

(Model.)

W. B. AITKEN.  
Brick-Machine.

No. 227,668.

Patented May 18, 1880.

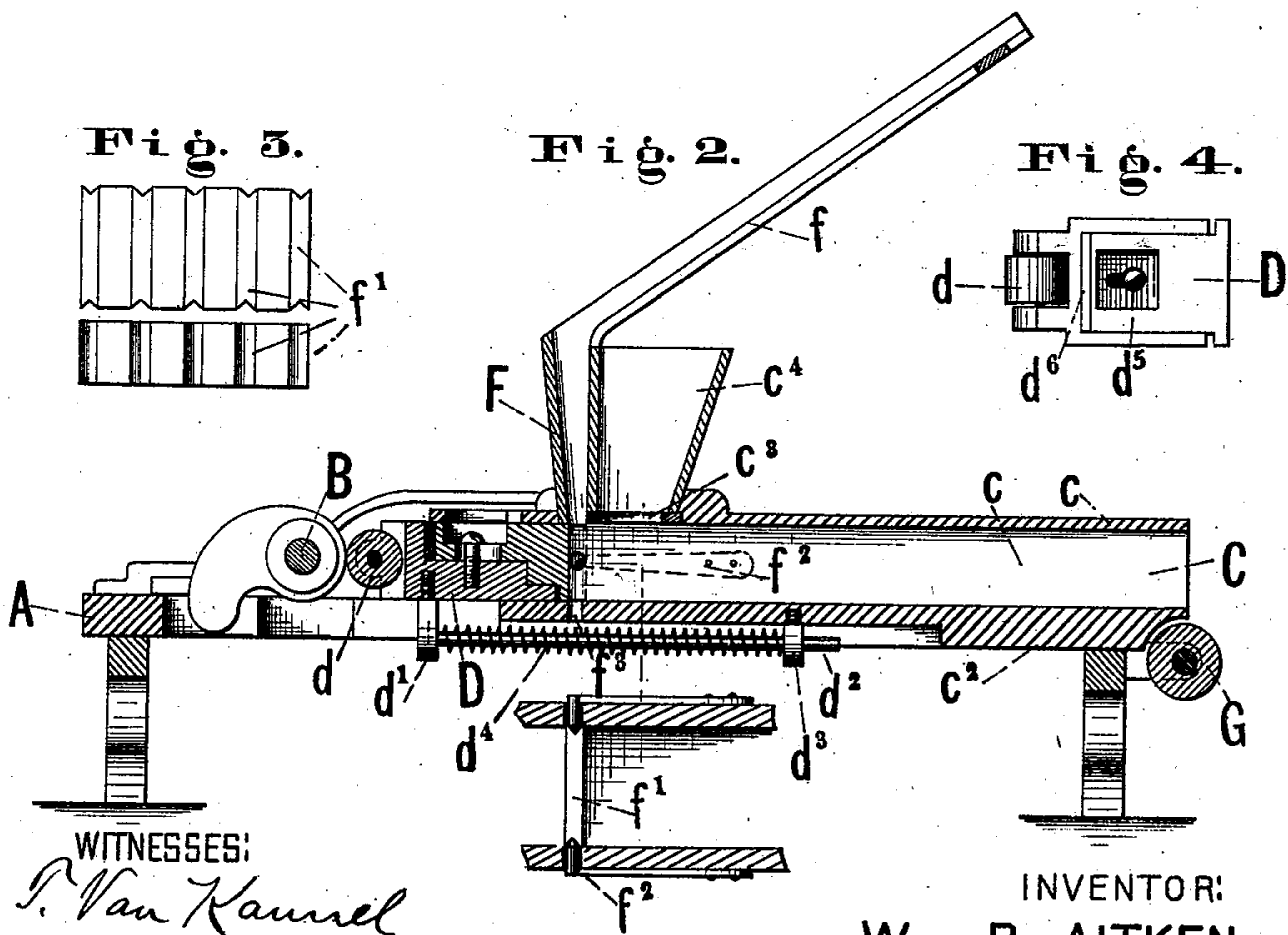
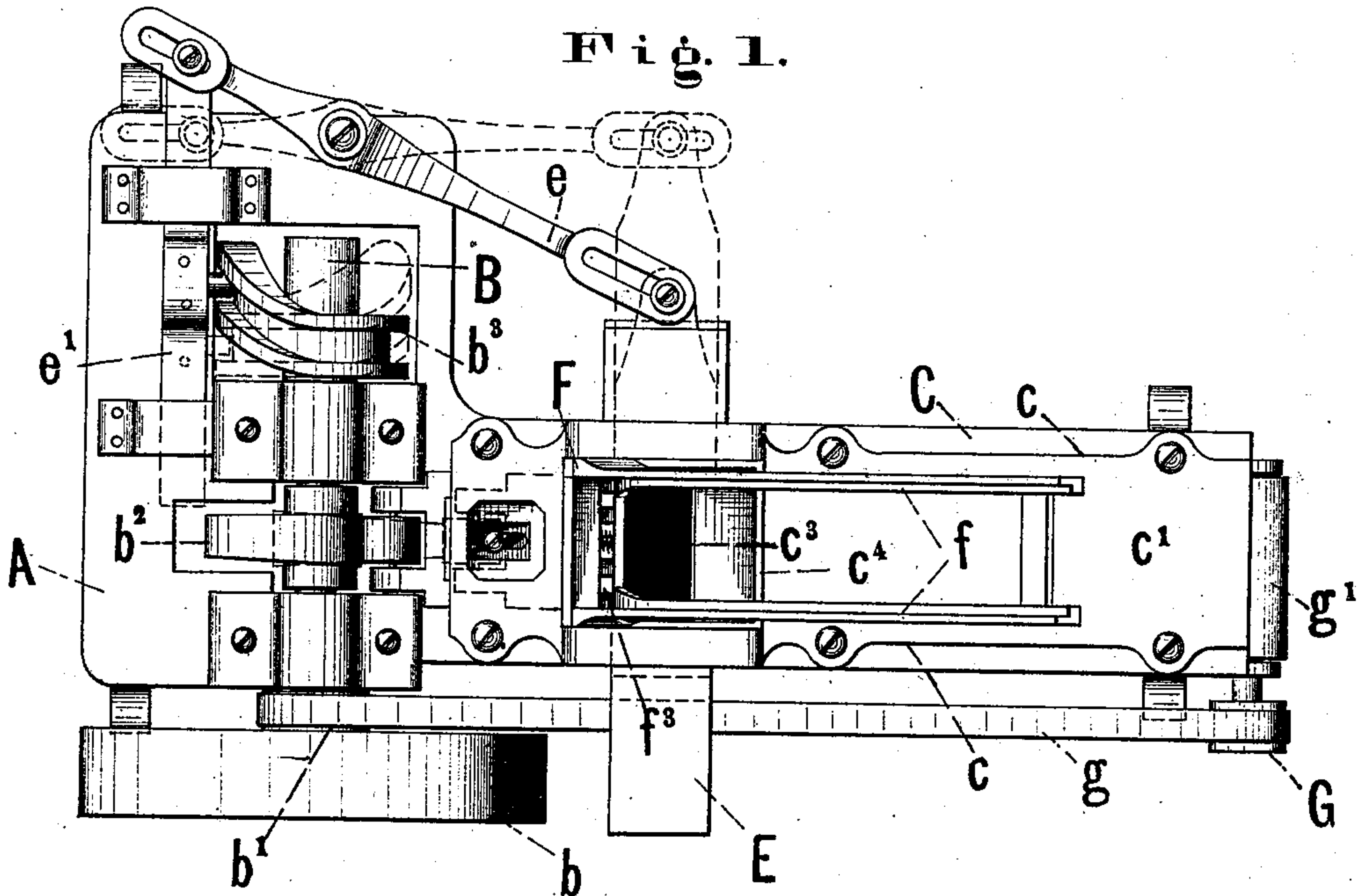


Fig. 3.

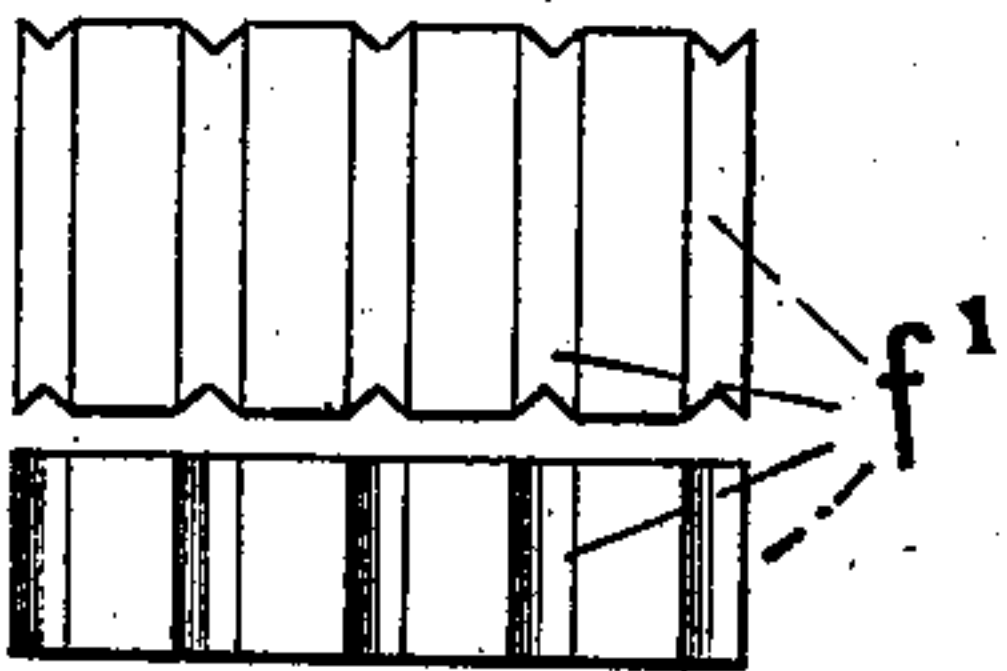
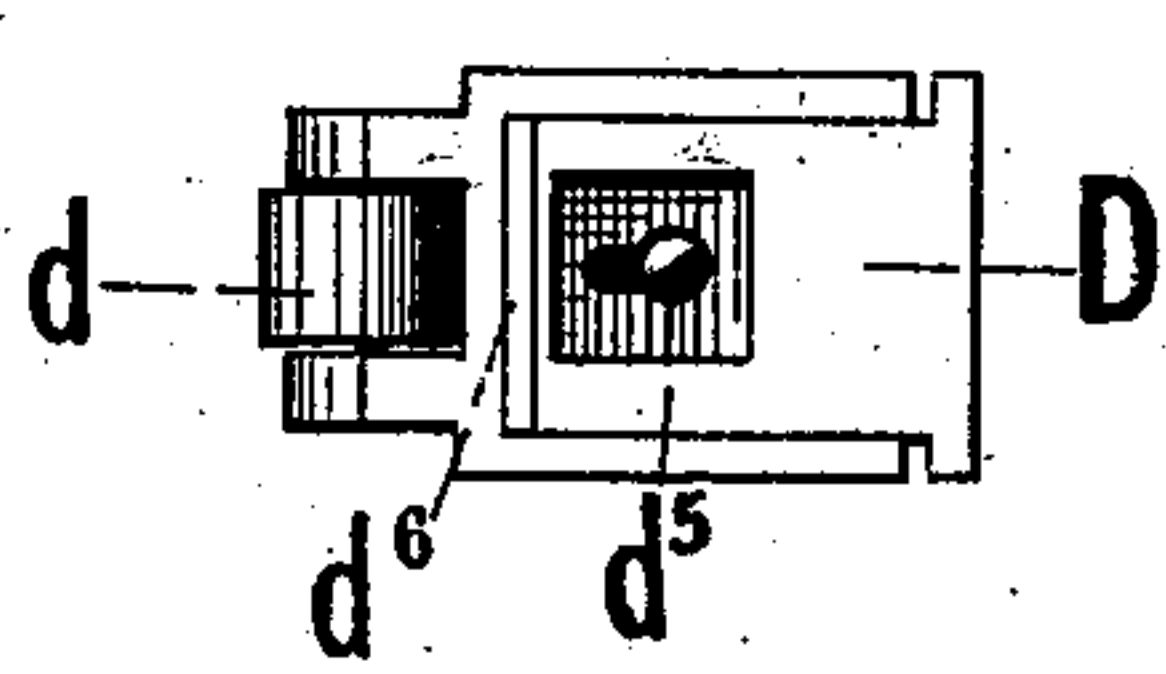


Fig. 4.



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## BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 227,668, dated May 18, 1880.

Application filed March 20, 1880. (Model.)

*To all whom it may concern:*

Be it known that I, WILLIAM B. AITKEN, of the city of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented new and useful Improvements in Brick-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention consists, mainly, in the combination of certain mechanism for delivering a clay charge to a molding-tube and mechanism for delivering a series of plates to the tube with mechanism for advancing the clay charges and plates in the tube.

It consists, further, in other combinations, and in certain details of construction, all of which will be fully described hereinafter.

In the drawings, Figure 1 represents a plan view of my improved machine; Fig. 2, a central vertical sectional elevation of the same, with a detail view of a portion of the tube, a separating-plate, and the springs which hold the latter in place; Fig. 3, a plan and end view of a series of clay charges or bricks and a series of alternating separating-plates as they come from the machine, and Fig. 4 a plan view of the plunger.

To enable others skilled in the art to use my machine, and to carry the same practically into effect, I will proceed to describe the same fully and the means employed in connection therewith.

My improved method consists, essentially, in passing the properly-prepared clay in a series of independent masses or charges through an extended tube. Each independent mass or charge is sufficient in quantity to form a single brick. The tube also through which the charge is pressed is extended far enough to furnish, by the friction of its bearing-surfaces, a sufficient resistance to the movement of the clay charges to insure the proper pressure of the latter by the mechanism which gives movement to them.

The means for carrying the method into effect will now be described.

A, Figs. 1 and 2, represents a frame-plate,

resting upon any suitable foundation, which serves to support the remaining parts of the machine.

B represents the main shaft, supported by proper bearing-blocks upon the frame-plate, which is provided with the large pulley *b*, or other proper means for receiving movement, the small pulley *b'*, the surface-cam *b<sup>2</sup>*, and the grooved cam *b<sup>3</sup>*, as shown.

C represents a rectangular tube, consisting of two side plates, *c c*, a top plate, *c'*, and a bottom plate, *c<sup>2</sup>*, which is an extension of the frame-plate A, as shown.

*c<sup>3</sup>* represents an opening in the top plate of the tube near one end, and *c<sup>4</sup>* a hopper located over the opening for the purpose of receiving the properly-prepared clay.

D, Figs. 2 and 4, represents a plunger snugly fitting the end of the tube, which is provided at one end with a friction-roller, *d*, and below with a stud, *d'*, having a rod, *d<sup>2</sup>*, which is supported at its rear end by a fixed stud, *d<sup>3</sup>*, as shown.

*d<sup>4</sup>* represents a spring encircling the rod, which is adapted to give the plunger its return movement after the same has been actuated by the cam, as will be hereinafter described. The body of the plunger is made in two parts, as shown in Figs. 2 and 4, one being adjustable upon the other, for the purpose of increasing and diminishing the effective length of the plunger, as may be desired.

*d<sup>5</sup>* represents a set-screw, by means of which the parts when adjusted may be held in any desired position.

*d<sup>6</sup>* represents a filling-block, one or more of which may be employed to fill the space between the adjacent faces of the parts of the plunger, to give a solid bearing.

E, Fig. 1, represents a plate or bar held in proper bearings upon the top plate, *c'*, of the tube, which is provided with a rectangular opening, as shown.

*e* represents a lever pivoted upon the frame-plate, the end of the long arm of which is attached, by means of a slotted connection, to the plate E, and the end of the short arm of which is attached, by means of a slotted connection, to the bar *e'*, held by proper bearings



on the frame-plate, which latter is provided with a pin extending into the groove of cam  $b^3$ , as shown.

F, Figs. 1 and 2, represents a vertical guide box or frame, of any proper construction, located on the front side of the hopper, which opens below into the tube, as shown.

$f$  represents an inclined plane leading to the guide-frame; but, if desired, an endless belt may be employed instead of this.

$f'$ , Figs. 2 and 3, represents one of a number of plates, each of which is adapted in form and size to snugly fit the tube. These plates are inserted in the tube by means of the guide-box F, as will be hereinafter described.

$f^2 f^2$  represent springs of any proper construction, the free ends of which are adapted to engage with the edges of the plate in the tube for the purpose of supporting the same in its proper position.

$f^3 f^3$  represent openings in the bottom of the tube, through which any clay conveyed therein by the plates may be readily discharged.

G represents a pulley, located at the rear end of the machine, which, by means of the endless belt  $g$ , receives movement from the pulley  $b'$ .

$g'$  represents a roller, receiving movement from the pulley G, which supports one end of the endless belt which conveys the brick from the machine.

The operation is substantially as follows: The hopper having been provided with properly-prepared clay and the guide-box with plates, the machine may be set in motion. When the machine is at rest the plunger should be in its rearward position, the lowermost separating-plate of the series in the guide-box resting in front of the same on the bottom of the tube, and the cut-off slide of the hopper being closed. The forward movement, then, of the plunger will advance the plate in the tube, the springs supporting the same readily yielding for this purpose, into proper position to form the front wall of the brick-mold. The rearward movement of the plunger, then, by the reaction of the spring, will permit the next separating-plate, which has been resting upon the same, to drop into the tube in front of it. The bar E, then, by its movement, will bring its rectangular opening inward into line with the hopper, and consequently a charge of the clay will be permitted to fall from the hopper into the tube. The sliding bar, then, being drawn outward again, to close the opening between the hopper and the tube, the plunger, by its forward movement, will advance the plate and clay charge toward the discharge end of the tube. The return movement, then, of the plunger occurring, another plate will be permitted to drop into the tube, and the bar being moved inward, another charge of clay will be permitted to fall into the tube. The bar being drawn outward

again, the advance of the plunger will force forward the new plate and clay charge, and also the plate and charge before it, to the discharge end of the tube. This operation continues indefinitely, a clay charge or mold and plate, after the tube has once been filled, being discharged at each impulse of the machine.

These molds and plates may be conveyed by the endless belt to any desired point. When the plates are separated from the mold they may be returned, by means of an endless belt, directly to the guide-box.

The amount of pressure given to the clay is determined by the length of the tube, a greater resistance to the movement of the same being afforded, of course, by a long tube than a short one.

Each new charge of clay, it will be understood, must receive, before movement can occur, a pressure greater than the resistance resulting from the friction of all the charges in the tube before it. From this it will be understood that by extending the tube any amount of pressure desired may be applied to the clay.

The plunger, it will be understood, receives its forward movement from the direct contact of the cam and its rearward movement from the reaction of the spring  $d^4$ . Between each movement of the plunger, also, it has a period of rest, during which time the clay charge is deposited in the tube.

The sliding plate E receives its reciprocating movement in both directions by the direct action of the grooved cam  $b^3$ .

The springs  $f^2$  serve to hold the plates strongly in place, and yet yield readily when the same are acted upon by the plunger.

Some of the advantages of the described construction are as follows: By the employment of the separating-plates in connection with the extended tube, the advantages resulting from the employment of direct pressure are obtained, while at the same time the machine is continuous in its operation. The construction of the machine is quite simple, and the same is not liable to get out of order. It can be manufactured at a comparatively low cost. The parts under strain may be readily replaced when worn and broken.

This machine may be used for any purpose for which it is adapted—as, for example, the pressing or re-pressing of brick or the molding of peat or other substances.

I am aware that the combination of a plunger with an extended tube for the purpose of pressing peat and finishing brick is not new; but,

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

1. The combination of the following elements: mechanism, substantially as described, for delivering a clay charge to a molding-tube,



mechanism, substantially as described, for automatically delivering a series of plates to the tube, and mechanism, substantially as described, for advancing the clay charges and  
5 plates in the tube.

2. The combination of the following elements: a hopper for containing the prepared clay, a cut-off slide for controlling the delivery of the contents of the hopper, a tube for molding the clay, mechanism for advancing the  
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clay, and a series of separating-plates, as described.

3. In combination with the plates, the springs, as and for the purpose set forth.

This specification signed and witnessed this 15  
19th day of March, 1880.

WM. B. AITKEN.

Witnesses:

V. L. WEST,  
LUCIUS M. CUTHBERT.