

(No Model.)

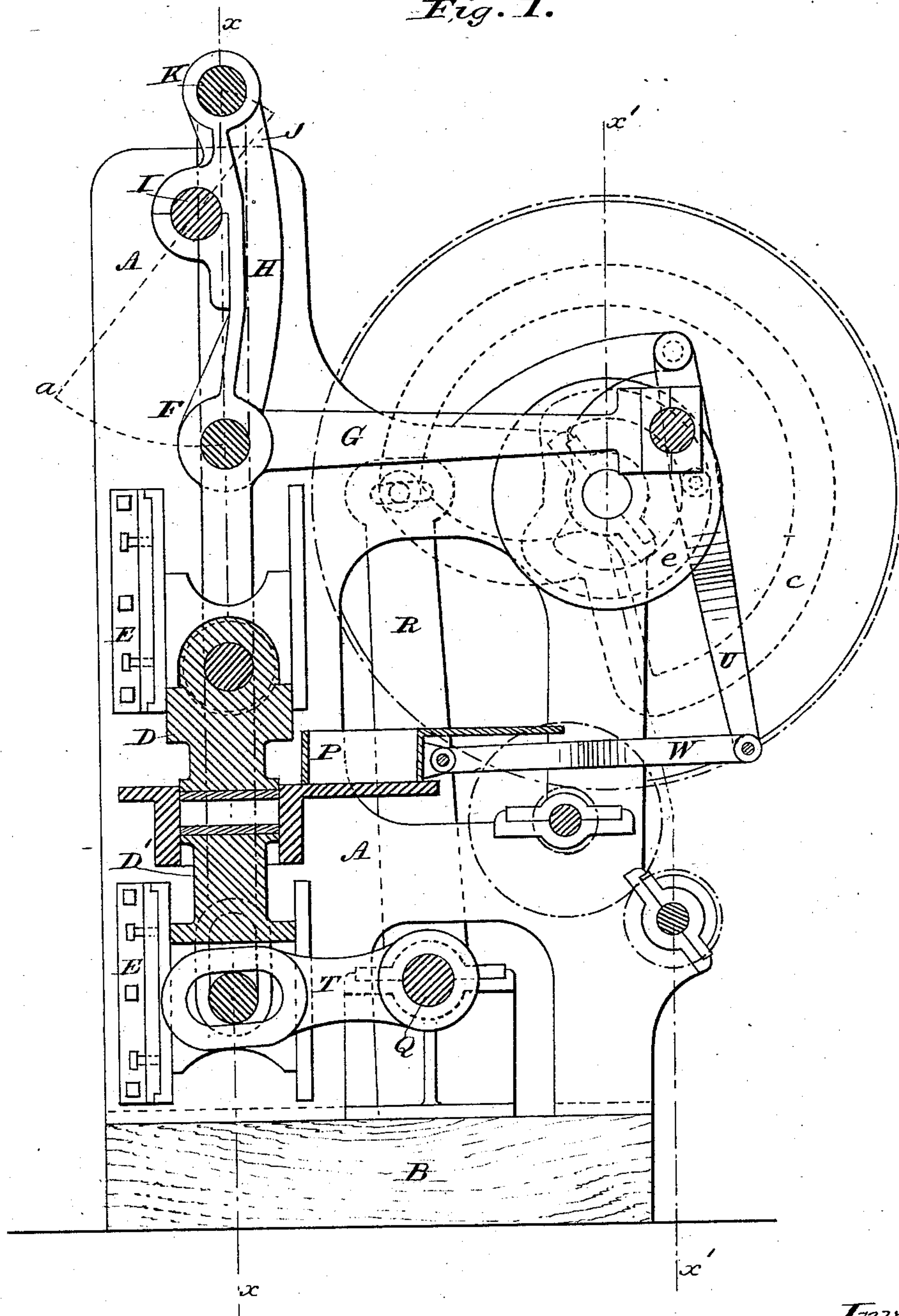
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W. ANDRUS.  
BRICK MACHINE.

No. 297,051.

Patented Apr. 15, 1884.

*Fig. 1.*



Witnesses:

*T. C. Brecht*  
*W. S. Simsbrough*

*Inventor.*

*William Andrus,*  
*Per S. S. Simsbrough*  
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(No Model.)

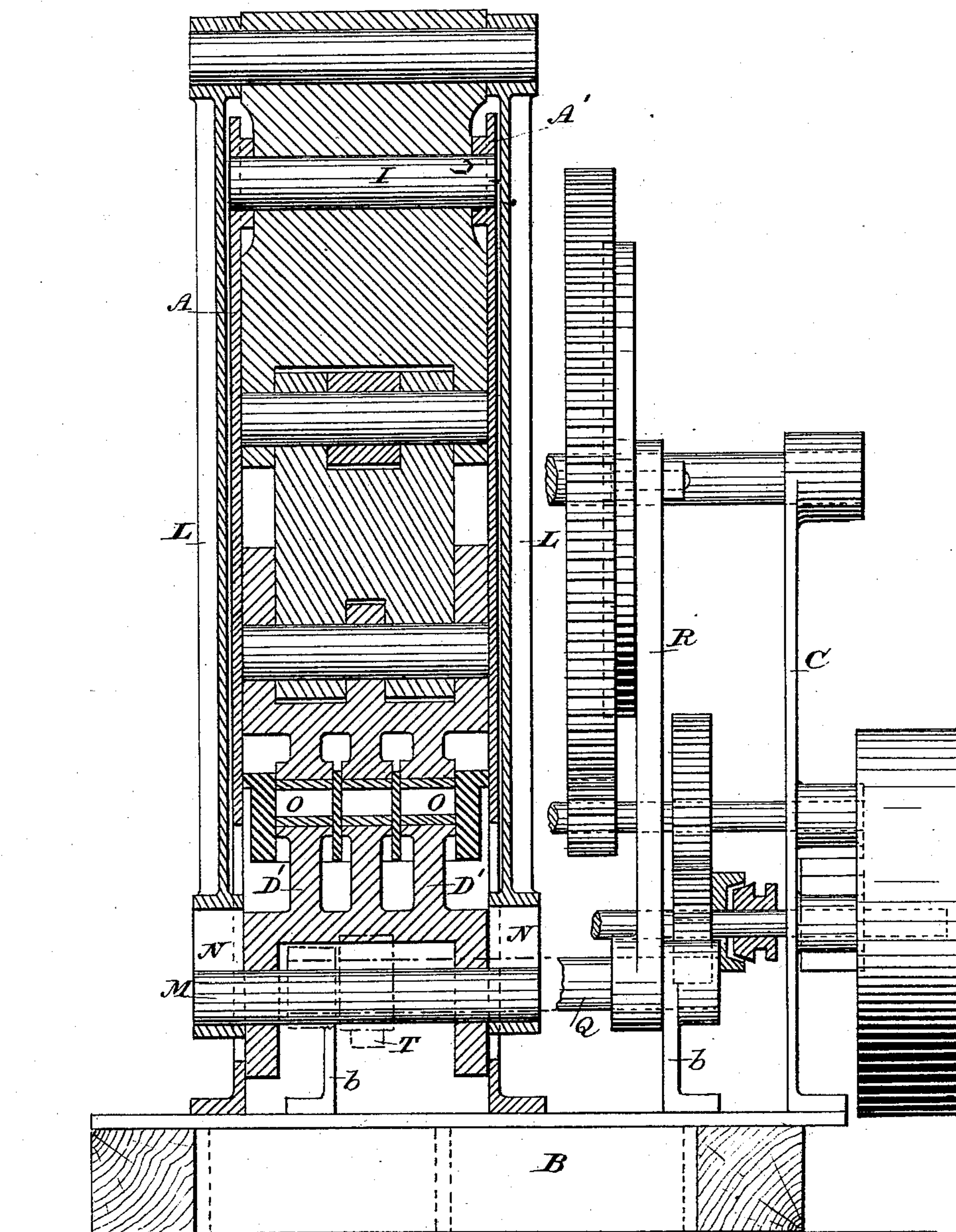
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*Fig. 2.*



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(No Model.)

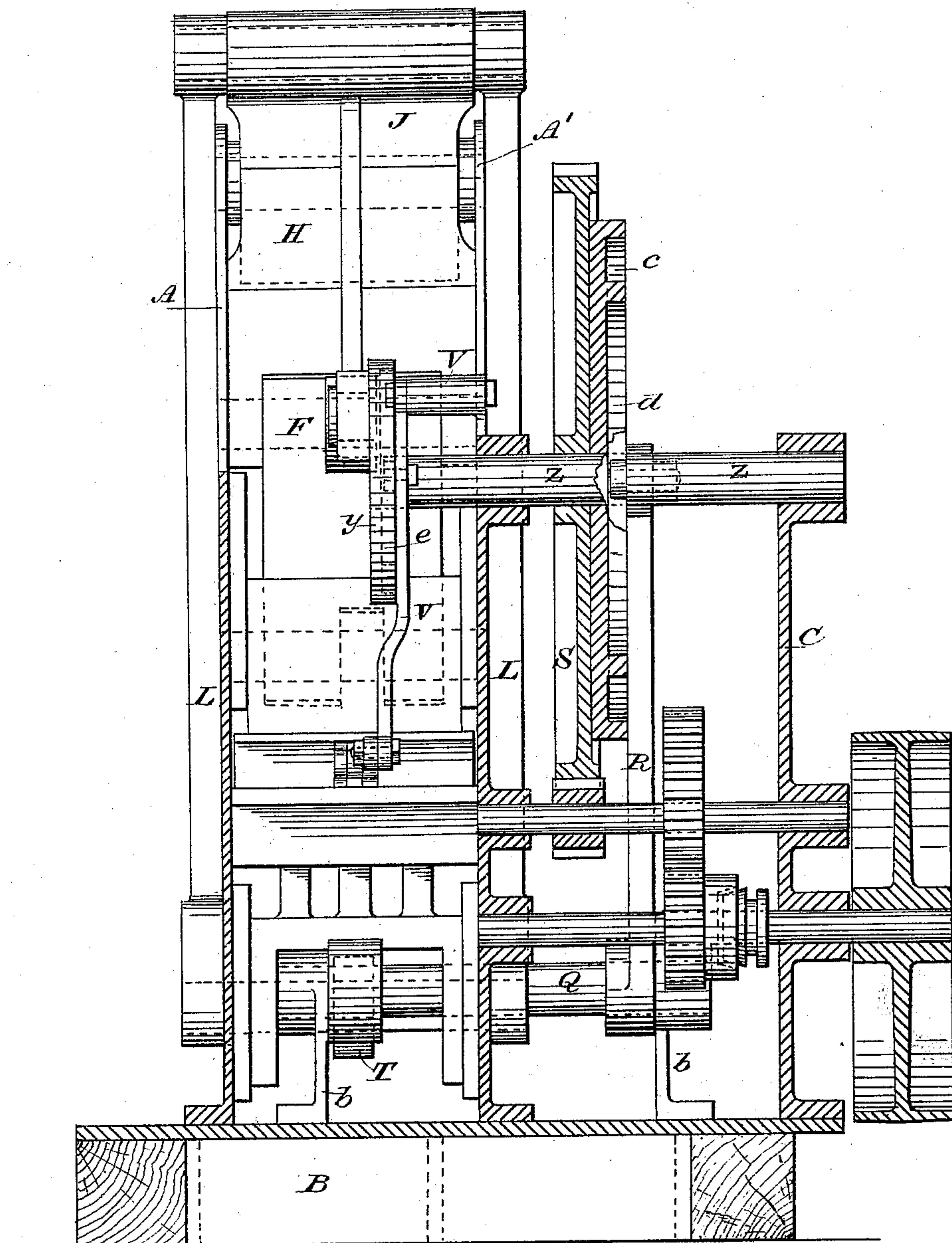
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*Fig. 3.*



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# UNITED STATES PATENT OFFICE.

WILLIAM ANDRUS, OF KEOKUK, IOWA.

## BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 297,051, dated April 15, 1884.

Application filed March 15, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM ANDRUS, a citizen of the United States, residing at Keokuk, in the county of Lee and State of Iowa, 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, more especially to the class known as the "dry-press" machines, in which the clay is pressed into brick form in a dry or comparatively dry state.

My invention relates more particularly to improvements on the machine for which Letters Patent were granted to me October 16, 1883, No. 286,892.

My invention consists in attaching the upper plungers to the lower end of a toggle-pressure, which is pivoted eccentrically in the sides of the machine, and provided with an extended portion above the pivotal point, to which are secured rods, which connect the upper end of the toggle with the lower plunger, and by which means said plunger is operated.

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

Figure 1 is a side view of my machine, partly in section. Fig. 2 is a sectional view taken on the line  $x x$ , Fig. 1. Fig. 3 is a sectional view taken on the line  $x' x'$  of Fig. 1.

A A are the sides or frame of the machine, in which the plungers and main operating parts of the machine are mounted, and are secured to a suitable base, B, in a firm and substantial manner, so as to give rigidity to the machine. A supplemental standard or frame, C, is also secured to the base B, in which the outer ends of the shafts which carry the gear-wheels are mounted, the other ends of said shafts being journaled in one of the frames A of the machine.

D is the upper and D' is the lower plunger, adapted to slide in guides E in the sides of the frame, said guides being made adjustable in any suitable manner, so they can be moved toward said plungers, and in this way compensate for the wear of the parts. The upper plunger is secured to and operated by a toggle-pressure, F, which is connected at its

joint to the pitman G, said pitman being driven from the main axle of the machine in any convenient manner. The upper section, H, of the toggle-pressure F is pivoted to the frame of the machine by means of the bolt I, said pivotal point being eccentric to or at a point located at one side of a line drawn through the center of the toggle-pressure, for a purpose to be mentioned hereinafter. The upper section, H, of the toggle-pressure is formed with an upwardly-extended portion, J, having a hole therethrough for receiving the bolt K, said bolt being made long enough to project beyond the sides of the toggle-pressure and form trunnions, to which the rods or bars L are attached. I may, however, in practice cast the upper section, H, of the toggle-pressure, with its pivotal and upper trunnions thereon, in one piece. The rods L, as before stated, are connected at their upper ends to the portion of the toggle-section H, and at their lower ends to the lower plunger, D, by means of a bolt, M, or trunnions cast thereon. The lower ends of the bars L are connected to the bolt or trunnions M of the lower plunger by means of an elongated opening, N, so that after the rods have raised the lower plunger the required distance to form the brick the plunger can be raised further, by devices to be presently described, to eject the brick from the mold. It will be noticed that by hinging or pivoting the toggle-pressure in the frame, as described, when said toggles are exerting their downward pressure, they are brought in line by the pitman G, as shown in Fig. 1, and that the rods L L are raised to their highest position, so that while the upper plunger is being forced downward the lower plunger is being drawn upward, and thus the clay is subjected to a powerful pressure in the mold box or boxes O. A reverse movement of the toggle-pressure, as indicated by the dotted lines  $a$ , Fig. 1, raises the upper plunger far enough to permit the brick to be ejected and the molds to be filled with a fresh charge of clay from the mold-filler P, while the levers L L are lowered a sufficient distance to allow the lower plunger to take its position in the bottom of the mold after the brick has been ejected.

Q is a rock-shaft mounted in suitable bear-



ings or brackets, *b*, secured to the base *B*, and is provided with an upwardly-projecting arm, *R*, having a projecting stud, which enters the cam-groove *c* in the disk or plate *d*, said plate or disk being secured to the side of the pinion-wheel *S*. The other end of the rock-shaft *Q* is secured to an arm, *T*, the outer end of which is secured to the lower plunger, and by which means the lower plunger is raised to eject the brick. The cam-slot is so formed that as soon as the pressure has been exerted to form the brick and the upper plunger is being withdrawn the rock-shaft will be operated to raise the lower plunger, which keeps the brick in contact with the upper plunger until it is out of the mold, thus obviating the blistering or splitting of the brick caused by suction in attempting to withdraw the plunger from the brick while yet within the mold. After the brick has been ejected from the mold, the cam-slot acts on the lever *R*, rock-shaft *Q*, and arm *T*, to return the plunger *D'* to the bottom of the mold, while at the same time the mold-filler *P* has been brought over the mold, which pushes the newly-formed brick from off the lower plunger and permits the clay to follow the lower plunger down into the mold-cavity, thus insuring a uniform distribution of the clay within the mold.

I have not shown the clay-hopper in the drawings; but it is located above the mold-filler in a well-known manner. I prefer to use the adjustable mold-filler shown, described, and claimed in the patent heretofore referred to.

*U* is a lever for operating the mold-filler, and is pivoted at its upper end to bracket *V*, secured to the side of the machine, while the lower end of the lever *U* is connected to the mold-filler by a bar, *W*. The lever *U* is operated by means of a cam-groove, *e*, formed in the face of the wheel *Y*, said cam-groove being so formed as to give the mold-filler a period of rest while over the mold-cavity, to allow the clay to fall therein, and then a quick return motion is given in order to remove the mold-filler out of the way of the upper plunger. The wheel *Y* is secured to the shaft *Z*,

and derives its motion from any suitable mechanism connecting it with a source of power.

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

1. In a brick-machine, a toggle-pressure pivoted in the frame of the machine eccentrically to a line drawn through the center of said toggle, the upper section being provided with an extension to which the rods for operating the lower plunger are secured, as set forth.

2. In a brick-machine, a toggle-pressure operated from its joint by devices substantially such as described, the upper section of which is pivoted eccentrically near its upper portion to the sides of the machine, while the upper end is provided with trunnions or arms, to which are secured the rods for operating the lower plunger, as set forth.

3. In a brick-machine, a toggle-pressure pivoted in the sides of the frame of the machine, as described, and to which the upper plunger is attached and adapted to be operated from its joint, and to the upper end of which are attached rods, which are secured to and connect the lower plunger with the free end of the toggle-pressure, whereby the upper plunger is adapted to be thrust downward and the lower plunger pulled upward simultaneously, as set forth.

4. In a brick-machine, a toggle-pressure pivoted eccentrically, as described, to the frame of the machine, and provided with an upwardly-extended portion, in combination with an operating-bar secured to the joint of the toggle, and with the bars for operating the lower plungers, as set forth.

5. In a brick-machine, a lower plunger, adapted to be raised and lowered, in combination with a rock-shaft operated as described, whereby the lower plunger is carried up and the brick is ejected from the mold, as set forth.

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

WILLIAM ANDRUS.

Witnesses:

C. B. HARRINGTON,  
H. O. WHITNEY.