

J. Hinkhardt.

Brick Mach.

Nº 92,059.

Patented Jun. 29, 1869.

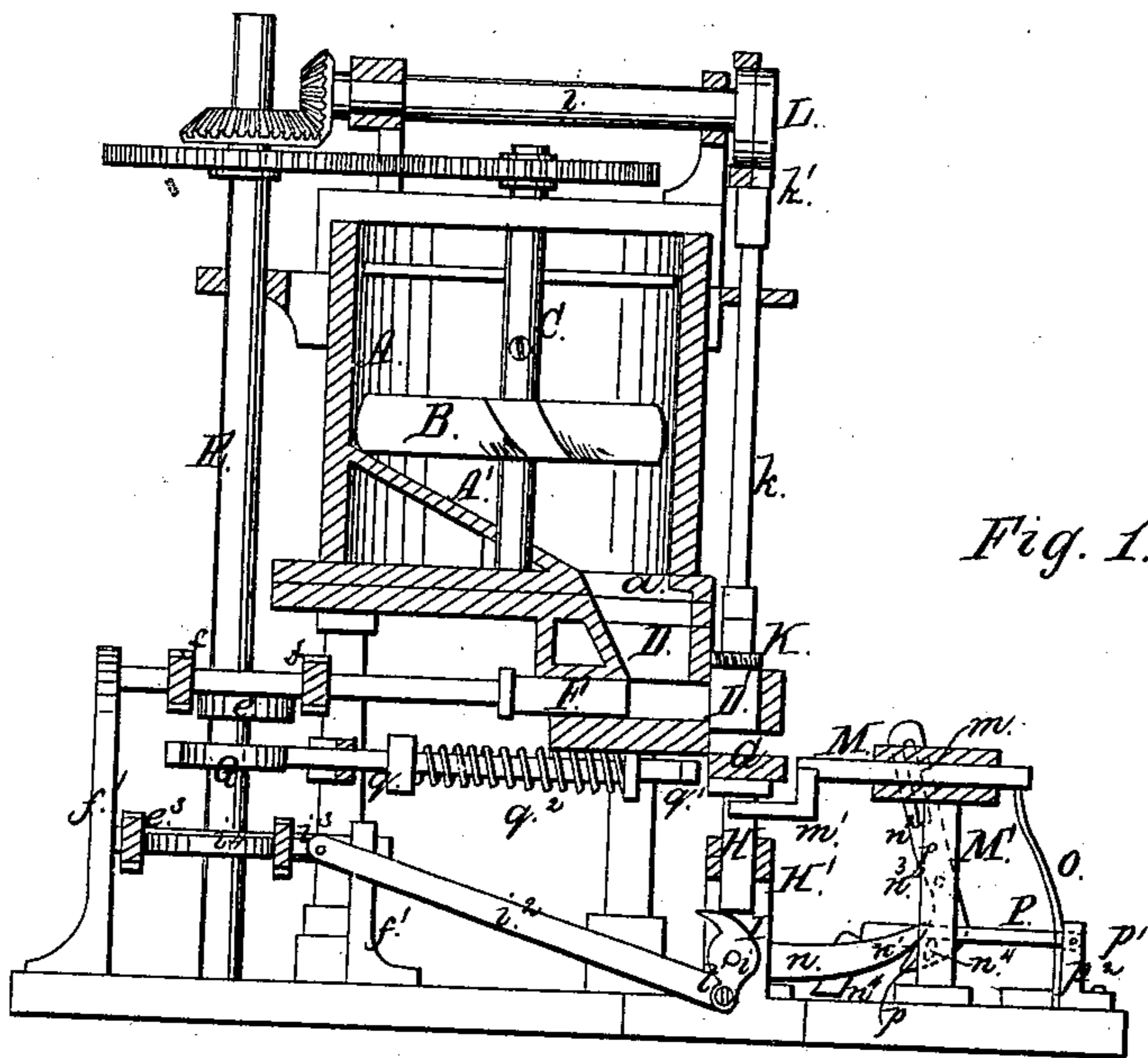


Fig. 1.

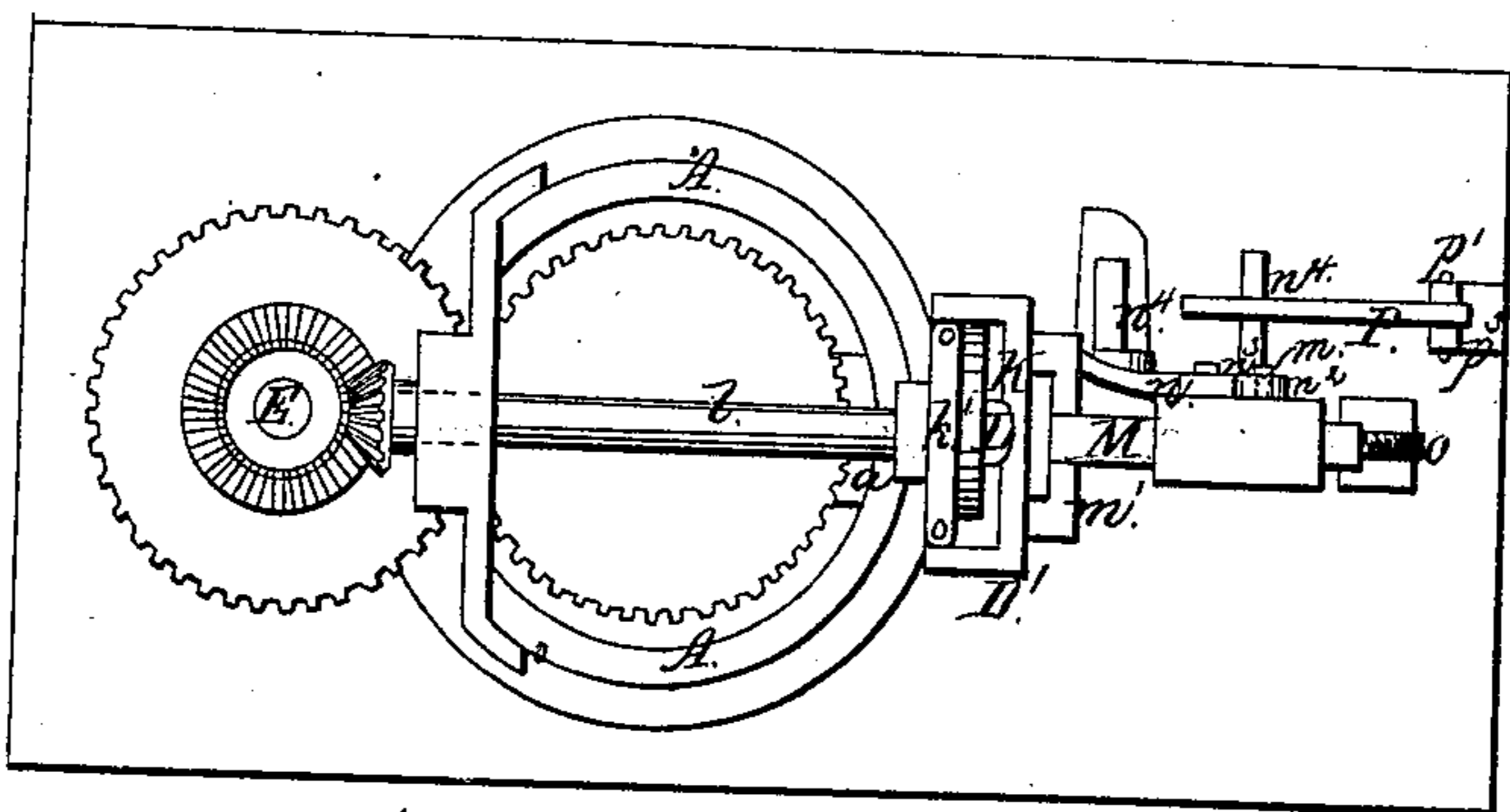


Fig. 2.

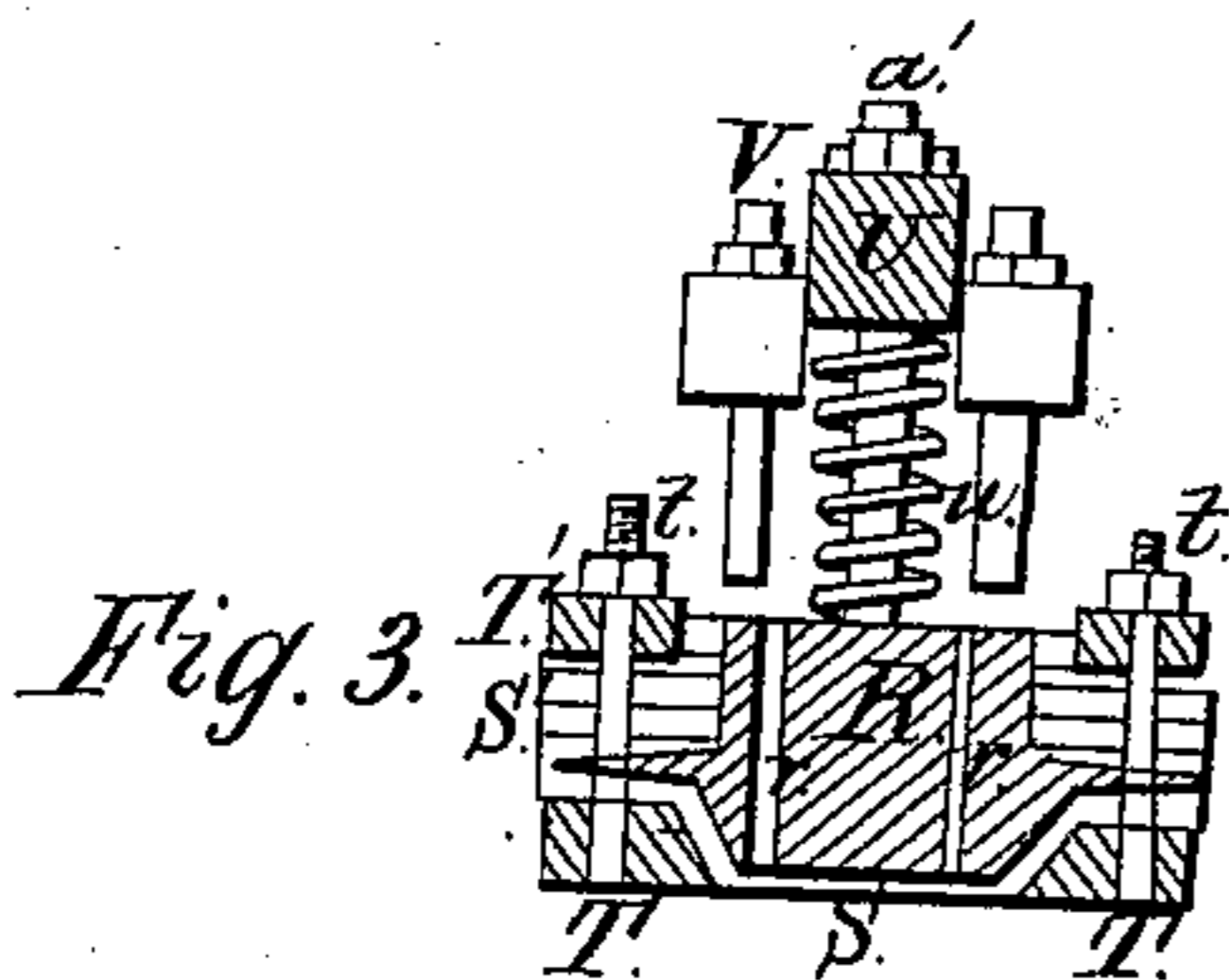


Fig. 3.

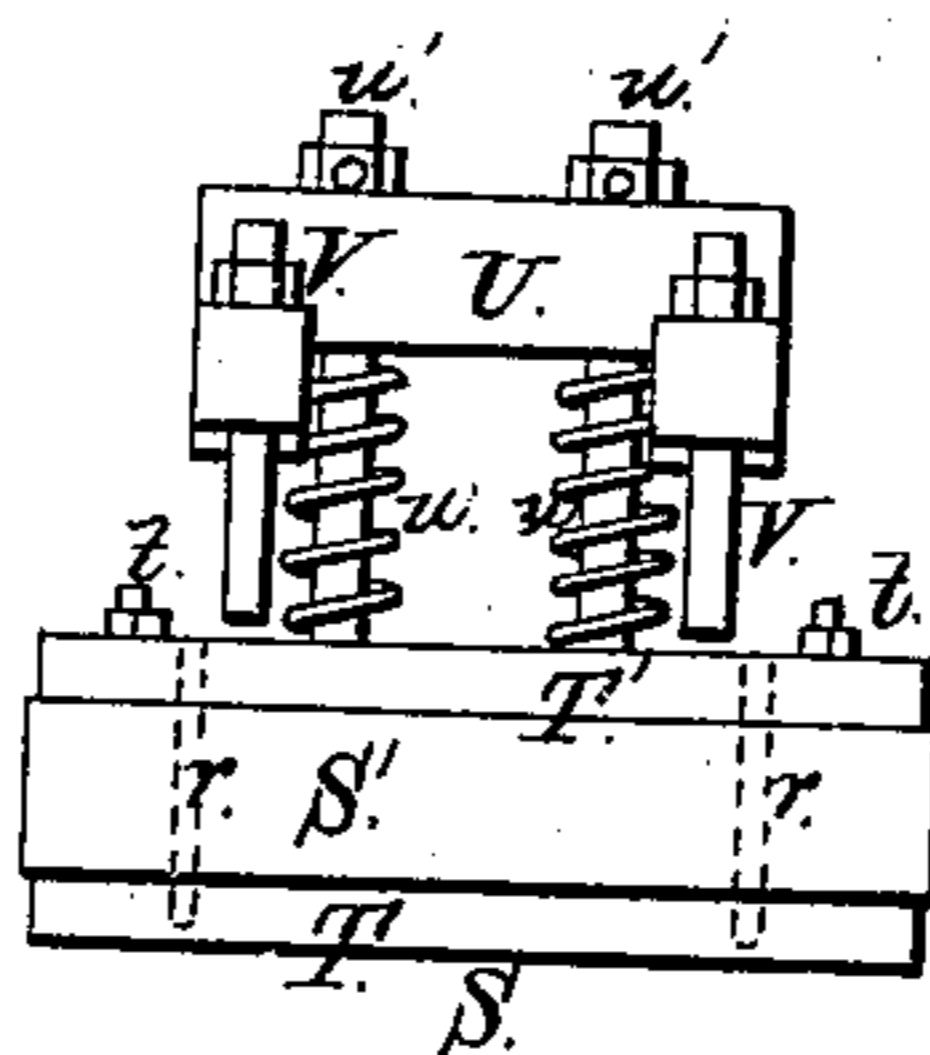


Fig. 4.

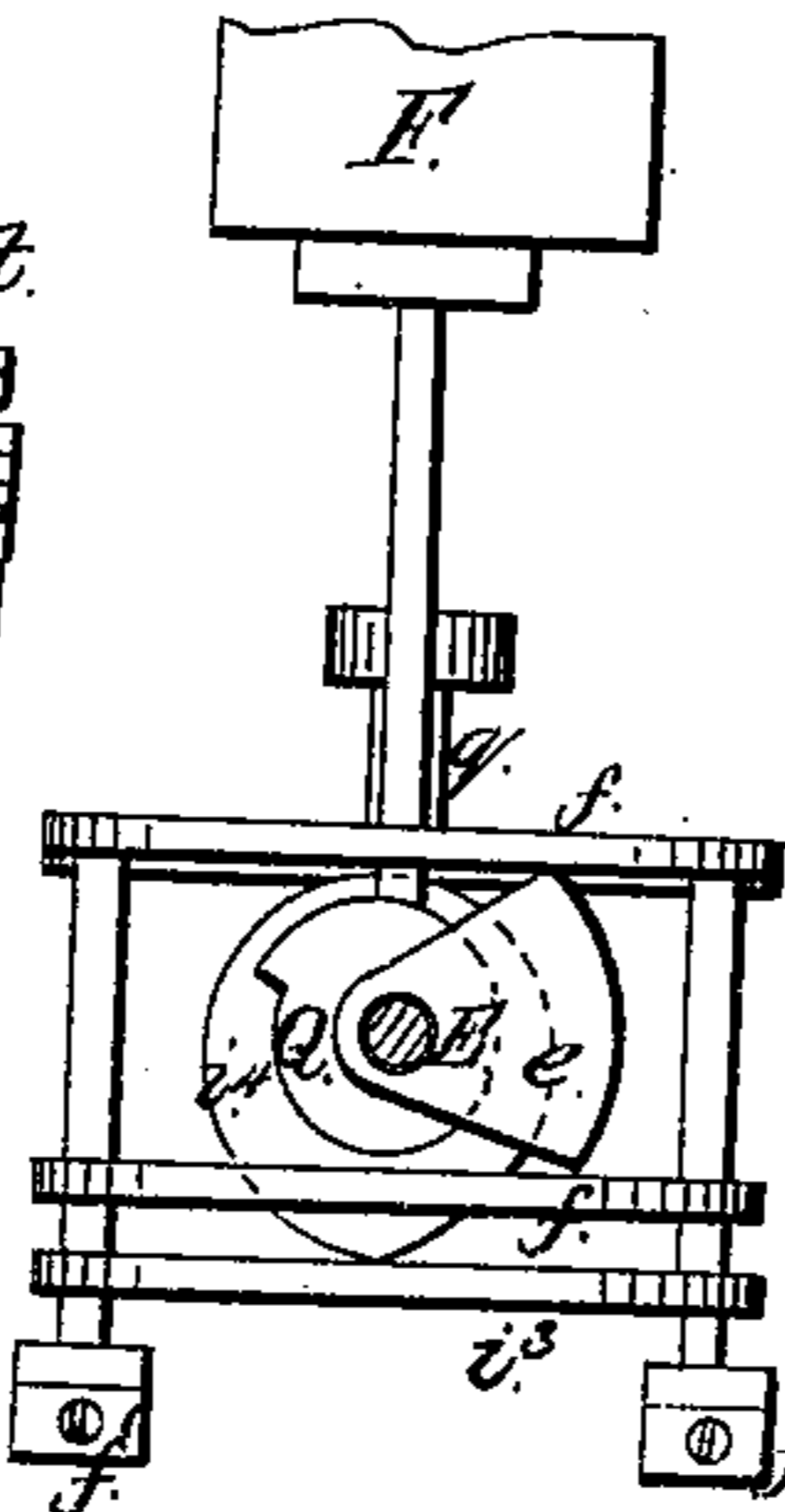


Fig. 5.

Witnesses.

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JOSEPH KLINKHARDT, OF ST. LOUIS, MISSOURI.

Letters Patent No. 92,059, dated June 29, 1869.

IMPROVED BRICK-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOSEPH KLINKHARDT, of St. Louis, in the county of St. Louis, and State of Missouri, have made certain new and useful Improvements in Brick-Machines; and I do hereby declare the following to be a full and true description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to machines for forming, moulding, and pressing bricks, and other building-blocks, out of clay or similar material; and the nature thereof is, first, in the manner of supporting the brick as it is formed, and in the devices acting to receive and remove the same after formation, or moulding; and it consists also, in the construction of the plungers for pressing the brick in and out of the moulds.

To enable those herein skilled to make and use my said improvements, I will now fully describe the same, referring herein to the accompanying

Figure 1, as a sectional elevation; to

Figure 2, as a plan;

Figure 3, as a sectional view of the plunger; and

Figure 4, as an elevation thereof;

Figure 5 is a part plan.

I form the pug-mill cylinder A of cast-iron, or similar metal, and support the same upon proper standards. The clay, being placed herein, is kneaded and worked upon by suitable arms, and is finally compressed and forced out of said mill by the screw-blades B, secured upon the vertical shaft C, said shaft being properly supported in bearings connected with the cylinder A, in any manner deemed advisable, and being driven by gear-wheels, or belts and pulleys, connected with an exterior-power source.

At the edge of the pug-mill A, I arrange the discharge-opening *a*, out of which the clay passes to the chamber D, being compressed therein by the forcing-power of the screw B.

In order that the clay shall not jam and clog at outer points of the lower circumference of the mill A, I arrange the bottom A' thereof in an inclined position, sloping toward the opening E, thus aiding the discharge of the clay.

The clay having reached the chamber D, is pressed forward to the mould D', by the devices, as follows:

The vertical shaft C is actuated by the power-source, and revolves with its cam, *c*, thus causing the slides *f*, and plunger F, to move forward and cut off a sufficiency of clay to fill said mould E', as desired. The cam *c* is formed to also give the necessary pressure upon the clay when in the mould.

The mould D' has a bottom-plate, G, which is removable. When the clay is pressed into the mould, said plate, G, is held up to its place by the standard H. This moves in the guide H', and rests upon the cam I.

In order to exert the desired upward pressure, said cam, I, is secured upon the rock-shaft *i*, operated by a

short crank, *i*¹, and connecting-rod, *i*². This again is pivoted to the slides *i*³, operated by the cam *i*⁴, on the vertical shaft E, above described.

Both sets of slides, *f* and *i*³, are secured upon parallel bars which move in standards, *f*¹, secured to the base-plate, upon which the whole structure rests. Said slides, *f* and *i*³, are each arranged to enclose their respective cams, so that a withdrawal of the cams shall effect a return-motion of the respective devices by them operated.

While the brick is in the moulds D', it exerts a pressure upward against the plungers K. Said plungers are connected to the rod *k*, and these connect with the slide *k*¹, about the cam L, operated by the horizontal shaft *l*, which connects suitably with the power-source.

The plate G, upon which the moulded brick rests, is prevented from lateral movement by the fork-bar M, said bar being forced against the edge of the plate G by the devices as now to be described.

On the shaft *i* is attached the cam-lever *n*, the forward end hereof having the curved surface *n*¹ connecting with the similar cam-lever *n*², which is pivoted at *n*³ to the standard M', upon which the bar M is supported, and arranged to slide. A pin, *m*, connects the lever *n*² with the fork-bar M.

The position of said parts is, therefore, such that when the cam I forces up the plate G against the under side of the mould D', the lever *n*² is caused, by the lever *n*, to press the bar M forward against the edge of said plate, G, and thus the latter is securely held in proper position.

When the brick has been thus moulded, the cam I lowers (or permits the descent of) the plate G, under impulse of the cam *i*⁴; at the same time the plungers K follow down, pressing the brick out of the mould D', under impulse of the cams L.

But in order that this downward movement may be without undue friction, the end pressure upon the plate G, by the bar M, is released, and this is achieved through the movement of the rock-shaft *i* and the lever *n*, releasing the lever *n*², whereupon a spring, or similar device, O, returns the bar M until the tappet *n*⁴ of the lever *n*² falls into the notch *p* of the detent-lever P, thus preventing further return of the bar M, and allowing merely a release of the pressure against the plate G.

The lever P is pivoted at *p*¹ in the standard *p*².

When the brick, and its plate, G, have reached their lowest position, they rest upon the forks *m*¹ of the bar M, the standard H then passing from its contact with said base-plate, and leaving the same to rest upon the said forks. In the meantime, in the continued movement of the shaft *i*, the lever *n* has been raised so that the lifter *n*⁴, secured on said lever, comes to contact with the lever P, and raises the same, thus releasing the lever *n*² from its detent in the notch *p*; and thereupon, under action of the spring O, the bar makes its

full return-motion, carrying the brick and plate G with it.

In order, however, that the operator may readily disengage the brick from the plate G, I have arranged a tipping-device for raising the brick from said plate, so as to loosen the same, acting immediately before the return-movement of the brick is effected.

For this purpose I secure the cam Q upon the shaft E, actuating the rod *q* and plunger *q'* against the coiled spring *q*². Said plunger is pressed against the brick, and tilts it up, immediately after the lodgment of the plate G on the forks *m'*.

When the plate G is thus moved back upon the forks *m'*, the operator places a band-board upon the top of the bricks, and simply reverses the parts, whereupon the bricks may be carried on the hand-board to the drying-floor. The plate G is then replaced upon the standard H, and the operation renewed.

The plate G will usually be sanded, and its upper surface may be marked or stamped with any required design, thus producing the desired impression on the brick.

In order that the plungers K shall act properly to receive the swelling of the brick, and clean the mould D', I arrange the same, as indicated in the detail, figs. 3 and 4. Under the central body R, I arrange the felting S, holding the same by the rim T, fitted nicely, to give smooth surfaces.

Above the body R, I arrange the lateral felt linings S', these being packed tightly, and the whole secured by the follower T', secured by bolts *t* to the rim T.

The projecting linings S' will, therefore, fit nicely the sides of moulds, D', and cleanse the same. For passage

of the air from the mould, the holes *r* are arranged, passing down to the felting S, and communicating with the exterior.

To take up the swelling of the clay in the mould the plunger, so formed, has an elastic connection by the springs *u* with the cross-head U, the latter being connected with the rod *k*. The springs *u* are coiled about the pins *u'*.

To prevent undue rise of the plunger-head K, set-screws, V, are arranged in the cross-head U, by which the rise of the head is regulated.

Having thus fully described my said invention, What I claim, is—

1. The mould D', arranged with a movable bottom-plate, G, supported on the standard H, and pressed up by the cam I, and its operating-devices, substantially as set forth.
2. The bar M, and its forks, *m'*, operated in combination with the plate G, substantially as set forth.
3. The plunger *q'*, and its operating-devices, acting to tilt the brick on the plate G, substantially as set forth.
4. The plunger R, S S', T T', when constructed as described, in combination with the cross-head U, intervening elastic connection, *u*, or its equivalent, and set-screws, V, substantially as and for the purposes herein set forth.

In witness of said invention, I have hereunto set my hand in the presence of

JOSEPH KLINKHARDT.

Witnesses:

GEO. P. HERTHEL, Jr.,
WILLIAM W. HERTHEL.