

(No Model.)

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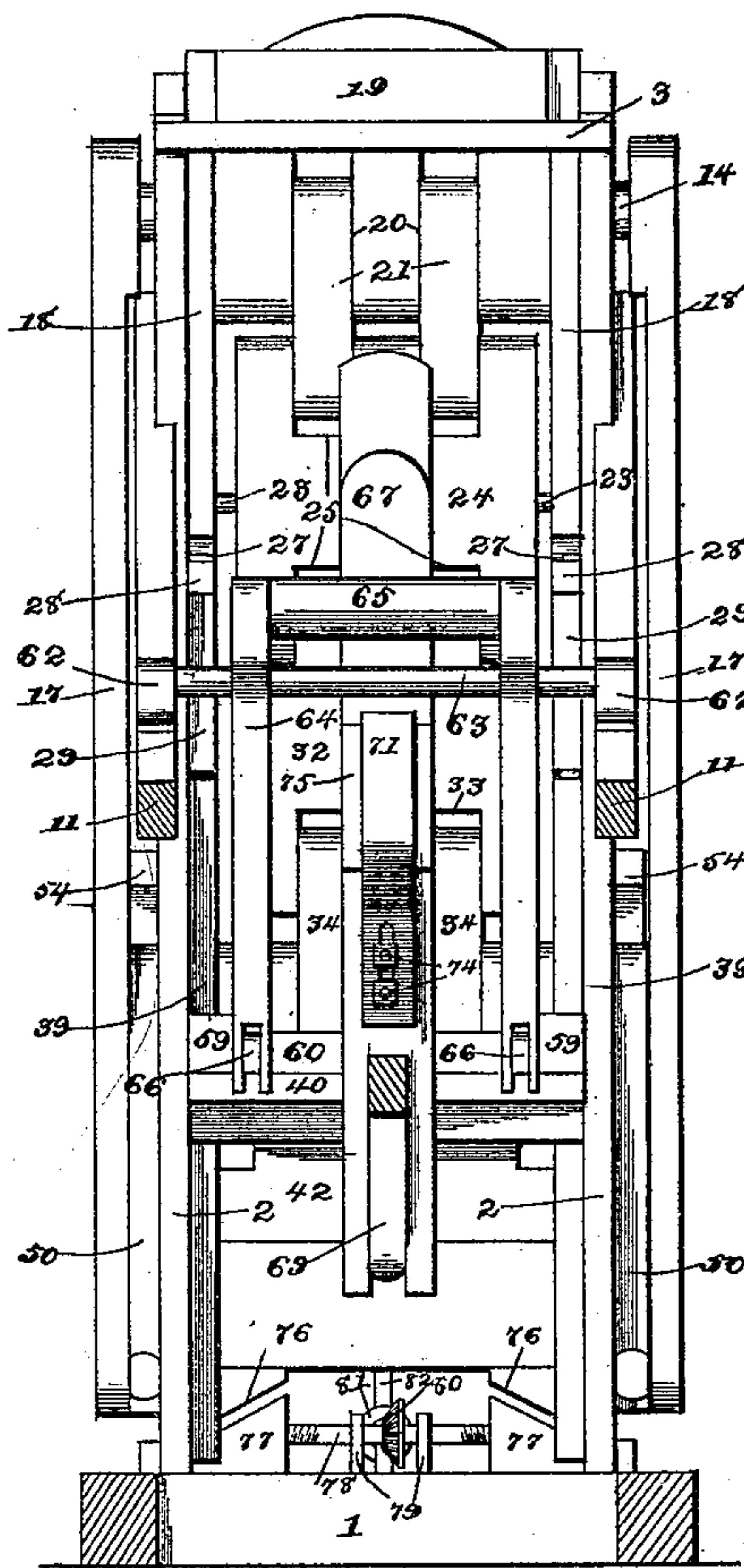
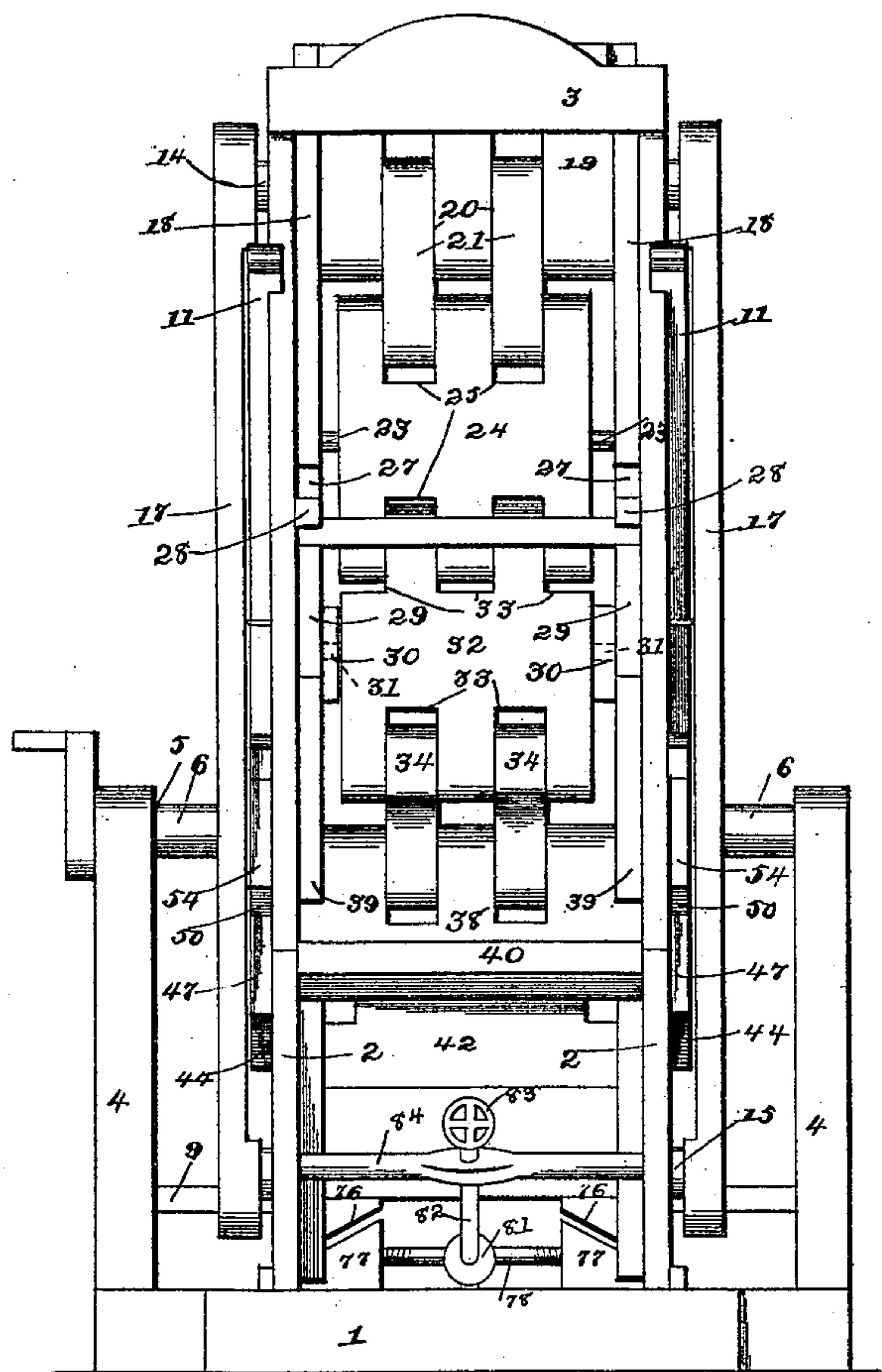
A. F. MILLER.  
BRICK MACHINE.

No. 459,642.

Patented Sept. 15, 1891.

FIG. 1.

FIG. 4.



Witnesses:

*E. S. Duvall Jr.*  
*W. S. Duvall.*

By his Attorneys,

*C. A. Snow & Co.*

Inventor

*A. F. Miller.*

3 Sheets—Sheet 2.

Patented Sept. 15, 1891.



Inventor

*A. F. Miller.*

E. S. Duwall Jr. By his Attorneys,  
W. S. Duwall. C.

Cañon Viejo.

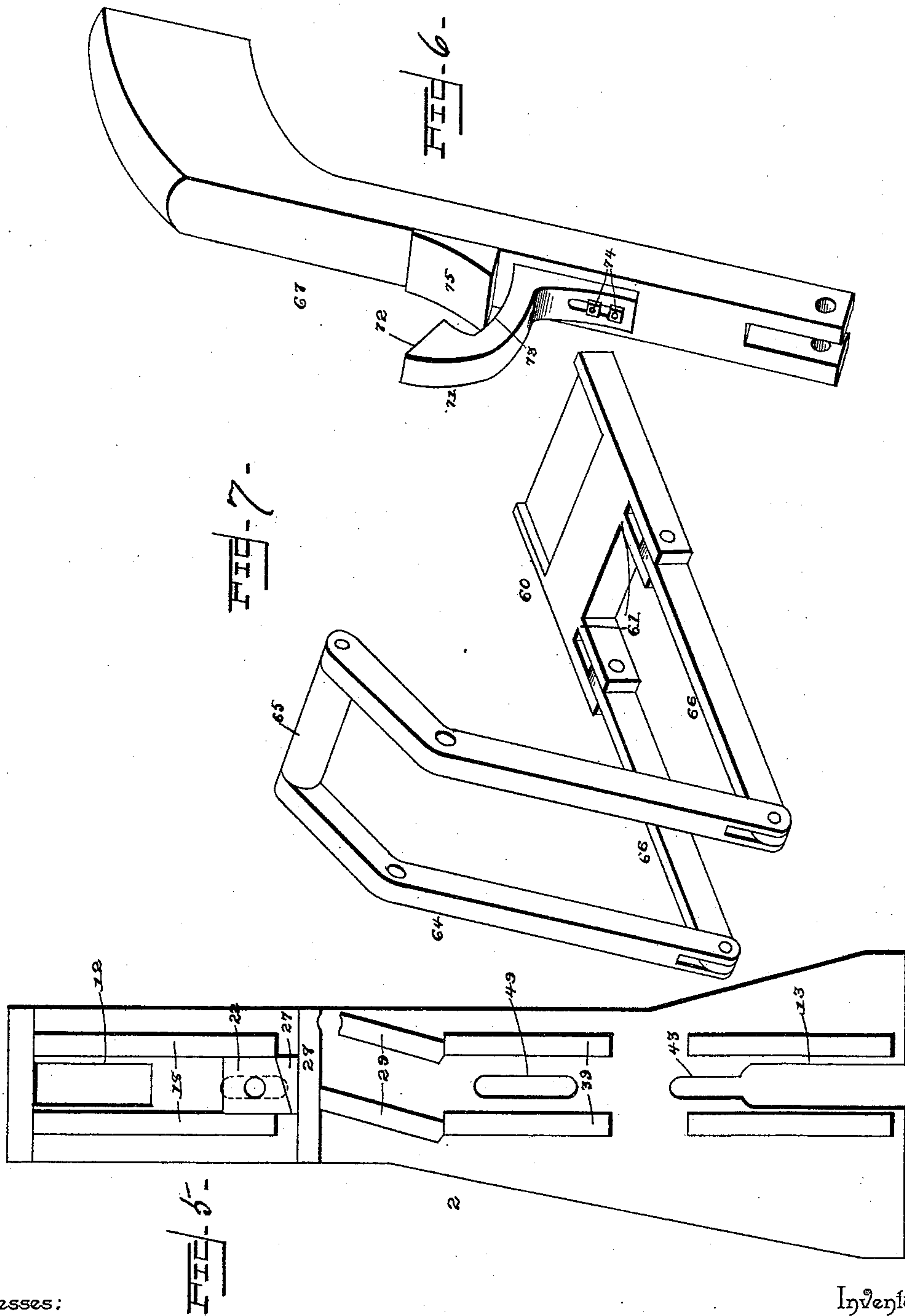
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Witnesses:

Inventor

A. F. Miller.

E. S. Duvall for By his Attorneys,  
W. S. Duvall

C. A. Snow & Co.



# UNITED STATES PATENT OFFICE.

ALBERT F. MILLER, OF PITTSBURG, KANSAS.

## BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 459,642, dated September 15, 1891.

Application filed March 4, 1891. Serial No. 383,770. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT F. MILLER, a citizen of the United States, residing at Pittsburg, in the county of Crawford and State of Kansas, have invented a new and useful Brick-Machine, of which the following is a specification.

My invention relates to brick-machines; and the objects in view are to provide a machine of simple, durable, and economical construction for pressing brick and to obviate the waste of play, secure great power, to avoid marring the corners of the newly-molded brick, and provide means for positively delivering said brick as elevated from the molds.

Other objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a front elevation of a brick-machine constructed in accordance with my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical longitudinal section. Fig. 4 is a transverse section upon the line *xx* of Fig. 2, looking toward the molds. Fig. 5 is an inner side elevation of one of the standards of the plunger-operating mechanism. Fig. 6 is a detail in perspective of the feed-operating vibrating arm. Fig. 7 is a detail in perspective of the reciprocating feeder and the bail for operating the same.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates the base of the machine, at the front of which is a pair of opposite side frames or standards 2, connected at their upper ends by suitable cross-pieces 3. At the rear end of the machine are located opposite pairs of standards 4, having bearings 5 at their upper ends, and in the bearings of each pair is located a short shaft 6, each having mounted upon its inner end a large gear 7. The gears are slowly driven by a pair of small gears 8, rigidly mounted upon the counter-shaft 9, journaled in bearings 10, located upon the bases of the standards 4 and driven by any suitable motor and in any suitable manner. Braces 11 extend from the inner standard of each pair of standards 4 to the opposite sides of the side frames

or standards 2, and thus serve as a means for increasing the stability of the latter. The standards 2 are provided near their upper and lower ends with opposite slots 12 and 13, respectively. Through the upper slot is passed the transverse shaft 14, and through the lower slots is passed a similar shaft 15. The two shafts terminate beyond their respective slots, and are connected at each side of the frame thus constructed by connecting-rods 17. Guides 18 are located near the upper ends and upon the inner faces of the standards 2 and upon the shaft 14, and moving in said guides is a head 19, provided at intervals with recesses 20, in which and upon the shaft are loosely journaled a pair of depending links 21. A pair of blocks 22, having bearing-openings, are mounted for sliding in the guides 18, and in said blocks are loosely journaled the trunnions 23 of a vertically-movable and oscillatory cross-head 24. The head 24 is provided at its upper and lower edges with recesses 25, through the walls of which pass shafts 26, upon the upper shaft of which rest the lower bifurcated ends 27<sup>a</sup> of the links 21. These blocks 22 are provided with lower inclined faces, and wedge-shaped keys 27 are interposed between the same and a pair of ledges 28, upon which the keys slide, so that said wedges may be driven under the blocks and the latter with all parts connected thereto may be elevated in accordance with such adjustment. Below the ledges 28 a pair of inclined guides 29 are located, in which there is mounted for vertical movement sliding boxes 30, in which the trunnions 31 of a second cross-head 32 take. The cross-head 32 is provided with upper and lower recesses 33, which alternate with the recesses 25 of the cross-head 24, so that the adjacent edges of the two heads 24 and 32 engage, and are pivoted together by the lower shaft 26. A shaft 37 is passed through the lower edge of the lower head 32, and links 34 are pivoted thereon and depend therefrom. These links 34 are by means of a shaft 35 pivoted within openings 36, formed in the upper side of a pressing-head 38, which is mounted for vertical movement in a pair of vertical guides 39, secured to the standards 2. A table 40 is mounted between the stand-



ards 2 and is provided at its center, directly in the path of and agreeing with the presser-head 38, with a mold-opening 41.

42 designates the lower presser-head, and the same is reduced at its ends and mounted in vertical slots 43, formed in the standards 2, said presser-head being designed to fit exactly and move within the mold-opening 41. At its outer ends the head 42 is provided with vertically-disposed latches 44, having front shoulders 45 and rear shoulders 46. Stops 47 are located in front of the latches above the shoulders when the latches are in a lowered position and are designed to receive and support the latches, and consequently the head, in a manner and for a purpose hereinafter apparent. The shaft 48, which passes through the upper pressing-head 38 and rides in a vertical slot 49, formed in the standards 2 for the purpose of guiding said shaft, is provided at its outer ends with a pair of gravity-pawls 50. The pawls 50 are weighted at their lower ends, and about midway their front faces are provided with shoulders 51, which by their weight are normally thrown into engagement with the rear shoulders 46 of the latches. Holding-pawls 52 are pivoted immediately in front of the pawls 50 near the lower ends of the latter, and engage shoulders 53 upon the pawls 50 for a purpose hereinafter apparent. Bell-cranks 54 are pivoted, as at 55, to each of the standards 2, and have their lower branches normally maintained out of contact with the upper ends of the latches 45, with which they are in line, by means of their rear weighted ends, which rest upon stop-pins 56 when not otherwise influenced.

Horizontal guides 59 are located upon the mold-table 40 in rear of the upper presser-head, and in the same there is mounted for sliding the feeder 60, the rear end of which is provided with bifurcated bearing-arms 61, as shown. In journal-boxes 62, located upon the inclined braces 11, there is mounted a rock-shaft 63, which carries between its bearings an inverted-U-shaped bell-crank bail 64, the upper cross-bar of which is provided with a loose roller 65. The terminals of the bell-crank bail are connected by rods 66 with the bifurcated arms 61 of the feeder, so that any rocking upon the part of the bell-crank bail causes a reciprocation upon the part of the feeder.

From the rear side of the head 24 there extends rearwardly and downwardly an inclined arm 67, the lower end of which is bifurcated and is pivotally connected, as at 68, to a connecting-rod 69, the other end of which is pivoted at 70 to the master-gears 7. The rear side of the arm is provided with an L-shaped cam 71, having an inner inclined face 72, undercut as at 73, and secured adjustably by bolts 74 to said arm 67, and between the undercut face 73 and the arm 67 there is secured to the latter an inclined shoulder 75, the in-

clination of which is opposite to that of the face 72.

In operation the clay is placed in the mold in any suitable manner, and the upper presser 70 is operated so as to descend into the mold in the following manner: The small pinions operating the large gears 70 through the medium of the connecting-rod 69 forces the lower end of the inclined arm 74 downwardly toward the molds, and in doing so brings the head 24 and its companion head 32 to a vertical position, thus forcing the head 19, through the medium of the links 21, up within its guides and the upper presser-head downwardly into the mold-opening. The clay is thus packed against the lower presser-head, and serves to arrest the downward movement of the upper presser-head, thus causing the heads 19, 24, and 32 to rise slightly within their respective guides and draw upon the rods 17, thus elevating the shaft 15 and forcing the lower presser-head upwardly. In this manner the clay is bound and pressed tightly between the two presser-heads working in opposite directions, so that it will be apparent an immense pressure is exerted. After the brick has been pressed or formed the gears 7, continuing their motion, will withdraw the lower end of the arm 67, and consequently relax the pressure upon the upper pressing-head, said arm 67 continuing its movement until the inclined face 72 arrives in contact with the roller 65 of the bell-crank bail 64, which causes said roller to ride down the face 72, and from thence down the inclined face 75. This causes a tilting of the bell-crank, throwing the lower portion thereof toward the front, and therefore moves the feeder 60 over the table 40. As the upper presser-head ascends it carries with it the gravity-pawl 50, the shoulder 51 of which engages with the shoulder 46 of the latch 44 and elevates the same until the shoulders 45 of said latches take over the stops 47. In this way immediately after the elevation of the upper pressing-head 38 is the lower pressing-head 42 elevated and is supported so that it is flush with the upper surface of the table 40. At this moment—that is, when the shoulder 45 takes over the stop 47—the pawl 52 engages with the shoulder 53 of the gravity-pawl 50, and as the gravity-pawl is elevated the pawls 52 serve to force the gravity-pawl outwardly, so that the shoulders 51 are disengaged from the shoulders 46 of the latches, and the head 38 continues its upward movement until a short distance above the table. At this moment the feeder 60 moves forward, and thus pushes the molded brick from off the lower pressing-head to the front portion of the table, from which it may be removed by an attendant or by the usual automatic delivery. The head 38 continues to rise until after the delivery of the molded brick has been accomplished and the feeder 60 withdrawn from over the mold-opening, at which time the



shaft 48, which carries the pawl 50, comes in contact with the weighted end of the bell-crank 54, elevates the same, and forces the lower ends into contact with the upper ends of the latches, thus pushing the latter off of the stops 47 and permitting the lower presser-head, which has acted as an extractor, to fall back within the mold-opening.

From the above construction and description it will be apparent that I have provided a machine of great strength and durability and adapted to exert great power in compressing brick; also, that I have provided a simple and inexpensive means for automatically delivering said brick as molded without the use of prying devices. The under side of the shaft 15 is provided with inclined faces 76, located near the opposite ends of the same, said faces being designed for contacting with a pair of sliding blocks 77, located upon the base and having faces inclined opposite to the faces 76. A right and left hand threaded shaft 78 is mounted in bearings 79 and terminates at its ends in the blocks 77, so that a rotation of the shaft in one direction will act to spread the blocks, while a rotation in the opposite direction will serve to draw them together. The shaft is also provided with a beveled pinion 80, which latter is engaged and operated by a similar pinion 81, mounted upon an inclined operating-shaft 82, provided at its upper end with a hand-wheel 83 and journaled in a cross-bar 84 and at its lower end in the base 1. By operating this hand-wheel the normal position of the shaft 15, and consequently the lower presser-head 42, may be regulated, and thus the mold-opening increased in depth and adapted to receive a greater or lesser quantity of clay.

Having described my invention, what I claim is—

1. In a brick-machine, the combination, with the standards, mold-actuating shafts mounted transversely in the standards and adapted for vertical movement, rods connecting the ends of the shafts, the said lower shaft being provided with opposite inclined faces, of a pair of blocks having inclined faces contacting with those of the shaft and inclined opposite to the same, an intermediate bearing, a right and left hand threaded screw mounted in the blocks and provided with a pinion, and an operating-shaft having a pinion for operating said pinion and provided with a hand-wheel, substantially as specified.

2. In a brick-machine, the combination, with the opposite standards, the upper and lower cross-shafts mounted therein, the intermediate mold-receiving table, the pressing-heads located at opposite sides of said table, guides located at opposite sides of the standards, and vertically and laterally movable cross-heads pivoted together at their adjacent edges, links connecting said heads with the upper shaft and the upper pressing-head, of an arm rigidly secured to one of said cross-

heads and extending rearwardly therefrom, a revoluble wheel located in rear of the arm, and a connecting-rod between the wheel and arm, substantially as specified.

3. In a brick-machine, the combination, with the opposite standards, the mold-receiving table, the presser-heads located above and below the same, the series of cross-heads connected to each other, and the links connecting the same with the upper shaft and upper head, of an arm rearwardly extending from one of said cross-heads and provided with a cam, a wheel, a connecting-rod connecting the wheel and arm, a pivoted bell-crank bail, a feeder mounted for reciprocation on the table, connecting-rods between the feeder and the bail, and means for elevating the lower pressing-head previous to the actuation of the feeder by the bail and the actuation of the latter by the cam of the arm, substantially as specified.

4. In a brick-machine, the combination, with the opposite slotted standards, the transverse shafts mounted in the same, the rods connecting the shafts, the mold-table located between the standards, the lower pressing-head mounted on the lower shaft and extending into the table and provided with oppositely-shouldered latches located outside of the standards, a stop located in front of the latches, the upper pressing-head mounted in vertical ways, the series of pivoted and vertically-movable cross-heads, links connecting the same to the upper shaft and to the upper pressing-head, the shaft of said upper pressing-head terminating outside of the standards, and weighted levers mounted thereon and provided with intermediate and lower shoulders, the former adapted to engage the rear shoulders of the latches, small pawls pivoted in front of the lower ends of the weighted pawls and adapted to engage the lower shoulders of said weighted pawls, the arm extending rearwardly from the upper cross-head of the series and provided with the cam-arm 73, having the inclined face 72 and the oppositely-disposed cam-face 75, of opposite ways located upon the table, a reciprocating feeder mounted therein, an inverted bell-crank-shaped bail, a shaft for the same, rods connecting the lower end of the bail with the feeder, and the upper end of said bail being adapted to be engaged and operated by the inclined faces 72 and 75, the wheels 7, the short shafts supporting the same and their bearings, and the connecting-rod 69, pivoted between the wheels and connected to the lower end of the rearwardly-disposed inclined arm, substantially as specified.

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

A. F. MILLER.

Witnesses:

N. E. WOOD,

D. O. JOHNSON.