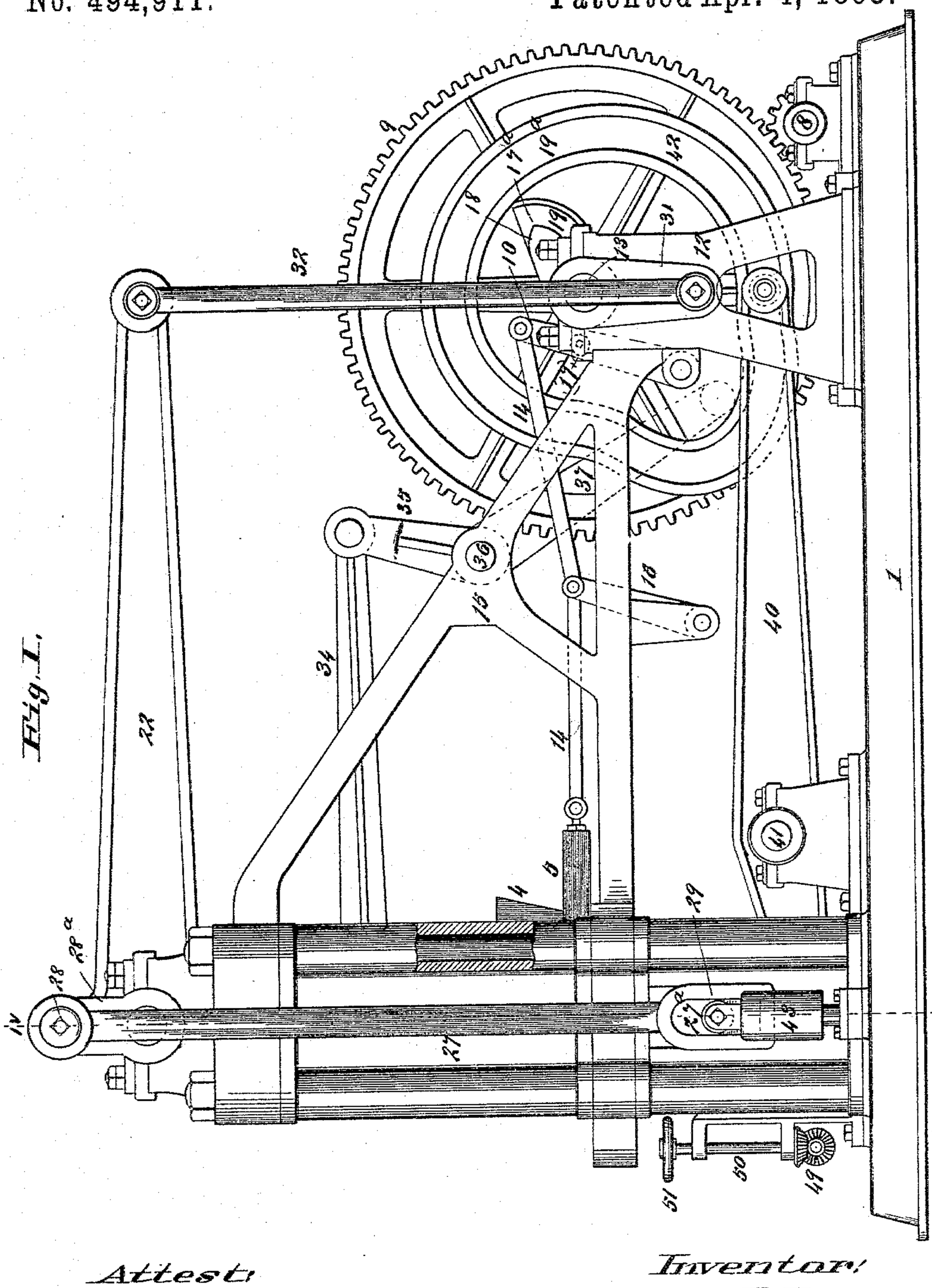
(No Model.)

5 Sheets—Sheet 1.

H. L. BALSON.

BRICK MACHINE.

No. 494,911. Patented Apr. 4, 1893.



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(No Model.)

5 Sheets—Sheet 2.

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BRICK MACHINE.

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Fig. II.

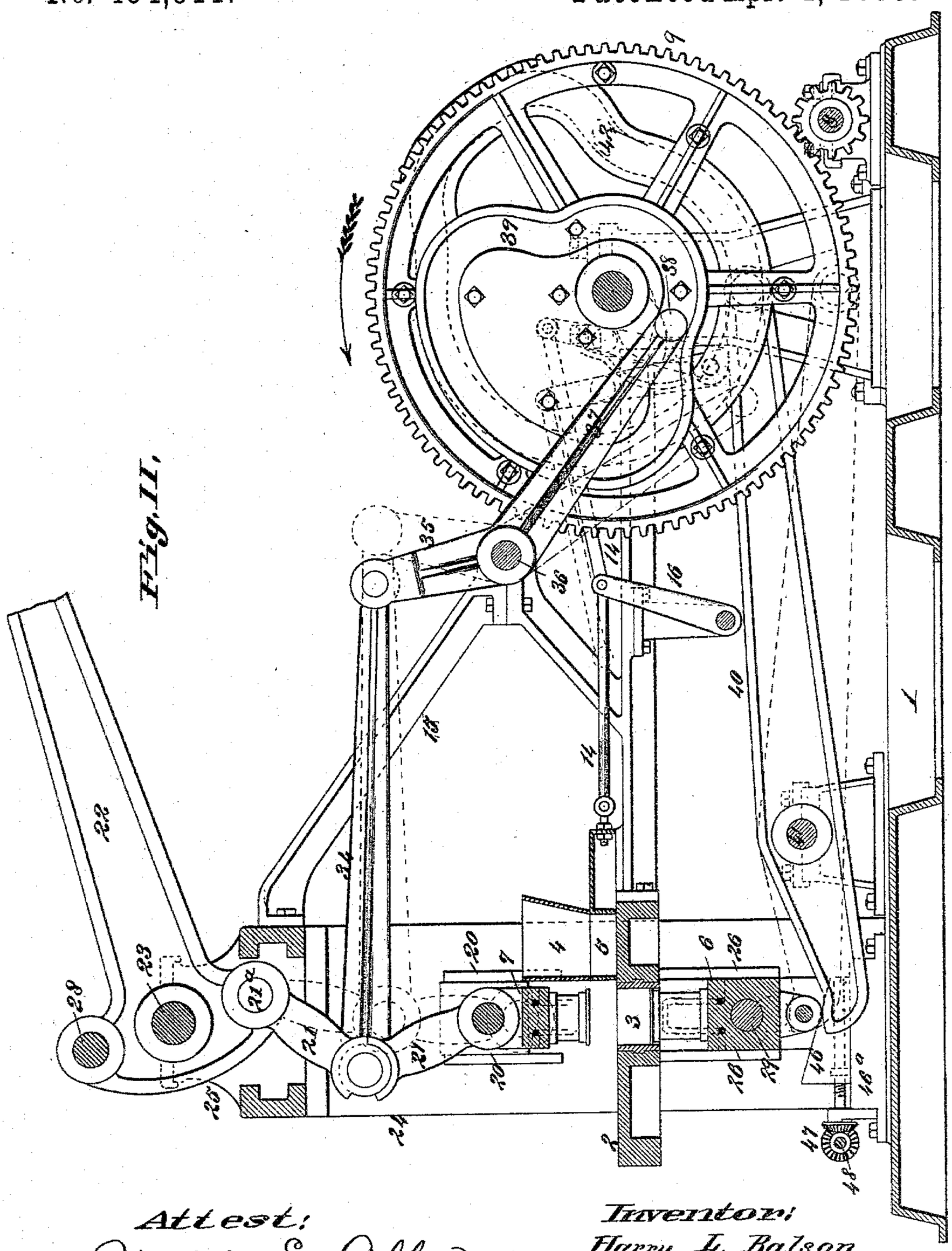

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Fig. IV.

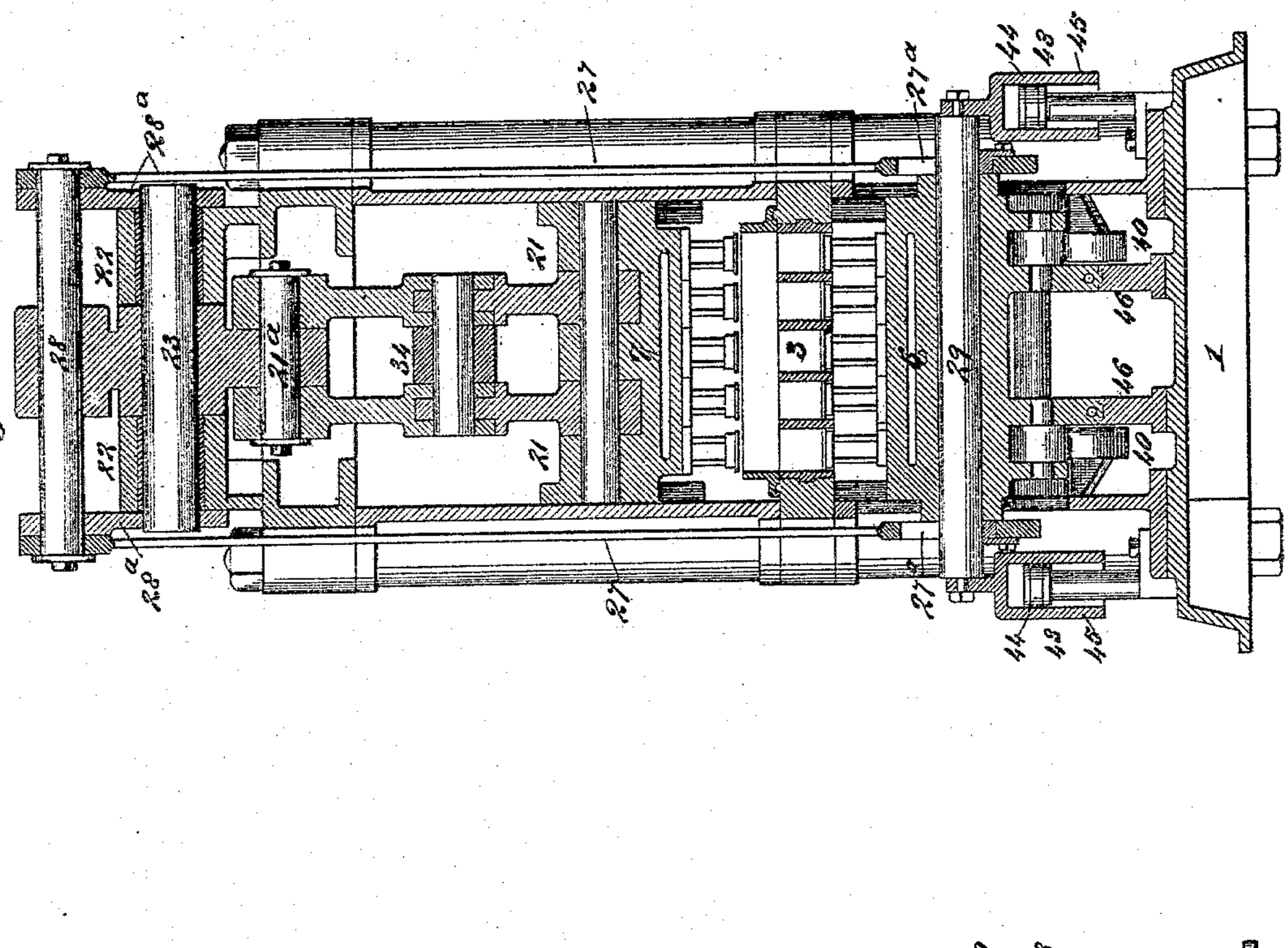
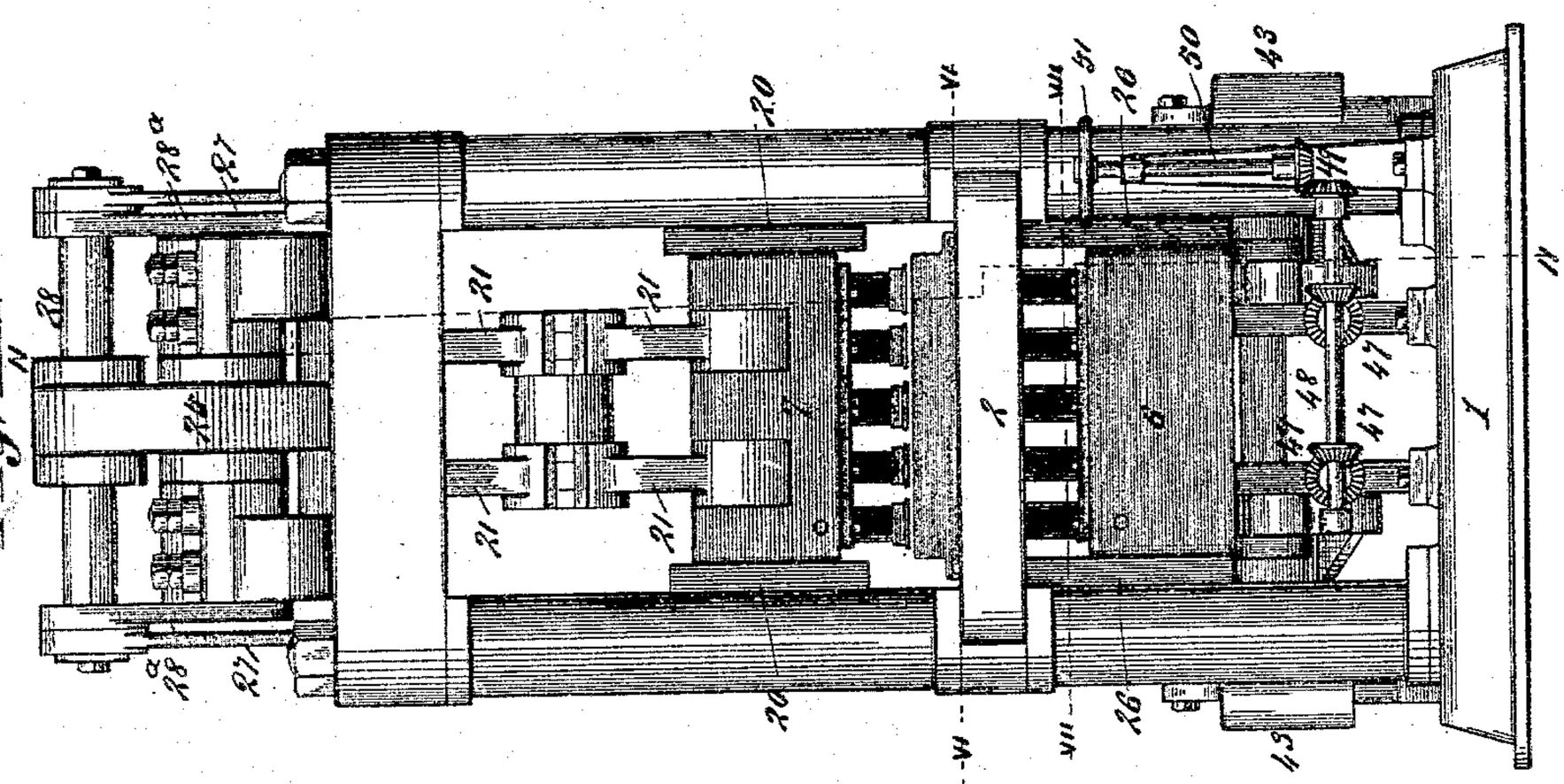


Fig. III.



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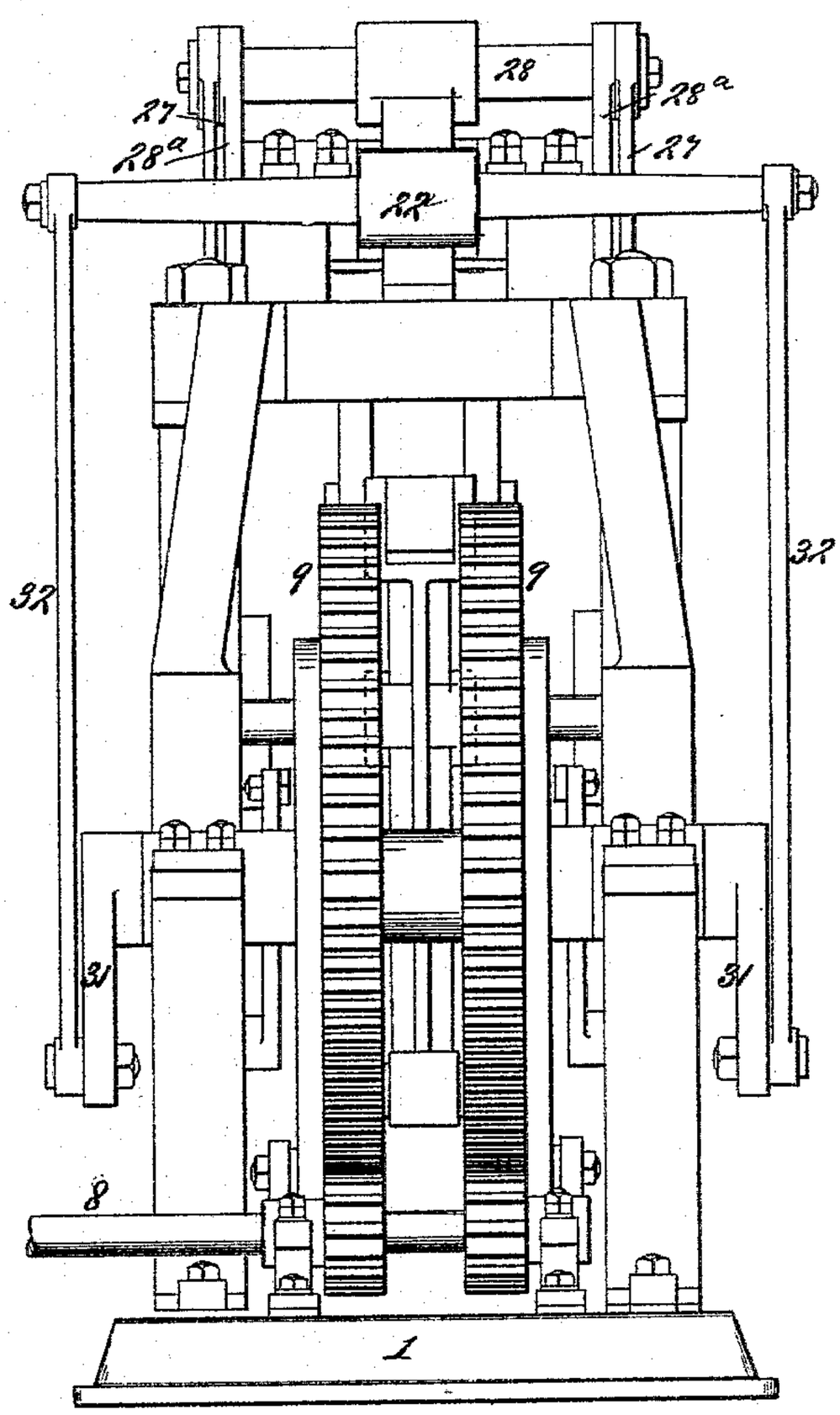
BRICK MACHINE.

No. 494,911. Patented Apr. 4, 1893.

Fig. V.



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(No Model.) 5 Sheets—Sheet 5.

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BRICK MACHINE.

No. 494,911. Patented Apr. 4, 1893.

Fig. VI.

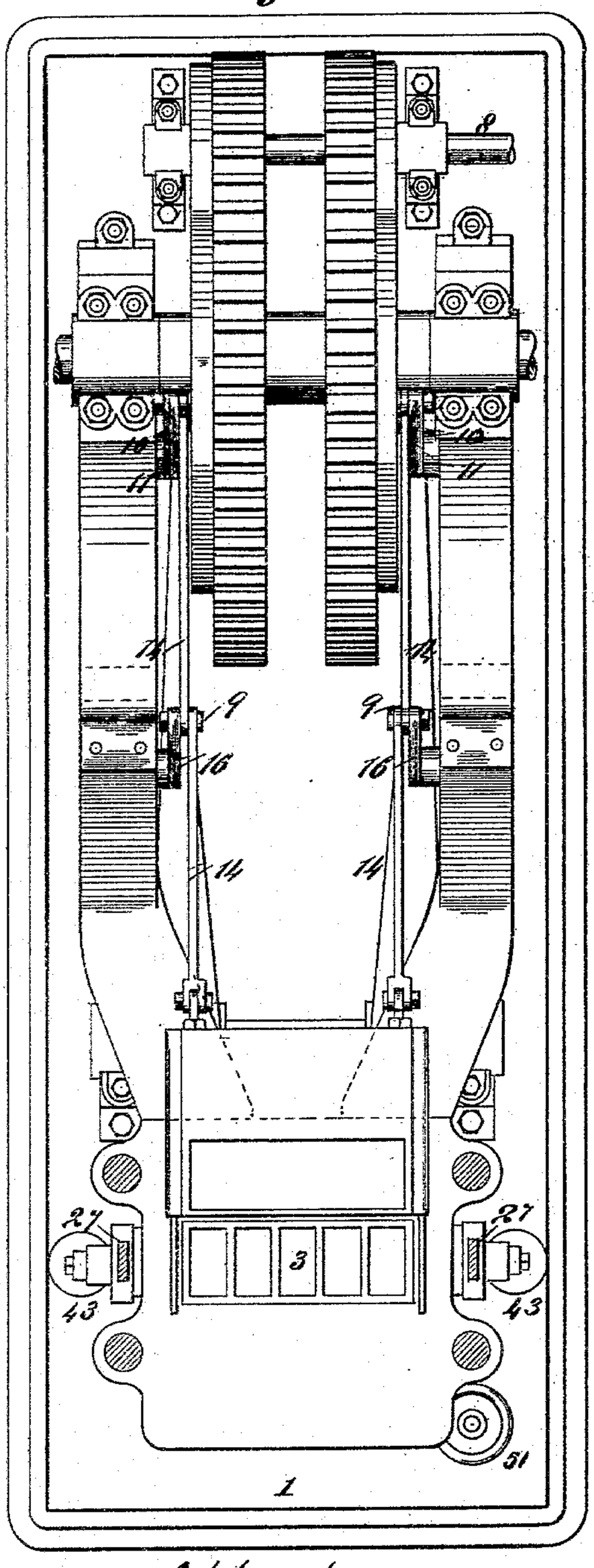
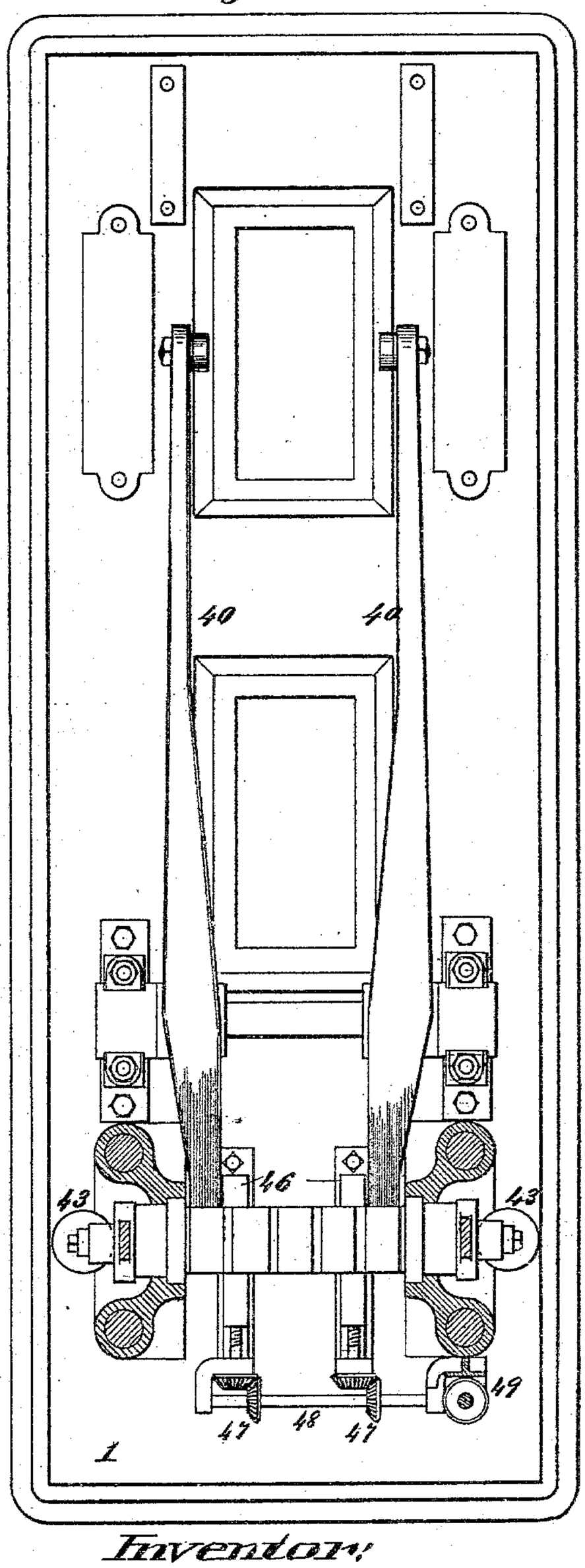


Fig. VII.



Attest;
Walter E. Allen.
Edward D. Knight.

Inventor;
Harry L. Balson
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Atty's

UNITED STATES PATENT OFFICE.

HARRY L. BALSON, OF ST. LOUIS, MISSOURI.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 494,911, dated April 4, 1893.

Application filed December 8, 1892. Serial No. 454,507. (No model.)

To all whom it may concern:

Be it known that I, HARRY L. BALSON, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Brick-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to certain improvements in brick machines, and my invention consists in features of novelty hereinafter fully described and pointed out in the claims.

Figure I is a side elevation of my improved machine. Fig. II is a vertical, longitudinal section, taken on line II—II, Fig. III. Fig. III is a front elevation. Fig. IV is a vertical, transverse section, taken on line IV—IV, Fig. I. Fig. V is a rear elevation. Fig. VI is a horizontal section, taken on line VI—VI, Fig. III; and Fig. VII is a similar view, taken on line VII—VII, Fig. III.

Referring to the drawings:—1 represents the bed plate of the machine, 2 represents the table, 3 the mold, 4 the hopper, 5 the charger, 6 the lower plunger, and 7 the upper plunger of the machine.

8 is the main shaft, to which a suitable motor is connected, and which is geared into large cam wheels 9.

10 are arms, pivoted at 11 to the standards 12, which support the counter-shaft 13 upon which the cam wheels 9 are mounted. The arms 10 are connected by jointed links 14 to the charger 5; the joints of the links 14 being pivoted to the frame 15 of the machine by arms 16, as shown in Figs. I and VI. The arms 10 carry pins or projections 17, which may be armed with friction rollers, and which are engaged by cams 18 on the wheels 9 to force the charger forward. The cams 18 are provided with grooves 19 to receive the pins or projections 17, and it will be understood that after the charger is forced forward, and the point 17^a of the cams 18 pass the pins or projections 17, the outer walls 19^a of the cams, will, by bearing against the pins or projections 17 retract the charger and bring it back to its original position. A positive movement of the charger is thus obtained in each direction. The upper plunger 7 moves vertically in suitable guides 20, as usual, and is connected by toggle links 21 to the head of a lever 22, pivoted at 23 to the standards 24 of the frame 15 of the press. The lever 22 has a head 25 to the lower end of which the toggle 21 is connected, as shown in Fig. II. The lower plunger 6 moves vertically in suitable guides 26. It is connected by links 27 to the upper end of the head 25 of the lever 22, the links being made fast to the head by means of a rod 28, and being made fast to the lower plunger by means of a rod 29; the links 27 having slots 27^a through which the rod 29 passes, so that the lower plunger is capable of being moved independently of the links 27.

28^a are links between the rod 28 and the pivot rod 23 of the lever 22, (see Figs. I, III and IV.) These links strengthen and support the rod 28, and as their center is the same as the center of the lever 22, they do not interfere with the movement of the parts. The lever 22 is oscillated on its pivot 23 by a crank 31 secured to the shaft 13, (see Fig. I,) the crank being connected to the end of the lever 22 by a link 32. The toggle 21 is connected by a link or pitman 34 to the upper end 35 of a lever, which is pivoted at 36 to the frame 15, the lower end 37 of the lever being provided with lateral projections 38, fitting in cam grooves 39 in the wheels 9, (see Fig. II.)

When the machine is set in motion, the first action is to force the charger 5 forward and retract it, the clay dropping into the mold. The toggle 21 is next straightened or brought into the position shown by dotted lines, Fig. II, through means of the cam 39, lever 35, 37, and pitman 34. This produces a quick movement of the upper plunger, for the initial pressing, the lower plunger remaining at rest, and forming, as usual, the bottom of the mold. By the time that the toggle 21 is straightened, the outer end of the lever 22 commences to descend, causing a further downward movement, under heavy pressure, of the upper plunger, and causing at the same time, an upward movement of the lower plunger, through means of the described construction. The next action of the press is to move the lever 22, back to its normal position, withdrawing the upper plunger slowly from the mold. On

or before the arrival of the lever 22 to its normal position, the toggle 21 is broken again and forced into the position shown by full lines, Fig. II, thus imparting a rapid upper movement to the upper plunger. As the upper plunger is thus ascending, the lower plunger is following it up, this movement being permitted by the slots 27ª in the links or rods 27, and this movement being imparted through means of levers 40, (see Figs. I, II and VII,) which are pivoted at 41, and the inner ends of which bear beneath the lower plunger 6, the other ends of the levers being provided with pins or projections which may be armed with friction rollers, which fit in cam grooves 42 in the wheels 9. The parts are so disposed that the levers 40 will commence to move as the upper plunger commences to recede. The levers 40 cause the lower plunger to be moved upward a sufficient distance to eject the brick from the mold and at this time the charger 5 advances again, and moves the brick onto the table 2, the levers 40 then moving back to their normal position, and the lower plunger receding to its normal position, and thus the operation goes on continuously.

To prevent danger of the lower plunger sticking in the mold, and not receding to its lower position, I employ dash-pots 43, (see Fig. IV.,) the pistons 44 of the dash-pots being secured to and projecting upwardly from the base of the machine, and the cylinders 45 of the dash-pots being secured to and projecting downwardly from the rod 29 of the lower plunger. As the lower plunger ascends a vacuum is created in the dash-pots, which exerts its force to draw the plunger back to its normal position, when the levers 40 recede to their normal position.

To regulate the descent of the lower plunger, and thus regulate the depth of the mold, I employ a wedge 46 sliding on the base 1 of the machine beneath the plunger, as shown in Fig. II. This wedge 46 is traversed by a threaded rod 46ª having bevel gear connection 47 with the shaft 48, which has bevel gear connection 49 with a vertical shaft 50, provided with a hand wheel 51, (see Figs. I and II.) By turning the hand-wheel the wedge can be moved in and out to regulate the ascent of the lower plunger, as stated.

In Fig. VII, I have shown two wedges 46, but it is evident that only one wedge need be used.

In Figs. III and IV I have shown two toggles 21 connected by the same pin or rod 21ª to the lever 22, and connected by the same pin or rod to the pitman 34 and to the upper plunger.

I claim as my invention—

1. In brick machine, the combination of a plunger, a toggle pivoted by one end to the plunger, a pivoted lever to which the other end of the toggle is pivoted, means for moving the lever, a pivoted lever to which the center of the toggle is connected, and means for moving said latter lever; substantially as and for the purpose set forth.

2. In a brick machine, the combination of the upper and lower plungers, a pivoted lever provided with a head, means for moving the lever, a toggle connecting the upper pitman to the head of the lever on one side of the pivot, mechanism for imparting pressure to the joint of said toggle, and a connection between the lower plunger and said lever on the other side of the pivot; substantially as and for the purpose set forth.

3. In a brick machine, the combination of the upper and lower plungers, a pivoted lever, a toggle connecting the upper plunger to said lever on one side of the pivot, mechanism for imparting pressure to the joint of said toggle, a connection between the lower plunger and said lever on the other side of the pivot, pivoted levers 40 and means for moving said latter levers; substantially as and for the purpose set forth.

HARRY L. BALSON.

In presence of—
ALBERT M. EBERSOLE,
ED. S. KNIGHT.