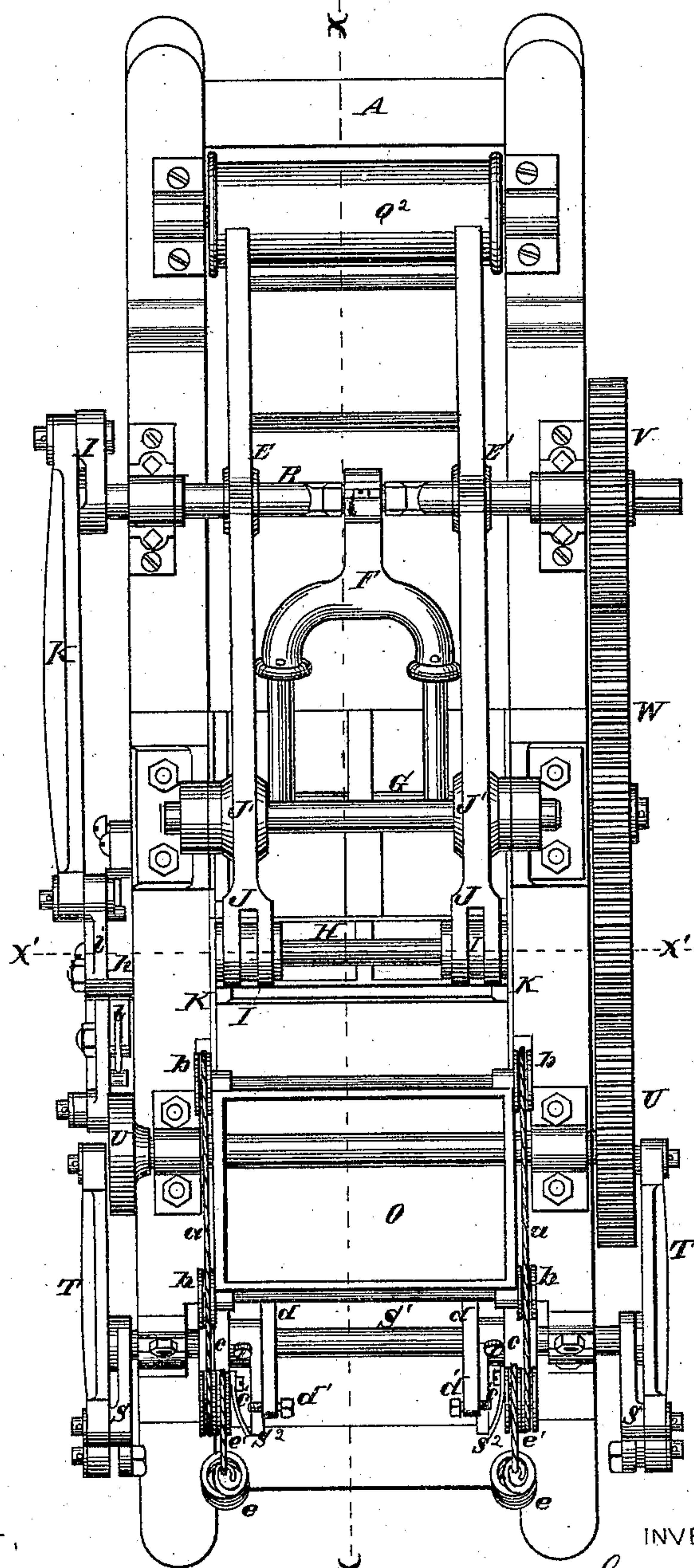


E. L. WAGNER.  
BRICK-MACHINE.

No. 171,453.

Patented Dec. 21, 1875.

Fig. 1.



ATTEST,

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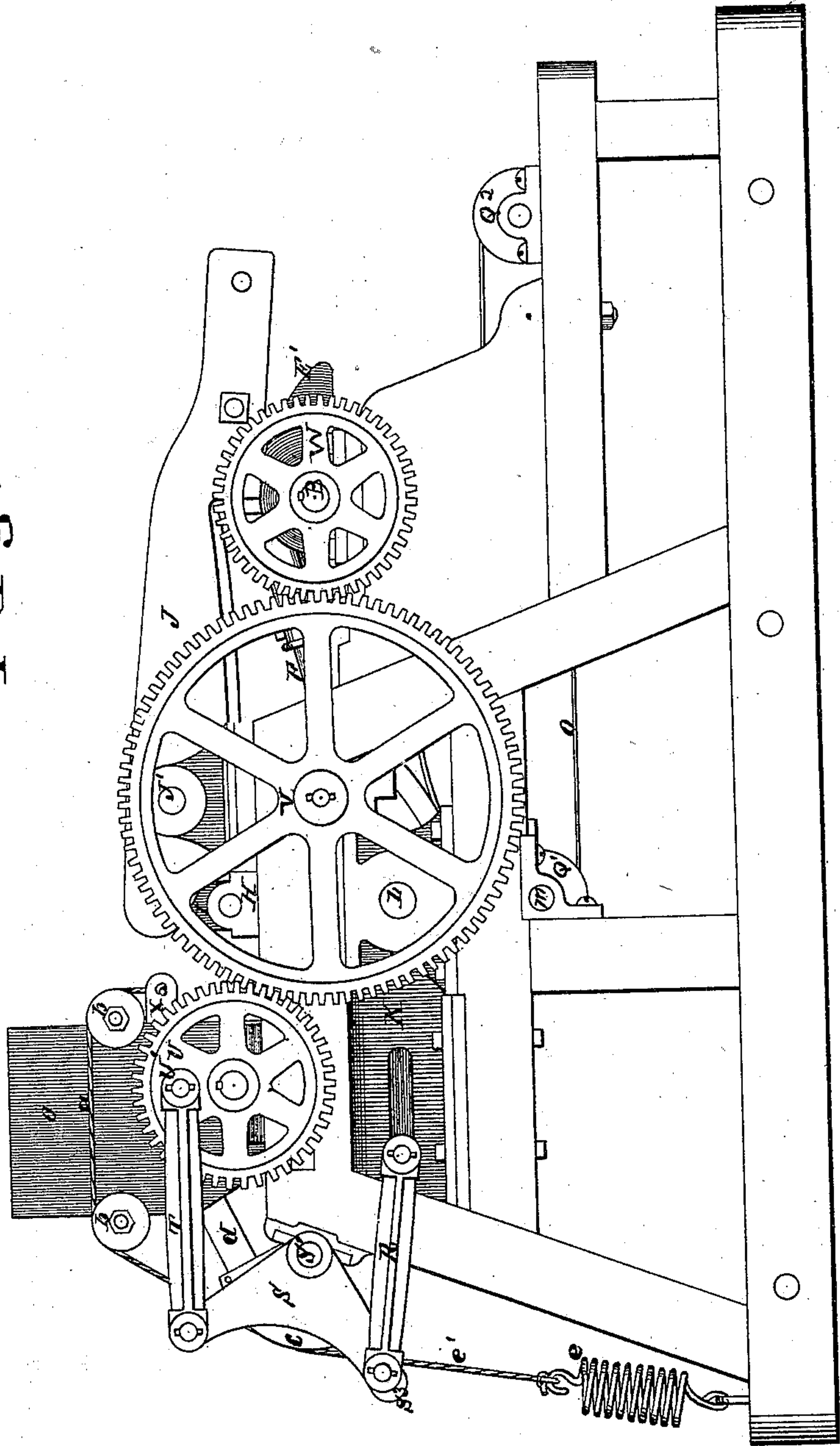
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Fig. 2.



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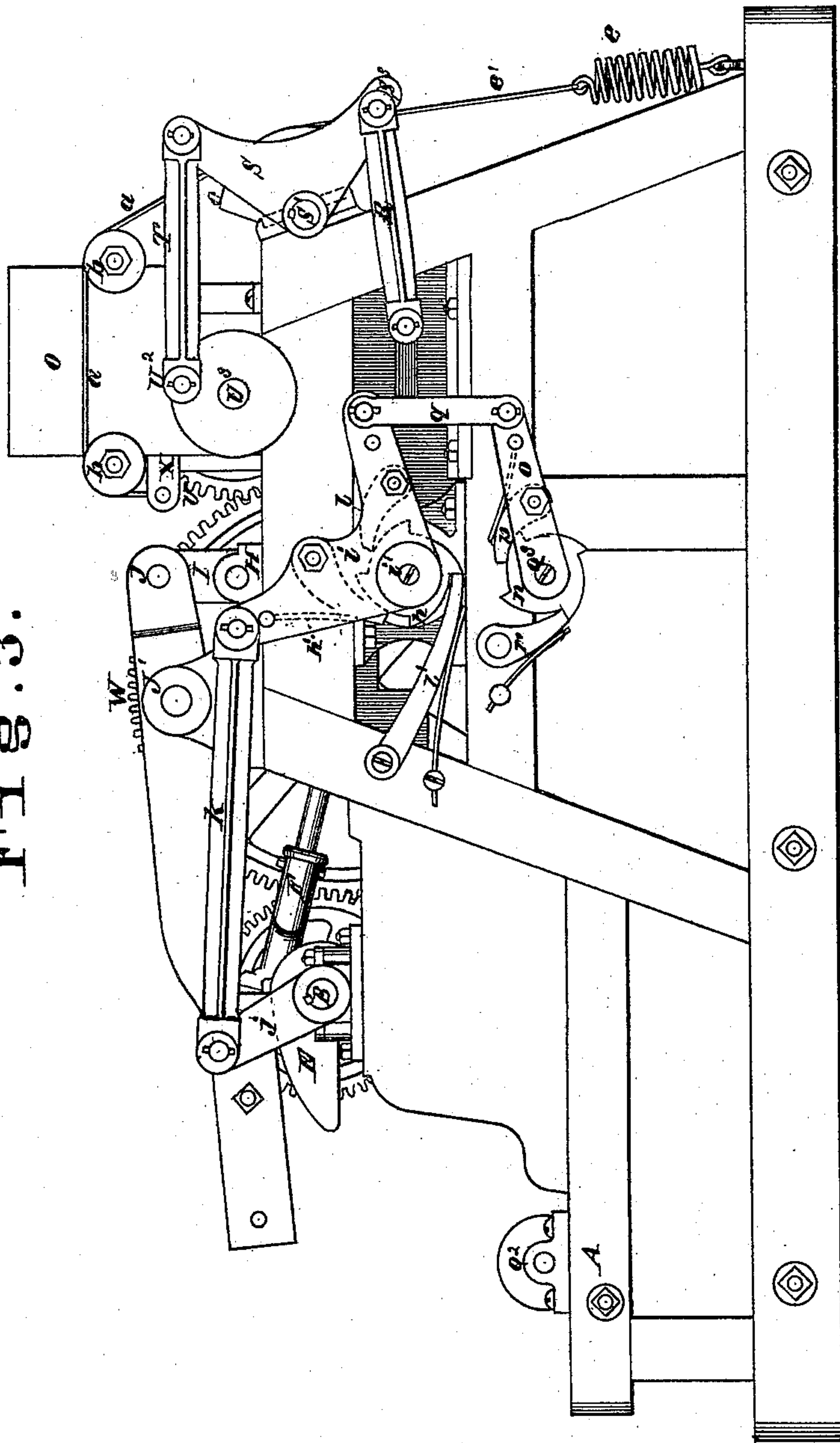
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Fi 3.



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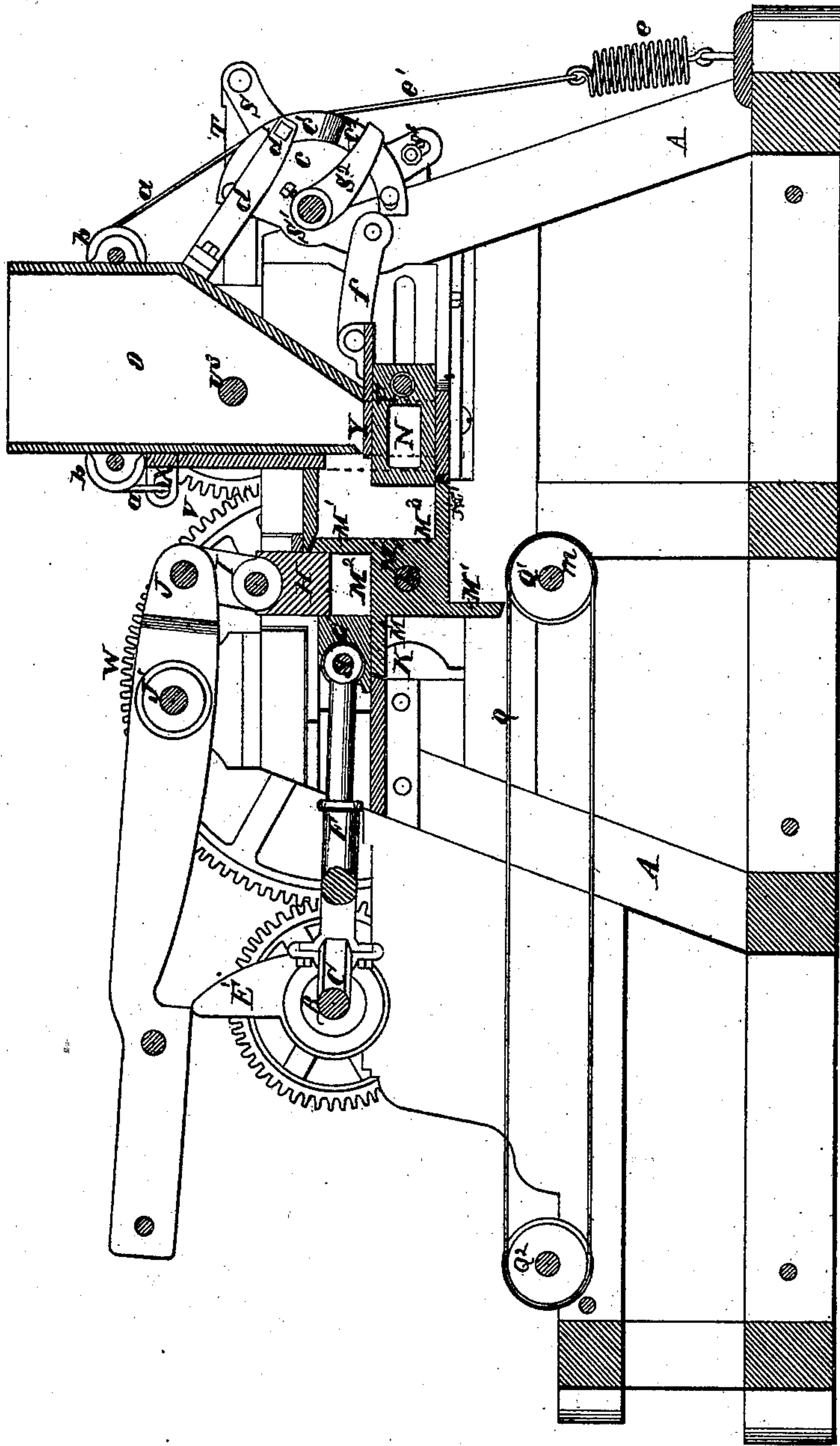


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Fig. 4.



ATTEST.

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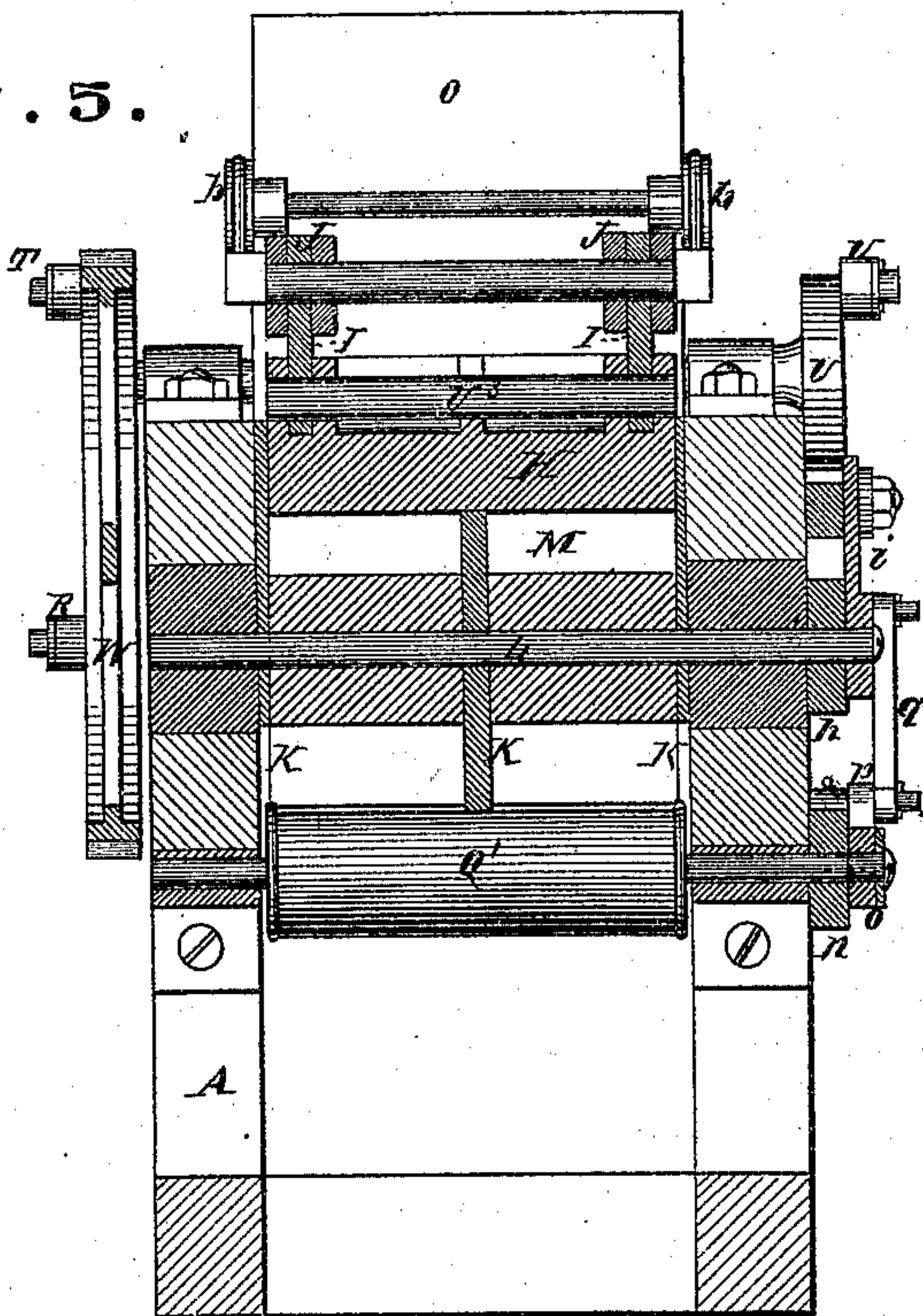
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**BRICK-MACHINE.**

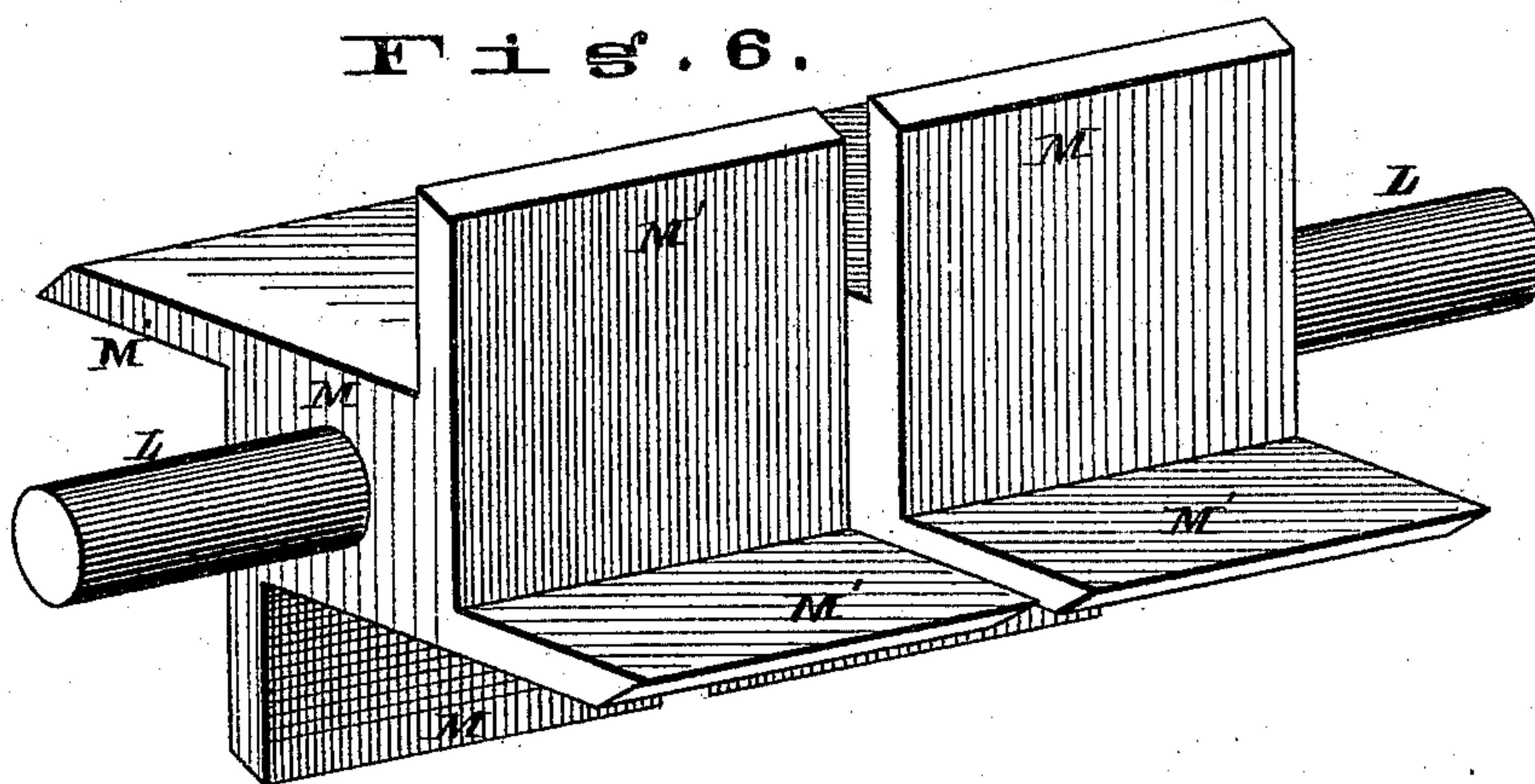
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Fig. 5.



**F i s . 6 .**



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# UNITED STATES PATENT OFFICE.

ERNST L. WAGNER, OF ST. LOUIS, MISSOURI.

## IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. **171,453**, dated December 21, 1875; application filed September 10, 1875.

*To all whom it may concern:*

Be it known that I, ERNST L. WAGNER, of the city and county of St. Louis and State of Missouri, have invented a new and useful Improvement in Brick-Machines, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

My improvement relates to a machine in which the clay is supplied to a hopper, and removed in form of bricks by an off-bearing belt or conveyer. The receiving-chamber beneath the hopper is shut off at each stroke from the hopper on one side and the mold on the other by sliding plates, so as to regulate the amount of clay to a nicety.

The mold consists of rectangular hubs, turning between plates or walls forming the housings of the mold-wheels and the ends of the molds, and the hubs have wings extending in the planes of the sides of the hubs, so as to make a rectangular recess with the next face, which forms two sides of the molds, (the ends being formed by the housing-plates,) and the other two sides being formed by presser-plates or plungers, which move inward simultaneously upon the brick, said brick having been roughly formed in the recess by the plunger by which the clay is carried into mold.

My invention also consists in the mechanical devices for imparting movement to the parts described.

In the drawings, Figure 1 is a top view. Figs. 2 and 3 are elevations of the opposite sides. Fig. 4 is a longitudinal section at line *x x*, Fig. 1. Fig. 5 is a transverse section at *x' x'*, Fig. 1. Fig. 6 is a perspective view of the mold-wheel.

A is the frame of the machine. B is the main or cam shaft, to which motion may be communicated in any desired manner. This shaft has upon it two cranks, C and D, and two cams, E and E'. The crank C has pitman-connection F, with the pressure-block G, being connected thereto by joints *g*. This pressure-block has a horizontal motion, and its face may be divided into a number of projections, each the length of a brick, and somewhat broader (vertically) than the thickness of a brick. The said block gives the edge-

wise pressure to the brick. The downward pressure upon the upper side of the brick is given by the pressure-block H, connected by a short pitman, I, to the shorter end of a lever-frame, J, fulcrumed at J', and whose free end is raised by the cams E E', which act beneath it.

The pressure-blocks G H form two sides of the brick-molds when the brick is under pressure. The ends of the molds are formed of fixed upright plates K, in which the rotating mold-shaft L has journal-bearing. Upon the shaft L are rectangular hubs M, having wings M<sup>1</sup>, forming an angular recess, M<sup>2</sup>, which constitutes two sides of a mold, the press-blocks G and H forming the other two sides, and the housing-plates K the ends. The rotating mold forms one side and part of the bottom of a clay-chamber, N, beneath the hopper O, and in the chamber works a plunger, P, that forces the clay which has dropped from the hopper into the recess M<sup>3</sup>, pressing it loosely into the form of a brick, and on the next movement of the mold-wheel M M<sup>1</sup> this loosely-pressed brick is brought into position for the action of the presser-blocks G H. Another quarter rotation of the wheel carries around the brick to a position where its weight causes it to slip from the recess M<sup>2</sup> and fall upon the off-bearing belt Q. The plunger P has an arm at each end connected by a rod, R, to a bell-crank lever, S, the pivotal connection being made at the bell-crank by a bolt passing through a slot, S<sup>3</sup>, so as to allow the movement of the pivot toward or away from the axis of the bell-crank lever to regulate the length of stroke of the plunger to adjust the size of the clay-chamber between the plunger and the drop-gate, enabling just the proper amount of clay to be fed to the mold at each movement, and the bell-crank levers are connected by rods T to the wrist-pin U' upon the cog-wheel U upon one side of the machine, and crank-disk U<sup>2</sup> upon the other side, said wheel and disk being in the same shaft U<sup>3</sup>.

The cog-wheel U engages with a cog-wheel, V, and that with a cog-wheel, W, upon the main shaft B. X is a vertically-sliding gate, which descends into the chamber N, so as to leave between said gate and the plunger a



space large enough to contain the required quantity of clay. Y is a horizontally-sliding gate or cut-off, which moves across the hopper-mouth and cuts off the clay in the said space (between the gate and plunger) from the clay in the hopper, the cut-off sliding forward simultaneously with the upward movement of the gate X, these movements taking place just previous to the forward movement of the plunger, so that the clay in the plunger-chamber N has free course to the mold-wheel, and the clay in the hopper is retained there until the backward movement of the cut-off plate and the plunger allows a fresh supply to fall into the chamber N, and before this takes place the gate X has descended to limit the size of the clay-space in chamber N, as described. The sliding gate descends by its own weight, and is raised by cords or chains *a* passing over pulleys *b*, and to oscillating grooved segments *c*, pivoted to the frame and operated by arms *S*<sup>2</sup> on the shaft *S*<sup>1</sup> of the bell-crank lever *S*, the cords or chains *a* being secured to said segments and lying in peripheral grooves of the same. The arms *S*<sup>2</sup>, in their oscillation, are in contact with curved springs *c*<sup>1</sup>, having catches *c*<sup>2</sup>, which the arms pass over in their downward movement, but which they engage against on their upward movement, so as to carry the segments with them as they rise. When the segments have reached a certain height the inclines at the upper sides of the spring-catches come in contact with the points of adjustable screws *d'* in arms *d*, and the catches are sprung away from the arms *S*<sup>2</sup> so as to release the segments from the arms. When released the segments are turned down by springs *e*, to which they are connected by cords or chains *e'* lying in their peripheral grooves, and move the gate X upward and the cut-off Y forward by quick movements, the cut-off being connected to the lower part of the segments by rods *f*. By adjusting the screws *d'* the release of the arms may be made to take place at the proper time. The mold-wheel shaft *L* has a ratchet-wheel, *h*, by which the mold-wheel has intermittent rotation by means of a spring, *h'*, pawl *l* on bell-crank plate *i* oscillating on an axis, *i'*, at the end of shaft *L*, and receiving its oscillatory movement from the crank *j* on the main shaft through the medium of the rod *k*. The backward rotation of the mold-wheel is prevented by a spring-dog or pawl, *l'*. The off-bearing belt is supported on drums or pulleys *Q*<sup>1</sup> *Q*<sup>2</sup>. The driving-pulley *Q*<sup>1</sup> is upon shaft *m*, which carries a ratchet-wheel, *n*, engaged by a spring-pawl, *p*, on the arm *o*, which is pivoted on the end of the shaft *Q*<sup>3</sup> of the pulley *Q*<sup>1</sup>. The end of the arm *o* is connected by rod *q* to the bell-crank plate *i*, and receives its oscillatory movement therefrom. The backward rotation of the shaft *Q*<sup>3</sup> is prevented by a spring-dog or pawl, *r*.

The mold-wheel may be made of any de-

sired length, so as to turn out more or less bricks at each movement. In the drawing it is shown containing two lengths of molds.

The drop-gate X being down, as represented by dotted lines in Fig. 4, and the cut-off Y and plunger P in retracted position, the receptacle N thus formed is filled with clay gravitating from the hopper. The next movement of the bell-crank lever elevates the gate X and throws forward the cut-off Y, leaving the clay in the receptacle N in the form of a brick. The plunger then moves forward and drives the clay thus formed into the recess *M*<sup>3</sup>, and on the retreat of the plunger the mold-wheel turns one-fourth around and carries the clay to recess *M*<sup>2</sup>, to the presser-blocks G H, which compress it into a brick. The next turn of the mold-wheel discharges the brick upon the off-bearing belt *Q*, which at each movement of the mold-wheel moves somewhat over the width of one brick. The presser-blocks G and H move toward the mold-wheel simultaneously, so that the pressure of the plunger P tends to somewhat counteract the pressure of the block G.

I claim as my invention—

1. The combination of mold-wheel M M' and pressure-blocks G H, substantially as set forth.
2. The combination of the mold-wheel M M', housing-plates K and plunger P, substantially as set forth.
3. The combination of the hopper *o* and plunger P and cut-off Y, working above the plunger and beneath the hopper, substantially as set forth.
4. In combination with the hopper *o*, plunger P, and cut-off Y, the falling gate X, substantially as and for the purpose set forth.
5. The combination of drop-gate X, cords or chains *a*, segments *c*, springs *e*, arms *S*<sup>2</sup> on rock-shaft *S*<sup>1</sup>, spring-catches *c*<sup>2</sup>, and arms *d* to relieve the catches from arms *S*<sup>2</sup>, substantially as set forth.
6. The combination of cut-off Y, rods *f*, segments *c*, springs *e*, arms *S*<sup>2</sup>, catches *c*<sup>2</sup>, and shaft *S*<sup>1</sup>, substantially as set forth.
7. The combination of mold-wheel having tangential wings M, ratchet-wheel *h*, oscillating plate *i* on wheel-shaft *L*, and pawls *l* and *l'*, giving intermittent motion to the mold-wheel.
8. The combination, with the mold-wheel M M', ratchet-wheel *h*, oscillating plate *i*, and pawls *l'*, of the oscillating arm *o*, pawls *p* *r*, and ratchet-wheel *n*, giving motion to the off-bearing belt simultaneously with the movement of the mold-wheel, as set forth.
9. The combination of pressure-block G and plunger P, at opposite sides of mold-wheel, exerting simultaneous pressure at opposite sides of said mold-wheel, substantially as set forth.

ERNST LOUIS WAGNER.

Witnesses:

SAML. KNIGHT,  
ROBERT BURNS.