

2 Sheets, Sheet 1.

I. Morley,
Brick Machine.

N^o 49,430.

Patented Aug. 15, 1865.

Fig. 1.

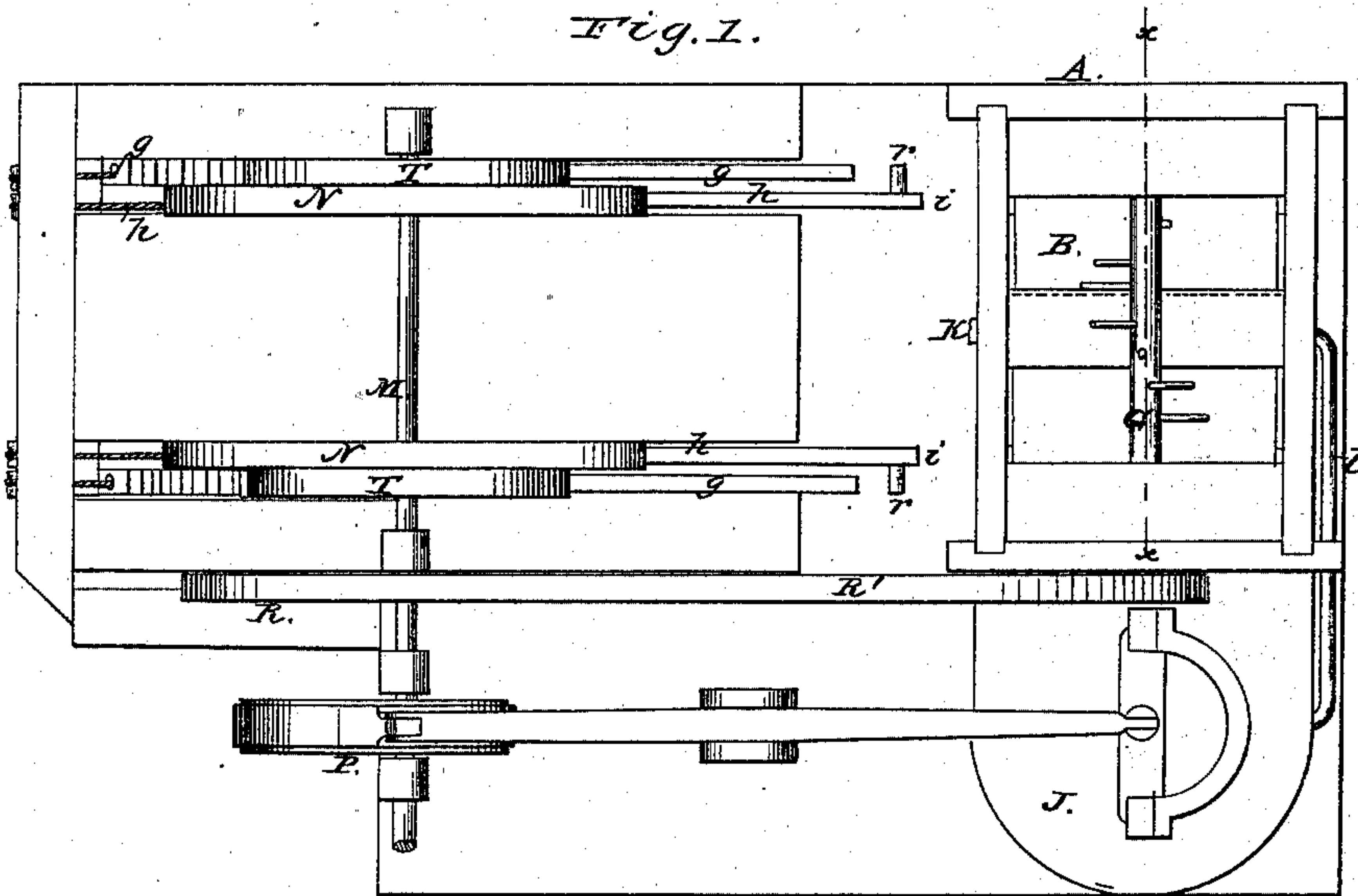
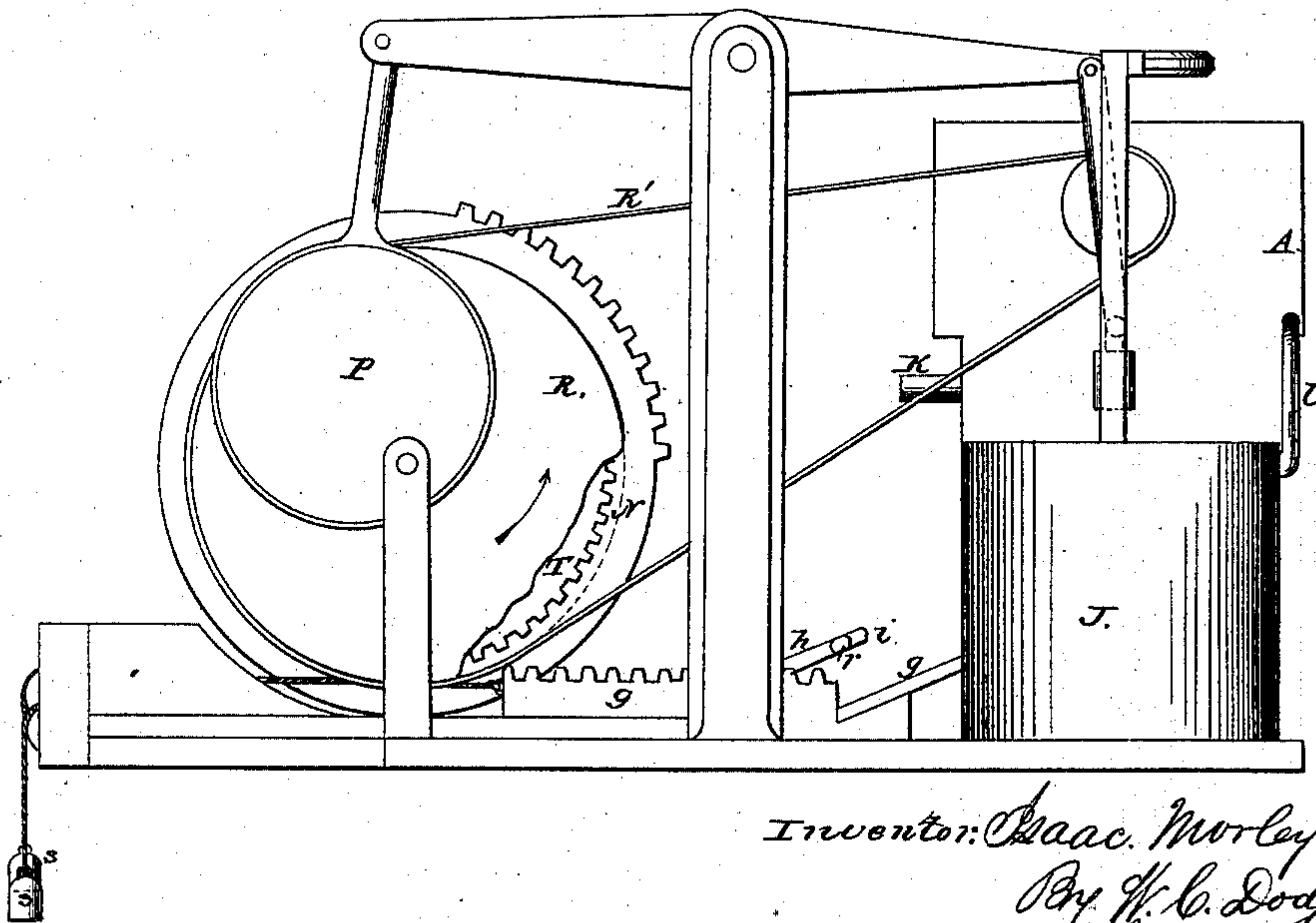


Fig. 2.



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2 Sheets, Sheet 2.

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Fig. 3.

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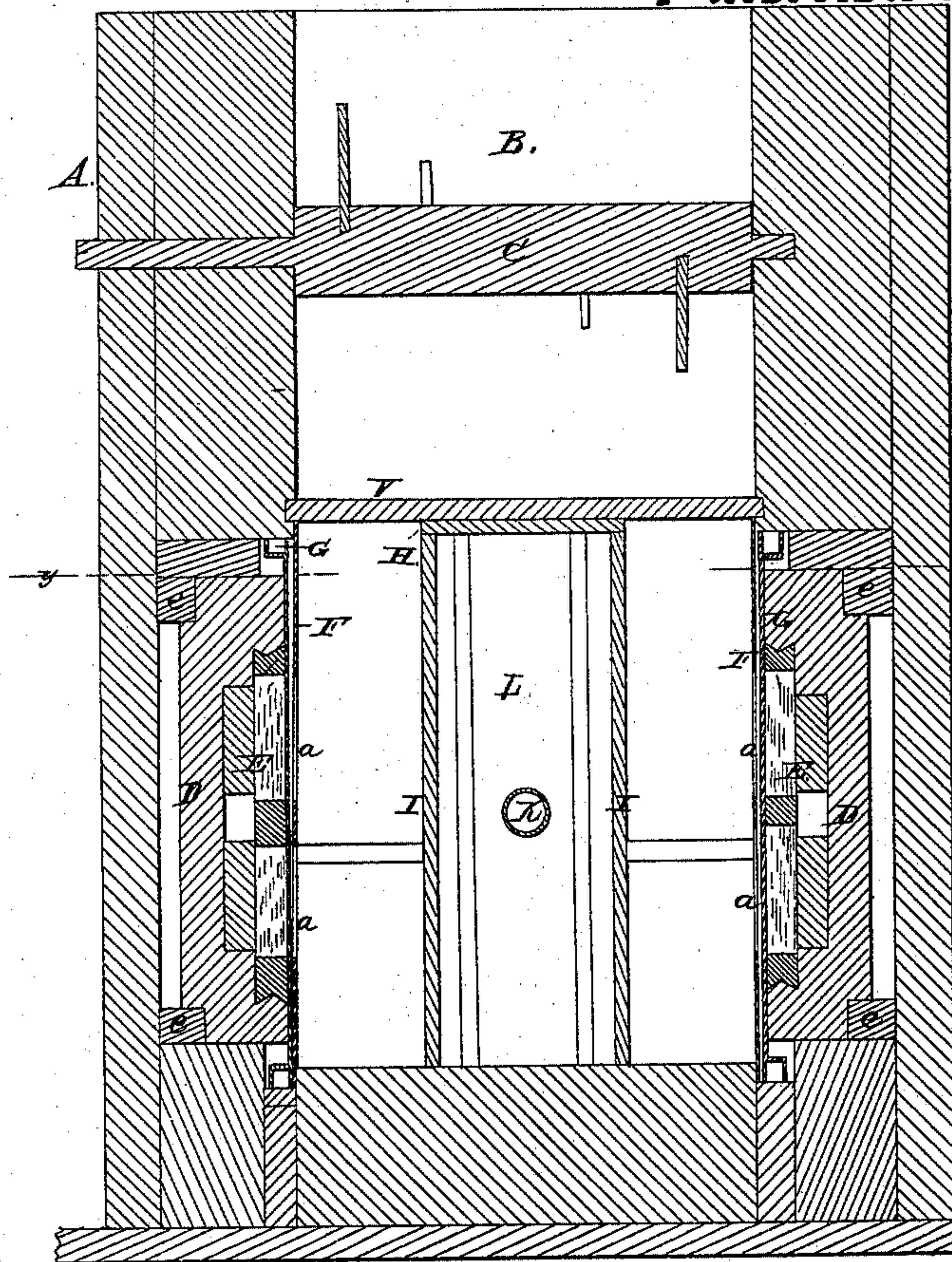


Fig. 6.

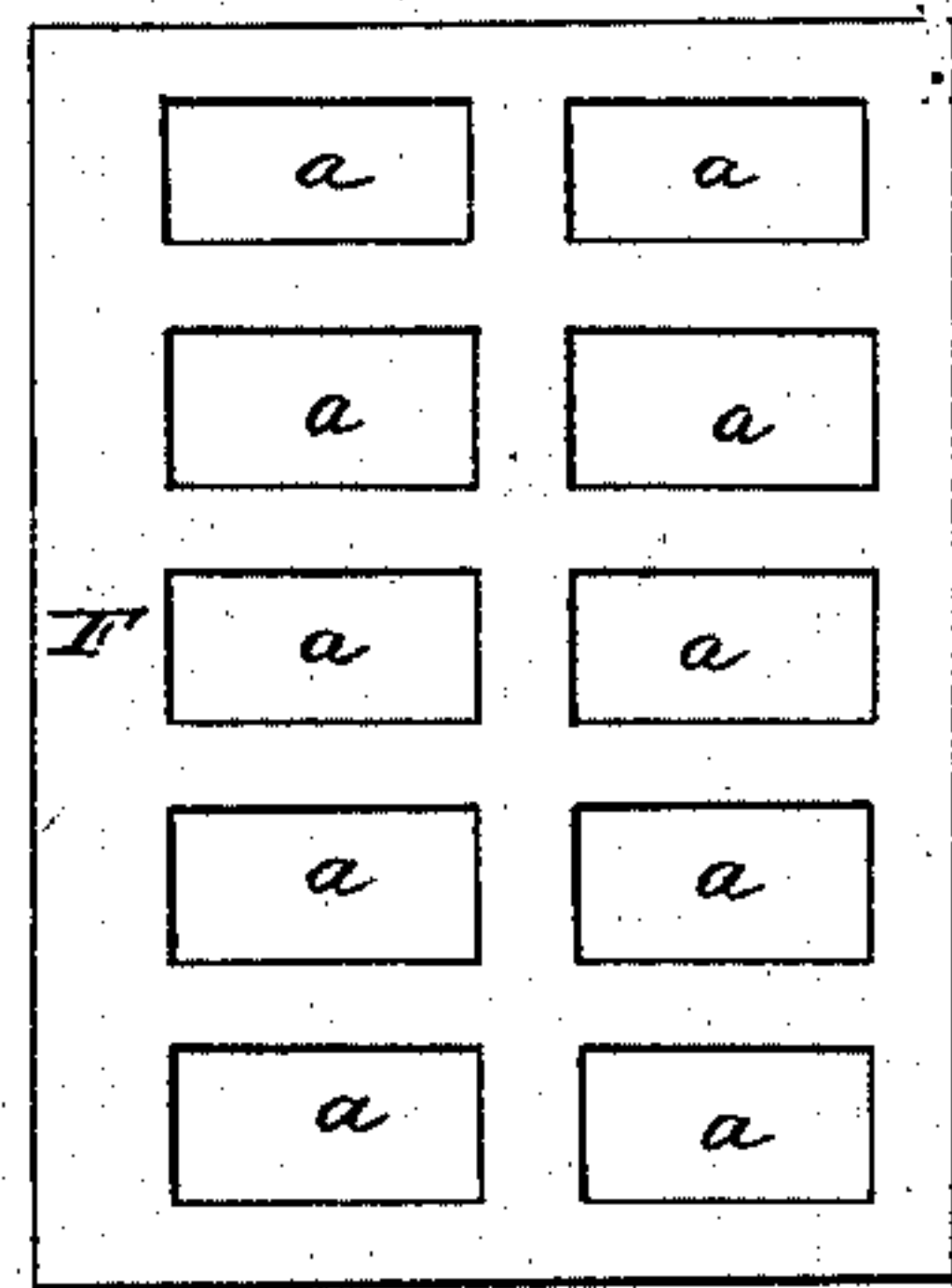


Fig. 4.

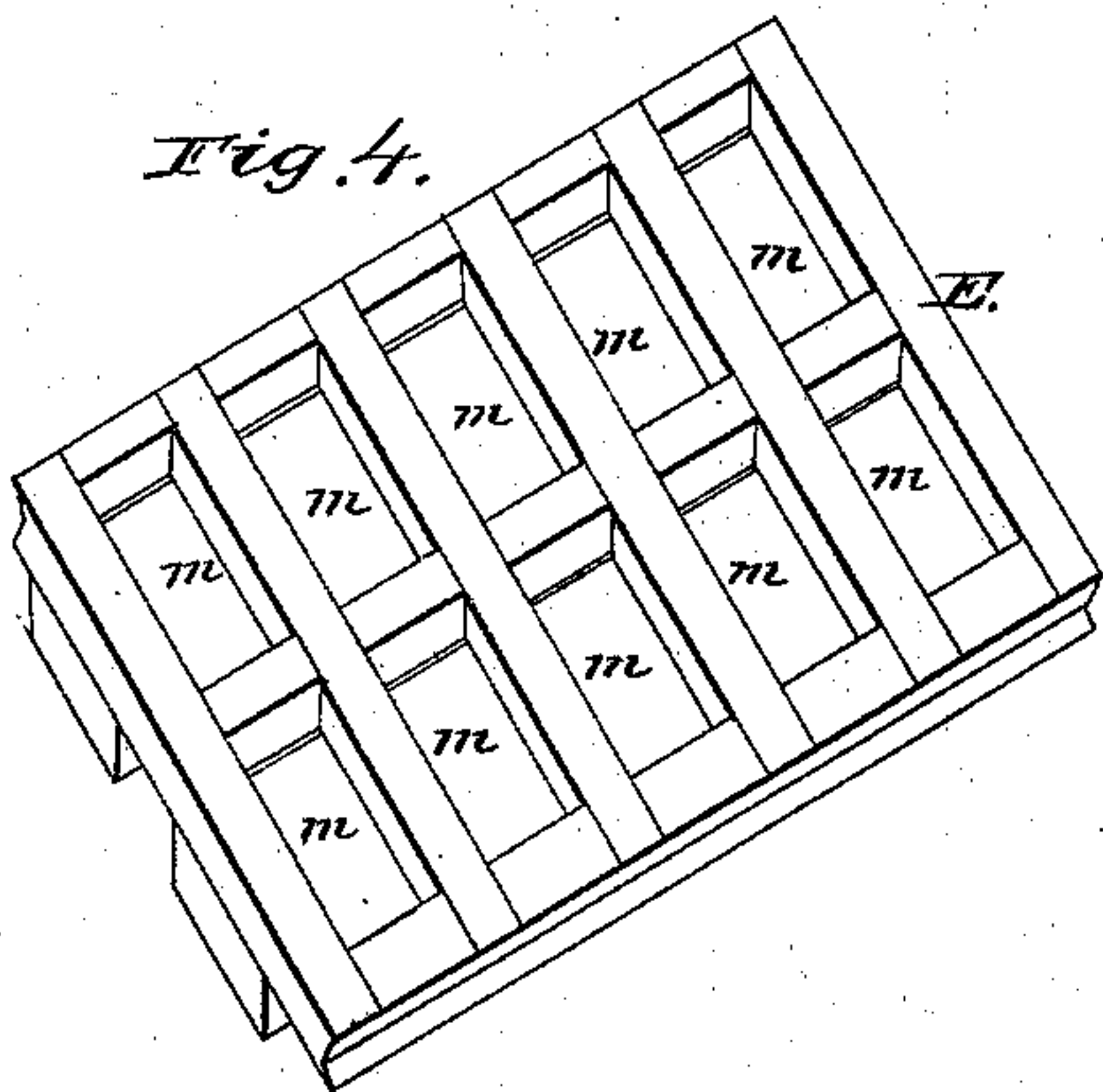


Fig. 7.

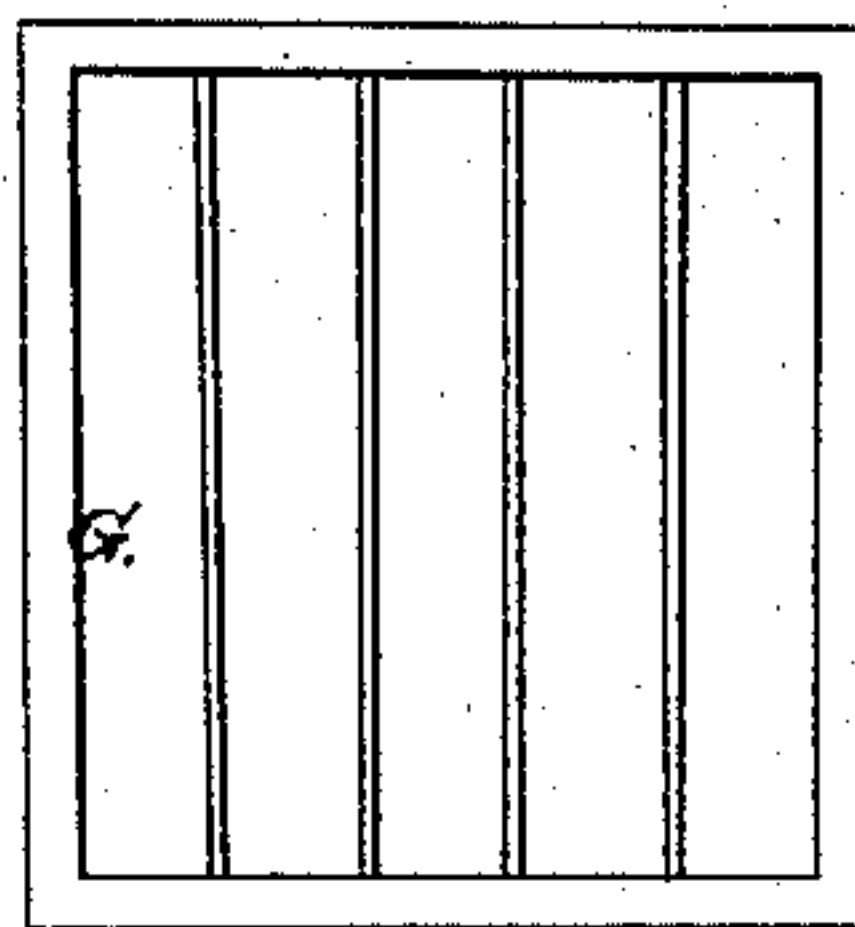
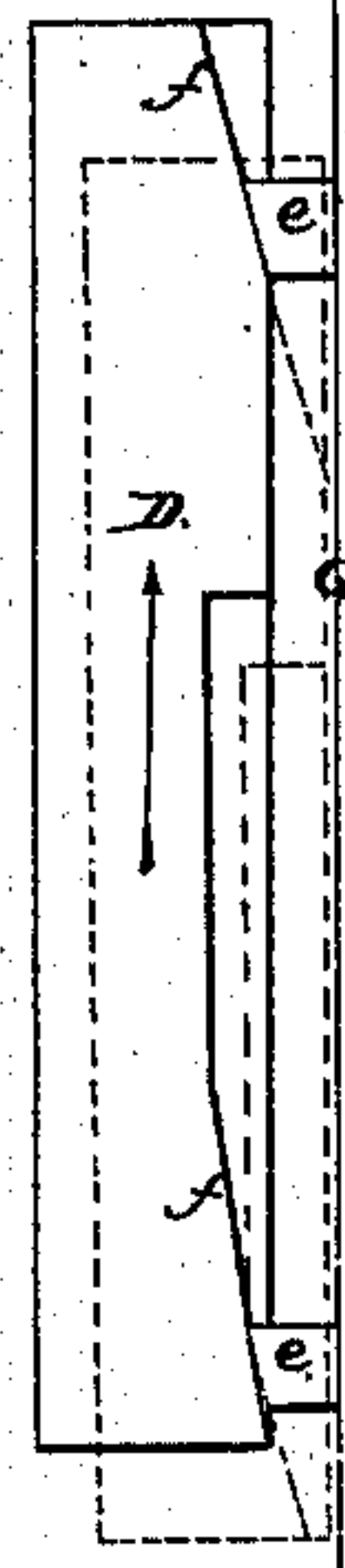


Fig. 5.



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UNITED STATES PATENT OFFICE.

ISAAC MORLEY, OF ALLEGHENY CITY, PENNSYLVANIA.

IMPROVED BRICK-MACHINE.

Specification forming part of Letters Patent No. 49,430, dated August 15, 1865.

To all whom it may concern:

Be it known that I, ISAAC MORLEY, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Making Bricks; and I do hereby declare that the following is a clear, full, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making part of this specification—

Figure 1 being a top-plan view; Fig. 2, a side elevation; Fig. 3, a vertical section taken in the line *x x* of Fig. 1; Fig. 4, a perspective view of one of the molds, and Fig. 5 a horizontal section of a portion in the line *y y* of Fig. 3.

Similar letters indicate corresponding parts wherever they occur.

My invention consists in a novel construction of a machine in which the clay is mixed and then forced into molds by the direct pressure of steam, compressed air, or other fluid, and the molds containing the brick then removed by the mechanism.

A represents a strong box or frame-work, having a hopper, B, in its upper portion, into which the clay is placed, and where it is ground and mixed to a plastic condition by means of the revolving shaft C, in the usual manner.

Below the shaft C, in the center of the hopper B, a stationary piece, H, is firmly secured, as shown in Fig. 3, extending from end to end of the hopper, but occupying only about one-third of the width of the same. Fitting snugly underneath this piece H are two vertical plates, I, so arranged that they may move laterally, and yet be steam-tight, or nearly so, thus forming a steam box or chamber, L, in the lower central portion of hopper B, a space being left on either side of said chamber L, as shown, for the prepared clay to pass into. A pipe, K, serves to admit steam or other fluid into the chamber L.

Directly opposite to the plates I openings are made in the sides of the box A; and in these openings are secured the plates F, provided with a series of openings, *a*, of the size and form that it is intended to make the brick, one of these plates being shown detached in Fig. 6. Outside of these plates F a movable frame, G, is placed, which may consist of a series of ver-

tical wires attached to a suitable frame-work, as shown in Fig. 7; or it may be a thin metallic plate having holes cut in it to correspond with the openings *a* in plate F.

E represents the mold, which consists of a strong frame, or block of wood or metal, having a series of cells, *m*, formed therein, of proper size and form to give shape to the brick, this frame E being provided with pieces secured to its back in such a way as to leave small openings for the escape of the air as the clay is forced into the cells *m*, as shown in Fig. 4. These frames E are fitted to slide longitudinally in the frames D, fitted immediately in their rear, as shown in Fig. 3. The frames D are also made to move a short distance longitudinally and rest on their back against the beveled pieces *e e*, as shown in Fig. 5, the frames D having inclined or beveled bearings *f f* formed thereon where they come in contact with the pieces *e e*. It will thus be seen that when the frame D is moved in the direction indicated by the arrow in Fig. 5 it will also be moved backward away from G at the same time, its line of movement being oblique, corresponding with the beveled faces *f f*, the object of which will be hereinafter explained.

Upon a platform to which the box A is attached is also mounted the operating mechanism, which consists of a main shaft, M, having secured thereto the wheels N N and T T for moving the slides *g* and *h*, these latter being provided with teeth, into which the teeth or cogs of the wheels N and T engage respectively as the latter rotate, as shown in Figs. 1 and 2. A wheel or pulley, R, is also mounted on said shaft M, from which motion is imparted to the shaft U by means of the belt R'. An eccentric, P, on said shaft M serves to operate the piston of the condenser and receiver J, by which the steam is exhausted from the chamber L through pipe *l*, which connects said chamber with the condenser J.

It will be observed that the wheels N and T are provided with teeth on a portion of their periphery only, and hence the slides *g* and *h* remain at rest during a portion of the revolution of said wheels, they being operated only at such times as the teeth on the wheels come in contact with the teeth on the slides; and as soon as the wheels have rotated far enough

to permit the teeth thereon to pass the slides the latter not only cease their forward movement, but are immediately drawn back by the weights *s*, attached by cords to their rearends, to their original position again, ready for another forward movement.

The slides *h* are located in line with the frames *F*, so that as the slide is moved forward by the wheel *N* its front point, *i*, will hit the frame *G* and shove it forward a distance equal to the width of a brick, and as soon as that is accomplished the projection *r* on said slide *h* impinges against the frame *D*, giving it the forward and lateral movement already described. By the time that this is accomplished the slide *g* moves forward in line with the mold-frame *E* and shoves it out at the opposite side of the box *A*, an empty frame, *E*, being inserted between the end of *g* and the frame *E*, already in the box, whereby the latter or empty frame is made to take the place of the one removed.

The operation is as follows: Clay being placed in the hopper *B*, motion is imparted to the shaft *C*, when the clay, after being mixed, passes down into the lower portion of the hopper, between the plates *I* and *F*. Steam being admitted through pipe *K* into the box *L*, the plates *I* are forced out, thereby pressing the clay in front of them through the holes *a* of plate *F* into the molds *m* of frame *E*. A forward motion of frame *G* then severs the clay in the molds from that in the box, and the frame *D*, with frame *E*, being moved, as previously described, by the slide *h*, removes the bricks in the mold from contact with anything in front, when the frame *E*, with its brick, is shoved out on the opposite side of the box *A* by means of slide *g*, where it is received by the attendant and the brick properly disposed of. At the instant that the bricks in the molds are severed from the clay in the box the steam in box *L* is let off partially, so as to prevent the forcing of any more clay through, and as soon as the frame *D*, with the molds and bricks, is moved away from contact with the plate *F* the steam is entirely exhausted by the condenser *J* from box *L*, which causes the plates *I* to move back to the position shown in red in Fig. 3, which will permit the clay to pass

down from above again, ready for repeating the process.

It should be observed that the frames *D* may be returned to their position by means of weights, similarly to the slides; or springs may be used for that purpose.

In case the weight of the superincumbent mass of clay in the hopper *B* should not be sufficient to hold that in the lower portion down, and thus insure the brick being sufficiently pressed, a sliding plate, *V*, may be arranged to slide horizontally across the hopper, as shown in Fig. 3, and thus prevent the clay below from being forced upward by the pressure of plates *I* when the steam is admitted. This plate *V*, if used, will need to be moved back after the molds are filled, so as to permit a fresh supply of clay to pass below it preparatory to filling the molds again. This motion may be given to plate *V* by any suitable mechanism connected with and operated by the machine.

It is obvious that compressed air may be used instead of steam for operating the plates *I*; but steam is believed to be preferable for the purpose.

Having thus fully described my invention, what I claim is—

1. Pressing the clay into the molds by means of steam or other fluid acting on the plates *I* or their equivalents, substantially as shown and described.

2. The movable molds *E*, in combination with the frames *D* and *G*, arranged and operating substantially as and for the purpose herein set forth.

3. Operating the frames *G*, *E*, and *D* by means of the wheels and slides or their equivalents, as and for the purpose set forth.

4. The arrangement of the frame *D*, as shown in Fig. 5, whereby the bricks in the molds shall be moved back from contact with the clay in the hopper or the plates *F*, as and for the purpose set forth.

ISAAC MORLEY.

Witnesses:

W. C. DODGE,
C. H. FOWLER.