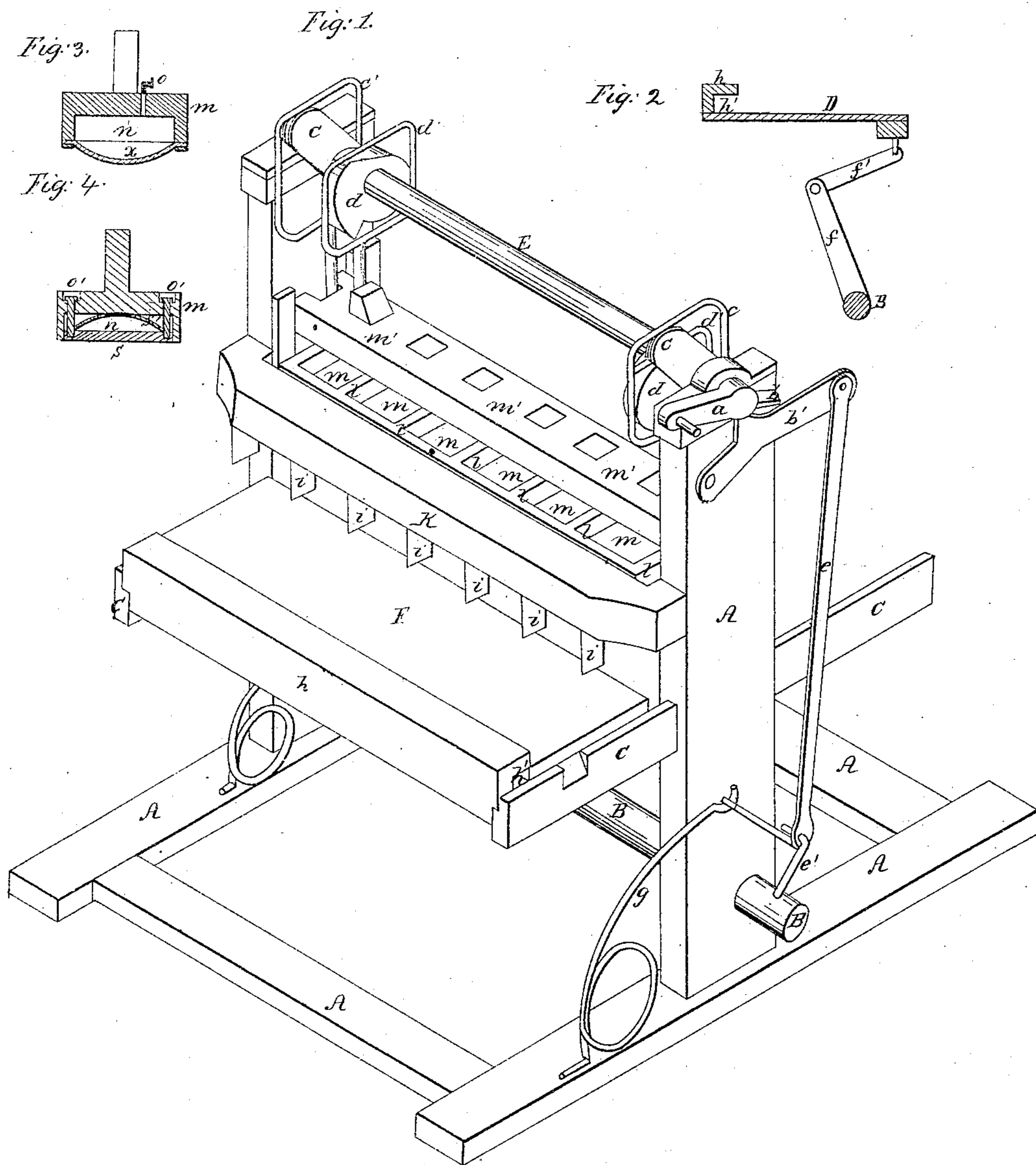


*L. B. Crittenden*

*Pressing Brick*

*N<sup>o</sup> 78,434.*

*Patented June 2, 1868*



*Witnesses;*  
*W. D. Lewis*  
*E. B. Cushing*

*Inventor;*  
*Lyman B. Crittenden*  
*by his attorneys*  
*Bakewell & Schuyler*

# United States Patent Office.

LYMAN B. CRITTENDEN, OF PITTSBURG, PENNSYLVANIA.

*Letters Patent No. 78,434, dated June 2, 1868.*

## IMPROVED PRESS FOR FINISHING BRICK.

*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, LYMAN B. CRITTENDEN, of Pittsburg, in the county of Allegheny, and State of Pennsylvania, have invented a new and useful Improvement in Press for Finishing Brick; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of my improvement.

Figure 2 shows, in section, in reduced size, the devices for securing the return stroke of the sliding frame; and

Figures 3 and 4 are sectional views, showing different modes of constructing my improved plungers.

Like letters of reference indicate like parts in each.

The nature of my invention consists in the construction and arrangement of a series or gang of pressing-boxes and plungers, for pressing and finishing brick, with suitable devices for operating them, and for feeding and discharging the brick previous to and after the pressure is applied; and also in the construction of an improved plunger, with which to press, finish, and shape brick in a pressing or finishing-machine.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and mode of operation.

To any suitable framework, A, I attach a rocking-shaft, B, cross-bars C, for a sliding frame, D, and a cam-shaft, E, to the last named of which the power requisite to operate the machine is communicated, in any ordinary way, through a hand-wheel or crank, *a*. In its revolution the cam-shaft E rotates a projecting tripper, *b*, and two sets of cams, *c* and *d*, the functions of each of which I will proceed to describe.

The tripper *b* engages a lever, *b'*, which, by the arm *e* and lever *e'*, is so connected with the rocking-shaft B, as to give to it a rocking motion, alternately forward and back. Its forward motion operates a lever, *f*, fig. 2, which, by a shaft, *f'*, is attached to or connected with the sliding frame D, which latter is consequently moved forward and back with the corresponding movements in the rocking-shaft B.

This sliding frame D, operating on the slides or cross-bars C, is designed for a feeder, and to that end carries one or more brick-trays, F, but usually two, discharging a tray of pressed or finished brick, and feeding in a tray of brick to be pressed, with each forward movement, and is carried back at its return stroke by a spring, *g*, connected with the rocking-shaft B, or by a weight.

These trays F may be of any desirable form or shape, and are designed merely as carriers for the brick, and to form the bottoms of the pressing-boxes, yet to be described.

When loaded with a number of brick, placed thereon in a row at short intervals, the number corresponding to the capacity of the machine, (which loading may be done by hand, or by mechanical devices properly constructed for that purpose,) the tray F is placed on the sliding frame D.

A cross-bar, properly grooved, as at *h'*, on its inner and under surface, is attached to the rear end of the sliding frame D. As the latter, being actuated in the manner above described, commences its forward stroke, the front edge of the cross-bar *h* passes over the rear edge of the loaded tray F, as shown in fig. 1, and, coming against the brick resting thereon, pushes them forward a sufficient distance to place them in a direct line with each other. The rear of the groove *h'* then engages the tray F and presses it forward. That the bricks on the tray may be not only in line with each other, but also at the desired distances from each other, so that each brick will come directly under its pressing-box and plunger, as hereinafter to be described, I pass the brick, as they move forward on the tray, between guides *i*, attached to a bar, *k*.

These guides *i* are wedge-shaped, with the blades of the wedges toward the brick, and their heads of a thickness equal to the distances at which the brick should be placed from each other, so as to be ready for the pressing-boxes.

The brick will then, after passing the guides *i*, be so arranged that they will come directly under the pressing-devices, yet to be described, when the forward motion of the sliding frame D ceases, and its return stroke begins.

leaving the tray F resting on bearers, not shown in the drawings, or otherwise secured from going back with the sliding frame D on its return stroke.

On the cam-shaft E are two sets of cams, *c* and *d*, working in cam-yokes, *c'* and *d'*, respectively, one set of yokes, *c'*, attached to and operating a framework, *l*, which constitutes the sides and ends of the pressing-boxes, (the trays F being the bottom.) In these boxes I operate the plungers *m*, which are attached by a cross-bar, *m'*, to the cam-yokes *d'*, and which perform the functions of presses, and at the same time constitute the tops of the boxes. The operation of the boxes *l* and plungers *m* is then simple.

The brick, resting on the platen or tray F, being brought directly under the plungers *m*, the cams *c* cause the boxes *l* to descend and enclose the brick. As soon as this is done, the cams *d* force the plungers *m* downward into the boxes a sufficient distance and with sufficient force to press the brick to any required degree of solidity. This done, the cams *c*, in completing their revolution, raise the boxes *l*, the plungers retaining their position, whereby the brick are discharged from the boxes. The cams *d* then raise the plungers *m*, and the platen or tray F, with the load of pressed brick, is pushed forward by the tray next following at the next forward stroke of the sliding frame D. It is then lifted off, and, either by a car or otherwise, conveyed to the kiln, where the brick are subjected to the usual treatment.

In order to produce brick of more uniform as well as of an improved shape I have devised an improved form of plunger, shown in figs. 3 and 4. This plunger consists of a block, *m*, of the usual form, hollowed out or chambered, as at *n*, on its under face, and the lower or open side of the chamber covered with a gasket, *x*, of India rubber, or other flexible or elastic material, as in fig. 3. The chamber *n* is, by an air-condenser, through the cock *o*, filled with compressed air, or other convenient cushioning-material, or, as in fig. 4, contains a spring, *s'*, by which the non-elastic sub-plunger *s* is forced outwards.

The screws *o'*, which carry the sub-plunger *s*, should work loosely in the main plunger *m*. The lower or outer face of the gasket *x*, or other covering of the chamber, should, when in use, protrude somewhat below the lower face of the plunger *m*, so that the upper face of the brick, when pressed, shall be slightly hollowed towards its centre. In this way I save material, and provide room inside the outer edge of the brick for the mortar necessarily used in building substantial and durable walls.

As another advantage resulting from the use of a cushioned chamber, fitted either with a gasket, *x*, or a sub-plunger *s*, I make brick of an almost perfectly uniform size, even when, as is invariably the case, the material contained in the different bricks varies somewhat in quantity.

If there is an excess of material, whatever is superfluous is pressed upward against the gasket *x* or sub-plunger *s* into the chamber *n*. If the material be deficient, the gasket *x* or sub-plunger *s* forces the material outward from the centre toward the edges of the brick, consequently the dimensions of the brick, measured along its edges, will always be uniform. Hence, they will be more convenient for use, will build more regularly into a wall, and produce a wall of more perfect joints, an even and more symmetrical face, without loss of strength, and with a saving of material.

By the mode of manufacturing described, I obtain a brick pressed while stationary, by a force moving at right angles to the resisting surface. I press either a very few or a considerable number of such brick at a single stroke. The manual labor required is but small, as the brick may be discharged directly on to the tray from the brick-machine proper, in which case no extra labor is needed, except to place the trays F on and remove them from the sliding frame D.

As already stated, I produce a brick of any required degree of solidity, more uniform in its dimensions than when made in the ordinary way, of a greatly improved shape for building into a wall, with a considerable saving of material, and no loss of strength. The brick should of course be in a plastic or semi-plastic state.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a machine for pressing brick, the construction and use, either singly or in gangs, of a plunger, *m*, chambered on its under face, and fitted with a sub-plunger, of any elastic or non-elastic material, such sub-plunger being supported by or resting against a spring or a cushion of condensed air, or other equivalent device, substantially as and for the purposes hereinbefore set forth.

2. The use of wedge-shaped guides *i*, in connection with a cross-bar, *h*, or its equivalent, for regulating the position of the bricks on each platen or tray F, so that they shall be fed directly under the pressing-devices, substantially as above set forth.

3. The boxes *l* and plungers *m*, with suitable devices for imparting to them the motions described, in combination with a feeding-device, consisting of a sliding frame, D, cross-bar *h*, and guides *i*, the whole being constructed and operated substantially in the manner and for the purposes hereinbefore set forth.

In testimony whereof, I, the said LYMAN B. CRITTENDEN, have hereunto set my hand.

LYMAN B. CRITTENDEN.

Witnesses:

A. S. NICHOLSON,  
GEORGE H. CHRISTY.