

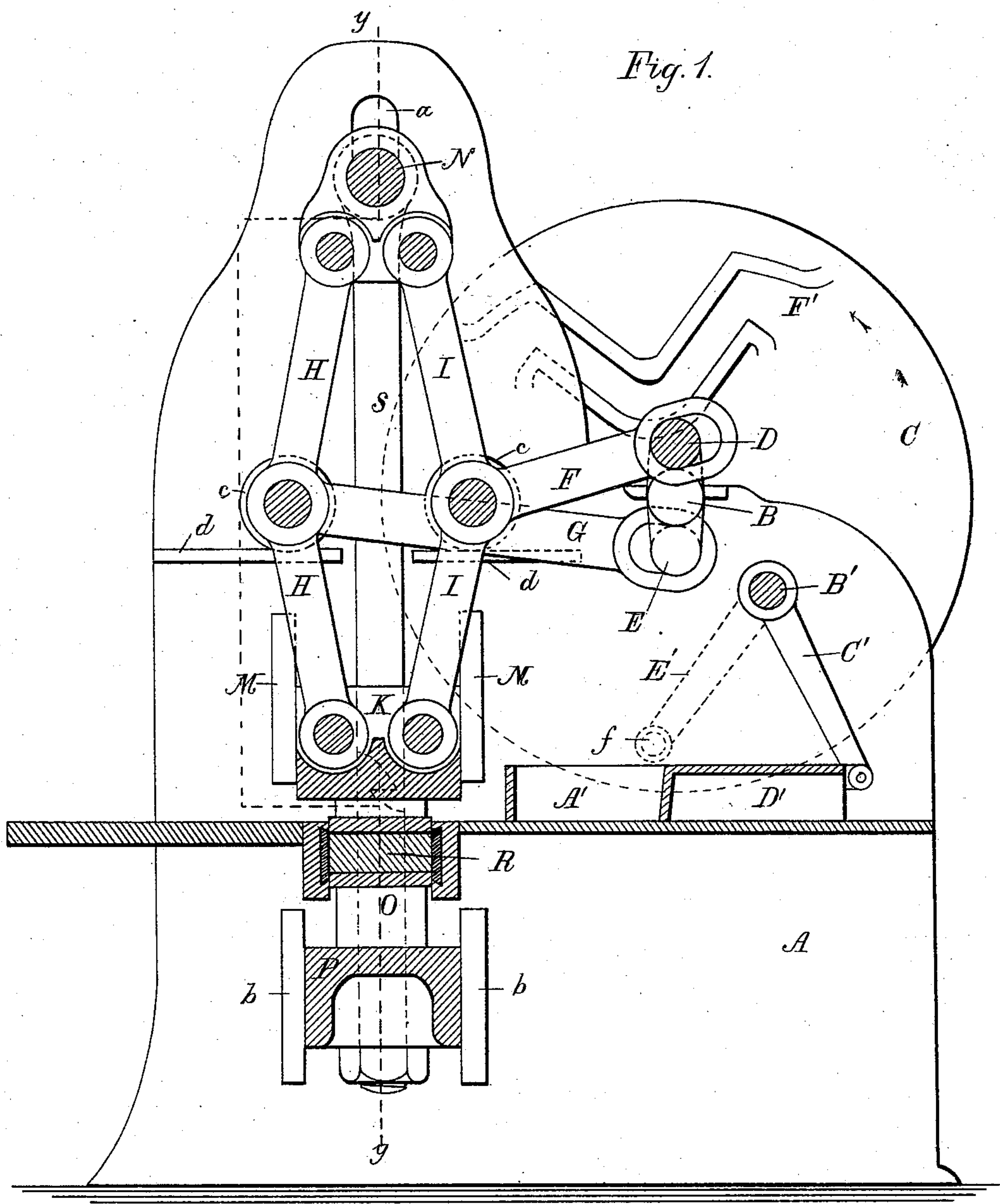
(No Model.)

4 Sheets—Sheet 1.

J. J. BREWIS.
BRICK MACHINE.

No. 324,453.

Patented Aug. 18, 1885.



Witnesses:
T. Henderson.
C. L. Emmons.

Inventor:
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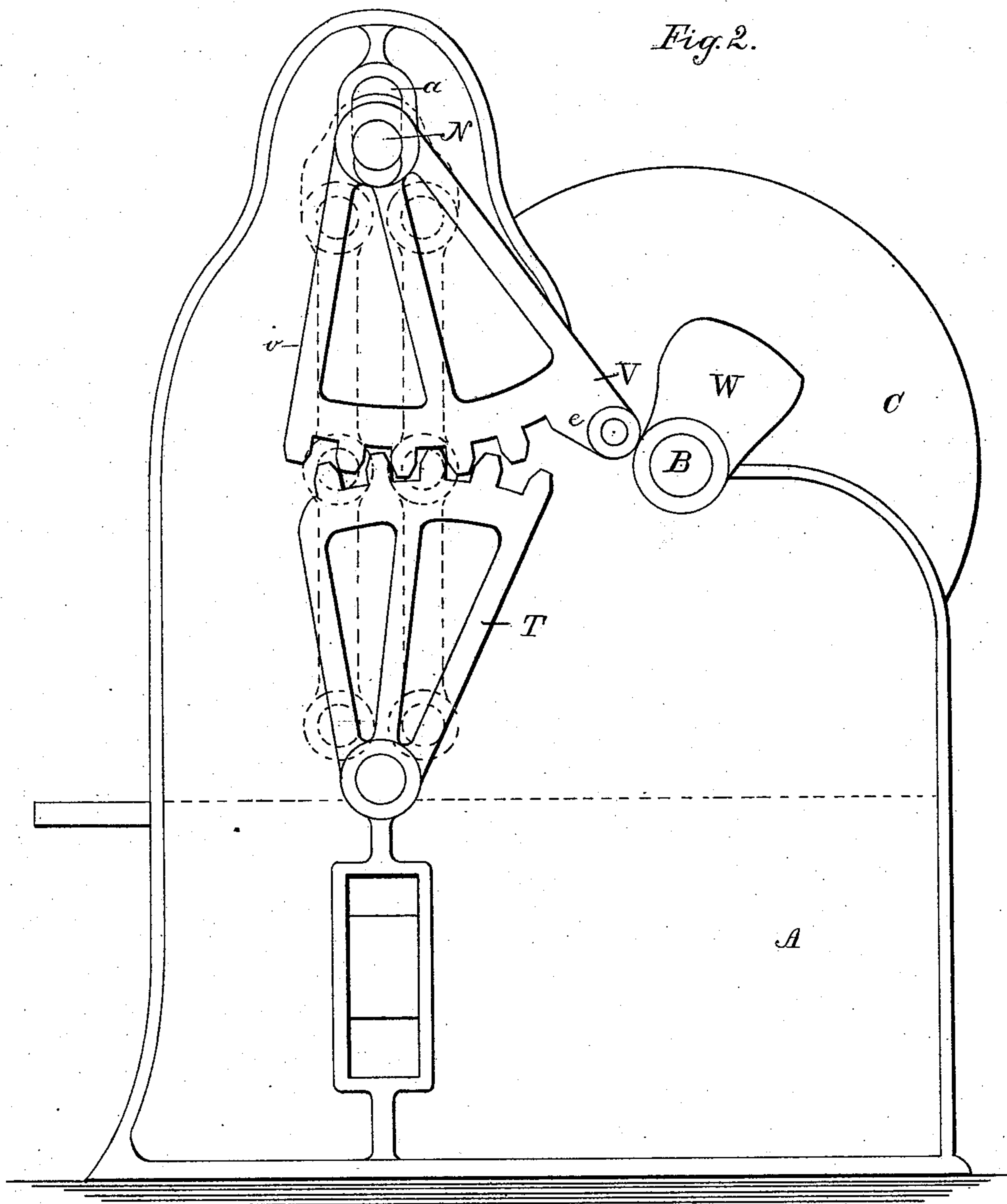
(No Model.)

4 Sheets—Sheet 2.

J. J. BREWIS.
BRICK MACHINE.

No. 324,453.

Patented Aug. 18, 1885.



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(No Model.)

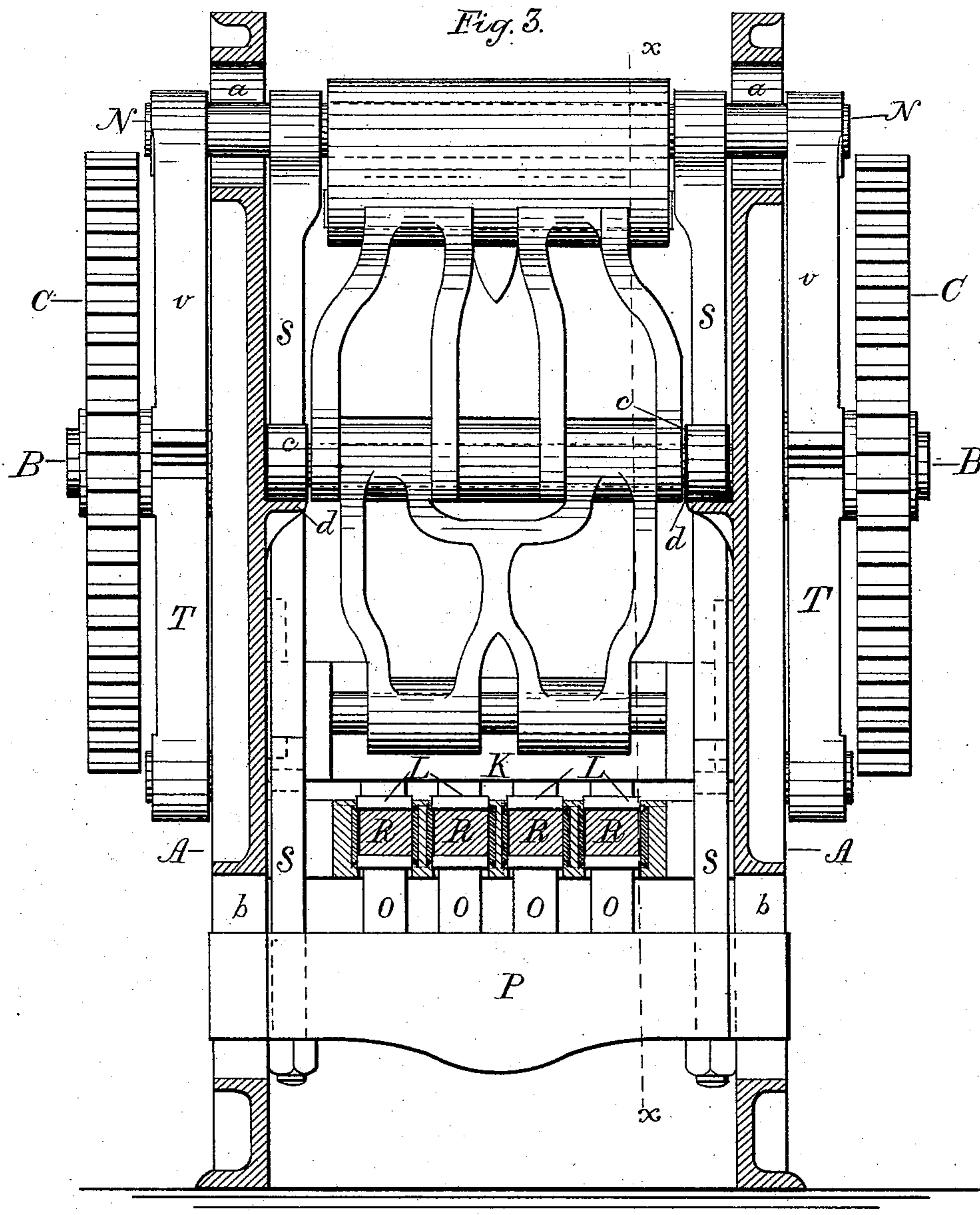
4 Sheets—Sheet 3.

J. J. BREWIS.

BRICK MACHINE.

No. 324,453.

Patented Aug. 18, 1885.



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(No Model.)

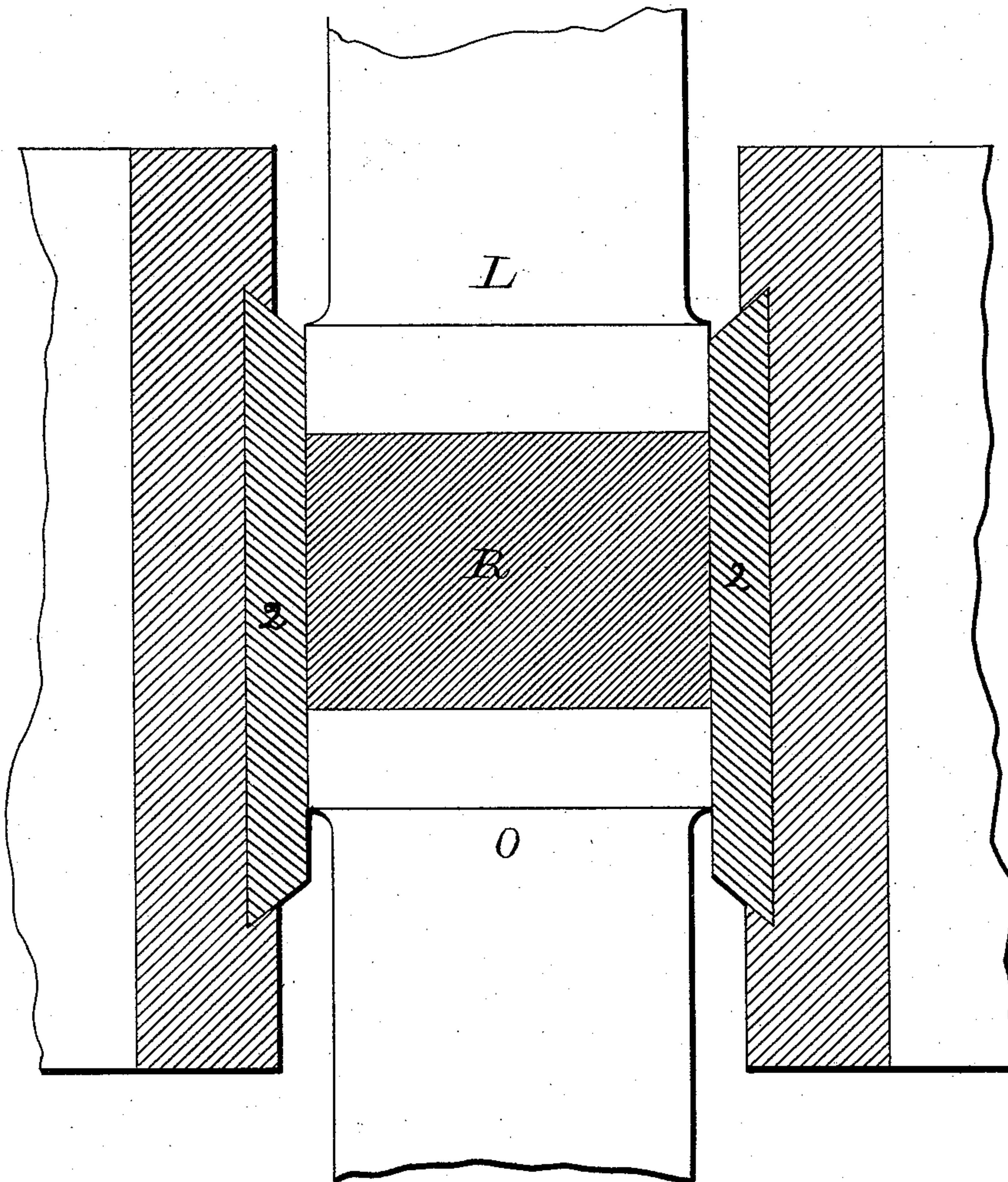
4 Sheets—Sheet 4.

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BRICK MACHINE.

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Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN J. BREWIS, OF MINNEAPOLIS, MINN., ASSIGNOR OF TWO-THIRDS TO
J. A. BOYD, OF SAME PLACE, AND H. R. DICKINSON, OF KEOKUK, IOWA.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 324,453, dated August 18, 1885.

Application filed December 19, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. BREWIS, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Brick-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in brick-machines.

My invention consists of a pair or series of toggle-levers to which the upper plunger or plungers are secured, operated from a continuously-rotating shaft, said toggles being secured to a movable shaft or fulcrum, which in turn is connected to a lower cross head carrying the lower compression plunger or plungers, whereby the point of resistance or pressure of the upper and lower plungers is centered on the clay to be compressed, instead of being borne by the frame of the machine or the rods or pivots which connect the working parts to the frame of the machine.

My invention consists, further, in certain details of construction which will be fully described hereinafter, and pointed out in the claims.

Figure 1 is a longitudinal sectional view on the line *x x* of Fig. 3. Fig. 2 is a side elevation of the machine, showing mechanism for raising the brick out of the mold. Fig. 3 is a sectional end view of the machine on the line *y y* of Fig. 1. Fig. 4 is a sectional view of the mold, showing the steel-faced lining dovetailed therein.

A A indicate the frame or sides of the machine, which is braced by cross-rods in any suitable manner or mounted on a suitable base, so as to make the machine rigid and strong.

B is a shaft mounted in suitable bearings in the frame of the machine and provided with one or more gear or other wheels, by means of which power is imparted to the shaft B from any convenient source.

The shaft B is provided with cranks D E, which project in opposite directions and to which the bars or pitmen F and G are secured, said bars being connected to the toggle-levers H and I, and by which means the said toggle-

levers are operated from a continuously-rotating shaft.

The lower ends of the toggle-levers are connected to a cross-head, K, to which the upper plungers, L, are secured, said cross-head K being adapted to work in suitable guides, M, in the sides A of the machine.

The upper ends of the toggle-levers H and I are connected to the cross-head or bar N, which is mounted in the slotted openings *a* in the sides of the machine, as shown, thus leaving the toggles unconfined, or, rather, providing for said toggles a movable fulcrum or pivotal point, the function and importance of which will be more fully described herein-after.

The toggle-levers H and I are provided at their central pivots with friction-wheels *c*, which rest on ledges or guides *d*, secured to the frame of the machine, as shown, and by which means the toggle-levers, with plungers, cross-heads, &c., are supported in the frame of the machine.

O are the lower plungers, secured to the cross-head P, said plungers, together with the upper plungers, L, being adapted to register with or enter the mold-boxes or cavities R, in which the brick are formed.

The cross-head P is adapted to work in slots or guides *b* in the frame of the machine, and is connected to the upper cross-head or bar, N, by means of the rods S S, so that when the toggle-levers are being operated by the crank-shaft B and the connecting-rods F G pressure is exerted by the top plungers on the top of the brick, and the lower plungers are drawn up by the rods and cross-head P to press the brick on the lower side, the pressure being equal on both sides of the brick; and, furthermore, the clay or brick within the molds being at the point of greatest compression, the sides of the machine are relieved from the upward and downward thrust of the plungers, the only wear or strain on the frame of the machine during the formation of the brick being at the journals or bearings of the shaft B. This is an important feature of my invention, as the entire mechanism for pressing—viz., the toggle-levers, cross-head, plungers, &c.—is raised or held suspended in the

guideways of the frame during the pressing operation of the clay into brick form.

I will now proceed to describe the mechanism for ejecting the brick from the mold.

5 T T are toothed cam-sectors pivoted to the frame of the machine, as shown, which mesh with a similar pair of cams or sectors, U U, the upper ends of which are secured to the cross-head or bar N. The cam-sectors U have
10 projecting portions V, on which are mounted friction-rolls *e*, adapted to be operated upon by the cams W, mounted on each end of the shaft B, (only one shown,) and as the sectors are pushed forward by the cams W the lower
15 plungers are drawn up to push the brick from the molds, which are pushed off by the forward movement of the feed-box, as will more fully appear.

The cam-sectors T U may be provided with
20 springs which will return them to the position shown in Fig. 2 after the cam W has ceased to force them forward.

The rods S S are divided into two parts, as shown in Fig. 1, the upper and lower ends of
25 each portion being hook-shaped, so that they will interlock, so that when the mold-filling box is thrust forward projections thereon (not shown) will strike against the lower sections of the rods S to disengage them from the upper
30 portions, and thus allow the lower plungers with the cross-head P to drop, so as to permit the clay from the feed-box to fill the molds.

A' is the feed-box by which the clay is fed into the molds from a suitable hopper, said
35 box being designed to be slid back and forth in suitable ways on the bed of the machine under the clay-hopper, as is usual in this class of devices.

B' is a shaft secured in bearings in the sides
40 of the machine, to which are secured the arms or bars C', the lower ends of which are secured to the extension D of the feed-box E.

E' is a bar provided with a friction-roller, *f*, which is also secured to the shaft B', the
45 friction-roller *f* being secured to a projection, which is designed to engage with a cam-groove, F', in the face of the wheel C, and by which means the clay-box is moved back and over the mold-cavities.

50 The operation of the machine is as follows: Driving-wheel C is revolved in the direction indicated by the arrow, and closes the toggle-levers or knuckle-joints H I by the pressure and tension transmitted to them, respectively,
55 by the links or pitmen F and G and the double cranks of the shaft B, thus bringing together the plungers L O, the upper plungers, by the direct strain from the toggle-levers through the cross-head K, upon which the upper plungers, L, are fastened, and to the lower plungers, D, from the toggles H I to the cross-head N, through the bars S to the cross-head P, upon which the lower plungers, O, are fastened, pressing the bricks in the molds. The
60 pressure being completed, the shaft B, revolving, brings the cam to bear upon the toothed cam-sectors U, causing the said cam-sectors T

U to rotate cam T upon its fixed axis, and cam U upon its sliding axis N, which now travels
70 upward in its vertical guide, raising with it the bricks in the molds R by the pull exerted through the bars S S and cross-head P, also raising at the same time the knuckles or toggle-levers H I and cross-heads P N until the face of the lower plunger, O, is brought on a
75 level with the top of the table, when the feed-box A', actuated by the cam-groove F, moves in, shoves the brick off the face of the plungers O, and when it has almost reached the limit of its travel strikes with a lug the lower
80 portion of the bars S S, causing them to unhook, when the weight of the cross-head P carries them down to their lowest positions, (which is variable to the amount of clay which is required to be pressed,) leaving the molds
85 R empty and ready to receive the clay, which now falls in out of the feed-box A', which then moves back to its starting position, then the cam W having passed the roller *e*, allowing the toothed cam-sectors T U to rotate back to
90 their former positions, thereby letting down the knuckles or toggle-levers H I and cross-heads P N until the friction-rolls *e* strike the guides *d*, and the bars S S come together and hook again, ready for the next pressing operation.
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In Fig. 4, I have shown an enlarged sectional view of the mold with the plungers O L therein, to better illustrate another feature of my improvements, which consists in lining
100 the mold-cavities with removable plates of steel or other hard metal, 2, the same being beveled at the edges to fit into correspondingly-beveled recesses in the iron frame-work of the mold.
105

By placing the steel or other hard-metal facing in the sides of the molds in the manner described I am enabled to remove the same when worn and put in new ones in their places.
110

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

1. In a machine for compressing substances into form, a toggle-lever or series of toggle-levers carrying compression-plungers and having a movable fulcrum or pivotal point to which the lower plunger or plungers are connected by a cross-head and rods, as described, and mechanism, substantially such as set forth,
115 for operating the toggles, whereby the point or points of resistance is transferred to the point or points of compression and the sides or frame of the machine relieved of the strain incident to pressing the material into form.
120

2. In a brick-machine, a series of toggle-levers to which the upper compression-plungers are attached, said toggles being connected at their upper ends to a movable cross-head or fulcrum, which in turn is secured or connected to a cross-head supporting the lower compression-plungers, as described, and suitable mechanism for operating the toggle-levers, whereby the thrust or point of resistance and
125
130

compression is confined to the clay within the mold, as set forth.

3. In a brick-machine, a series of toggle-levers carrying compression-plungers, in combination with the pitman-rods and a continuously-rotating crank-shaft, whereby the toggle-levers are moved back and forth in opposite directions, as set forth.

4. In a brick-machine, a series of toggle-levers having a movable fulcrum, in combination with the friction-rolls *c* and ledges *d*, whereby the toggles are supported in the frame of the machine, as set forth.

5. In a brick-machine, a series of toggle-levers carrying the upper plungers, connected to a movable cross-head or fulcrum, in combination with a lower cross-head carrying the lower plungers, which are joined or connected to the upper cross-head by means of hooked or separable bars, said separable bars serving to draw up the lower plungers during the pressing operation, as set forth.

6. The sectors *T T*, pivoted to the sides of the machine, the sectors *U U*, constructed as described and secured to the movable cross-head *N*, in combination with the cams or eccentrics *W*, whereby the lower cross-head is raised to eject the brick from the mold, as set forth.

7. In a machine for pressing substances into form, a series of toggle-levers, pitmen, and plungers, operated as described, in combination with the cam-sectors and devices for operating them, whereby the entire pressing mechanism is raised when the articles are ejected from the mold.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN J. BREWIS.

Witnesses:

CHARLES L. HASTINGS,
HOWARD A. TURNER.