

(No Model.)

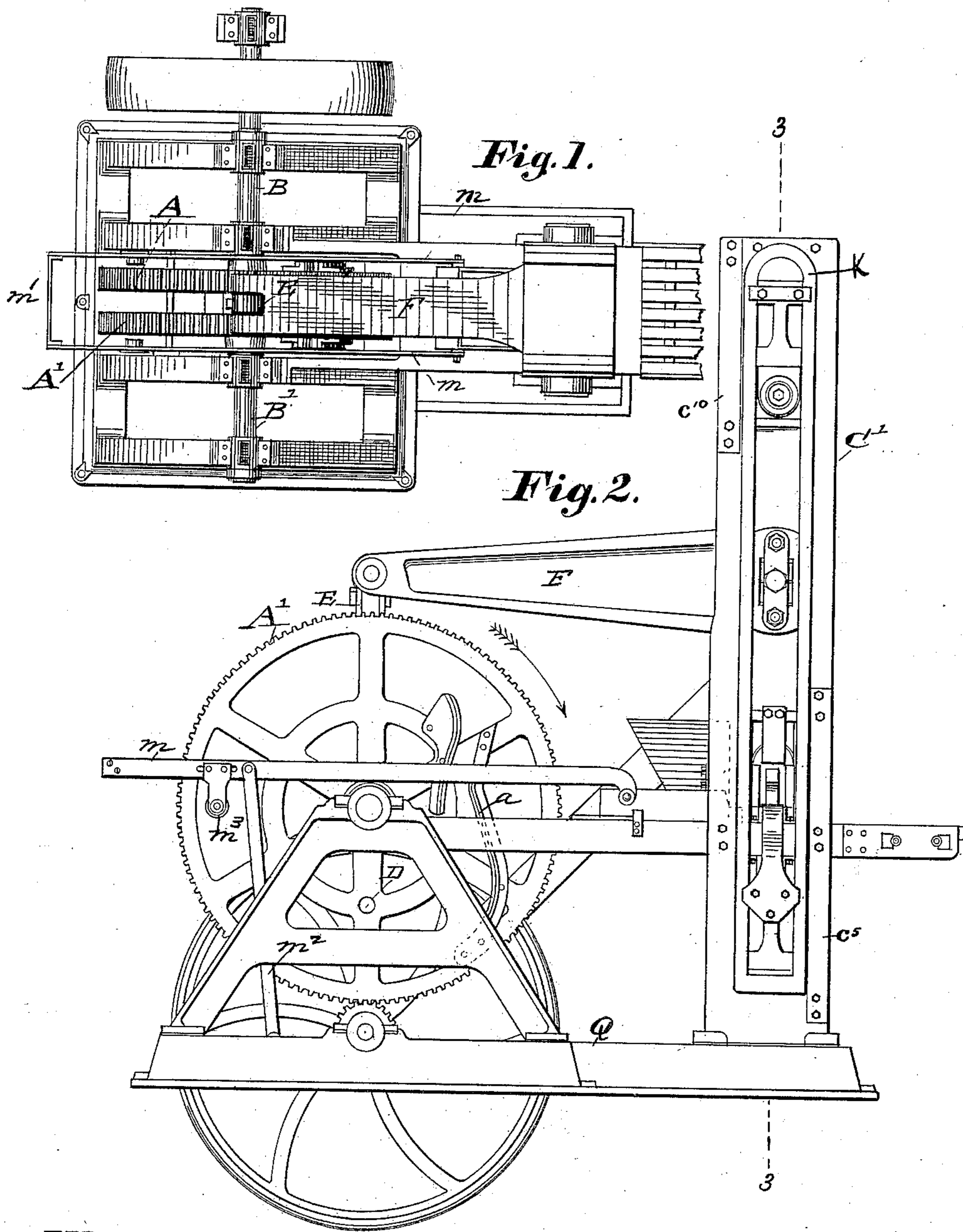
3 Sheets—Sheet 1.

J. J. KULAGE.

BRICK MACHINE.

No. 383,399.

Patented May 22, 1888.



Witnesses:

W. B. Anderson.
J. W. Sutherland.

Inventor:

Joseph J. Kulage,
by C. S. Moody, atty.

(No Model.)

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Fig. 3.

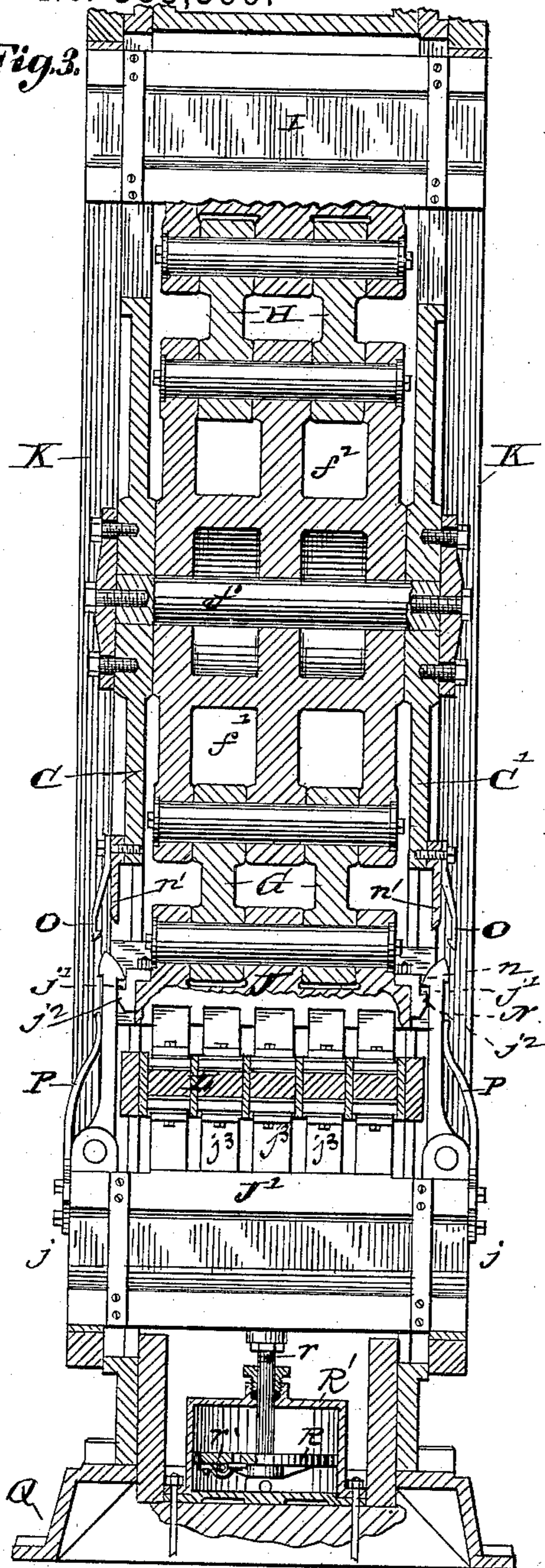


Fig. 5.

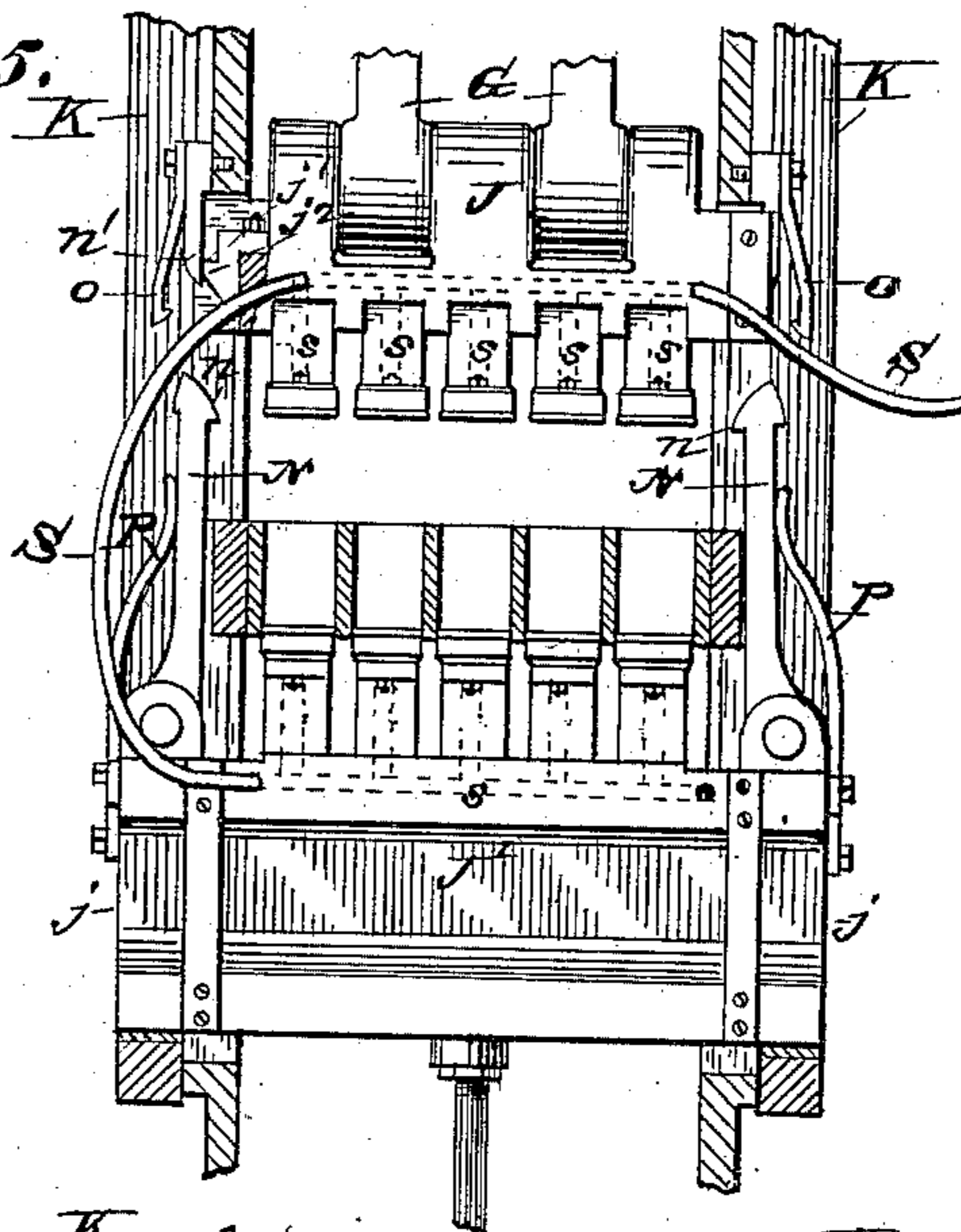
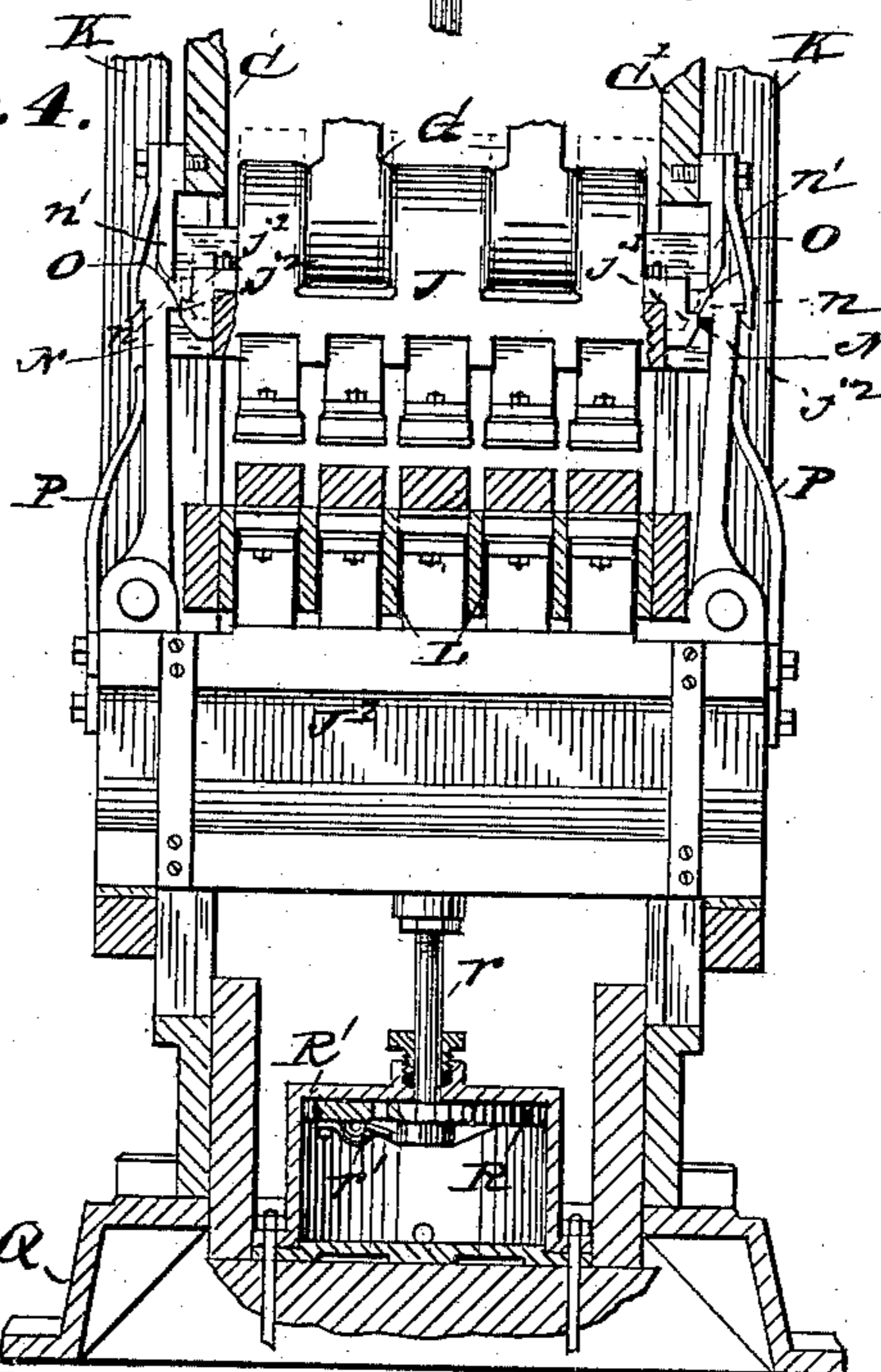


Fig. 4.



Witnesses:

M. B. Anderson.
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Inventor:

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(No Model.)

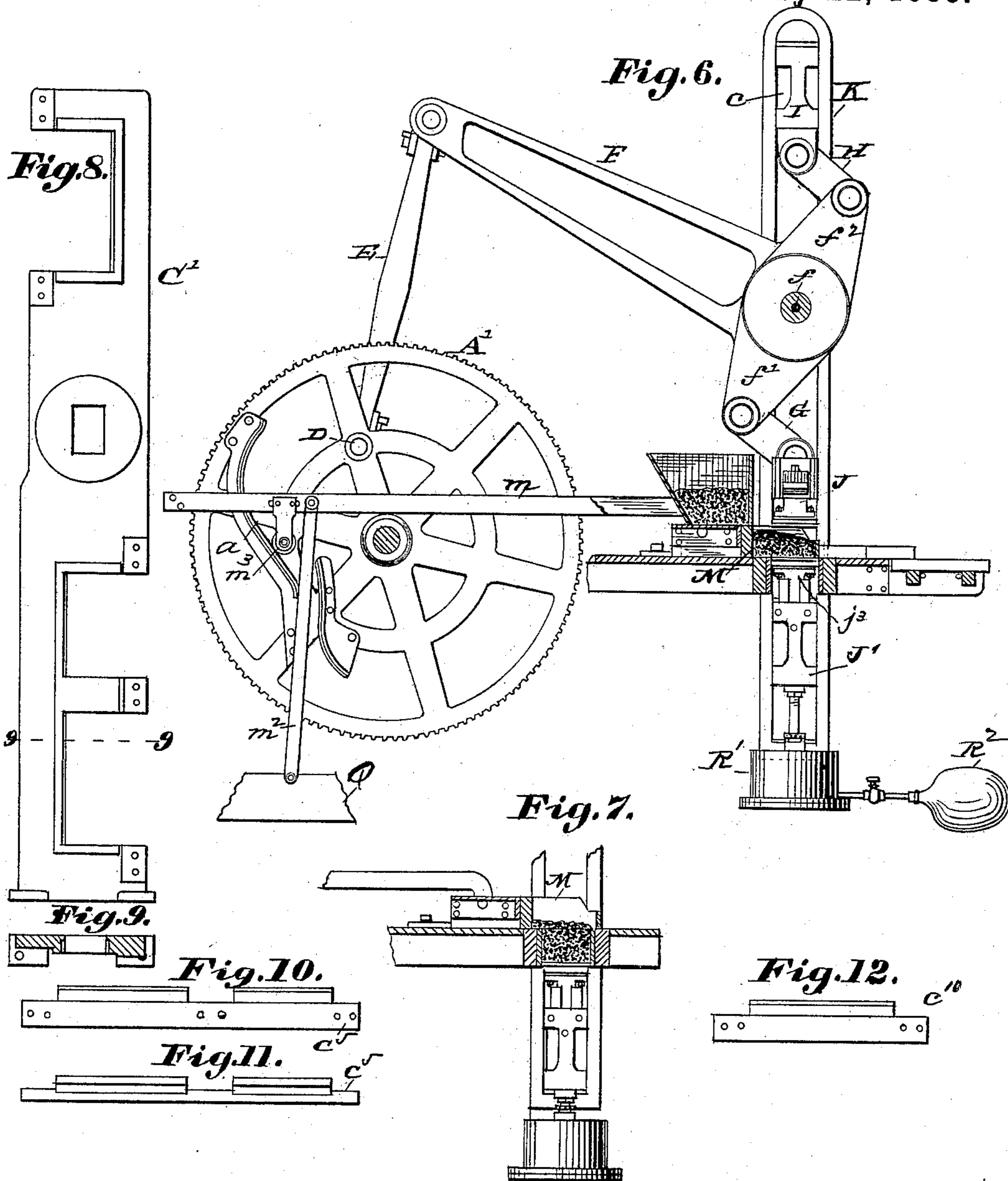
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UNITED STATES PATENT OFFICE.

JOSEPH J. KULAGE, OF ST. LOUIS, MISSOURI.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 383,399, dated May 22, 1888.

Application filed August 30, 1886. Serial No. 212,229. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH J. KULAGE, of St. Louis, Missouri, have made a new and useful Improvement in Brick-Machines, of which the following is a full, clear, and exact description.

The present machine may be classified with those employing an upper and a lower plunger, the plungers moving vertically and opening apart from each other to admit between them the horizontally-moving charger bringing the clay to the molds, and after the charger has been withdrawn closing toward each other to form the bricks in the molds. In such machines as hitherto made difficulty has arisen from the clay not being properly delivered, the finer particles dropping more into that end of the molds which is nearer to the side from which the charger is moved, and the coarser particles dropping more into that end of the molds which is farther away.

The improvement relates to the means for obviating this difficulty. It also has reference to the means for operating the charger, to the means for cushioning the fall of the lower plunger, and to other and minor features, all substantially as is hereinafter more particularly described and claimed, and illustrated in the annexed drawings, making part of this specification, and in which—

Figure 1 is a plan of the improved machine. Fig. 2 is a side elevation. Fig. 3 is a vertical section on the line 3 3 of Fig. 2, the parts being as when the bricks have been formed but not yet ejected from the molds. Fig. 4 is a section similar to that of Fig. 3, the parts being as when the bricks have been ejected from the molds. Fig. 5 is a similar section, the parts being as when the plungers are opened farthest apart. Fig. 6 is a side elevation, partly in section, showing the parts as when the charger has nearly completed its forward stroke. Fig. 7 is a vertical section showing the mold filled with clay and the charger about to make its return-stroke. Fig. 8 is a side elevation from the inner side (opposite to that in Fig. 2) of one of the uprights of the machine-frame, the strips used to confine the toggle and plungers being removed. Fig. 9 is a horizontal section on the line 9 9 of Fig. 8, the confining-strip being shown attached to the inner face of the

upright. Fig. 10 is a side elevation of the lower confining-strip. Fig. 11 is an edge elevation of that strip, and Fig. 12 is a side elevation of the upper confining-strip.

The same letters of reference denote the same parts.

A A' represent the two gear-wheels, attached, respectively, to the shafts B B', and united by means of the wrist-pin D, Figs. 6 and 2. A pitman, E, leads from the wrist-pin to the lever F, which is of the double-bell-crank type, journaled upon the pin f, Figs. 3 and 6, that in turn is held in the uprights C C'. The arms f' f² of the lever are respectively jointed to the links G and H. The lower links, G, are in turn jointed to the upper plunger, J, and the upper links in turn are jointed to the cross-bar I, which is adapted to be moved upward and downward in the slots c in the uprights C C', and at the sides of the uprights respectively connected with the links K K, which lead downward past the upper plunger and connect with the cross-bar or lugs j j of the lower plunger, J'. Said lugs, as shown, project, respectively, through the uprights and then into the links. The lower plunger is drawn up by the links when the upper plunger is moved downward; but the upper plunger can be drawn upward without dropping the lower plunger, for the links can drop and leave the lower plunger upheld by other means, and when the lower plunger is detached from those other means it simply falls into its bearings in the lower end of the links. Both plungers work upward and downward between the uprights C C', in combination with the mold L and charger M, all substantially as in the brick-machine heretofore (August 17, 1886) patented to me, saving as the construction and operation are modified by the improvement now under consideration, which, more particularly described, consists as follows: As these brick-machines have heretofore been made and operated, the clay is allowed to roll into the molds—that is, as the charger approaches the molds, the lower plunger has been lowered, so that the clay begins to enter the molds as soon as the charger begins to pass over the molds. Now, in a charger of the kind described, the finer particles of the clay find their way to the bottom of the charger, leav-

ing the coarser particles at the top. The result of this is, that the finer particles drop more into that end of the mold which is toward the direction from which the charger approaches, and the coarser particles pass more into the other end of the molds. In consequence of this uneven distribution of the finer and coarser particles of the clay the bricks cannot be evenly pressed in the molds, and are therefore imperfectly made. I overcome this difficulty by causing the charger with its contents to be brought well over the molds before the lower plunger descends, so that when that plunger is lowered the clay can drop substantially in a vertical direction and the finer and the coarser particles of clay be evenly distributed throughout the length of the molds. This is accomplished, preferably, by the following means: N N represent the hooks by which the lower plunger can be connected at each stroke of the plunger momentarily with the upper plunger, thereby to cause the sub-plungers or projections j^3 of the lower plunger to eject the molded bricks from the molds. By the term "sub-plunger" is simply meant the projection or projections on the body of the lower plunger, J' . The point n of the hook in this operation engages with the shoulder j' of the upper plunger, J , Figs. 3, 4, and 5, and the lower plunger is thereby lifted by the upper plunger until the hooks are detached from the shoulders $j' j'$; but in the place of employing the charger or some projection thereon to effect the dislodgment of the hooks the "deflectors" n' , as they may be termed, are used. These deflectors are attached to the uprights, respectively, and as the lower plunger rises the hooks, which at the upper end are suitably shaped to coact with the deflectors, encounter the deflectors, and are thereby sprung outward from the shoulders j' . The lower plunger would now drop, as in the previously-constructed machines referred to, were it not for the hooks O. The hooks N are shaped to engage with the hooks O, and when the deflectors n' have acted to dislodge the hooks N from the shoulders j' the upper plunger rises sufficiently to bring the projection j^2 of the upper plunger against the point n of the hooks N, and the last-named hooks are thereby held outward, so as to bring them into engagement with the hooks O, as shown in Fig. 4. The downward movement of the lower plunger is thereby arrested and the sub-plunger j^3 of the lower plunger upheld in the molds, as shown in Fig. 6. The lower plunger remains in this position until the upper plunger has been lifted sufficiently for the projection j^2 to pass upward past the point n of the hooks N, whereupon the springs P, which are attached to and move with the lower plunger and constantly press against the hooks N, act to disengage the hooks N from the hooks O, and the lower plunger in consequence drops into the position of Figs. 5 and 7. It is during the interval while the lower plunger is thus applied by the hooks O that the charger moves into

the position of Fig. 6. This interval can be prolonged or shortened to, suit the movement of the charger, by correspondingly lengthening or shortening vertically the projection j^2 .

In the machines referred to it has been a troublesome matter to operate the charger properly. In its movement it is apt to rock, in one direction bearing at one end upon its trackway and in the other direction bearing at the other end. One side of the charger, also, is liable to be advanced beyond the opposite side. To correct this, the charger-arms m are extended past the gear-wheels $A A'$, Figs. 1, 2, and 6, and are united by the cross-bar m' , Fig. 1. They are also, by means of the links m^2 , jointed to the base-plate Q, or other fixed part of the machine, beyond the center of the gear-wheels.

The rollers m^3 , which are adapted to operate, in connection with the cams a , upon the gear-wheels, are made adjustable upon the charger-arms, so that they can be set closer to or farther from the charger, for the cams a are liable to be worn and the movement of the charger thereby improperly affected; but by means of the described adjustment the rollers m^3 can be shifted to suit the wear, and by means of the connection of the charger-arms with the base-plate, as described, and with each other, as described, the charger can be properly moved to and fro to effect its customary work.

The fall of the lower plunger is cushioned by means of the piston R, Figs. 3 and 4, working in the air-cylinder R' . As the piston descends, the air beneath escapes partly upward past the periphery of the piston into the upper part of the cylinder R' and partly into the collapsible and expansible bag R^2 , Fig. 6, the movement of the air being sufficiently slow to properly cushion the downward movement of the plunger, which is connected with the piston R by means of the rod r . As the piston rises, the air above escapes downward past the valve r' , and it also returns from the bag R^2 into the cylinder. In this manner the air can be used over and over again, and no dust from without can find its way into the cylinder.

It is frequently desirable to get at the working parts immediately within the uprights C C'. Accordingly, the uprights are provided with the removable strips c^5 , Figs. 2, 10, and 11, and c^{10} , Figs. 2 and 12. By first taking these strips off the uprights the plungers, toggle, and parts thereto more immediately belonging can be readily reached and, if desired, removed from their places.

Steam, by means of the flexible pipes S, Fig. 5, can be admitted into the passages s within the plungers, and thereby caused to heat the plungers, so that the clay will not adhere thereto.

I claim—

1. In a brick-machine and in combination with the vertically-movable upper and lower plungers, J and J' , the former shouldered at j' and the latter carrying the spring-actuated hooks N, the deflector and sustaining-hooks independent of either plunger, whereby in op-

eration the lower plunger is arrested and the sub-plunger momentarily upheld as the charge is moved over the mold.

2. The combination of the lower plunger, 5 the hooks N, the upper plunger having the shoulder j' , the deflectors, the hooks O, and the springs P, substantially as described.

3. The combination of the charger M, the arms m , the link m^2 , the base-plate Q, the ad- 10 justable rollers m^3 , and the gears A A', having cams a , substantially as described.

4. The combination of the arms m , the adjustable rollers m^3 , and the gears A A', having the cams a , as described.

5. The combination of the plunger J', the 15 cylinder R', the piston R, and the bag R², as described.

6. The combination of the plunger J', the piston R, the valve r' , the cylinder R', and the bag R², as described. 20

7. The uprights having the removable strips $c^5 c^{10}$, as described.

Witness my hand.

JOSEPH J. KULAGE.

Witnesses:

C. D. MOODY,
J. W. HOKE.