No. 656,896. Patented Aug. 28, 1900.

H. K. KING.

RE-PRESS BRICK MACHINE.

(Application filed Aug. 27, 1897.)

(No Model.) 7 Sheets—Sheet 1.

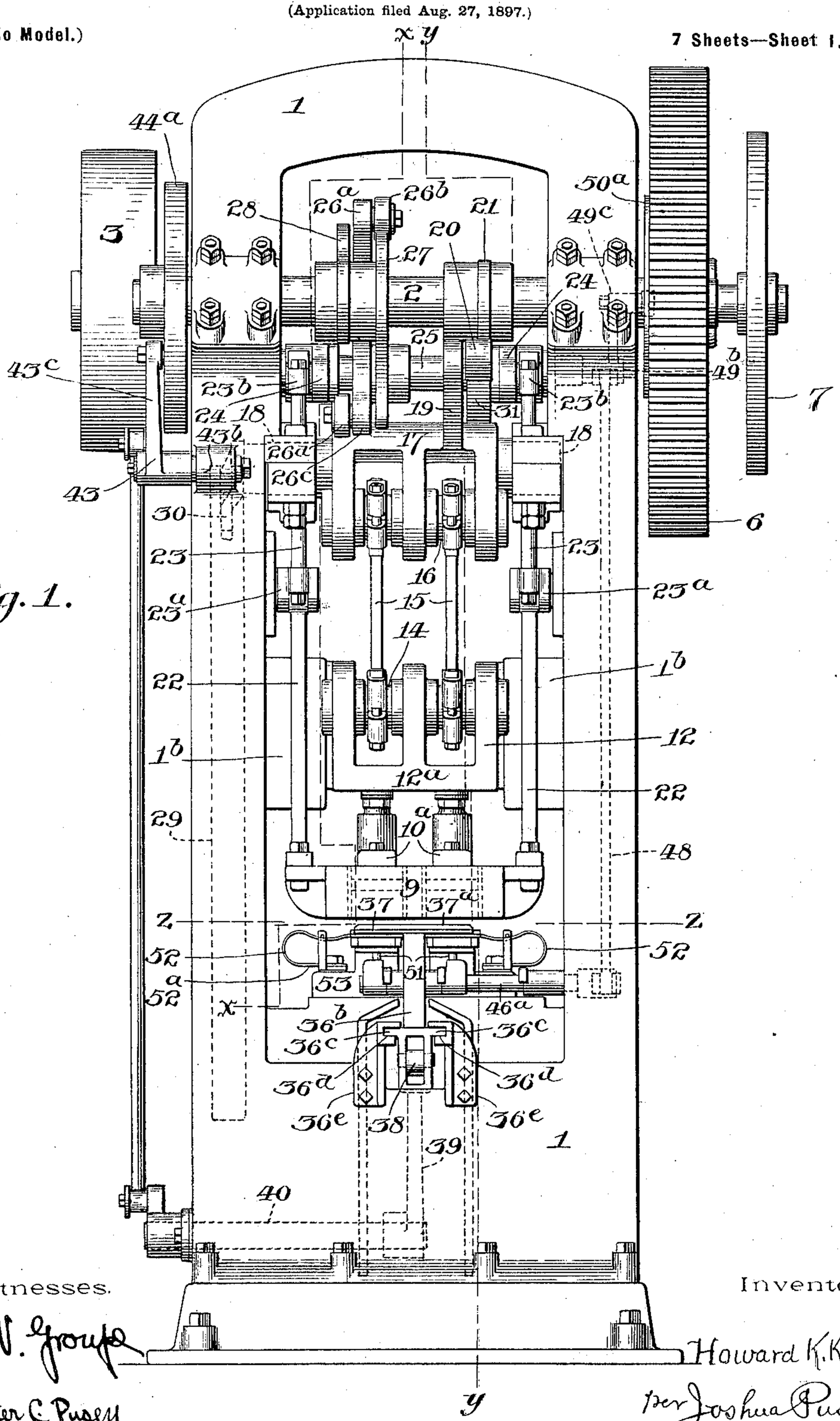

Fig. 1.

Witnesses.

A. V. Groupe

Walter C. Pusey

Inventor.

Howard K. King.

per Joshua Pusey.

Attorney.

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(No Model.) 7 Sheets—Sheet 2.

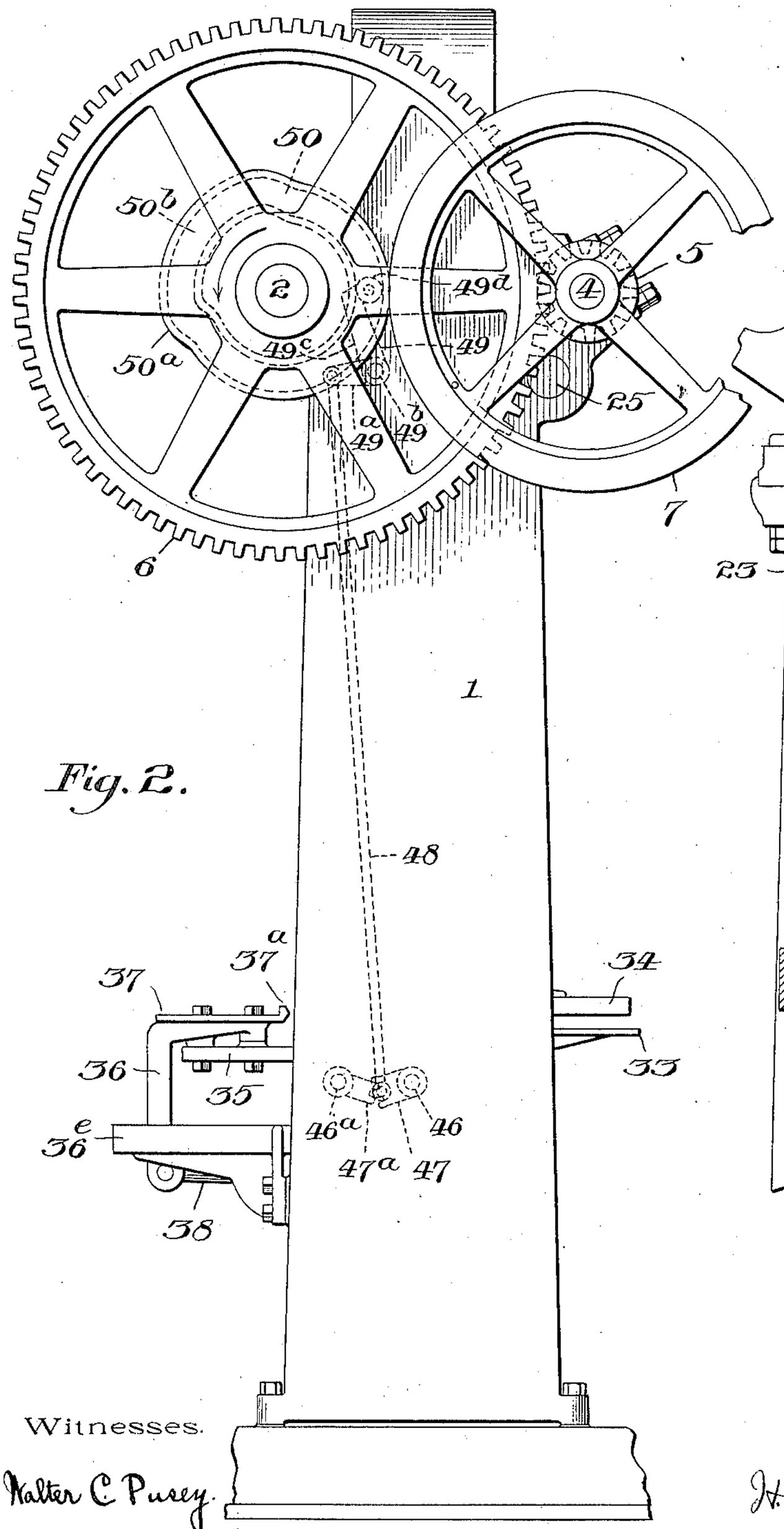

Fig. 2.

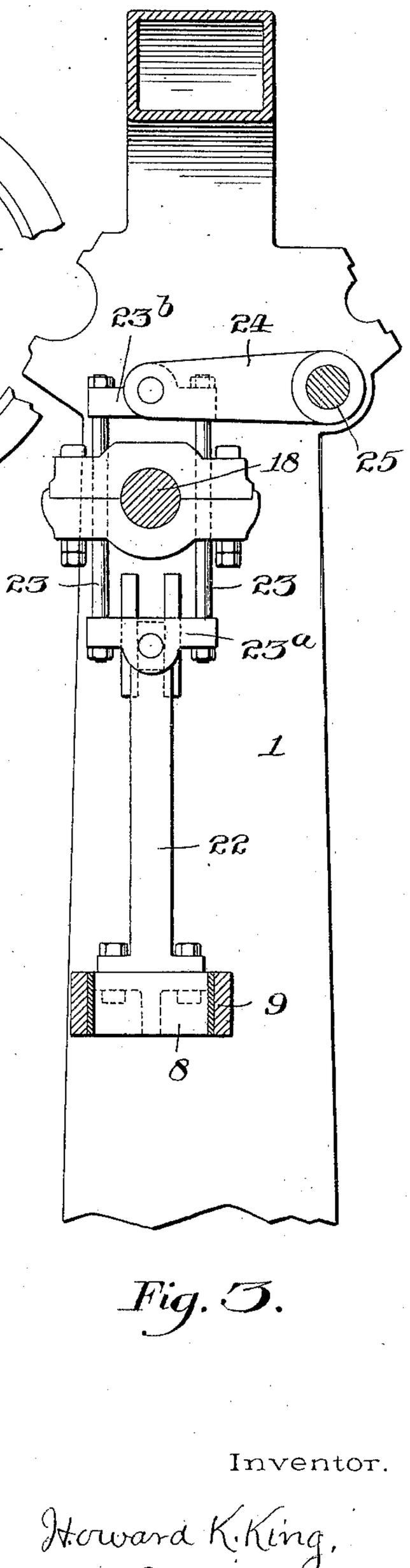

Fig. 3.

Witnesses.

Walter C. Pusey.

A. V. Groupe

Inventor.

Howard K. King,

per Joshua Pusey,

Attorney.

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(No Model.) 7 Sheets—Sheet 3.

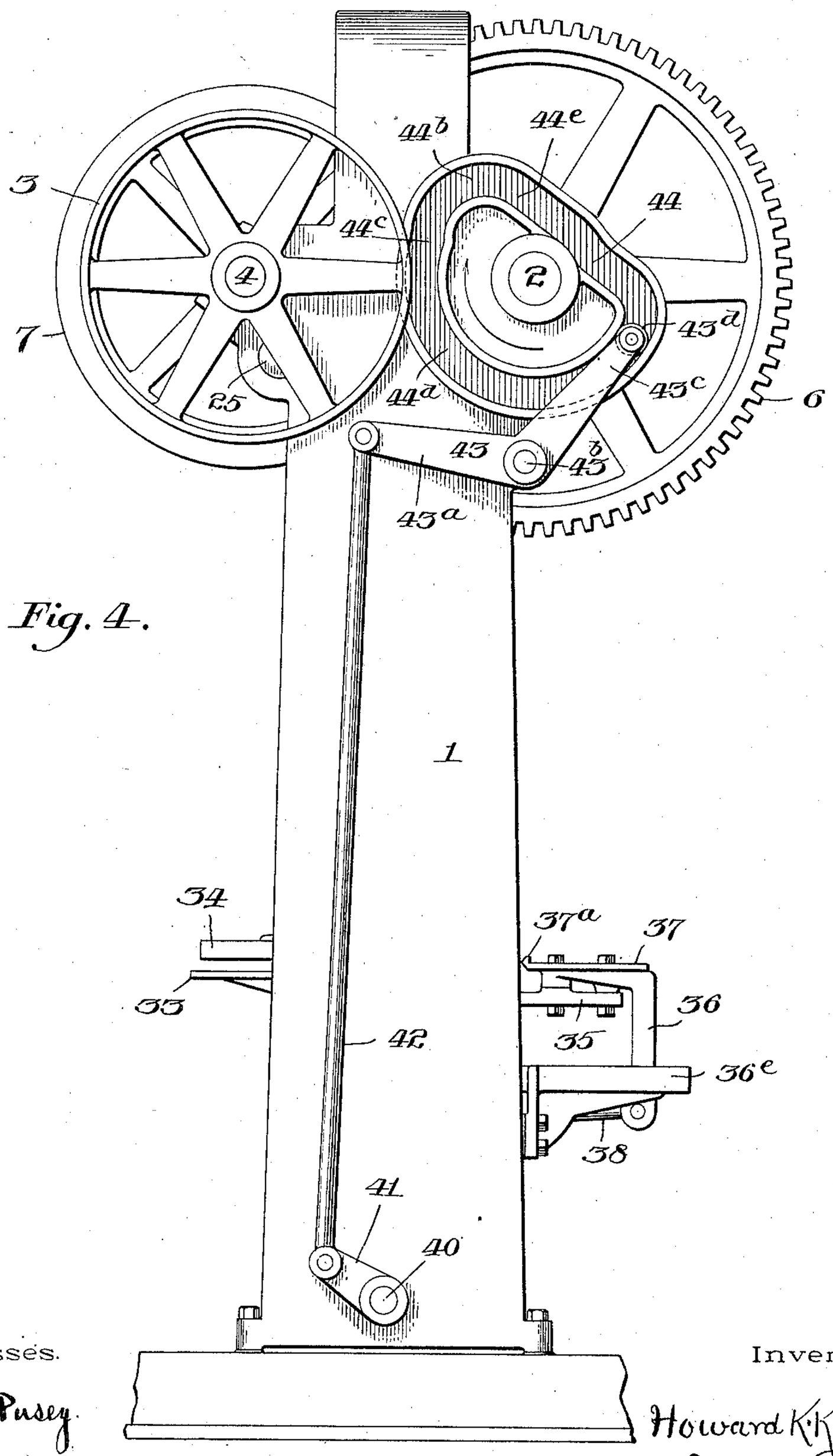

Fig. 4.

Witnesses.

Walter C. Pusey.

A. V. Groupe

Inventor.

Howard K. King,

per Joshua Pusey.

Attorney.

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(No Model.) 7 Sheets—Sheet 4.

Fig. 5.

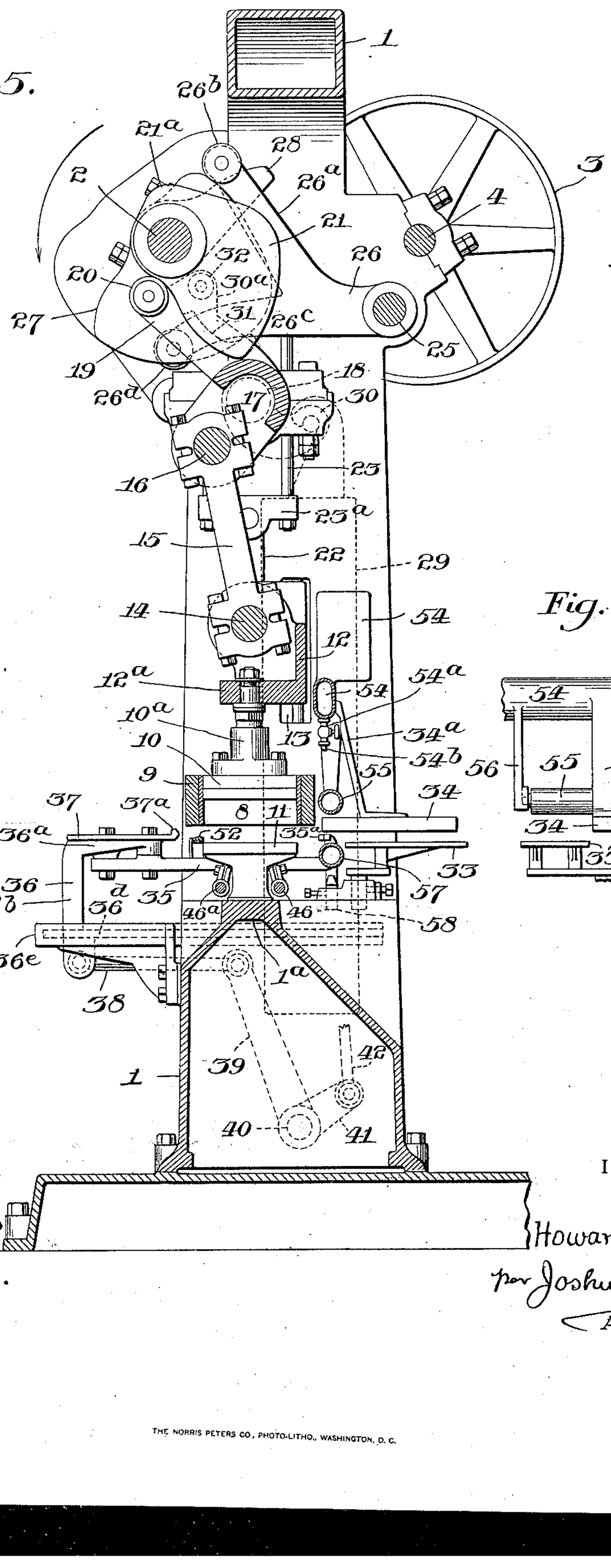
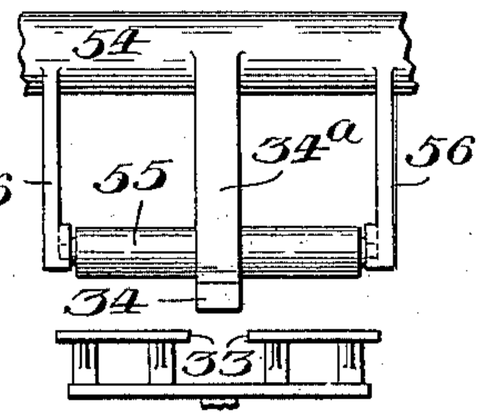


Fig. 6.



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(No Model.) 7 Sheets—Sheet 5.

Fig. 7.

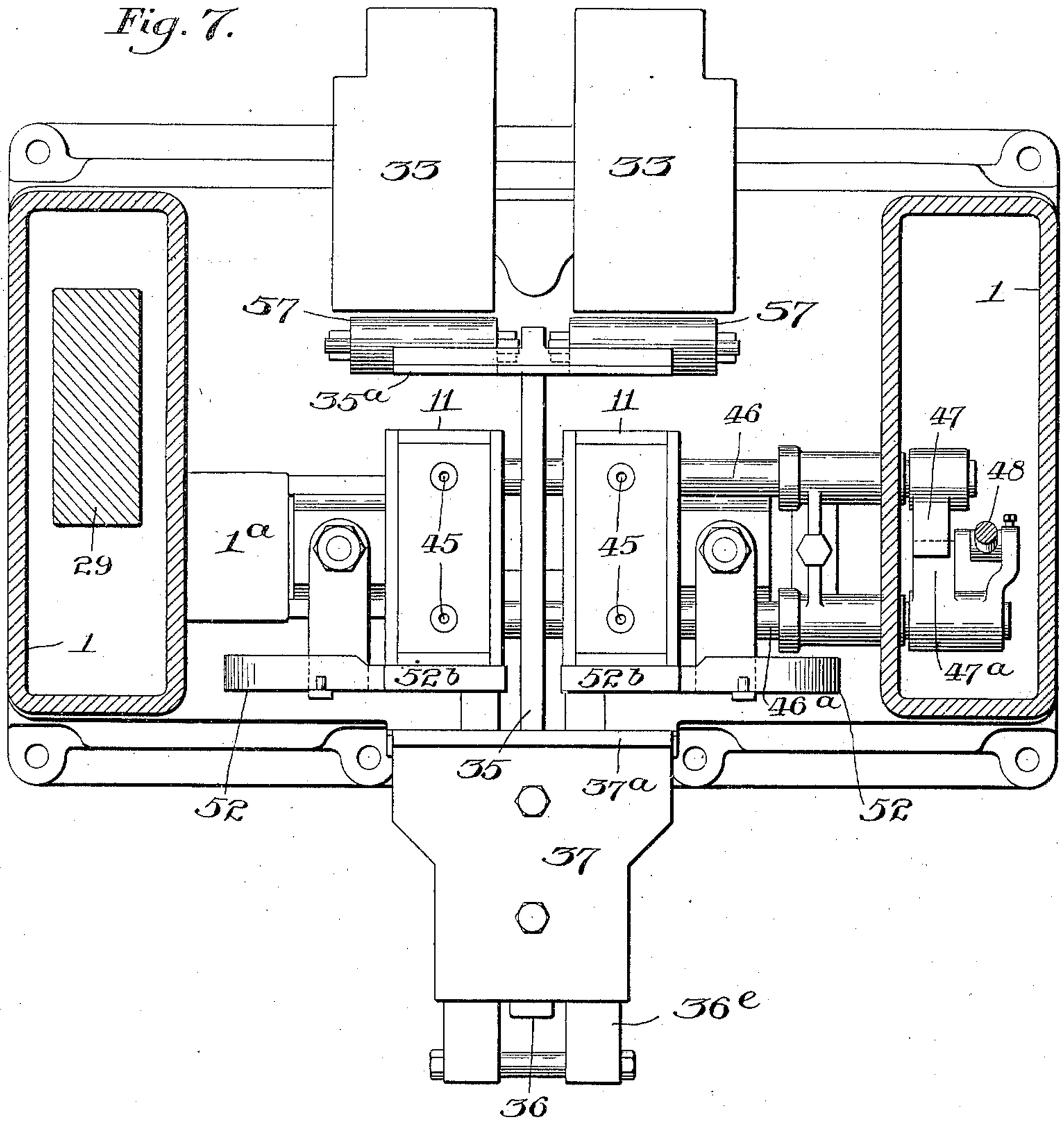
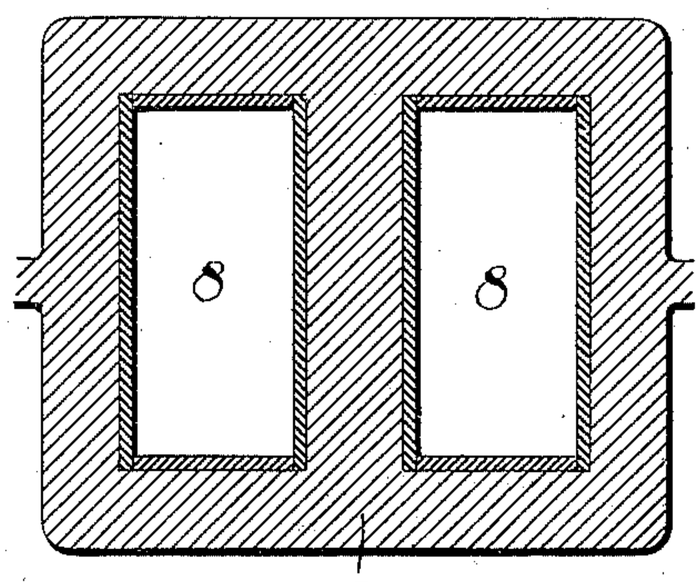


Fig. 8.



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A. V. Groupe

Walter C Pusey

Inventor.

Howard K. King,

per Joshua Pusey,

Attorney.

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(No Model.)

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Fig. 9.

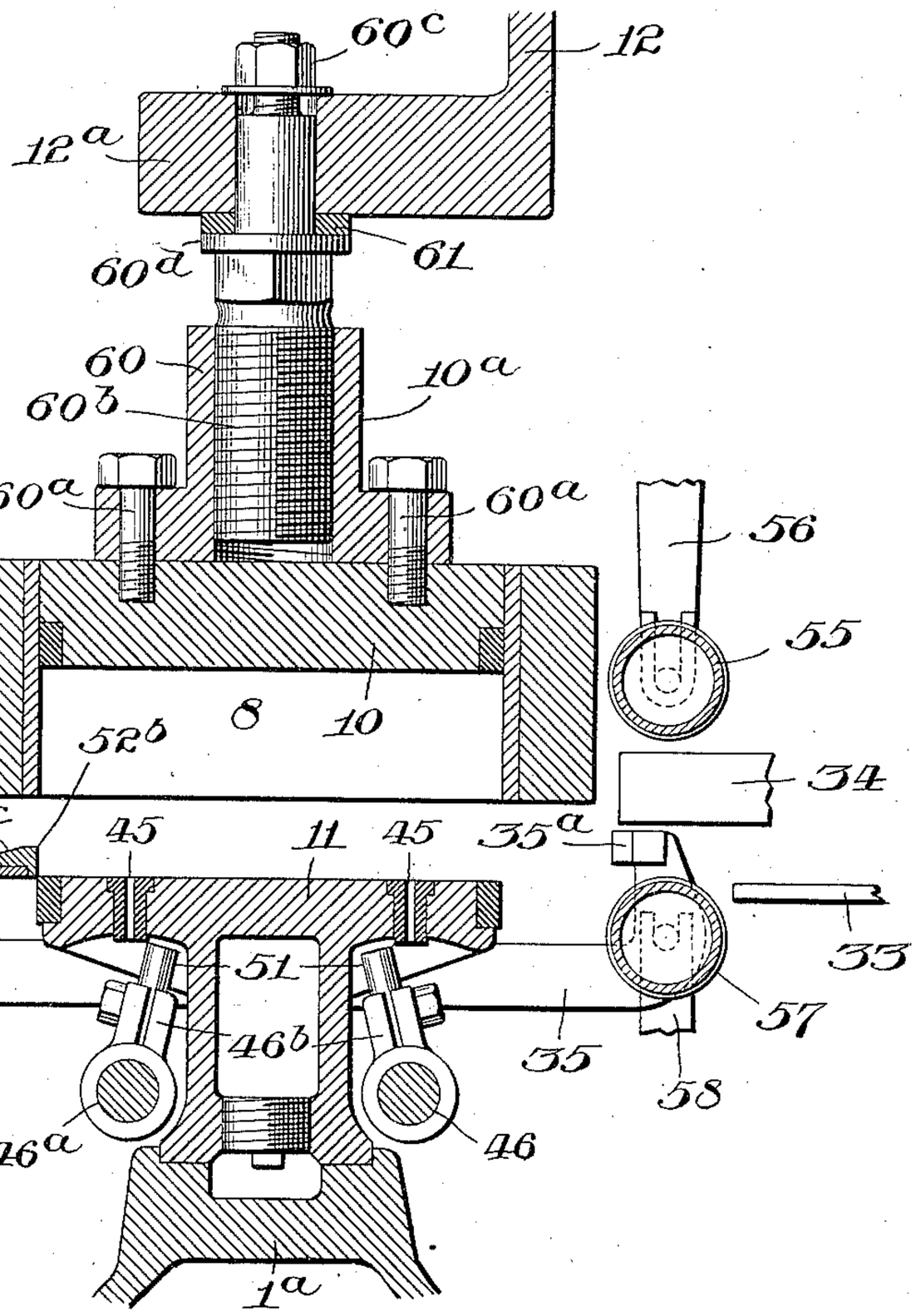
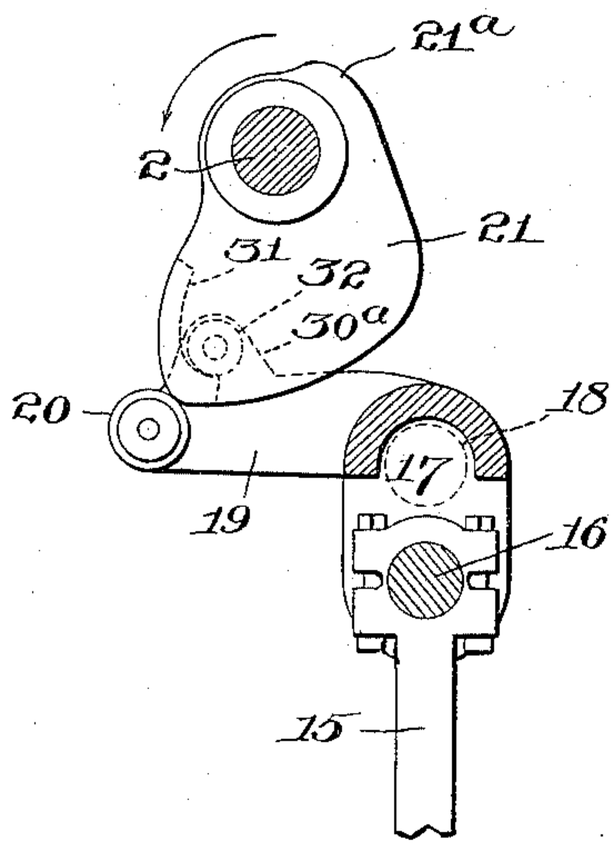


Fig. 10.



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Walter C. Pusey.

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Howard K King,

per Joshua Pusey,

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(No Model.) 7 Sheets—Sheet 7.

Fig. 12.

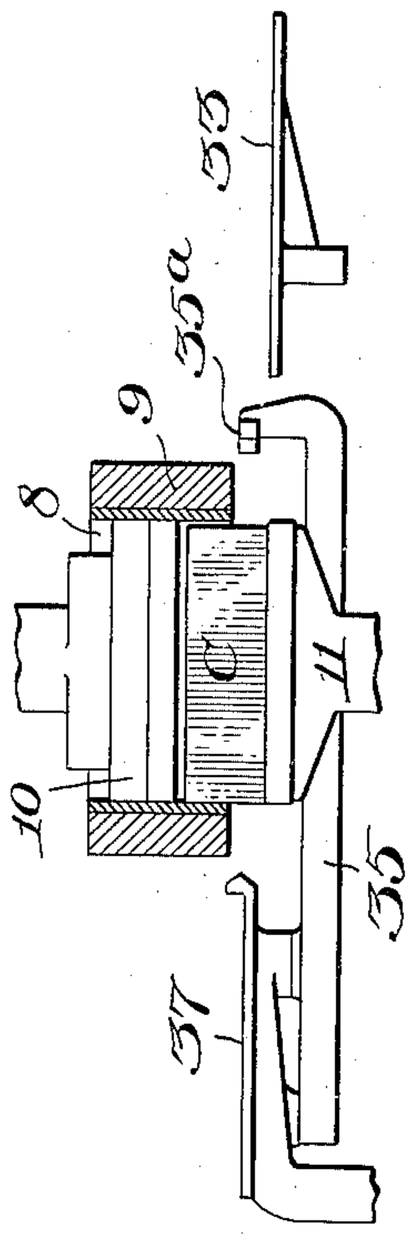


Fig. 14.

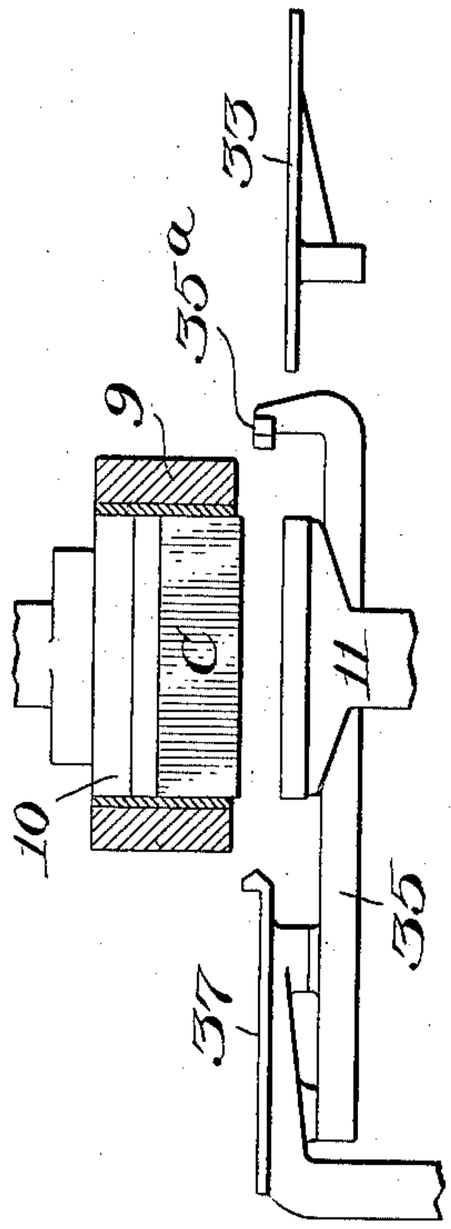


Fig. 16.

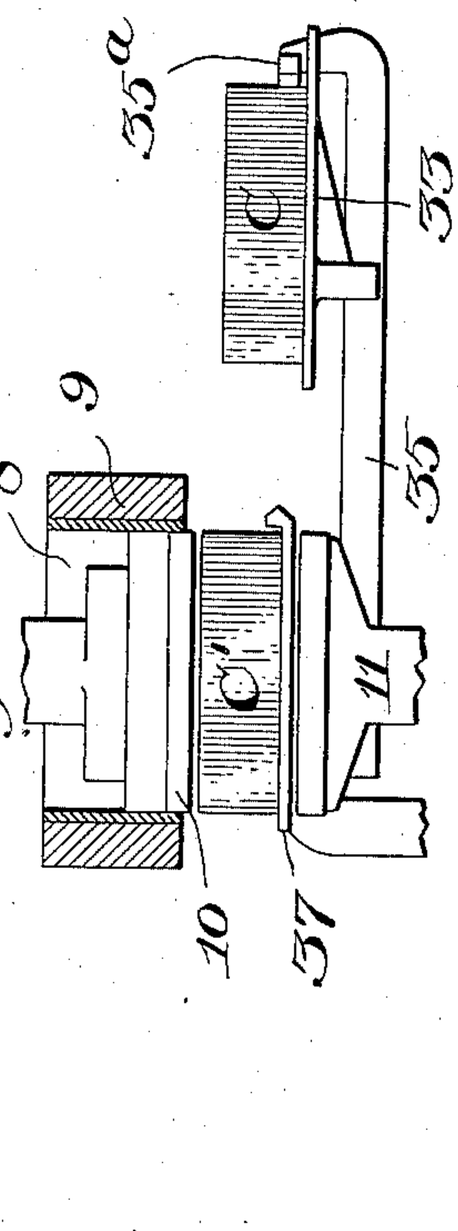


Fig. 11.

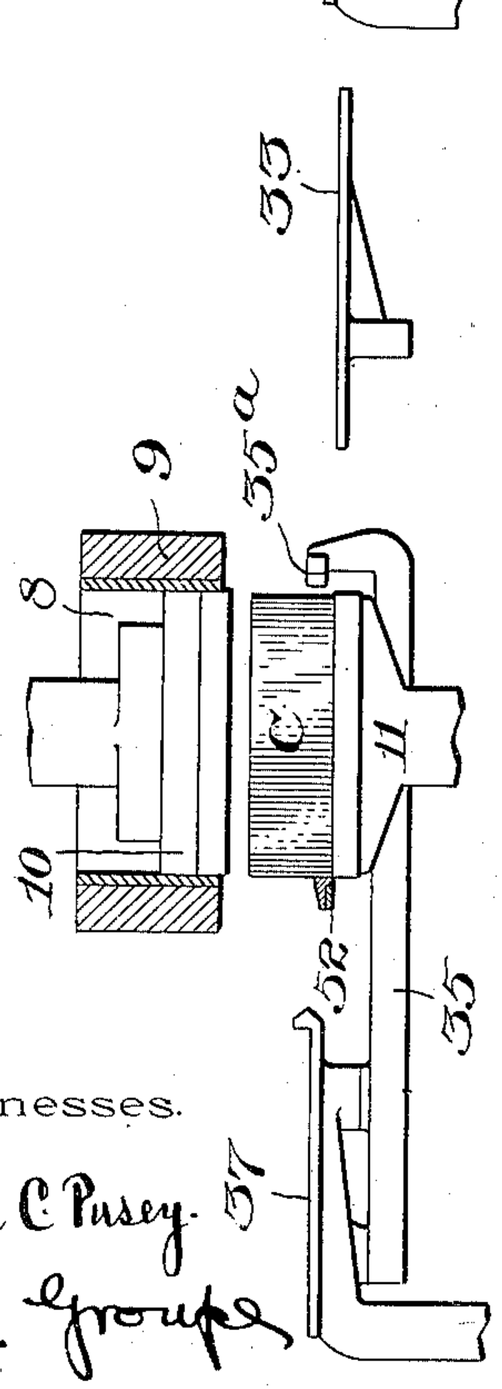


Fig. 13.

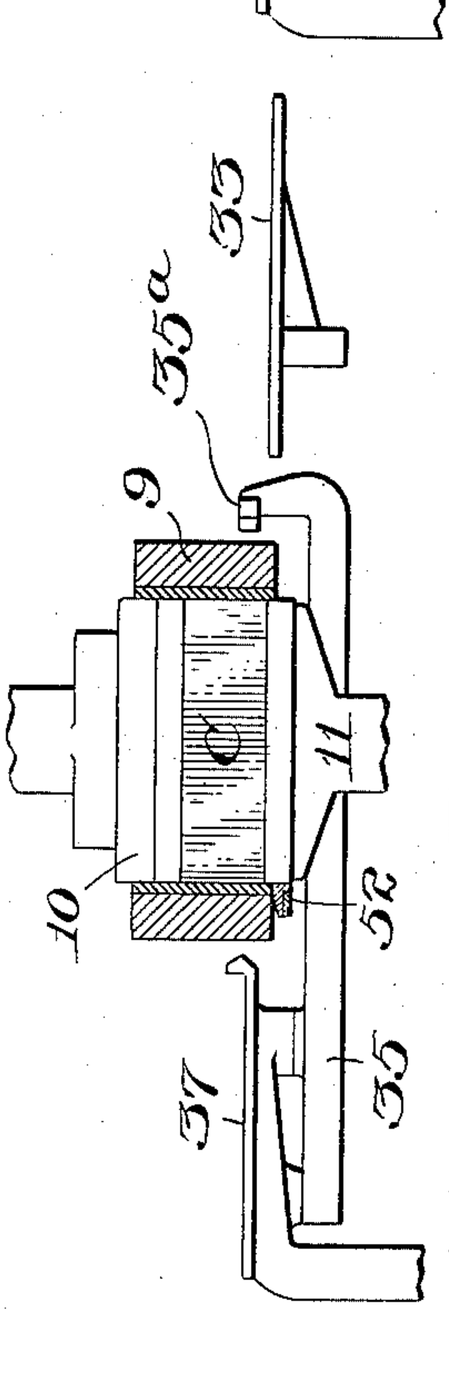
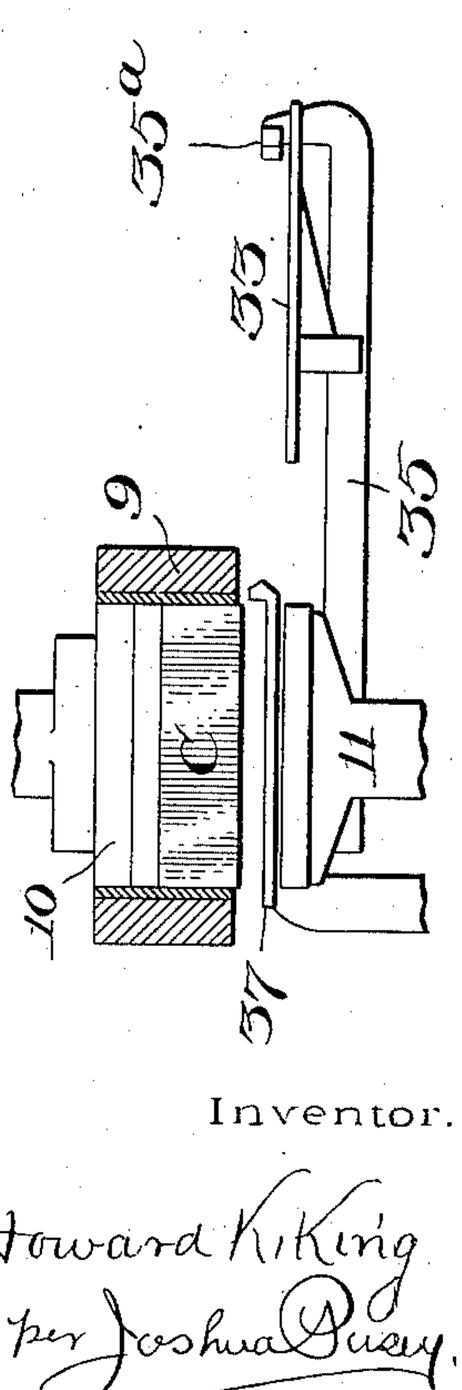


Fig. 15.



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Howard K. King

per Joshua Pusey,

Attorney.

UNITED STATES PATENT OFFICE.

HOWARD K. KING, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE CHAMBERS BROTHERS COMPANY, OF SAME PLACE.

RE-PRESS BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 656,896, dated August 28, 1900.

Application filed August 27, 1897. Serial No. 649,703. (No model.)

To all whom it may concern:

Be it known that I, HOWARD K. KING, a citizen of the United States, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Re-Press Brick-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

Figure 1, Sheet 1, is an elevation of the forward or delivery side of the machine. Fig. 2, Sheet 2, is a side elevation looking from the right of Fig. 1. Fig. 3, Sheet 2, is a section on line *x x*, Fig. 1. Fig. 4, Sheet 3, is an elevation of the side looking from the left of Fig. 1. Fig. 5, Sheet 4, is a vertical section on line *y y*, Fig. 1. Fig. 6, Sheet 4, is an elevation, broken away, of a portion of the rear or receiving side of the machine. Fig. 7, Sheet 5, is a horizontal section, enlarged, on line *z z*, Fig. 1. Fig. 8, Sheet 5, is a horizontal section, enlarged, through the mold-boxes. Fig. 9, Sheet 6, is a vertical section, enlarged, through one of the mold-boxes, plunger, anvil, &c., showing details of construction of the parts. Fig. 10, Sheet 6, is a detail, partly in section, of the plunger-operating cam and its connections. Figs. 11, 12, 13, 14, 15, and 16, Sheet 7, are in the nature of diagrammatic views representing positions of the mold-box, plunger, &c., at successive stages in the operation of the machine.

This invention relates to that class of machines or presses whereby previously-made comparatively-rough blanks or "clots," as they are usually termed, are compressed by a plunger working in a suitable mold into the more perfect shape of bricks; and the object of the invention is to provide an organization of mechanism whereby the operation of re-pressing shall be facilitated, as also the delivery of the clots to the molding or compression devices and the removing or "off-bearing" of the same after having been re-pressed.

The main feature of the invention consists in the combination of a mold or mold-box of suitable internal dimensions open at the bottom, a plunger fitted to and adapted to move in said box, a stationary anvil underlying the latter in position to support the clots to be operated upon, and mechanism adapted to impart at predetermined times movements of the mold-box and plunger away from the anvil and at other predetermined times to impart respectively to the plunger and the mold-box independently movements toward the anvil, the construction and timing of the mechanisms being such as hereinafter described, whereby the clots of suitable size placed in position upon the anvil with regard to the then-elevated mold-box and plunger will be first incased by the mold-box as it is caused to descend a short distance, and its lower end also incases the top portion of the anvil, and the clot will then be compressed by the descent of the plunger, and finally the re-pressed clot carried up by the mold-box and plunger will be ejected from the former by a further upward movement of the mold-box.

Another feature of the invention consists of the combination, with said mechanism and devices for re-pressing the clots, of mechanical means for carrying the latter from a table or support, upon which they are successively placed, onto the anvil into proper position beneath the mold-box and also for off-bearing them after the re-pressing operation has been completed, said means consisting of a sliding bar carrying at its free end a cross-bar above the plane of the table and said bar having also mounted thereon a plate and which bar when moved in one direction at the proper time advances the clot onto the anvil, and at the same time the said plate which has received a clot that has been previously re-pressed by the machine carries away the latter from beneath the mold-box.

The invention further consists in other features and certain details of construction hereinafter described and duly pointed out.

Referring to the accompanying drawings, forming a part of this specification, 1 marks the main frame or housing of the machine, which is made of considerable strength in order to safely sustain the mechanism and to resist the strain of the compressing devices.

2 is a shaft, hereinafter termed the "cam-shaft," that is journaled in bearings in the upper part of the vertical members or posts of the frame. This shaft, through suitable cams and connections hereinafter described,

operates all the movable parts of the machine. It is driven by a belt (not shown) running over a pulley 3 on the end of a shaft 4, hereinafter referred to as the "driving-shaft," also journaled in the frame and having on its other end a pinion 5, whose teeth engage those of a spur-wheel 6 on the cam-shaft 2. I usually mount a hand or fly wheel 7 upon the driving-shaft.

8 represents the mold-boxes (two in number in this instance) in a common partitioned frame 9, which are lined with hardened steel and whose ends may, if desired, be chambered out for steam-heating.

10 represents the plungers, that are fitted to and adapted to work vertically in the mold-boxes.

11 represents T-shaped stationary "anvils," as I shall term them, upon which the clots to be compressed are supported and upon which they are pressed by the plungers. These anvils rest upon an arched diaphragm 1^a of the frame, and although I term them "anvils" they may be said to be stationary plungers, as they are in length and breadth but slightly less than the corresponding dimensions of the respective mold-boxes, so that the latter may in their descent pass below and closely adjacent to the sides of the anvils.

The necessary downward movement is imparted to the plungers 10 at the proper intervals as follows: The upper end of each of the plunger-rods 10^a is secured to the lower limb 12^a of a cross-head 12, that is adapted to slide vertically in guideways 13 of inward projections 1^b of the frame. The upper part of said cross-head has a transverse horizontally-rotatable shaft 14, to which are secured connecting-rods 15, whose upper ends are secured to a similar rotatable shaft 16 of a crank-head 17, that has laterally-projecting studs 18, which are journaled in bearings of the posts of the frame of the machine. The shaft 14 and studs 18 are substantially in line vertically. Fixed to the crank-head 17 at an angle to the limbs of the former is an arm 19, which has a roller 20 at its free end that is adapted to ride on the face of a cam 21 of the form shown in Figs. 1, 5, and 10 on the cam-shaft 2. Secured to lateral extensions of the mold-box frame are vertical rods 22, whose upper ends are respectively pivotally connected to the lower cross-head 23^a of a link 23, whose upper cross-head 23^b is pivoted on the end of an arm 24 of a rock-shaft 25, Figs. 1 and 3, journaled in the main frame. On the latter shaft is also mounted a forked arm 26, the upper limb 26^a of which carries at its free end a roller 26^b, that is adapted to ride on a cam 27 on the cam-shaft 2, and its lower limb 26^c has a roller 26^d, that is adapted to ride on a cam 28, also on said cam-shaft. These cams are of the forms respectively shown partly in full and partly in dotted lines in Fig. 5 and seen in edge elevation in Fig. 1. The cam 28 operates to depress the mold-box and the cam 27 to raise the same at certain intervals and for purposes as hereinafter explained. The cam 21 in its rotation serves only to depress the arm 19 of the crank-head 17, and consequently the plungers. In order to raise the plungers, I suspend a heavy weight 29 (indicated in dotted lines in Figs. 1 and 5) from the end of an arm 30 upon the projected end of one of the studs 18 of the crank-head 17. As, however, when the clot of clay has been re-pressed or molded a considerable force is required to retract the plunger, or rather to give it a start, I provide on the side of the plunger-cam 21 a cam ledge or projection 31, Fig. 1, (shown also in dotted lines in Figs. 5 and 10,) against which is adapted to ride at certain times in the rotation of cam 21 a roller 32, that is journaled on a lug 30^a of the arm 19.

33 represents fixed plates or tables that are supported by the main frame and whose upper surfaces are in a horizontal plane with the tops of the anvils 11. Upon these tables the clots to be re-pressed by the machine are placed by the attendant. A short distance above and in a vertical line midway of the interspace between the tables is suspended a guide-bar 34 on the lower end of a hanger 34^a, that is connected with the main frame and whose sides are in the same plane with the inner sides, respectively, of the mold-boxes.

Between and below the line of the top of the anvils and the tables 33 extends a horizontal bar 35, which I term the "feed-bar," on one end of which is a cross-bar 35^a at right angles to the latter, like the head-bar of a T-square, and projecting above the plane of the tables, as shown. The other end of the bar 35 is secured to and beneath the horizontal limb 36^a of a gooseneck 36, and on the top of the gooseneck is fixed a horizontal plate 37, hereinafter termed the "off-bearing plate," that is a short distance above the line of the anvils and whose inner end is upturned to form a flange 37^a, whose front edge is at right angles to the top of the plate, and its lower edge is beveled, as shown. The vertical limb 36^b of the gooseneck is provided with flanges 36^c, that are fitted to and adapted to slide horizontally in guideways 36^d of supporting-brackets 36^e, fixed to a part of the main frame. (Seen most clearly in Fig. 1.) The lower end of the gooseneck is pivotally connected by a rod 38 to an arm 39 of a rock-shaft 40, that is journaled in bearings of the lower part of the frame 1. On the outer end of this rock-shaft is a crank-arm 41, to the free end of which is pivoted a vertically-extending rod 42, whose upper end is pivoted to the lower limb 43^a of a bell-crank 43, that is journaled on a stud 43^b, that is fixed to and projecting from the side of the frame. The upper arm 43^c of the bell-crank has on its free end a roller 43^d, that is entered in a cam-groove 44 in the face of a cam-wheel 44^a, Figs. 1 and 4, on the cam-shaft.

The anvils have vertical vent-holes 45

therein of comparatively-small diameter, preferably located as shown more clearly in Fig. 7, and whose purpose is to permit the escape of a certain quantity or excess of the clay during the process of pressing the clots in order to avoid liability of fracture of the machine and also in order that the successive bricks may be of uniform size. In order, however, to obviate the escape of too great a quantity of the clay through said holes, I provide a mechanism for at the proper times cutting off the outflow. This cutting-off mechanism is as follows: Below the vent-holes of the anvils and adjacent to their neck are two similar rock-shafts 46 46ª, that are journaled in the main frame and extend transversely to the anvils. On the end of one of the shafts, 46, is an arm 47, with teeth on its free end that are in engagement with the teeth of a similar arm 47ª on the other shaft, 46ª. Pivoted to a part or extension of the latter arm is a connecting-rod 48, whose upper end is pivoted to the end of an arm 49ª of a bell-crank 49, that is journaled on a stud 49ᵇ, projecting from the side of the main frame. The other arm 49ᶜ of the bell-crank carries at its free end a roller 49ᵈ, which is entered into a cam-groove 50 in the side of a cam-wheel 50ª, that is mounted on the cam-shaft, as shown in Figs. 1 and 2. The configuration of this groove is most clearly shown by dotted lines in Fig. 2. Secured to the rock-shafts 46 46ª, or rather to arms 46ᵇ thereof, are pins 51, whose upper ends are in such proximity to the line of the lower ends of the vent-holes 45 that when the pins are rocked outwardly they will cut off the "noodles" or small stems of clay that have been forced through said holes and will also close the latter at predetermined times, as and for a purpose hereinafter explained.

Having now described the construction of the machine (not going into minor details or describing parts tending to render the operation more perfect, which parts will be hereinafter described) and premising that the said several cams carried by the cam-shaft 2 are so shaped and timed as to effect at the proper instants or intervals the movements of the respective parts actuated thereby, I shall now proceed to explain the operation of the machine, as follows: The clots to be re-pressed, whose length and width are less than those of the interior of the mold-boxes, are placed upon the tables 33 against the sides, respectively, of the guide-bar 34 at the time when the feed-bar 35 has been projected to its farthest outward extent by operation of the cam 44 and its connections with the rock-shaft 40—that is to say, when the cross-bar 35ª is at the outer end of the tables 33, as seen in Figs. 15 and 16, Sheet 7. The latter figure shows also the position of the mold-box and plunger and off-bearing plate at the time of the completion of the re-pressing of a clot C′. C is a clot that is placed upon one of the tables, with its side against that of the guide-bar 34 just after the re-pressing of the previous clot. Now as the cam-wheel 44ª continues to rotate, and thus actuates the rock-shaft 40 through the connecting-rod 38, &c., the gooseneck slides forward, and the cross-bar 35ª, impinging against the rear end of the clot C, carries the latter into position upon the anvil 11, beneath the mold-box. As, however, the momentum is liable to carry the clot too far, and thus out of register with the mold-box, I provide a means for arresting the clot when it arrives at the required position. This consists in the present instance of a bent or approximately U-shaped spring 52, whose lower limb 52ª is fastened to a bracket 53, that is secured to the top of the anvil-supporting diaphragm, and whose upper limb 52ᵇ extends above the plane of the anvil and its inner side is in line vertically with the inner edge of the mold-box on that side. The timing of the mechanism which actuates the feed-bar is such that when the bar has reached substantially the limit of its forward movement the clot C will impinge against the spring-stop 52. As the cross-bar 35ª is then directly beneath—that is, in the path of—the forward wall of the mold-box, as in Fig. 11, it is necessary that it should be gotten out of the way before the box shall descend to incase the clot. When the said bar is at the limit of its forward throw, the roller 43ᵈ is riding in the rounded portion or swell (marked 44ᵇ, Fig. 4) of the cam-groove 44, and as the cam-wheel continues to rotate the said roller enters the depression at 44ᶜ of the said cam-groove, and a slight rock is thereby imparted to the shaft 40, which carries back the feed-bar a short distance sufficiently to cause its cross-bar 35ª to amply clear the line of the mold-box—that is, from the position of Fig. 11 to that of Figs. 12, 13, and 14, Sheet 7. The bar remains in this position until roller 43ᵈ passes from the semicircular part 44ᵈ and comes to the part 44ᵉ of the cam-groove 44. The mold-box now descends by the action of the rotating cam 28 upon the roller 26ᵈ of the lower limb 26ᶜ of forked arm 26, as in Fig. 12, and continues its descent, finally incasing the clot C, as seen in Fig. 13, the stop-spring being at the same time depressed by the mold-box. The plunger 10 is now forced down by the cam 21, and thus the clot is compressed upon the anvil. Any excess of clay is forced through the vent-holes 45; but just before the final pressure is given by the plunger the pins 51 are rocked outwardly by the action of the suitably-timed cam-groove 50, in the high part 50ᵇ, Fig. 2, of which rides the roller 49ᵈ of the bell-crank arm 49ᶜ, that is connected by the rod 48 with the toothed arm 47ª upon the shaft 46ª, upon which latter said pins are mounted, as before described. These pins break off the noodles and stop the flow of clay through the vent-holes. As the cam 21 continues its rotation and the roller 20 rides on the highest point of the cam, as in Fig. 10, the final pres-

sure is given to the clot by the plungers while the said holes are thus closed. This latter pressure while not wholly essential is designed to impart a uniform texture to the clay—that is, to compact that part of the clot at or about the points whence the clay has flowed through the vent-holes. The mold-box and plunger now being in the position shown in Fig. 13 rise thence to that of Fig. 14, the mold-box ascending through the action of cam 27 and the plunger by the weight suspended from the arm 30 of stud 18, it (the plunger) being, however, started by the positive action of the cam-ledge 31 of the cam 21 impinging against the roller 32 on arm 19, so as to overcome the suction of the clot to the anvil, as seen in Fig. 10. While at this time the plunger has reached its upward limit, the mold-box, still incasing the clot, (which has been carried up from the anvil by the box,) has, for a purpose hereinafter appearing, not reached its highest point. At this juncture—that is, after the box and plunger have ascended, as seen in Fig. 14—the feed-bar 35 is retracted by means of the before-described mechanism, suitably timed for actuating it, from the position seen in Fig. 14, also in Figs. 12 and 13, to that of Figs. 15 and 16—that is to say, the off-bearing plate 37 is carried into position over the anvil and beneath the mold-box and the re-pressed clot therein, the lower beveled edge of said plate in its inward movement impinging against and depressing the spring-stop 52 out of the way, or rather against an incline 52^c, Fig. 9, upon the spring. The cross-bar 35^a is also carried to the rear part of the table in position to slide the next clot to be re-pressed from the table to the anvil. The mold-box is now caused by its operating-cam 27 and connections to rise to its highest limit, as seen in Fig. 16, the distance from the under side of the plunger to the top of the off-bearing plate being a little greater than the thickness of the clot that has been operated upon. This ascent of the mold-box freeing the clot therefrom causes or permits the latter to drop upon the off-bearing plate, by which it is carried forward into convenient position to be taken away by the attendant of the machine, when the feed-bar is again advanced to carry the succeeding clot into position beneath the mold-box, as in Fig. 11. In order to insure the drop of the clot which may adhere to the plunger, I usually impart a final downward movement to the latter by providing the edge of the cam 21 with a projection 21^a, of substantially the form shown in Figs. 5 and 10. This projection impinging against the roller 20 at the proper instant—that is, at the same time the mold-box is ascending to its highest limit—gives a slight descent of the plunger and with it the re-pressed clot, thus positively delivering the latter to the off-bearing plate.

In order to obviate the liability of sticking of the top and bottom of the clot, I apply oil or other lubricant to these surfaces of the latter. This I do by the following means: 54, Fig. 5, is a box or tank for containing oil, in the bottom of which is a pipe 54^a, having a petcock 54^b therein for allowing oil to fall or drip from said tank onto a roller 55, covered with felt or the like and journaled in bearings of arms 56, that depend from the tank. Directly beneath this roller are two second similar rollers 57, that are journaled in posts of a bracket 58, fixed to the frame of the machine, and whose peripheries are substantially in line with the tops of the tables 33, respectively. These rollers are located in advance of the line of the forward end of the tables 33 and a short distance to the rear of the line of the mold-box frame. The distance between the said rollers is substantially the thickness of the clot to be operated upon and in order to adapt the rollers for variations in the thickness of clots the bearings of the journals of the upper roller are vertically elongated, so that the roller may adapt itself to the clots. The lower rollers are supplied with oil by the dripping from the upper roller. As the clot is carried between the rollers by the movement of the feed-bar its top and bottom will be oiled by coming into contact with the peripheries of the rollers.

In order to adjust the relative height of the plunger for clots of different thickness, I connect it (the plunger) to the limb 12^a of the cross-head 12 in the manner shown most clearly in Fig. 9, Sheet 6, as follows: 60 is a flanged tubular head which is secured to the top of the plunger 10 by means of bolts 60^a and is internally screw-threaded to receive a threaded bolt 60^b, with a contracted stem that extends through an aperture in the part 12^a, and is secured to the latter by means of a nut 60^c in the projecting end of the stem, whereby the bolt is clamped to the cross-head, as shown. It will be obvious that by loosening the said nut and turning the bolt the plunger may be brought toward or away from the cross-head to suit the thickness of the clots to be operated upon. As it may sometimes occur that the resistance of the clot to compression will be such as to break or strain some part of the machine under the heavy pressure, I usually insert between a shoulder 60^d at the bottom of the stem of the bolt 60^b and the under side of the part 12^a of the cross-head 12 a safety-washer 61, composed of soft metal or material, whose strength is sufficient to resist ordinary strains, but which will crush under abnormal pressure, and thus obviate fracture of the machine. The frame as well as all the parts of the machine are, however, made heavy and of great strength, having regard to economy of space. The mold-boxes and vent-holes, as also all the parts of the machine that come in

contact with the corners of the clot while pressure is being applied thereto, are preferably lined with hardened steel, as seen.

While I have shown one way of carrying out my invention, I do not wish to be understood as limiting myself to the precise constructions or mechanisms shown and hereinbefore described, as substantially-identical results may be attained with other mechanisms adapted to operate in substantially the same way or upon the same essential principle.

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

1. In a machine of the class recited, the combination of the anvil, the mold-box whose internal length and breadth are slightly greater than the corresponding dimensions of the anvil, the plunger within the mold-box; means for effecting a downward movement of the mold-box to incase a clot suitably placed upon the anvil and to cause the lower ends of the said box to pass below the anvil; means for effecting a downward movement of the plunger; means for effecting a substantially-simultaneous upward movement of the mold-box and plunger, and means for effecting an upward movement of the mold-box, the said several movements being successively effected substantially as and for the purpose set forth.

2. In a machine of the class recited, the combination of the anvil, the mold-box whose internal length and breadth are slightly greater than the corresponding dimensions of the anvil, the plunger within the mold-box means for effecting a downward movement of the mold-box to incase a clot suitably placed on the anvil and to cause the lower ends of the said box to pass below the anvil, means for effecting a downward movement of the plunger, means for effecting a substantially-simultaneous upward movement of the mold-box and plunger, means for effecting an upward movement of the mold-box, means for effecting a slight downward movement of the plunger simultaneously with the last-mentioned upward movement of the mold-box, substantially as and for the purpose set forth.

3. In a machine of the class recited, the combination of the anvil, the mold-box suspended above the same, the plunger fitted to said mold-box, mechanism for imparting the vertical reciprocations to said mold-box and plunger, respectively, the table located relatively as shown, the feed-bar having the cross-bar projecting above the plane of said table, the delivery-plate mounted on said feed-bar in a plane above the top of the anvil together with mechanism for reciprocating said feed-bar at predetermined intervals, substantially as and for the purpose set forth.

4. In a machine of the class recited, the combination of the anvil, the mold-box suspended above the same, the plunger fitted to said mold-box, mechanism for imparting the vertical reciprocations to said mold-box and plunger respectively, the feed-bar, the off-bearing plate mounted thereon in a plane above that of the top of the anvil, and having the upward projection or flange, and means for reciprocating said bar, whereby the said plate is brought into position beneath the mold-box and over the top of the anvil, and retracted therefrom, substantially as and for the purpose set forth.

5. In a machine of the class recited, the combination of the anvil, the table located with relation to the anvil as shown, the mold-box suspended above the latter, the plunger fitted thereto, mechanism for imparting the vertical movements to said mold-box and plunger with relation to the anvil, the feed-bar having the cross-bar projecting above the plane of the anvil, and means for reciprocating said feed-bar; together with the spring-controlled or yielding stop located relatively to the mold-box and the feed-bar substantially as and for the purpose shown, all constructed and adapted to operate as and for the purpose set forth.

6. In a machine of the class recited, the combination of the anvil, the mold-box, the plunger fitted thereto, mechanism for imparting the reciprocations to said plunger and mold-box, respectively, the vent-holes through the anvils adapted to communicate with the interior of the mold-box, and means for closing and opening the exits of said vent-holes at predetermined intervals, substantially as and for the purpose set forth.

7. In that class of brick-machines, wherein clay is formed into the shape of bricks by means of a mold, and a plunger adapted to reciprocate therein, the combination with the mold-box of vent-holes through the anvil, adapted to communicate with the interior of said mold-box; together with means for closing and opening said holes at predetermined intervals, substantially as and for the purpose set forth.

8. In a machine of the character described, the combination of the anvil, the mold-box suspended above the same, the plunger fitted to the mold-box, mechanism for imparting the vertical reciprocations to said mold-box and plunger respectively, the vent-holes extending substantially vertically through the anvil, and means for closing and opening the lower ends of said holes, at predetermined intervals, substantially as and for the purpose set forth.

9. In a machine of the character described, the combination of the anvil, the mold-box suspended above the same, the plunger fitted to said mold-box, means for imparting vertical reciprocations to said mold-box and plunger, respectively, substantially as described, the vent-holes in the anvil, the rock-shafts having pins or the like thereon, and means for actuating said shafts at predetermined

times, whereby said pins are caused to close and open the exits of said holes, respectively, substantially as and for the purpose set forth.

10. In a machine of the class recited, the combination of the stationary anvil, the mold-box, the plunger fitted to said box, mechanism for imparting the vertical reciprocations to said box and plunger, respectively, the feed-table, the feed-bar having the cross-bar projecting above the plane of said table, mechanism for reciprocating said feed-bar, and off-bearing plate mounted on the latter in a plane above the top of the anvil, substantially as and for the purpose described.

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

HOWARD K. KING.

Witnesses:
WALTER C. PUSEY,
JOSHUA PUSEY.