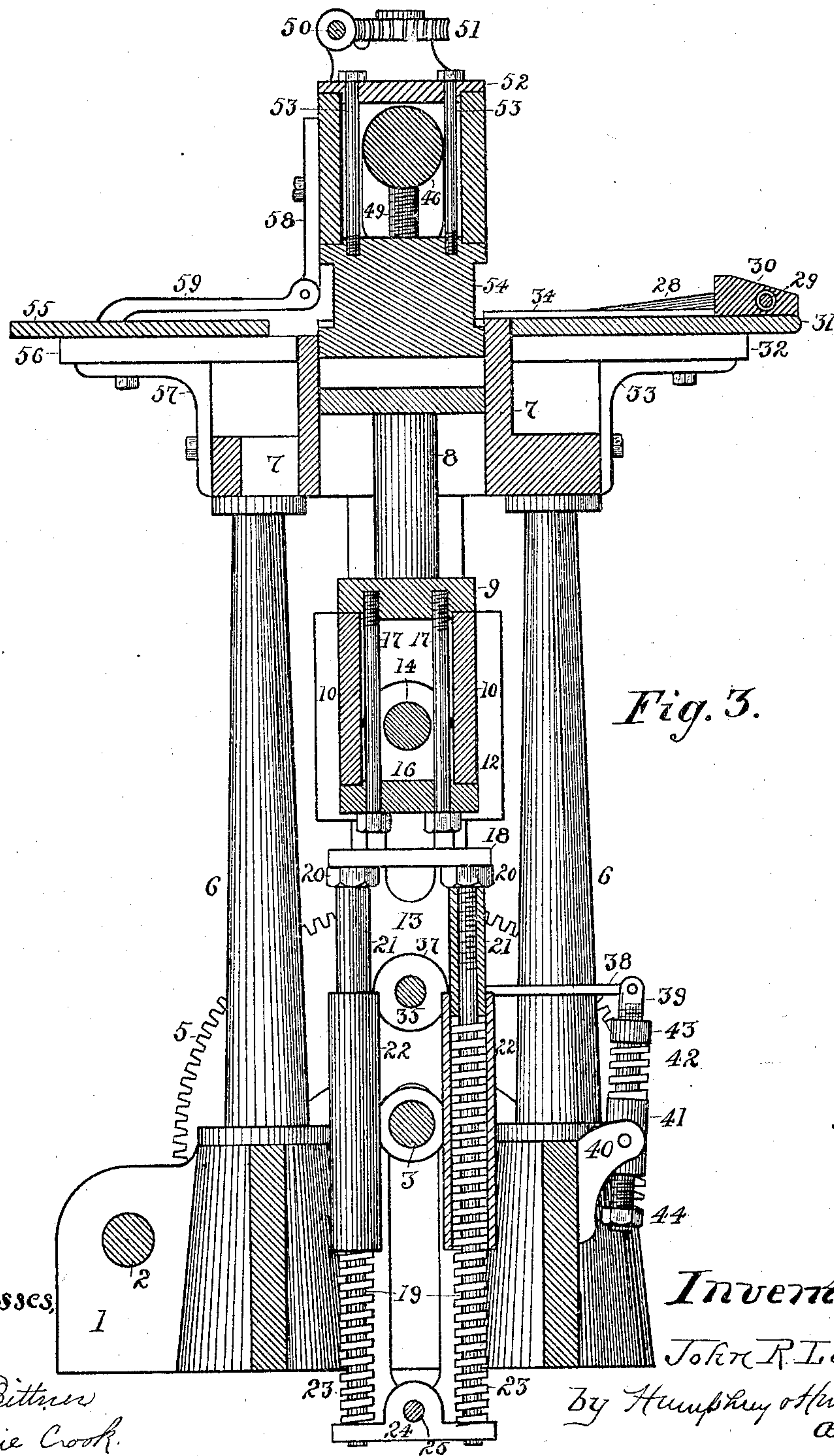
Patented Sept. 10, 1901.

J. R. LONG.
BRICK PRESSING MACHINE.

(Application filed Aug. 13, 1900.)

(No Model.)

5 Sheets—Sheet 3.



No. 682,383.

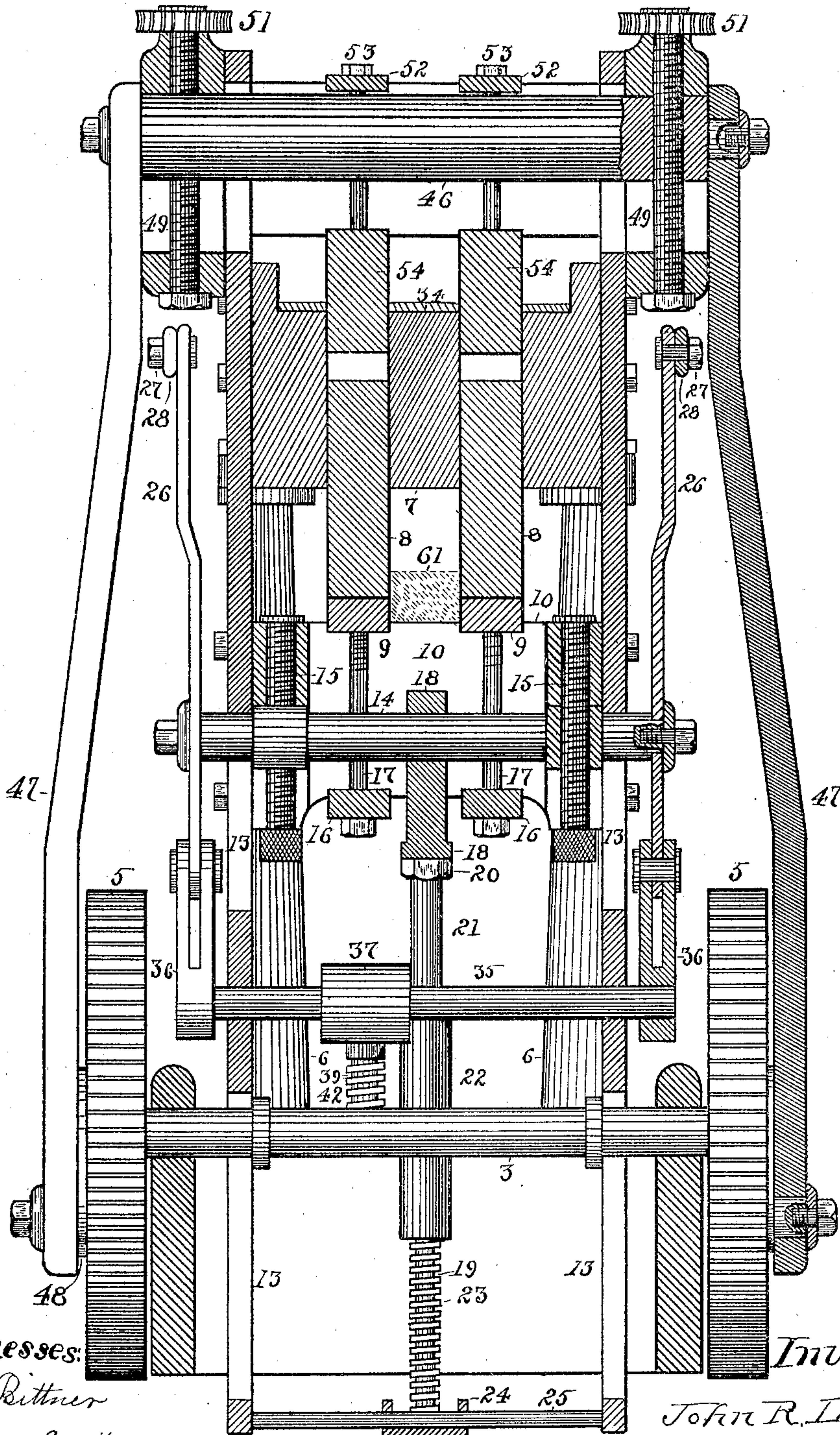
Patented Sept. 10, 1901.

J. R. LONG.
BRICK PRESSING MACHINE.

(Application filed Aug. 13, 1900.)

(No Model.)

5 Sheets—Sheet 4.



Witnesses:

L. B. Bittner
Bessie Crook

Inventor.

John R. Long,
by Humphrey & Humphrey
attys.

Fig. 4.

No. 682,383.

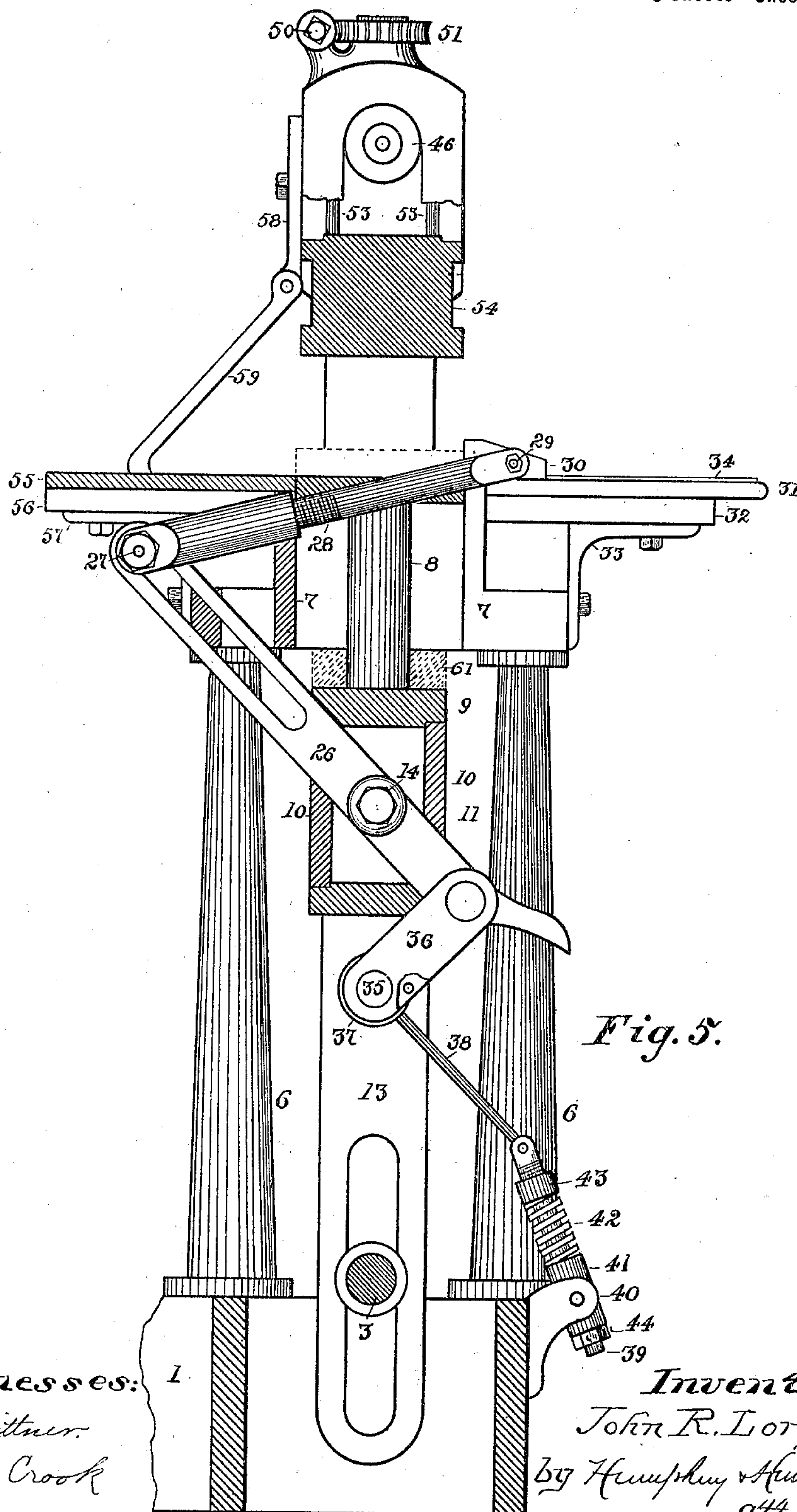
Patented Sept. 10, 1901.

J. R. LONG.
BRICK PRESSING MACHINE.

(Application filed Aug. 13, 1900.)

(No Model.)

5 Sheets—Sheet 5.



Witnesses:
L. D. Pittner.
Bessie Crook

Inventor:
John R. Long,
by Humphrey & Humphrey,
attys

UNITED STATES PATENT OFFICE.

JOHN R. LONG, OF SPRINGFIELD TOWNSHIP, OHIO.

BRICK-PRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 682,383, dated September 10, 1901.

Application filed August 13, 1900. Serial No. 26,695. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. LONG, a citizen of the United States, residing at Springfield township, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Brick-Pressing Machines, of which the following is a specification.

My invention has relation to improvements in machines for re-pressing brick; and it has for its object the construction of a mechanical apparatus by which the bricks in a plastic state and after they have been pressed to form in the usual manner shall be re-pressed to more completely solidify and harden them preparatory to burning; and its further object is to avoid certain objections in the devices heretofore used for this purpose by holding the compressed brick in the molds until the pressure is completed, so as to avoid the possibility of their enlarging when they are released from the mold.

My invention consists in the peculiar and novel construction, arrangement, and combination of parts hereinafter described and then specifically pointed out in the claims, reference being had to the accompanying drawings, forming a part of this specification.

In the accompanying drawings, in which similar reference-numerals indicate like parts in the different views, Figure 1 is a front elevation; Fig. 2, a side elevation, partially in section, at the line X X of Fig. 1; Fig. 3, a section at the line Y Y of Fig. 1; Fig. 4, a central vertical section of Fig. 2, and Fig. 5 a section showing certain positions of the operative parts and hereinafter described.

Referring to the drawings, 1 is a bed-block having the general form of a hollow square in which are journaled two parallel shafts 2 3, the first whereof, 2, is provided with a pulley (indicated by dotted lines in Fig. 1) to be driven from any suitable source of power. On this shaft 2 are small gears 4, that mesh in larger gears 5 on the counter-shaft 3.

From the bed-block 1 arise four posts 6, on top of which is secured the mold 7. This mold consists of a substantial casting through which are openings of the proper size and shape to form horizontal sides of the brick to be pressed. Arranged to slide in these openings are vertically-reciprocating plungers 8,

having rectangular heads secured on plates 9, that rest on side bars 10 of a cross-head 11. On the lower face of these cross-bars 10 are two plates 16, similar to plates 9 and directly below them, through which pass bolts 17, which screw into plates 9, and thus retain both firmly in place by clamping the bars 10. This cross-head consists of a hollow box having guide-bars formed on its ends by dovetailed plates 12, fastened thereto by bolts, in which slide vertically-reciprocating bars 13, to be described. Across this cross-head 11 is a shaft 14, having enlarged portions near its ends where it passes through the end walls of the cross-head, and through these enlarged parts pass and mesh adjusting-screws 15, which change the relative vertical position of the shaft 14 within the cross-head, the end walls of which are cut out or slotted from below to permit this movement. In passing through the cross-head the shaft 14 passes through and supports a block 18, whose lower end is provided with outwardly-extending shelves, in which are rigidly fastened two vertically-depending parallel screw-threaded rods 19. On the upper ends of these rods 19 are nuts 20 to mesh and travel on the screw-threads thereof, Fig. 3. Below these nuts 20 and surrounding the rods 19 are two like hollow tubes 21, the upper parts of which are slightly larger than the rods 19. From the lower ends of these tubes 21 depend tubes 22, whose internal diameter is larger and between which and the rods 19 are coiled springs 23, the upper ends of which press against the lower ends of tubes 21 and the lower ends against a cross-arm 24, hung on a rod 25, extending between the vertical bars 13 near their lower ends. The rods 19 pass freely through the cross-arm 24; but the springs rest on its upper face and are compressed when desired by turning down the nuts 20 on the tubes 21, which force the springs more firmly together.

On the outer ends of the shaft 14 (in the cross-head) are pivoted two levers 26, whose movements are similar and whose upper portions are slotted for bolts 27, which pivotally connect their upper ends with connecting-rods 28. These connecting-rods 28 are longitudinally adjustable by being made in two parts and screwed together and are connected at their opposite ends with the two outer ends

of cross-rod 29, which bears a number of followers 30, corresponding to the number of molds in the machine. As the levers 26 rock on their pivot (shaft 14) the followers 30 slide backward and forward across a feed table or shelf 31, sustained on two bars 32, which are upheld by brackets 33, bolted to the lower face of the mold 7 above the posts 6. The upper or working face of the shelf 31 is on an even level with the upper face of the mold 7, so that bricks will pass from the shelf into the mold without encountering any obstacle, and to further direct their course narrow raised strips 34 are placed across the shelf to form guideways for the brick pushed forward by the followers 30.

Journalled in the bars 13 and a short distance above and parallel with shaft 3 is a shaft 35, bearing at its outer ends, outside of the bars 13, cranks 36, bifurcated at their ends and pivotally connected with the lower shorter ends of the levers 26, which enter the open slots in them. It will be apparent that a partial revolution of the crank-shaft 35 will cause lever 26 to rock and reciprocate the followers across the table 31, and to cause this I fasten irrevolubly on the shaft 35 a sleeve 37, from which extends at substantially a right angle with the axis of the shaft 35 a rod 38. The outer or free end of the rod 38 is pivotally connected with a short shaft 39, which is mounted as follows: On the housing 1 is a double bracket 40, bearing between its sides a vertically-swinging tube 41, with trunnions to enter the brackets to form bearings, and through this tube 41 the shaft 39 slides freely, excepting that it is normally held upward by a coiled spring 42, whose tension is adjusted by a nut 43, and the shaft 39 is prevented from rising too far by a nut 44 at the lower end thereof. Normally the spring is so adjusted as to leave some distance between the tube 41 and the nut 44, so as to permit the shaft 39 to rise a short distance before being stopped by the nut.

Having described the mold and the lower plungers and their connected mechanism, the upper or descending plungers are next described, as follows: On either side of the vertical bars 13 and forming slides or ways therefor are dovetailed plates 45, bolted to the mold 7, between which the bars 13 reciprocate up and down, and they bear at their upper ends a head, through which is an irrevoluble shaft 46, the ends whereof are reduced in size and on which are pivotally secured connecting-rods 47, the lower ends of which are similarly fastened to the wrist-pins 48 on the main gears 5. The head is somewhat similar to the cross-head 11, being a hollow box open at the top and bottom, and is pierced at each end where the shaft 46 passes through with a vertically-elongated slot, and the shaft 46 is vertically adjusted by means of two screws 49, passing through this slot and shaft 46 and whose office and operation are similar to the screws 15 in the

cross-head. The upper ends of the adjusting-screws terminate in worm-wheels 51 outside of the head. A transverse shaft 50, bearing two worms, is journaled in the top of the head, so that its revolution will raise or lower the shaft 46 by revolving the worm-wheels 51. Across the two side bars of the head are two plates 52, through which pass bolts 53 to the plungers 54, similarly mounted on the under face of the head, and the plates 52 and plungers 54 are retained in place by the bolts 53 clamping them against the top and bottom of the head, respectively. On the opposite side of the mold 7 from the shelf 31 is a sliding shelf 55, moving on two bars 56, supported by adjustable brackets 57, bolted to the mold 7. This shelf 55 is caused to approach to the inner line of the mold 7 when the head and plungers 54 are raised and to slide away therefrom by the following means: On the side of the head next to the sliding shelf are two vertical slotted bars 58 bolted thereto, to the lower ends of which are pivotally hinged arms 59, pivotally fastened to the sides of the shelf 55, and as the head rises the shelf is drawn toward the mold and pushed away as it descends. The reciprocating bars 13 are fastened to the head, between the sides thereof, by pins 60, Fig. 1, so that they rise and lower with it, and it will be noticed that these bars are slotted below the shaft 46 in order to permit its adjustment and below the shaft 14 to permit its upward course after the shaft 14 has ceased to rise and also around and below the main shaft 3 to permit the bars to rise unimpeded by this stationary shaft.

In practice I place a block of wood 61, Figs. 4 and 5, between the lower plungers 8 upon the cross-head of such determinate thickness as to allow the lower plungers 8 to rise until their top is flush with the top line of the mold 7, at which point the wood, striking the under face of the mold, will arrest further upward movement.

The operation is as follows: Assuming the machine to be in the position indicated in Figs. 1, 2, 3, and 4 and the mold empty and the head and plungers at the lowest point of their stroke, a number of bricks are placed on the shelf 31, corresponding to the number of mold-openings. Motion is communicated to the machine through the pulley, pinions 4, and gears 5 to shaft 3. As the gears 5 revolve the connecting-rods gradually raise the head to its highest point, and then as the gears 5 continue to revolve the plungers descend into the molds, and this motion is repeated at every revolution of the gears 5 and will need no further explanation. As the head rises it also raises the bars 13 and with them the shaft 35, which is journaled therein, and, as will be noticed, the cranks 36 and the lever 26 being in substantially a straight line vertically it raises the shaft 14, which is partially assisted in this by the lower cross-rod 25, the arm 24, and springs 23, at a speed similar to the upper head. This upward motion

of both is kept up until the tops of the bricks nearly reach the top of the mold, and the small shaft 39, hung in the tube 41 at the side of the housing 1, rises to cause the nut 44 to encounter the bottom of the tube 41, thereby drawing down on the end of the rod 38, thus partially rotating the shaft 35 and cranks 36 to the right with the lower end of the lever 26, which in turn throws the upper end and the connecting-rods 28 and followers 30 to the left, gradually pushing the bricks placed on shelf 31 toward the mold until the motion ceases, leaving the bricks upon the lower plungers 8 now risen until flush with the shelf 31, which, as before stated, is attained by arresting its vertical rise by the block of wood 61 encountering the bottom of the mold. The fact that the bars 13 are slotted below the shaft 14 permits the head to rise much higher than the lower plungers 8. The position of the machine is now that shown by Fig. 5, which represents the machine at the extreme upper end of its stroke. As the gears 5 revolve the parts resume their former position in the following manner: the upper plunger-head bearing the bars 13 descending with a speed equal to its ascent until the plungers 54 almost reach the upper faces of the newly-placed bricks, by which time the shaft 35, carried by the bars 13 and descending therewith, has gradually drawn down the cranks 36 and the lower ends of levers 26 toward a straight line, at which time the upper parts of the slots in the bars 13, surrounding the shaft 14, encounter it and force it downward with a speed equal to that of the upper plunger-head. The descent of the lower plungers is arrested by the straightening of the joint between the cranks 36 and levers 26. The shaft 35 being journaled in the bars 13 and the cranks 36 and levers 26 being in a straight line the shaft 14 and plungers 8 mounted thereon are rigidly supported momentarily stationary during the compressing of the bricks at the interval of the lowest descent of the upper plungers. The lever 26 is prevented from going past a true vertical line with the cranks 36 by the interposition of a pin between the bifurcated ends of the latter, Fig. 5. The peculiar feature of the upward motion of the machine is the steady equal motion of the upper plungers 54 and lower plungers 8, which keep the bricks under compression during the ejecting process until just before the bricks reach the top of the mold, and further pressure on the bricks unsurrounded by the walls of the mold would be injurious to their integrity. The lower plungers are slightly retarded by the pulling of the shaft 39 on the rod 38 and the breaking of the joint between the cranks 36 and the lever 26, thus permitting the space between the top of the bricks and the plungers 54 to rapidly increase until the newly-formed bricks are clear of the mold, when they are pushed to the left by the incoming bricks onto the sliding shelf 55, which at this point

in the movement is drawn to the right to the inner mold-line and which as the plungers 54 descend slides to the left, thus clearing the bricks from all possible danger of abrasion by the descending plungers.

What I claim is—

1. In a machine for pressing bricks the combination of a main driving-shaft, cranks and connecting-rods attached thereto, a cross-head attached to the end of said connecting-rods provided with means for vertical adjustment, plungers depending from said cross-head, arranged to enter molds, a pair of rods suspended from said cross-head, a cross-shaft mounted in said rods bearing cranks at its ends, levers connected to said cranks and a brick-feeding mechanism, a shaft bearing a lower cross-head arranged to pivot and be supported by said levers, lower plungers mounted on said lower cross-head adapted to rise and approach said first plungers and molds adapted to receive said sets of plungers simultaneously in opposite directions, substantially as shown and described.

2. In a machine for pressing bricks the combination of a main driving-shaft, cranks and connecting-rods attached thereto, a cross-head attached to the end of said connecting-rods, provided with means for vertical adjustment, plungers depending from said cross-head, arranged to enter molds, a pair of rods suspended from said cross-head, a cross-shaft mounted in said rods bearing cranks at its ends, levers connected to said cranks and a brick-feeding mechanism, a shaft bearing a lower cross-head arranged to pivot and be supported by said levers, lower plungers mounted on said lower cross-head adapted to rise and approach said first plungers, a horizontal rod projecting from said cross-shaft bearing a second rod constantly held by a spring and capable of a limited vertical motion and arranged to partially rotate said cross-shaft as it rises to break the joints between the cranks on said cross-shafts and levers and cause the partial retarding of said lower cross-head, and molds adapted to receive said sets of plungers simultaneously in opposite directions, substantially as shown and described.

3. In a machine for pressing bricks the combination of a main driving-shaft, cranks and connecting-rods attached thereto, a cross-head attached to the end of said connecting-rods, provided with means for vertical adjustment, plungers depending from said cross-head arranged to enter molds, a pair of rods suspended from said cross-head, a cross-shaft mounted in said rods bearing cranks at its ends, levers connected to said cranks and a brick-feeding mechanism, a shaft bearing a lower cross-head arranged to pivot and be supported by said levers, means to permit the vertical adjustment of said lower cross-head with reference to its supporting-shaft, lower plungers mounted on said lower cross-head adapted to rise and approach said first plun-

gers, a horizontal rod projecting from said cross-shaft bearing a second rod constantly held by a spring and capable of a limited vertical motion and arranged to partially rotate
5 said cross-shaft as it rises to break the joints between the cranks on said cross-shafts and levers and cause the partial retarding of said lower cross-head, and molds adapted to receive said sets of plungers simultaneously in
10 opposite directions, substantially as shown and described.

4. In a mechanism of the class designated, the combination with a lower main frame, a driving-shaft mounted therein, cranks and
15 connecting-rods attached thereto, a plate bearing molds, mounted on posts rising from said main frame, a cross-head bearing depending plungers above said mold-plate arranged to be reciprocated by said connecting-
20 rods, a pair of rods depending from said cross-head, a cross-shaft suspended between said rods, cranks mounted on said cross-shaft, levers mounted and pivoted between said le-
25 vers, a lower cross-head mounted on said last-named shaft, a brick-feeding device consisting of a series of followers sliding on a table attached to the upper ends of said levers, and means as a horizontal rod bearing a depend-
30 ing second rod provided with a stop for gradually retarding the upward motion of said lower plungers by rotation of said second-mentioned shaft and the oscillation of said levers, substantially as shown and described.

5. In a mechanism of the class designated, the combination with a lower main frame, a
35 driving-shaft mounted therein, cranks and connecting-rods attached thereto, a plate bearing molds, mounted on posts rising from said main frame, a cross-head bearing de-
40 pending plungers above said mold-plate arranged to be reciprocated by said connecting-rods, a pair of rods depending from said cross-head, a cross-shaft suspended between said rods, cranks mounted on said cross-shaft, le-
45 vers mounted and pivoted between said levers, a lower cross-head mounted on said last-named shaft a brick-feeding device consisting of a series of followers sliding on a table
50 attached to the upper ends of said levers, and means as a horizontal rod bearing a depending second rod provided with a stop for gradually retarding the upward motion of said
lower plungers by rotation of said second-mentioned shaft and the oscillation of said
55 levers, and means for removing the finished bricks from the vicinity of said plungers before the descent thereof, substantially as shown and described.

In testimony that I claim the above I here-
unto set my hand in the presence of two sub-
60 scribing witnesses.

JOHN R. LONG.

In presence of—

C. E. HUMPHREY,
BESSIE CROOK.