

D. GOLDTHORP & T. HIELD.
Brick-Machines.

No. 145,169.

Patented Dec. 2, 1873.

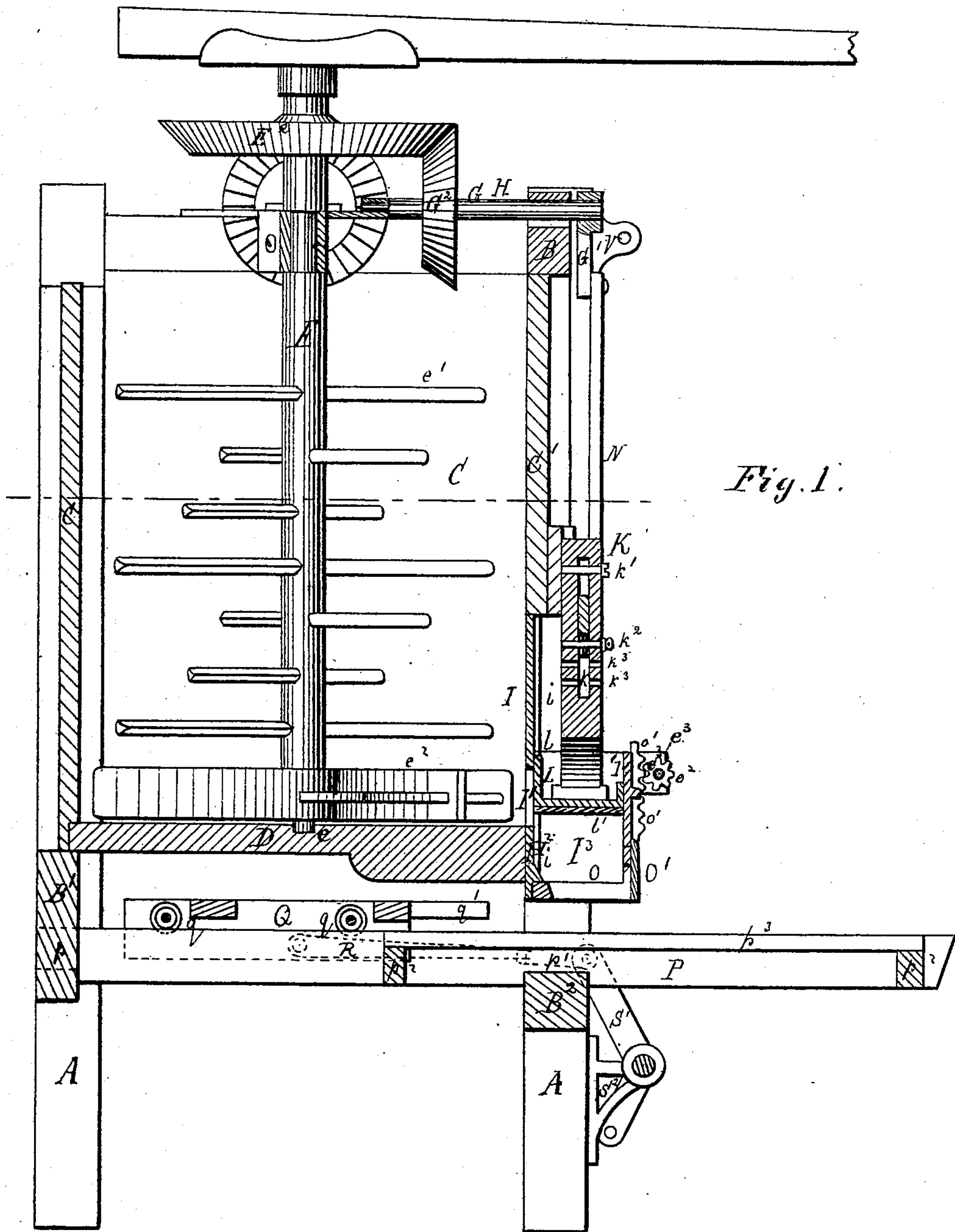


Fig. 1.

Witnesses.
E. A. Bates.
George E. Upham.

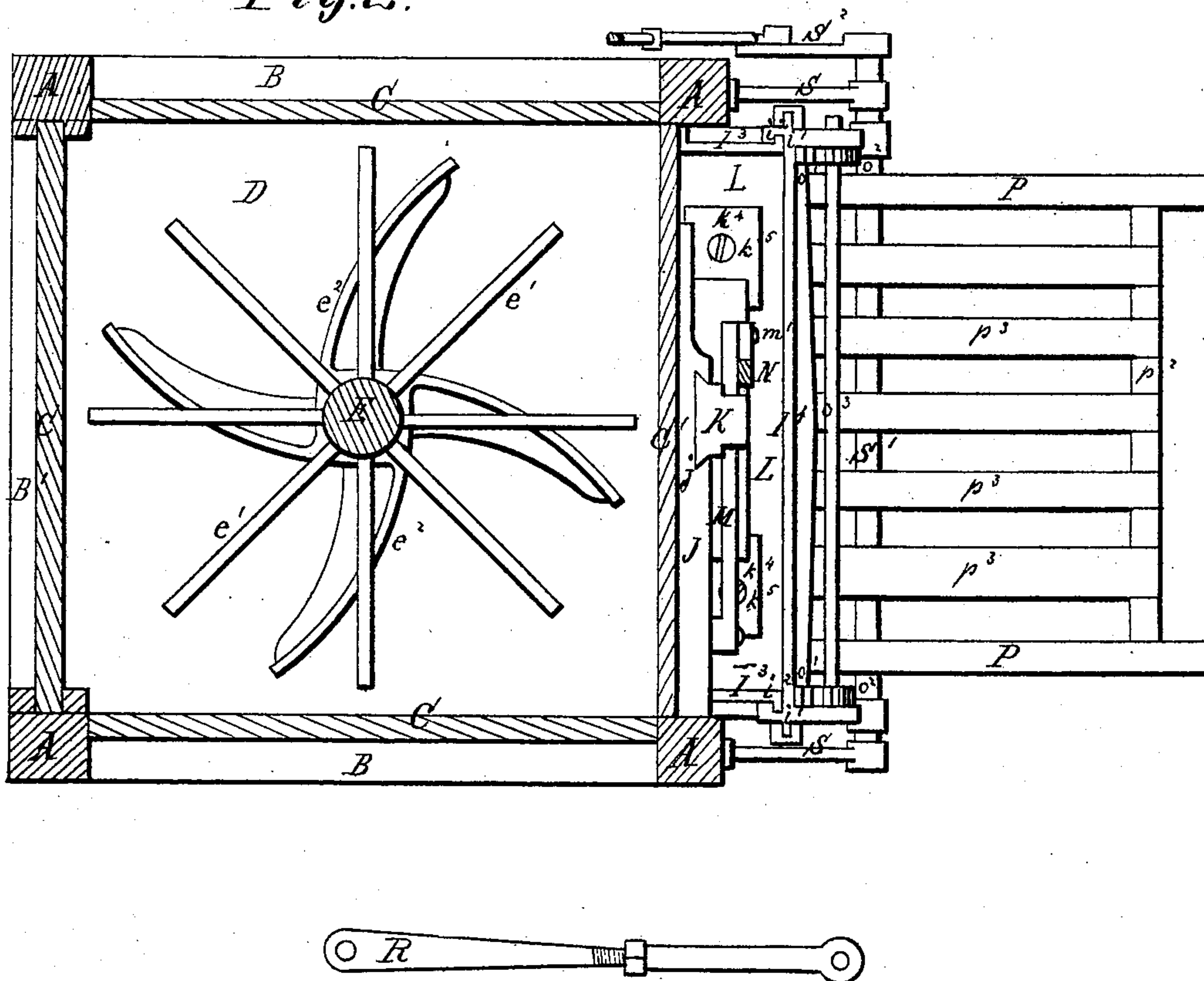
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Fig. 2.



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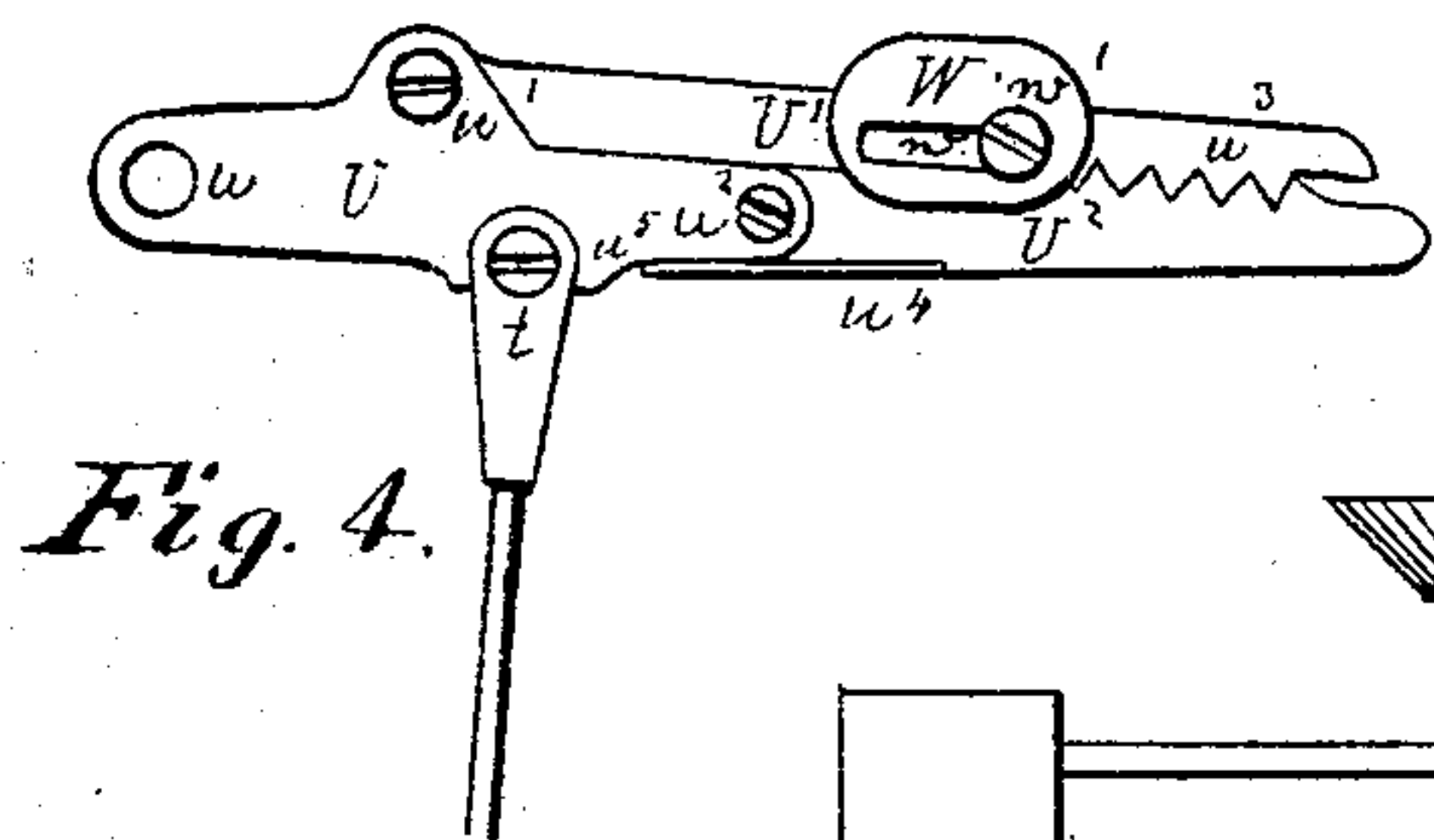


Fig. 4.

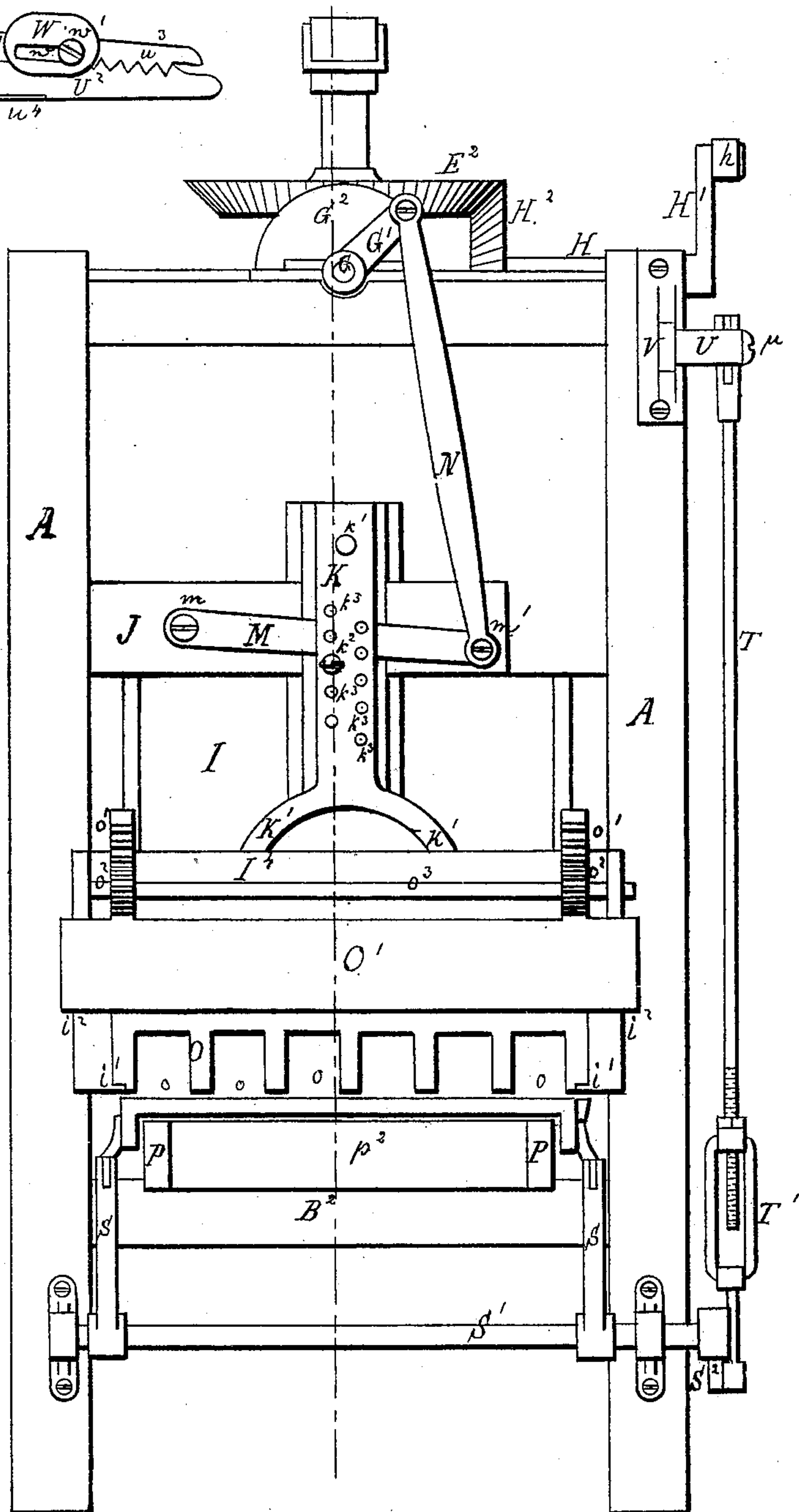


Fig. 3.

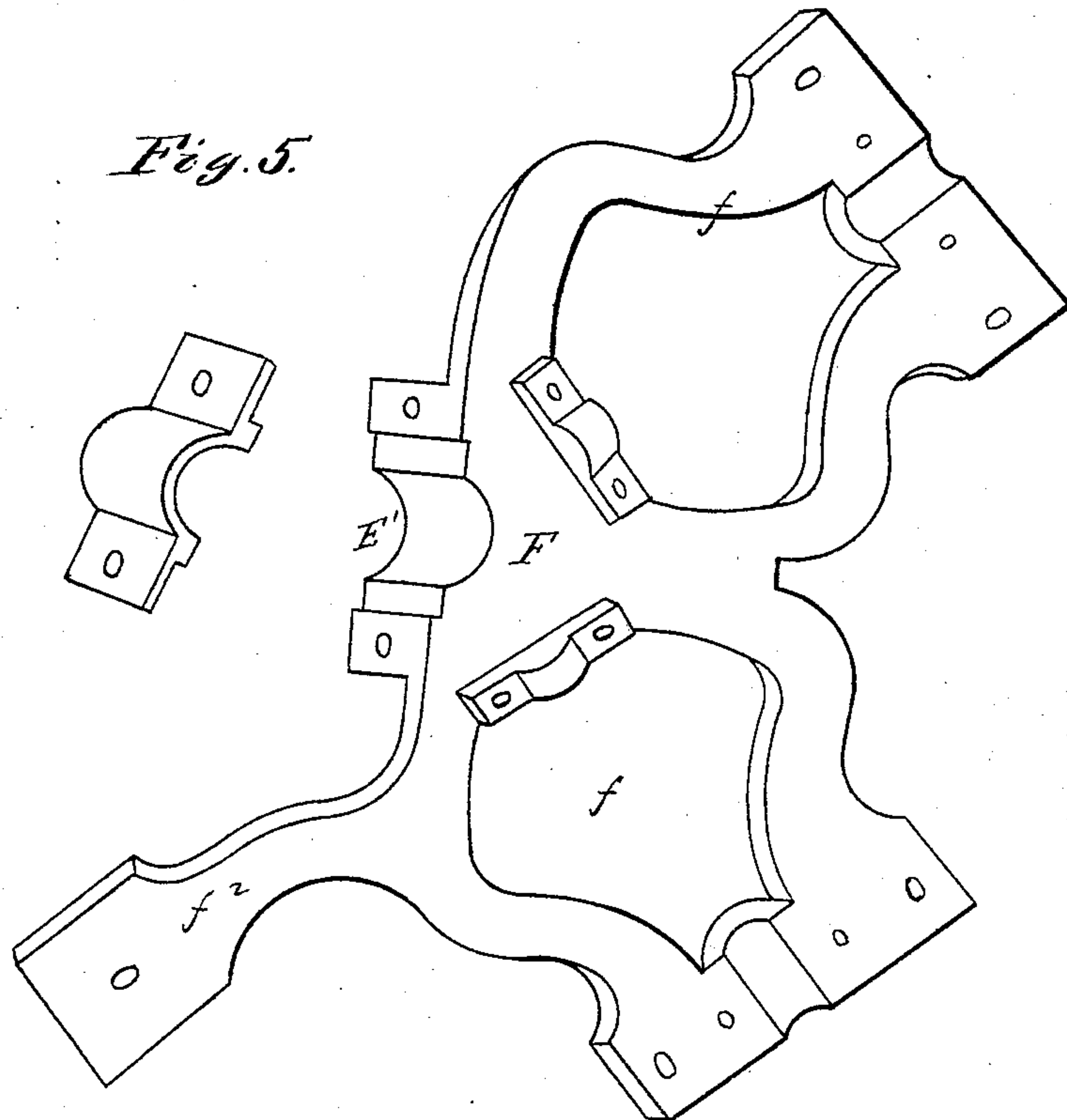
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UNITED STATES PATENT OFFICE.

DAVID GOLDTHORP AND THOMAS HIELD, OF HARTFORD, CONN., ASSIGNORS
OF ONE-HALF THEIR RIGHT TO JOHN B. CLAPP, OF SAME PLACE.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. 145,169, dated December 2, 1873; application filed
July 19, 1873.

To all whom it may concern:

Be it known that we, DAVID GOLDTHORP and THOMAS HIELD, of Hartford, in the county of Hartford and State of Connecticut, have invented a new and valuable Improvement in Brick-Machines; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of our improved brick-machine by a vertical central section. Fig. 2 is a top view of the same. Fig. 3 is an elevation of the same. Fig. 4 is a detail view. Fig. 5 is a detail view.

Our invention relates to brick-machines; and it consists of the improved construction and arrangement of a piston-gear for pressing the bricks, and of the carriage-motion for adjusting the mold-boards, as more particularly hereinafter described and claimed.

In the drawings, A represents an upright post, four of which constitute, with the aid of the cross-ties B B¹ B², the frame of my machine. The sides are closed down to the lower cross-ties B B¹ by panels C C¹, and on the lower cross-ties a strong bottom, D, rests, at the center of which the step of a spindle, E, has its bearing. To the upper cross-ties a metal plate, F, is fastened, which carries the bearings for the spindle E and for two horizontal crank-shafts, G and H. The plate F consists of two lyre-shaped wings, f, fastened to the ties B by screws f¹ of an arm, f², and a central vertical bearing for the spindle E. The wings f are near the central bearing, and at their outside ends provided with halved horizontal bearings g g' and h h' for the shafts G and H, and the vertical bearing E' is likewise halved, whereby any of the said shafts, or the spindle, may be removed without disturbing the bearings of the other shafts. The plate F is not connected with the front part of the frame, which is without an upper cross-tie, for the purpose of allowing ample room for the introduction of the raw clay. The spindle E is provided with straight cutters e¹, as usual, and with curved arms or sweeps e²

at the bottom D of the machine. The rear panel, C¹, of my machine does not extend down to the bottom, but leaves a space which is partly occupied by a metal plate, I, with two vertical guide-strips, i, and a gate, I¹. The lower end of the panel C¹ is provided with a dovetailed vertical guide-bearing, j, on a plate, J, in which the shank K of the piston L moves up and down. The shank K is provided with a lateral slot, k, in which a lever, M, works, and thereby does the lifting of the said shank against a pin, k¹, near the upper end of the slot, and the depressing against a pin, k², below, which pin may be adjusted to any depth by inserting it in one of the holes k³ arranged in two vertical rows in the shank. The lever M is pivoted to a fulcrum-pin, m, on the plate J, and is connected, by a pivot-pin, m¹, and a connecting-rod, N, to the crank G¹ of the shaft G, which receives its rotary motion, by means of a bevel-gear, G², from a horizontal bevel-gear, E², on the spindle E. The shank K parts, near its lower end, into two branches, K¹, with horizontal foot-flanges k⁴, which are fastened by screws k⁵ to the piston L. The said piston is constructed with the shape of a trough, with a projecting shield, t, to cover the gate I¹ in its descent, and with an exchangeable foot-plate, l¹.

The chamber in which the piston works consists of the plate I² below the gate I¹, the two side plates I³ and the back plate I⁴ firmly fastened together and supported by the plates I² and I. The plate I², which is really a continuation of the plate I, recedes to a small extent from the plate I, so that the piston does not slide against it, as it does against the plate I, for which reason the vertical guide-strips i are more elevated from the lower plate I².

The bottom and a part of the back of the piston-chamber consist of a movable or exchangeable elbow-grating, O, with openings o of the width of the brick which is to be manufactured.

The grating O rests on two inwardly-projecting strips, i¹, on the bottoms of the side plates I³, and its vertical end is covered by a sliding plate, O¹, which, at both ends, clasps the vertical flanges i² on the plates I³, and

which may be moved up or down with the aid of two racks, o^1 , fastened thereto and operated by two pinions, o^2 , on a shaft, o^3 , with stationary bearings. A frame consisting of two longitudinal bars, P , two cross-bars, p^2 , and a number of grate-bars, p^3 , is inserted with the two ends p of the said bars P into the cross-tie B^1 , and with notches p^1 on the cross-tie B^2 . The said frame serves as a track or tramway for the flanged wheels q of a carriage, Q , and as a support and slide for the brick-molds, which fit between the grating O and the grating p^3 , and are moved on the bars p^3 by the said carriage. The carriage Q receives its motion by aid of two connecting-rods, R , which are pivoted to the sides of the carriage, and coupled to two swivels, R' , with check-nuts r , from two lever-arms, S , on a rock-shaft, S^1 . The shaft S^1 is supported by two bearings, S^2 , fastened to the posts A . The end of the shaft S^1 is provided with a rocker-arm, S^3 , to which an adjustable connecting-rod is pivoted, which consists of the rod T and the single-acting swivel-connection T' . A lever, U , moves the said connecting-rod with the aid of a pivot-pin, t . The lever U is connected with two levers, U^1 U^2 , pivoted at u^1 and u^2 , and provided with serrated surfaces w^3 at their ends, which fit into each other. The lever U^2 is provided near its fulcrum with a tongue, w^4 , which bears against a step, w^5 , on the lever U , and thereby keeps the lever U^2 in line with the lever U , and prevents its swinging down. The lever U is pivoted at u to the stand V , which is fastened to one of the upright posts A . The lever U^1 is provided with an adjustable weight, W , which is fastened thereto by a screw, w' , and a slot, w . The fulcrums u^1 and u^2 are set well apart, so that the levers U^1 and U^2 cannot rise together unless the serrated surfaces w^3 are disengaged and pass each other, which requires more or less power, according to the position of the weight W . The lever U^2 is lifted by a friction-roller, h , at the end of a lever or crank, H^1 , fastened to the shaft H , which is revolved by aid of the bevel-gears E^2 and H^2 . The rise and fall of the lever U causes the forward and backward motion of the carriage Q , which moves the empty brick-molds under the grating O , and is provided with a check or wing, q' , against which the operator pushes the molds, which are introduced through a side opening in front of the said grating.

The introduction of the raw clay into the so-called pug-mill, and its preparation for the entrance into the piston-chamber, are not connected with new principles and require no explanation.

The clay in the piston-chamber is forced, by the down-stroke of the piston, through the grating O into the mold-board. In order to have the molds well filled with hard-pressed clay it is necessary to have a surplus of clay in that part of the chamber which begins below the gate I^1 , the precise amount of which

cannot well be regulated. If the piston does fit the said lower part of its chamber, and the surplus of clay is too great, the clay which cannot be packed into the molds forces a passage between the mold and the grating, and thereby changes the measurement of the bricks and spoils the corners. This is avoided in my machine by the receding back-plate I^2 and the advanced guide-strips i , by which a space is effected between the plate I^2 and the corresponding side of the piston. The said space permits the clay, after the filling of the molds, to pass up harmlessly until the stroke of the piston is finished. The piston has no friction to overcome on the side opposite the plate I^2 , and consequently requires less power to operate it.

The weight W is so fastened to the lever U^1 that its resistance at the serrated surfaces w against parting with the lever U^2 is sufficient to operate the carriage Q under ordinary circumstances; but when the carriage is stopped by obstructions, which would lead to breakage if the operation of the carriage should be forced, the lever U^1 cannot keep its connection with the lever U^2 , and both levers rise and turn around their fulcrums u^1 and u^2 , thereby allowing the roller h on the crank H to pass without moving the lever U .

The adjustability of the working parts for the operation of the piston and mold-carriage is easily understood, and does not require special explanation.

What we claim as new, and desire to secure by Letters Patent, is—

1. In the piston-chamber of a brick-machine, the receding back plate I^2 with the advancing guide-strips i , constructed and arranged substantially as and for the purpose set forth.

2. In a brick-machine, the adjustable piston-gear, consisting of the combination of the piston L , the shank K with the pins k^1 k^2 and the holes k^3 , in connection with the lever M , the connecting-rod N , and the crank G' , constructed and arranged as and for the purpose set forth.

3. In a brick-machine, the combination, with the mold-carriage and with the operating-levers S , of the rods R , and the adjustable swivels R' having the check-nuts r , all constructed and arranged substantially as specified.

4. In a carriage motion of a brick-machine, the combination of the lever U having the fixed fulcrum u , the levers U^1 U^2 having fulcrums u^1 u^2 and serrated surfaces w^3 , the adjusting-weight W , and the adjustable connecting-rod T , all constructed and arranged substantially as specified.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

DAVID GOLDTHORP.
THOMAS FIELD.

Witnesses:

H. P. KENNE,
THOMAS WOOD, Jr.