

No. 656,880.

Patented Aug. 28, 1900.

C. CHAMBERS, JR.
RE-PRESS BRICK MACHINE.

(Application filed Mar. 15, 1899.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1.

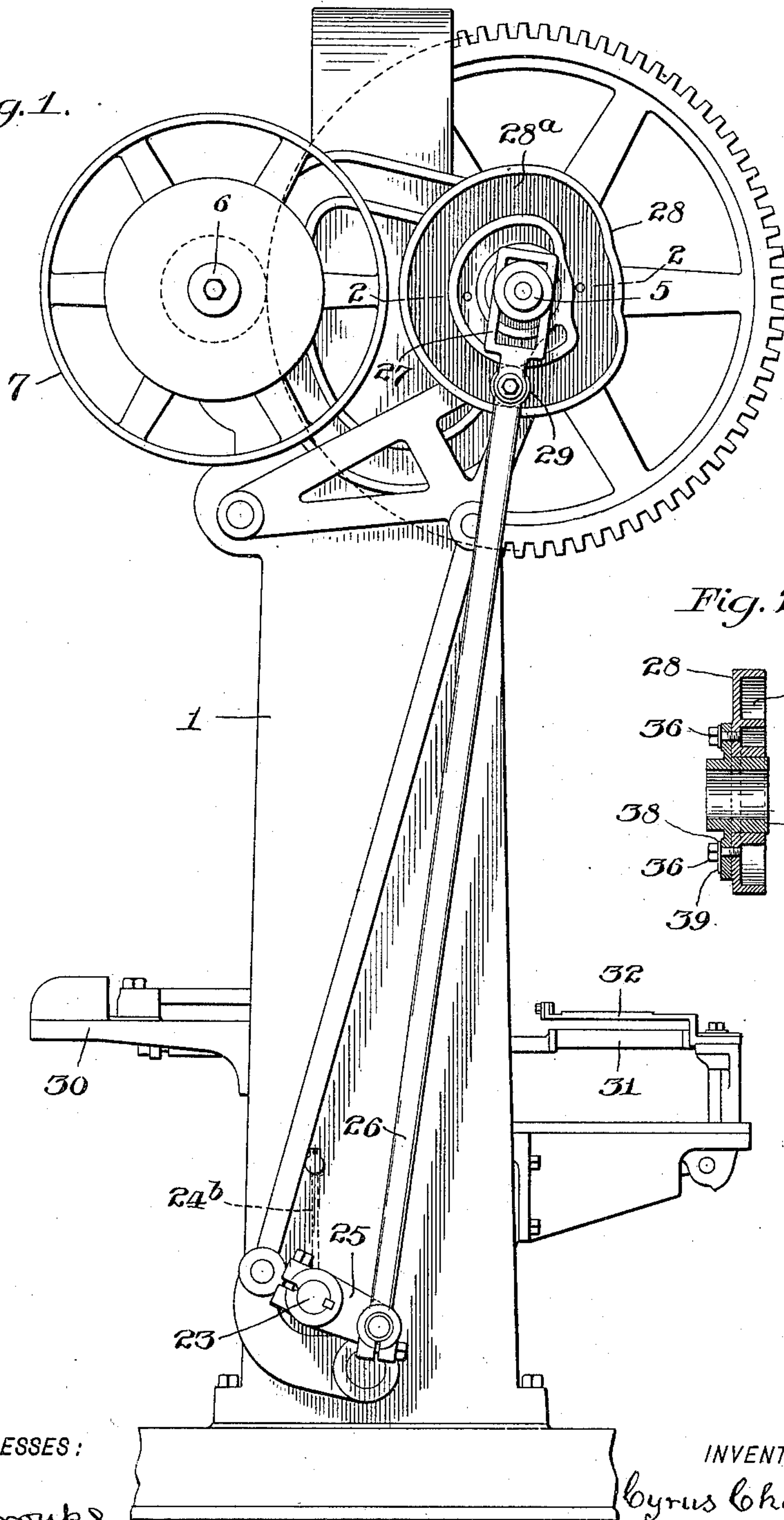
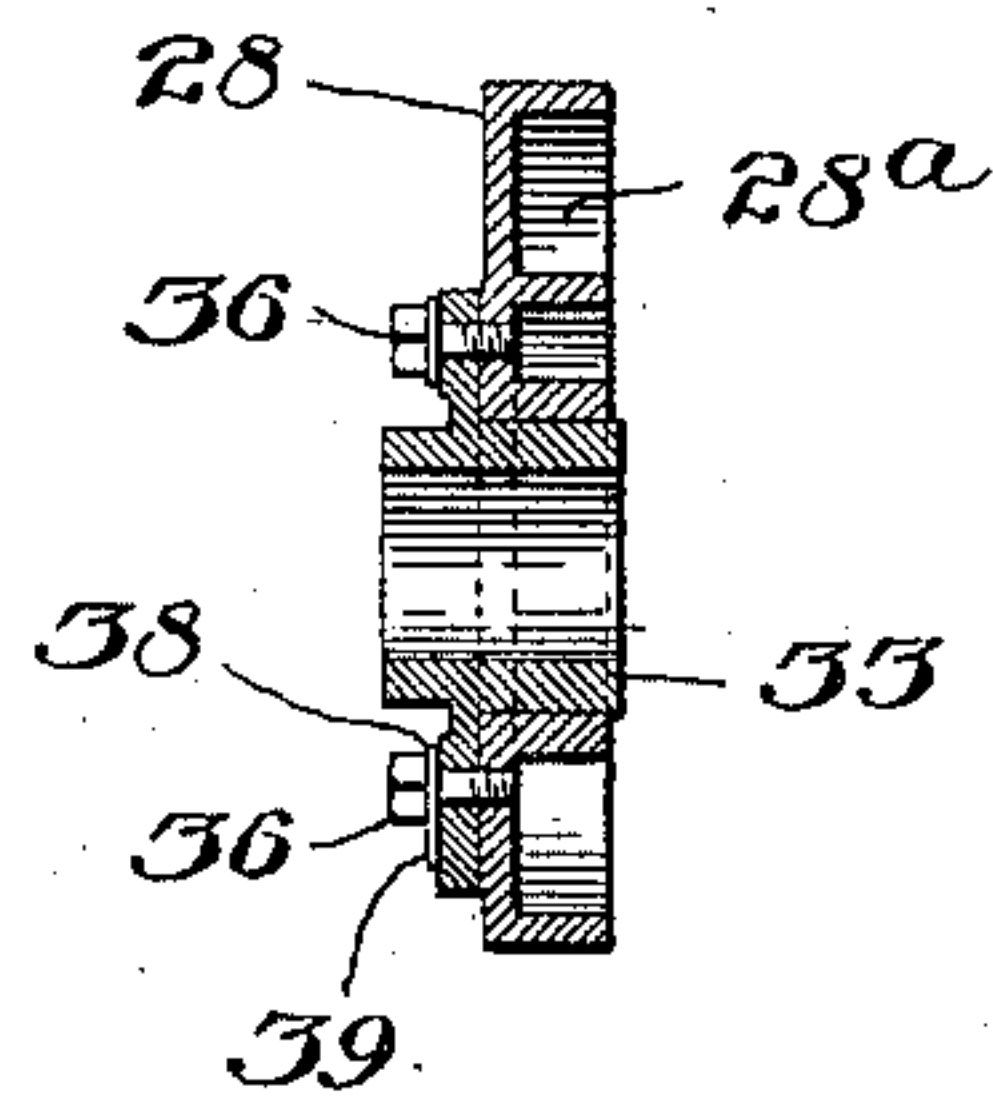


Fig. 2.



WITNESSES:

A. V. Group
Walter C. Pusey.

INVENTOR

Cyrus Chambers, Jr.
BY Joshua Pusey,
ATTORNEY.

No. 656,880.

Patented Aug. 28, 1900.

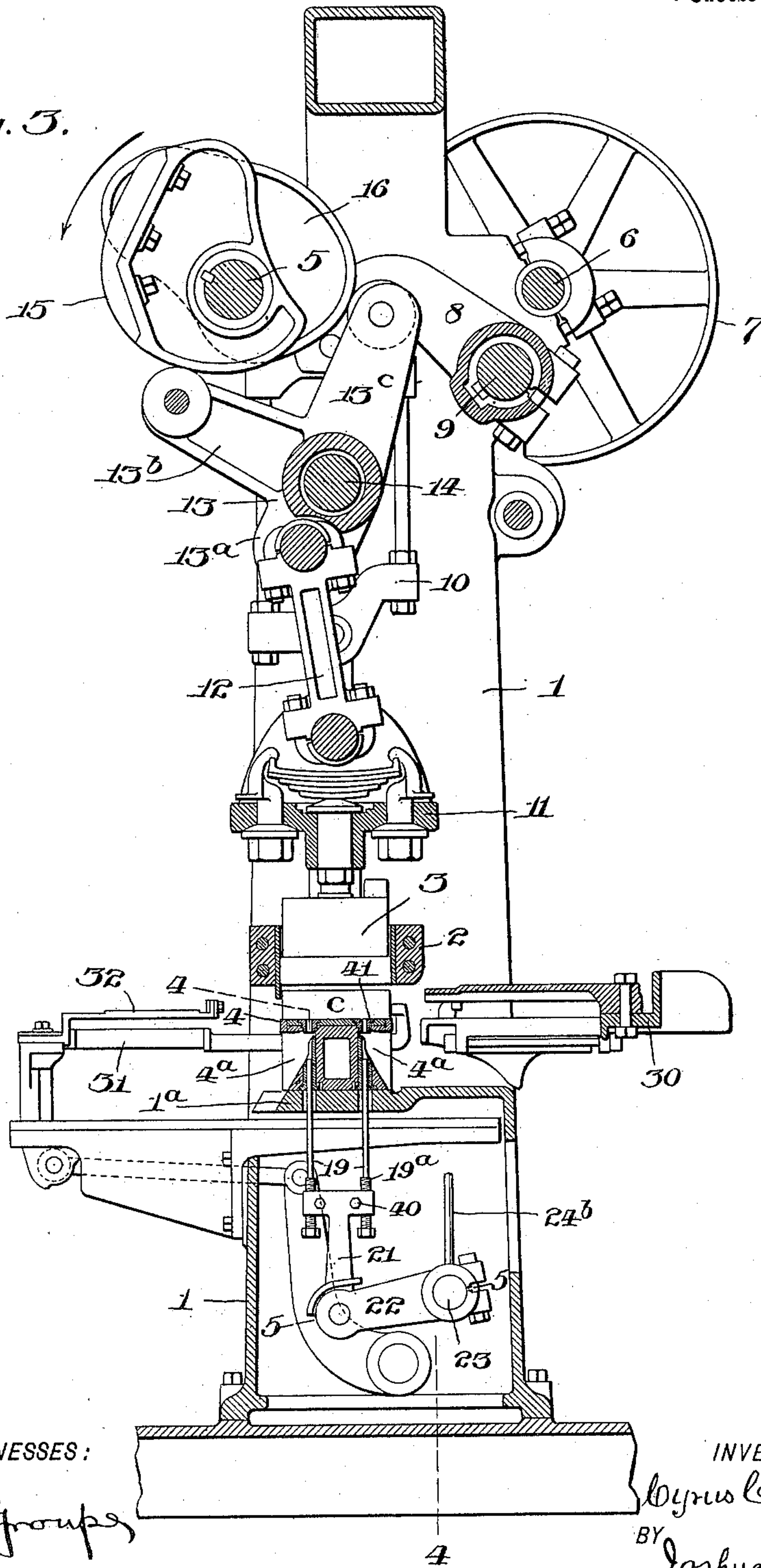
C. CHAMBERS, JR.
RE-PRESS BRICK MACHINE.

(Application filed Mar. 15, 1899.)

(No Model.)

4 Sheets—Sheet 2.

Fig. 5.



WITNESSES:

A. V. Groupes
Walter C. Pusey.

INVENTOR

Cyrus Chambers, Jr.
BY Joshua Pusey,
ATTORNEY.

No. 656,880.

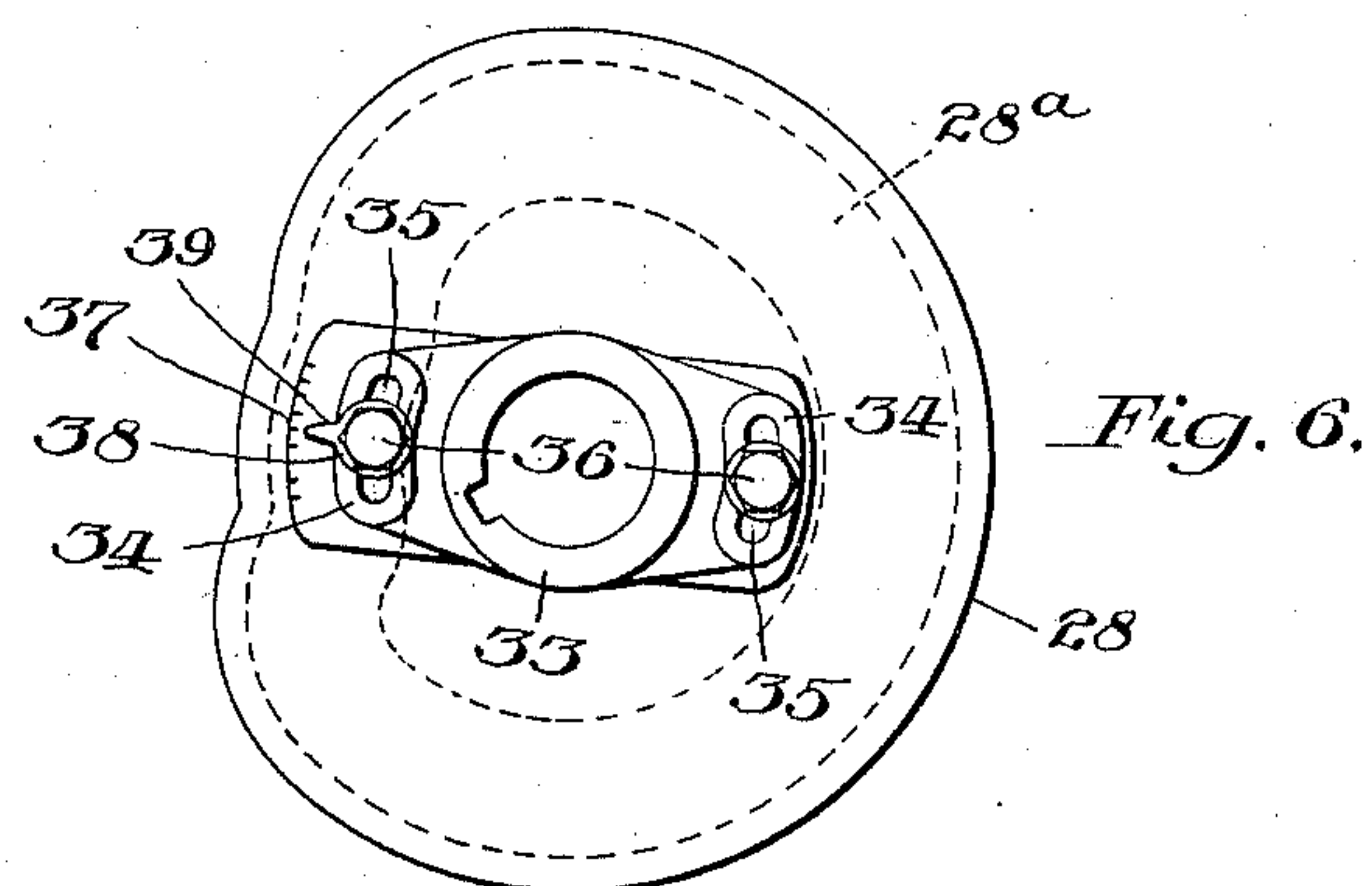
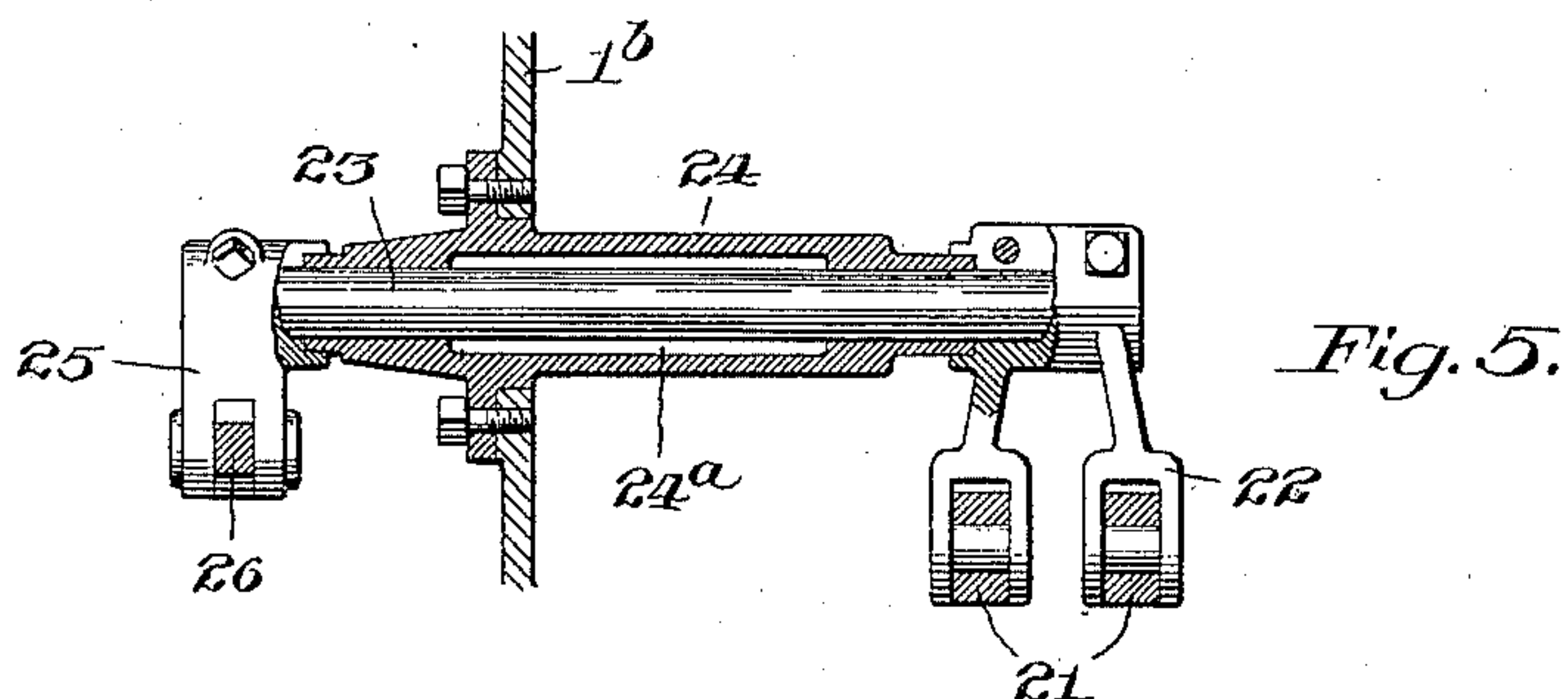
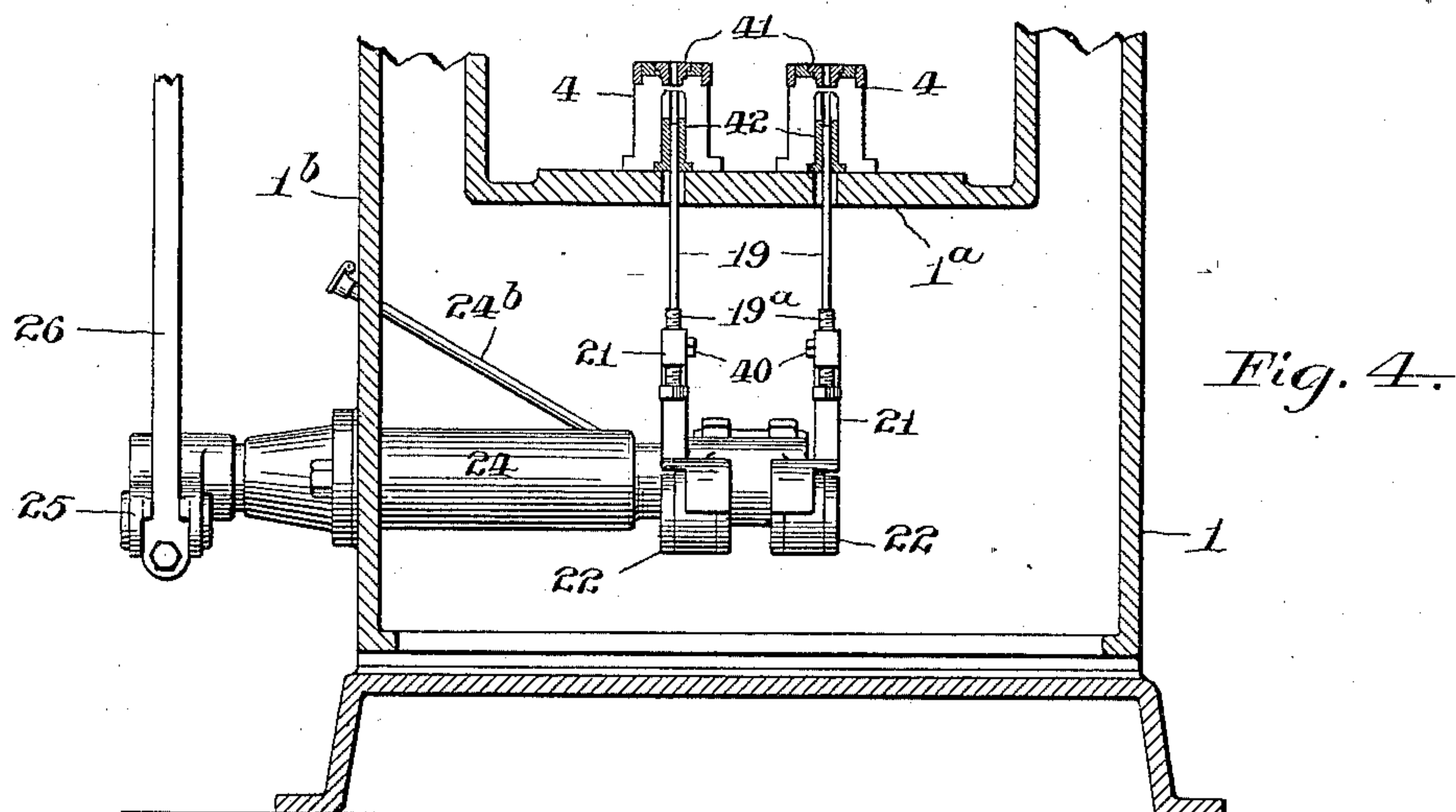
Patented Aug. 28, 1900.

C. CHAMBERS, JR.
RE-PRESS BRICK MACHINE.

(Application filed Mar. 15, 1899.)

(No Model.)

4 Sheets—Sheet 3.



WITNESSES :

A. V. Group
Walter C. Pusey.

INVENTOR,
Cyrus Chambers, Jr.,
BY
Joshua Pusey,
ATTORNEY.

No. 656,880.

Patented Aug. 28, 1900.

C. CHAMBERS, JR.
RE-PRESS BRICK MACHINE.

(Application filed Mar. 15, 1899.)

(No Model.)

4 Sheets—Sheet 4.

Fig. 7.

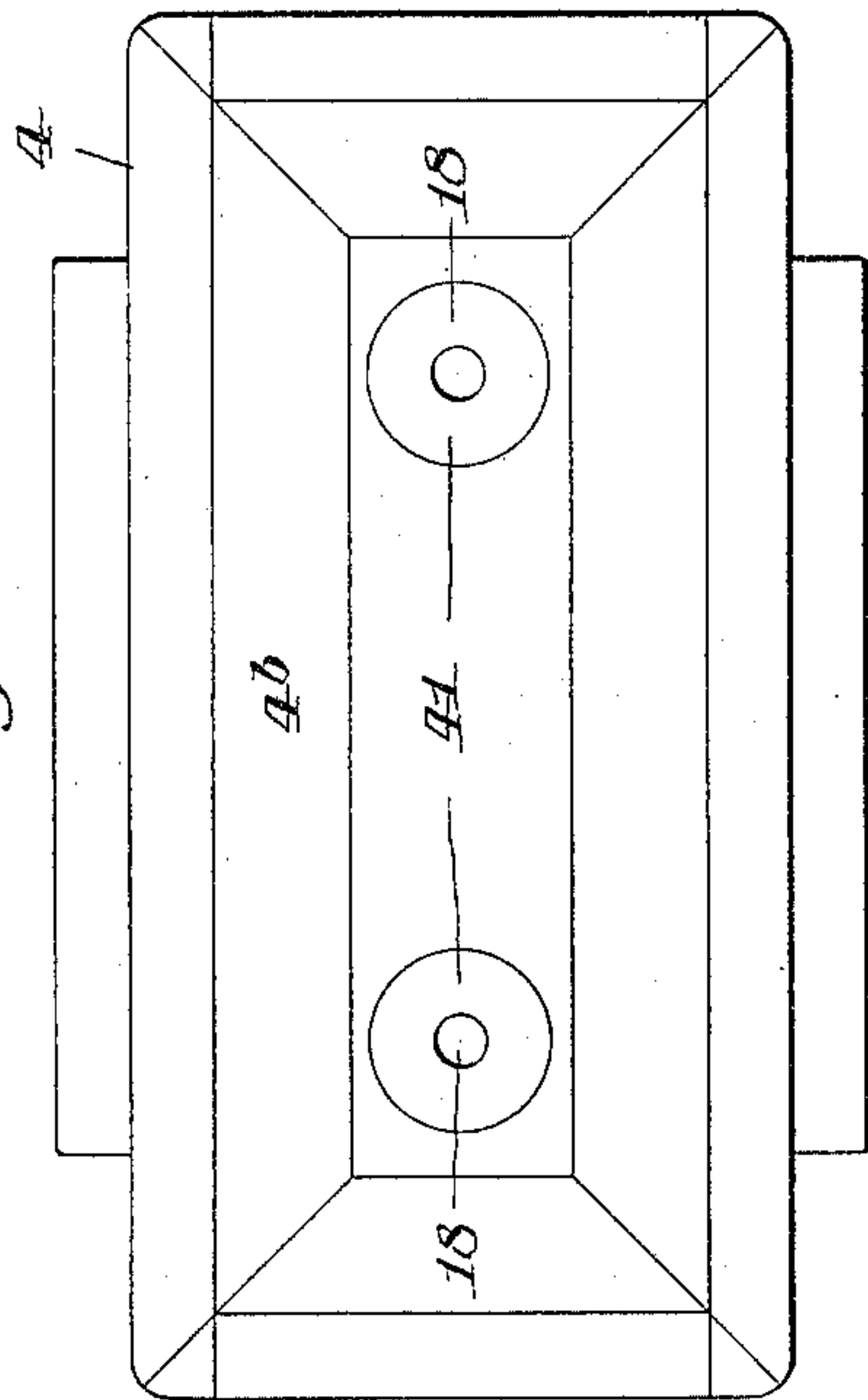


Fig. 8.

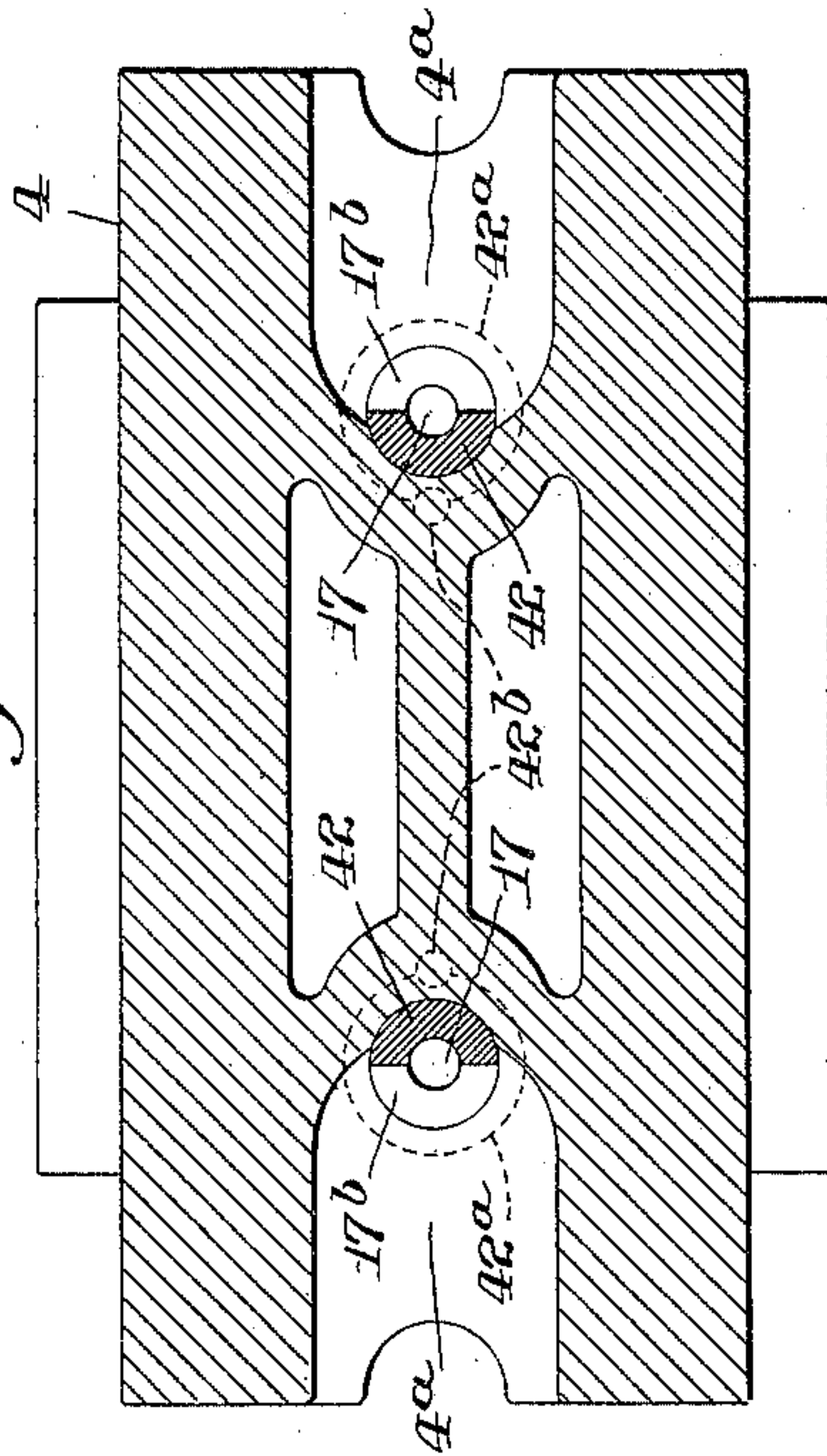


Fig. 10.

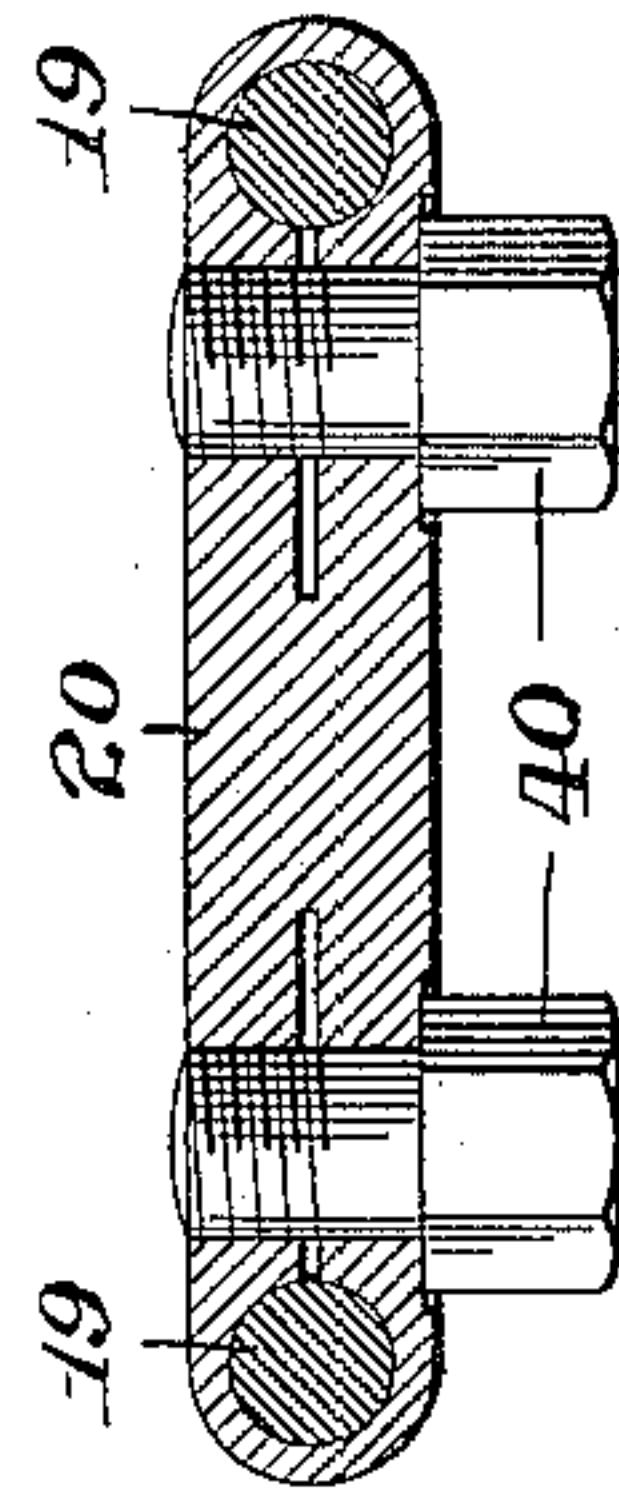
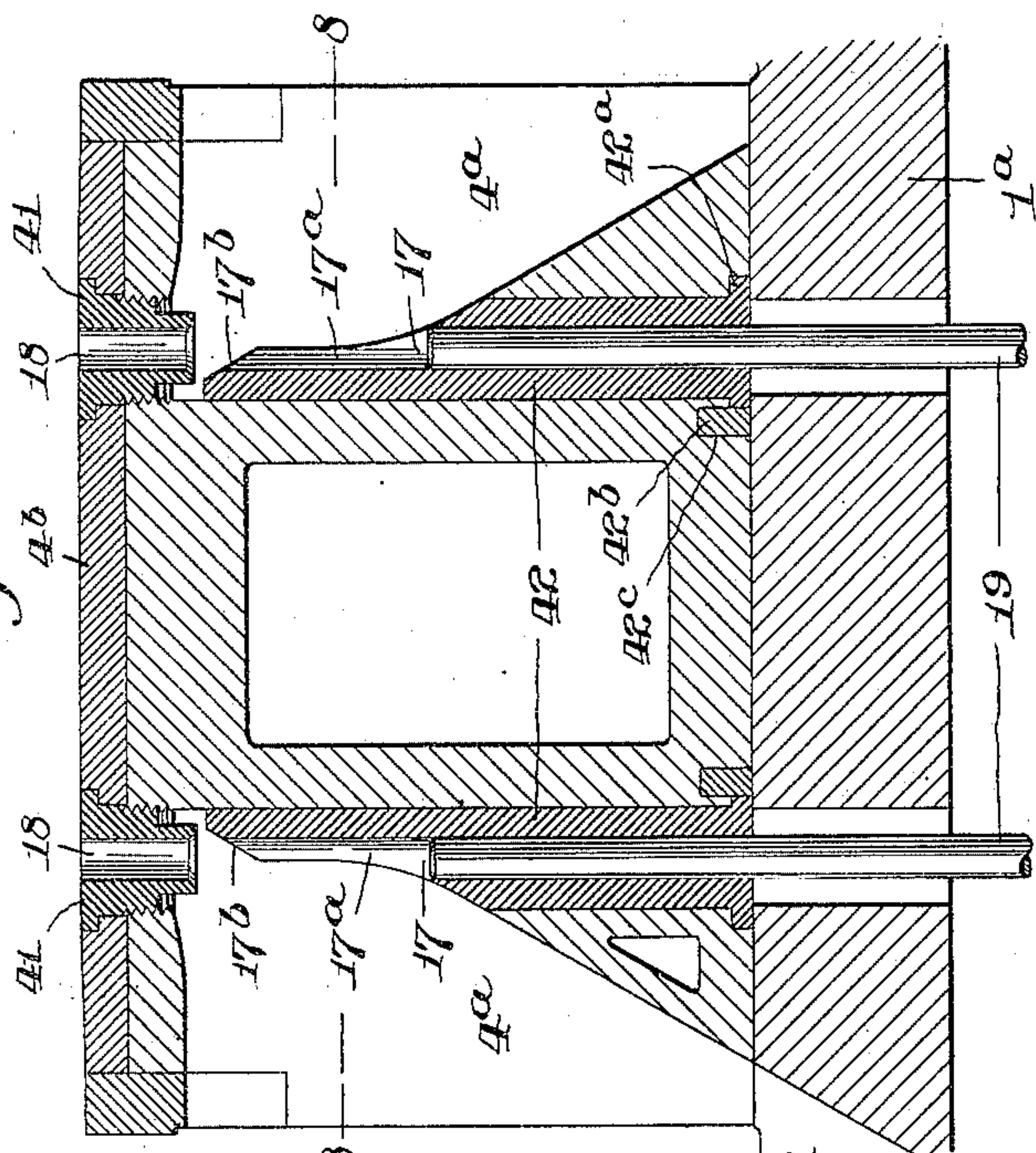


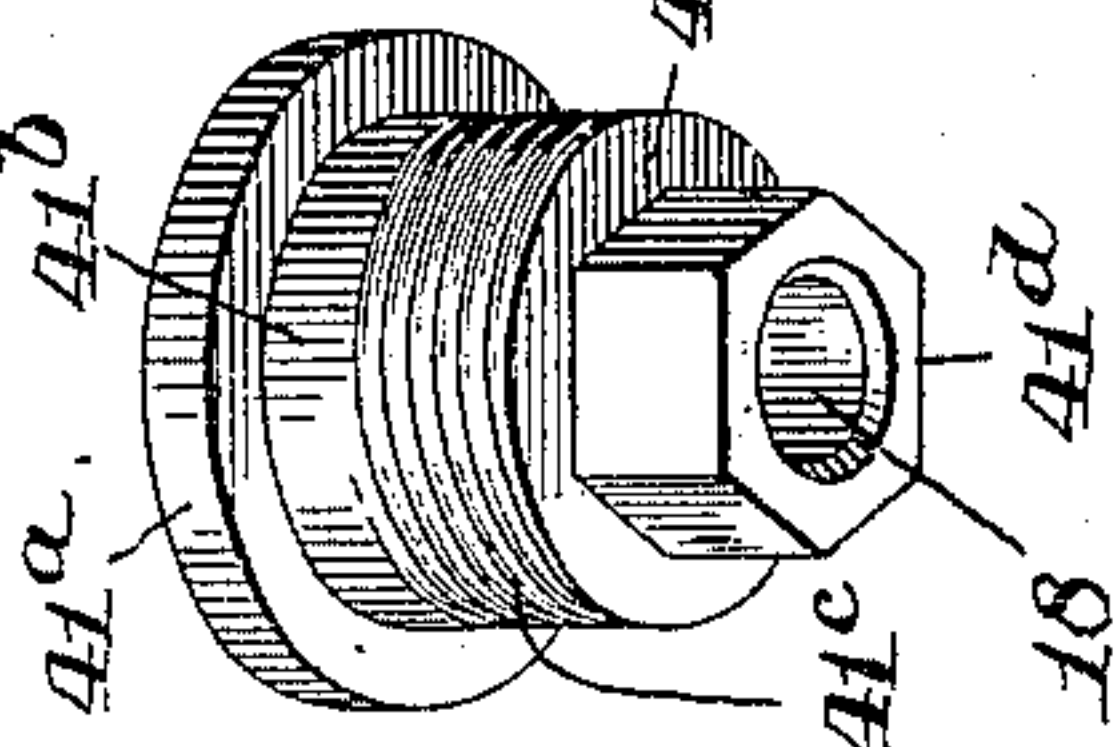
Fig. 9.



WITNESSES:

A. V. Group
Walter C. Pusey.

Fig. 11.



INVENTOR
Cyrus Chambers, Jr.
BY
Joshua Pusey,
ATTORNEY.

UNITED STATES PATENT OFFICE.

CYRUS CHAMBERS, JR., OF OVERBROOK, PENNSYLVANIA, ASSIGNOR TO THE
CHAMBERS BROTHERS COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

RE-PRESS BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 656,880, dated August 28, 1900.

Application filed March 15, 1899. Serial No. 709,122. (No model.)

To all whom it may concern:

Be it known that I, CYRUS CHAMBERS, Jr., a citizen of the United States, residing at Overbrook, in the county of Montgomery and 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 a side elevation of a re-press brick-machine in which my invention is embodied. Fig. 2 is a section as on line 2 2, Fig. 1, of the cam that operates the vent-hole-closing pins. Fig. 3, Sheet 2, is a vertical longitudinal section looking from the side opposite to that of Fig. 1. Fig. 4, Sheet 3, is a full section, partly broken away, as on line 4 4, Fig. 3. Fig. 5 is a section as on line 5 5, Fig. 3. Fig. 6 is a rear side elevation, enlarged, of the cam detached for actuating the vent-closing pins; Fig. 7, Sheet 4, a plan view of the anvil enlarged; Fig. 8, a full section as on line 8 8, Fig. 9. Fig. 9 is a vertical longitudinal section through the middle of the anvil, being an enlarged view of the same parts shown in similar section in Fig. 3. Fig. 10 is a section as on the line 10 10, Fig. 9. Fig. 11 is a perspective view, enlarged, of the vent-hole plug or bushing detached.
This invention relates to re-press brick-machines wherein the mold or mold-box is provided with one or more vent-holes for the purpose of permitting the escape of any excess of clay of the "clot" during the compressing operation. The bricks made in such machines were imperfect in that the clay at and adjacent to the point or line of outflow from the vent-holes was of considerably-less density than the other parts of the brick. Attempts have been made with only partial success, so far as I am aware, to remedy this defect, and the object of my invention is to entirely remedy the same—that is to say, to produce re-pressed bricks with machines of the kind above mentioned that shall be of homogeneous texture or density throughout.

The invention consists in the combination, with a re-press brick-machine having suitable vent-holes (or it may be a single hole) in the mold or mold-box, of pins, one for each hole, mounted in suitable guideways and in line

with the holes and of substantially the same diameter as the latter, and suitable mechanism for imparting a reciprocation of the pins toward and from the vent-holes in such manner that when the usual pressure is applied by the plunger of the machine to the clot of clay within the mold and the surplus clay has escaped through the said holes the ends of said pins are caused to enter the holes, and forcing back the "noodles" of portion of clay then occupying the holes into the body of the brick, thus correcting the lack of or restoring the density of the clay in and adjacent to the outflow toward and from the vent-holes.

While my improvement is applicable to various forms of re-press brick-machines of the kind referred to, whether the mold or mold-box be stationary or movable with relation to a stationary anvil or bottom, I have shown the same in the accompanying drawings applied to a certain machine which is in public use and which is the invention of Howard K. King, of the city of Philadelphia and State of Pennsylvania, for which I am aware he has filed an application for Letters Patent of the United States. A feature of that machine comprises mechanism operating at a predetermined time to cut or knock off the free ends of the noodles projecting beyond the exit end of the vent-holes of the bottom of the mold-box and then to stop up such end a short time before the completion of the compression of the clot, the object and result being to in a considerable measure produce uniformity of texture or density of the clay throughout the clot or brick. In applying my improvement to the said machine I substitute for the mechanism and devices for cutting off the noodles and then stopping the vent-holes the devices hereinafter to be described.

I have not deemed it necessary to show in the accompanying drawings and shall not describe in detail all the mechanism of the aforesaid King machine, but only sufficient for a clear understanding of my improvement as applied thereto.

Referring now to the accompanying drawings, 1 designates the frame of the machine; 2, the mold-box; 3, the plunger fitted therein, and 4 the underlying stationary anvil, which

forms the bottom of the mold-box when the clot *c*, Fig. 3, is being re-pressed.

The mold-box is adapted to be reciprocated vertically with relation to the anvil at predetermined times, by the operation of a cam (not shown) upon the main or cam shaft 5 of the machine, which shaft is driven in the direction indicated by the arrow in Fig. 3, through suitable gear connections from a shaft 6, that carries a pulley 7, which is driven by a belt from the source of power. The aforesaid cam is arranged to rock an arm 8 upon a shaft 9, the free end of which arm is pivotally connected with a vertically-slidable frame 10, whose lower end is connected to the mold-box 2, whereby the required vertical movements of the latter are effected at the prearranged times.

The plunger 3 is secured to a cross-head 11, whose upper end is pivotally connected by a bar 12 to the lower short arm 13^a of a three-arm rock or bell-crank lever 13, that is mounted on a shaft 14. One of the arms 13^b of the lever has a roller at its free end, which contacts with a cam 15 on the cam-shaft 5. The other similar arm 13^c of the lever also has a roller that contacts with a cam 16 on the same shaft 5. The cam 15 rocks the lever 13 forward and so causes the plunger to descend, and as the said shaft continues its rotation the cam 16 rocks back the lever and so raises the plunger.

The anvil 4, which is supported by and is fastened to a diaphragm 1^a, Fig. 3, of the machine-frame, is provided with vertical guide-holes that are in line vertically with vent-holes 18 through the anvil. The lower portions of said guide-holes are round, while the outer wall of the upper portion 17^a is cut away, so that part of the holes is open outwardly to a space 4^a in the sides of the anvil. The upper end 17^b of the walls so cut away is beveled off, as seen in Figs. 3 and 9. Into each of the guide-holes 17 extends a vertical rod or pin 19, that also passes through an aperture in the diaphragm 1^a. The lower ends of these pins are fixed to a cross-head 20 on the upper end of a bar 21, whose lower end is pivoted to the end of an arm 22, that is mounted upon a horizontal rock-shaft 23. This shaft works in a sleeve-bearing 24, Figs. 4 and 5, that is secured to one of the uprights 1^b of the machine-frame. I usually provide the said sleeve with a chamber 24^a for the reception and retention of oil for lubricating the shaft, the oil being conveniently introduced through a pipe 24^b.

On the outer end of the rock-shaft 23 is an arm 25, Fig. 1, to the free end of which is pivoted a rod 26, whose upper end has a guide-yoke 27, through which extends the end of the main or cam shaft 5. On this shaft, or rather upon a flanged sleeve or hub that is keyed to the shaft, is a cam 28, having a cam-groove 28^a of the form seen in Fig. 1 on its face, into which extends a roller 29, that is journaled on the inner side of the rod 26.

Having thus described the construction of my invention, I shall now explain the mode of operation thereof as applied to the particular re-press brick-machine illustrated in part in the drawings. The parts being in the position shown in said drawings in which the clot *c*, Fig. 3, has been advanced by suitable means from the feed-table 30 to the anvil 4 in position to register with the interior of the walls of the overlying mold-box—as, for example, by means of a horizontal slidable feed-bar 31, having its rear end upturned and terminating in a cross-bar 31^a to take against the rear end of the slot placed on the feed-table—as the shaft 5 rotates, the feed-bar being first retracted a short distance, so as to carry its upturned end from beneath the rear end of the mold-box, the mold-box is caused to descend by the action of the aforesaid cam (not shown) and incases the clot. At the same time the plunger 3 is forced down by the operation of the cam 15, thus compressing the clot between the plunger and anvil, which latter becomes then, in effect, the bottom of the mold-box. Any excess of clay in the clot beyond what is required to form the finished brick is forced out through the vent-holes 18 in the shape of cylinders or noodles that are deflected outwardly by reason of their free end impinging against the beveled walls of the cut-away portion of the pin-guide holes 17, as because of the clay expanding as it flows out the noodles cannot enter said cut-away portion. While this outflow of the surplus clay is going on, the cam 28 rotating in the direction of the arrow in Fig. 1 is so shaped, as shown, as to draw up the connecting-rod 26 and the end of the arm 25, and consequently rocks the shaft 23, thus forcing up the pins 19. When the latter reach the lower extremities of the vent-holes, (which occurs at about the time the clay has ceased to issue therefrom by reason of the plunger having nearly attained the limit of its downward movement,) the escape of the clay is arrested by the said pins, and as they continue their ascent they force the clay then occupying the vent-holes back into the body of the compressed clot, thus accomplishing the object of the invention—to wit, the resolidifying of that portion of the clot or brick which had not acquired the density of the other parts owing to the outflow of the clay from or lack of resistance of the vent-holes. If necessary or desirable, the cam 28 may be set so as to cause the pins to be forced up a short distance into the body of the brick, thereby effecting further consolidation of the clay. The indenture that would in that case be left in the brick would not injure its commercial value. The re-pressing operation having been thus completed, the pins 19 are gradually returned by the rotating cam 28 to the original or depressed position. At about the same time the shaft 5, that carries the cams that respectively actuate the plunger and mold-box, causes the plunger and mold-box to ascend simultaneously, and the brick

is carried up away from the anvil, it adhering to the plunger and mold-box by suction and friction. The feed-bar 31 is then retracted toward the feed-table 30, and a delivery-plate 32, mounted on the feed-bar, is brought over the anvil. Then, while the plunger has reached its upward limit, the mold-box, with the incased brick, continues to rise until it reaches its highest point, thus freeing the brick and causing it to drop down upon the said delivery-plate, and it is then carried away by the next forward reciprocation of the feed-bar.

It is desirable that the cam 28, which, it will be remembered, imparts, through the connections hereinbefore described, the proper vertical reciprocations to the pins 19, shall be rotatively adjustable, so as to change, if necessary, the timing of the movements of the said pins. To this end I mount the cam loosely upon a sleeve or hub 33, that is keyed upon the cam-shaft 5 and has opposite lugs 34, Figs. 2 and 6, which are provided with curvilinear slots 35, as clearly seen in Fig. 6. Through these slots are passed set screws or bolts 36, whose inner ends are screwed into the side of the cam-wheel which abuts against said lugs, as seen in Figs. 2 and 6. By loosening the said screws the cam may obviously be rotatively adjusted as required. There may be a scale 37, Fig. 6, on the face of one of the lugs 35, as seen in Fig. 6, in connection with a washer 38 beneath one of the set-screws 36, having a pointer 39, whereby the adjustments may be made to a definite point. I also, mainly to compensate for wear, make the pins 19 vertically adjustable on the cross-head 20, to which they are connected by means of screws 19^a on their lower ends entered into threaded holes in the cross-head. These screws may be integral with the pins or the pins may be fastened to them. By turning the said screws it will be obvious that the distance of the pins from the vent-holes may be adjusted as required and one pin may be so adjusted independently of the other. I usually split the cross-head, as seen in Fig. 10, and use screw-clamp bolts 40 for drawing the split portions of the cross-head toward each other, and thus tightening the same upon the screws 19^a to prevent any possible displacement of the pins.

Although preferable it is not always necessary that the vent-holes be in the bottom of the mold-box. I prefer to make the part having the vent-holes, as shown in the drawings, more clearly in Figs. 9 and 10, Sheet 4—that is to say, in the form of a cylindrical perforated plug or bushing 41—of bronze or other suitable metal having a circular flange 41^a at the top and a shank the upper part of which, 41^b, is plain and the body 41^c thereof screw-threaded and terminating in a head 41^d, which may be square or hexagonal, as shown, whereby the plug may be readily turned with a wrench, the head projecting into the space or opening 4^a of the anvil when the plunger is

in place, as shown. The body of the anvil, as also the usual steel removable facing 4^b thereof, is perforated to receive the plug, whose flange 41^a rests in an enlargement or counterbore of the upper part of the perforation, with its upper surface flush with that of the anvil-facing, as seen in Fig. 9. The threaded part of the shank engages threads in the wall of the body of the anvil, and thus the device serves the double purpose of a removable vent and a means for securing the steel lining to the body of the anvil. I also prefer to make the part having the guide-holes for the pins in the form of a bushing 42, Figs. 3 and 9, of bronze or other suitable metal, which is securely but removably fastened to the anvil—as, for example, in the following manner: The lower end of the said bushing is made with a flange 42^a, that is seated in a socket in the under side of the anvil, which latter rests upon the top of the diaphragm 1^a. In order to prevent turning of the bushing—that is, to insure the maintenance of the cut-away part 17^a of the upper part of the holes in the proper position—a cylindrical pin 42^b is inserted in hole 42^c, part of which is in the flange of the bushing and part in the base of the anvil, as seen in Fig. 9 and indicated by dotted lines in Fig. 8.

I here remark an important advantage that I have omitted to mention that obtains in my invention, and that is the remedy of a difficulty that exists in those machines wherein the ends of the noodles projecting beyond the vent-holes are broken off or cut off. This difficulty is that the vent-holes frequently become more or less stopped up by sticks, stones, or other obstruction or by clay that had hardened when the machine was not in operation. As the pins in my invention enter the vent-holes they clear the latter of all obstructions, which are forced back into the brick with the noodles. I further remark that it will be obvious that the quantity of clay to be forced back into the body of the clot or brick, as hereinbefore described, may be varied by varying the length of the vent-holes or their diameter, and consequently that of the pins.

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

1. In a re-press brick-machine, the combination of the mold-box, the vent-holes therein, the plunger adapted to work in said mold-box, the pins in registry with said vent-holes, and means for actuating said pins to cause them to enter said holes at a predetermined time during the compression of the clot and force back the clay then occupying said holes into the body of the clay contained in the mold-box, substantially as and for the purpose set forth.

2. In a re-press brick-machine, the combination of the mold-box having the vent-holes therein, the plunger adapted to work in said box, the pins in registry with said holes, and

means for actuating said pins to cause the same to enter said holes at a predetermined time and force back the clay therein into the body of the compressed clay within the mold-box, and means whereby the clay issuing from the vent-holes is deflected out of the path of the pins, substantially as and for the purpose set forth.

3. In a re-press brick-machine, the combination of the mold-box having vent-holes therein, the plunger adapted to work in said mold-box, an anvil having guide-holes, the vertically-disposed pins in corresponding guide-holes of the anvil in registry with the vent-holes, the upper portion of said guide-holes opening outwardly as shown, and means for imparting vertical reciprocations to said pins to cause them to enter and retract from said vent-holes, at predetermined times, substantially as and for the purpose set forth.

4. In a re-press brick-machine of the character recited, the combination of the anvil, its removable lining, and the removable flanged plug or bushing having the vent-holes and secured to the anvil, whereby said lining is maintained in place, substantially as described.

5. In a re-press brick-machine, of the character recited, the combination of the anvil, its removable lining, and the removable plug or bushing having vent-holes therein, the flanged head seated in a socket in said lining and its shank screwed into an aperture in the anvil, whereby the device serves the twofold function of a vent-plug and a means for securing the lining to the anvil, substantially as specified.

6. In a re-press brick-machine, the combination of the stationary anvil having the vent-holes, the open mold-box, the plunger adapted to work therein, means for actuating said mold-box and plunger respectively,

the vertically-movable pins in registry with the said vent-holes, and means for causing said pins to enter said holes at the hereinbefore-stated predetermined time, during the operation of compressing the clot within the mold-box, substantially as and for the purpose described.

7. In a re-press brick-machine, the combination of the mold-box, the plunger adapted to work therein, the anvil or bottom of the mold-box having the vent-holes therein, the pins in registry with said holes, means for actuating said pins, and means for adjusting the latter longitudinally, substantially as and for the purpose set forth.

8. In a re-press brick-machine, the combination of the mold-box, the plunger adapted to work therein, the anvil or bottom of the mold-box having the vent-holes therein, the pins in registry with said holes, mechanism, substantially as described, for actuating said pins, and means for adjusting said mechanism whereby the timing of the movements imparted to said pins may be varied as required, as and for the purpose set forth.

9. In a re-press brick-machine, of the character described, the combination of the mold-box and plunger, the anvil or bottom of the mold-box having the vent-holes therein, the rock-shaft, the pins connected with said shaft and in registry with said vent-holes, the arm on said shaft, the rotatable cam, the rod connecting said arm and cam, and means, substantially as described, for effecting rotative adjustments of said cam, substantially as and for the purpose set forth.

In testimony whereof I have hereunto affixed my signature this 1st day of March, A. D. 1899.

CYRUS CHAMBERS, JR.

Witnesses:

JOSHUA PUSEY,
ANDREW V. GROUPE.