

E. W. Crittenden, Brick Machine.

N^o 70,969.

Patented Nov. 19, 1867.

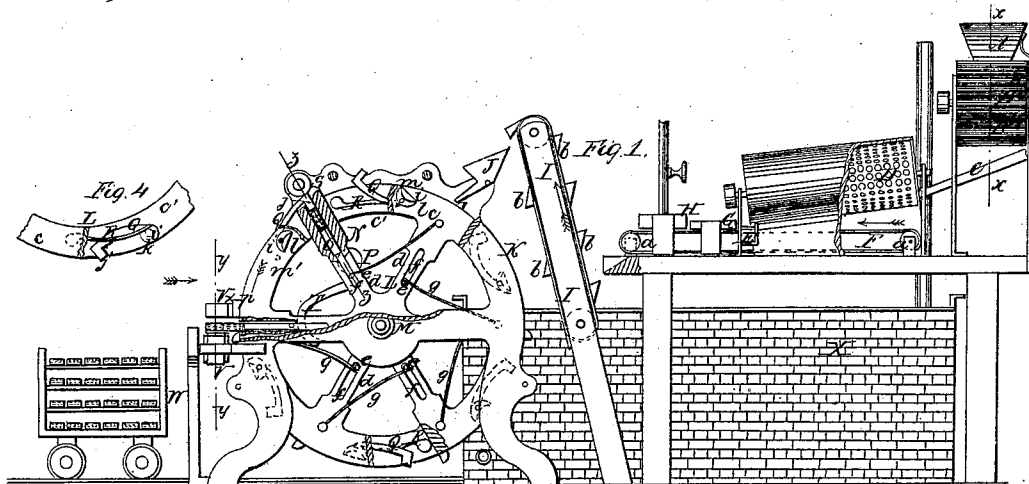


Fig. 5.

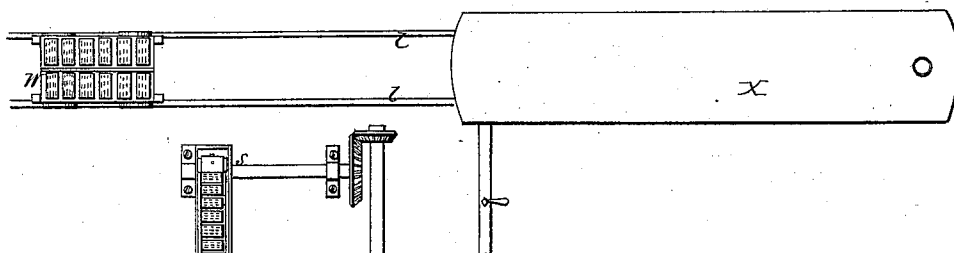


Fig. 6.

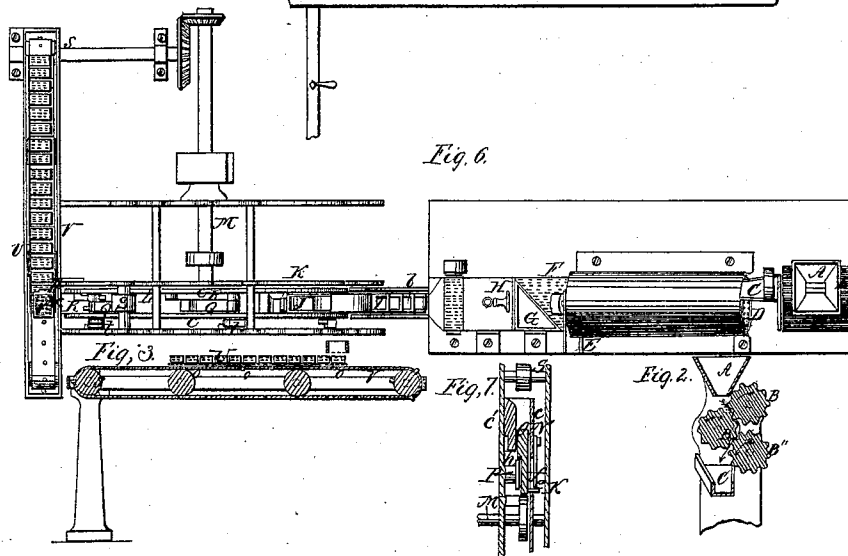


Fig. 3.

Fig. 7.

Fig. 2.

Witnesses,

*Shoemaker,
W. Brown*

Inventor

*E. W. Crittenden
By Munn & Co
Attorneys*

United States Patent Office.

E. W. CRITTENDEN, OF PITTSBURG, PENNSYLVANIA.

Letters Patent No. 70,969, dated November 19, 1867; antedated November 9, 1867.

IMPROVEMENT IN MANUFACTURING BRICKS.

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, E. W. CRITTENDEN, of Pittsburg, in the county of Allegheny, and State of Pennsylvania, have invented certain new and useful Improvements in Manufacturing Bricks; and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

This invention relates to certain new and useful improvements in manufacturing bricks, designed for operation on a large scale, and more especially with a view of dispensing with the hand labor and expensive manipulations hitherto required in the process of brick making.

The invention consists, first, in an improved means for crushing or pulverizing the clay, and bringing it to a proper plastic state to be moulded or compressed into bricks; second, in an improved means for moulding and compressing the clay into bricks. In the accompanying sheets of drawings—

Figure 1, Sheet No. 1, is a side view of my invention, showing a few parts in section.

Figure 2, a detached vertical section of the clay-pulverizing or crushing mechanism, taken in the line *x x*, fig. 1.

Figure 3, a section of a carrier pertaining to the same, taken in the line *y y*, fig. 1.

Figure 4, a detached view of a part pertaining to the moulding and pressing mechanism.

Figure 5, Sheet No. 2, a plan or top view of the drying-kiln and one of the cars thereof.

Figure 6, a plan or top view of the whole device; and

Figure 7 a section of the mould-wheel, taken in the line *z z*, fig. 1.

Similar letters of reference indicate corresponding parts.

A represents an elevated hopper, into which the clay is shovelled, and underneath this hopper there are placed three rollers, B B' B'', arranged as shown clearly in fig. 2, and operated by means of belting or gear from the driving-shaft. These rollers B B' B'' are all fluted longitudinally, so as to have corrugated surfaces, and they rotate in the direction indicated by the arrows in fig. 2, the clay passing down between them, as indicated by the red arrows, the crushed clay falling into a spout, C, which conducts it into a cylindrical rotary screen, D, which is slightly inclined, the pulverized clay passing through the screen, while gravel and coarse foreign substances are discharged from the depressed end of the screen, and pass off at one side through an inclined spout, E. The clay which passes through the screen D falls upon an endless apron, F, which works over rollers *a a*, and moves in the direction indicated by the arrow in fig. 1, and underneath an evener, G, which serves to spread the clay uniformly over the surface of the apron F, said evener having an oblique front, the foremost end of which is at the side of the apron where the clay falls in greatest quantity. The clay thus evenly spread upon the apron F, passes underneath a box, H, having a perforated bottom. Low-pressure steam is admitted into this box, and passes through the perforated bottom in jets upon the pulverized clay, moistening it and giving it a requisite consistency suitable for moulding and pressing. Into these perforations I desire to have fixed hollow points, three or more inches long, and from thirty to fifty in number, which penetrate the clay upon the apron, passing nearly to the bottom. As the apron moves forward it brings the clay in contact with these points, which act on the clay like a harrow or cultivator, stirring it up. At the same time the steam which is constantly escaping from their lower openings, warms and dampens the clay without converting it into mortar, and thus fits it for pressure.

The moistened clay, as it is discharged from the apron F, falls into the buckets *b* of an ordinary elevator, I, each bucket *b* being of sufficient capacity to hold as much clay as is required for making a brick. The buckets *b* discharge their clay into a hopper, J, placed on the upper part of a framing, K, which contains the moulding and pressing mechanism. This moulding and pressing mechanism consists of the following parts: L is a wheel, firmly keyed on a horizontal shaft, M, and composed of two rims, *c c'*, between which the moulds N are placed, the rim *c* being provided with arms *d*, connected to a hub which is keyed on the shaft M. The moulds N have a radial position in the wheel L, as shown clearly in fig. 1, and in each mould there is fitted a plunger, O, and

these plungers have pins *e* projecting from them, which pass through slots *f* in the arms *d*, and have springs *g* bearing upon them, which have a tendency to keep the plungers at the inner ends of the moulds, as will be fully understood by referring to fig. 1. Each plunger *O* is formed with a shoulder, *h*, below or at the inner ends of the moulds *N*, to admit of a fixed wheel, *P*, in the framing *K*, acting against the plungers, serving as a stop for the same, and also, with the rotation of wheel *L*, giving a slight movement outward to the plungers, the wheel *P* being placed in such a position relatively with the shoulders *h* to effect that result. Between the rims *c c'* of the wheel *L* there are secured, by pivots *i*, arms *Q*, the outer or free or disengaged ends of which have lips or projections *j*, to fit into the outer ends of the moulds *N*. The arms *Q* are provided at one side with a hub, *k*, having a flat surface for springs *R* to bear against, and hold them in the position shown in fig. 4, and the pivots or shafts *i* of the arms have on one end of them a cam, *l*, of segment form, shown clearly in fig. 1, and these cams, as the wheel *L* rotates, come in contact with pins *m m'* in the framing *K*, the pins *m* throwing the arms *Q* over towards the outer ends or orifices of the moulds *N*, so that the lips or projections *j* will enter the same, (see fig. 1,) the pins in throwing the arms back in a contrary direction, so that the lips *j* will be out from the moulds, as shown in dotted lines in fig. 1. The pins *m* throw the lips or projections *j* into the moulds just previous to the shoulders *h* of the plungers *O* coming in contact with wheel *P*, and just as the shoulders *h* come in contact with the wheel *P*, the arms *Q* pass under a roller, *s*, in the framing *K*, and the clay in the moulds *N* is thereby compressed in consequence of the lips or projections *j* of the arms *Q* being forced into the moulds to their fullest extent, and the plungers *O* forced slightly outward in consequence of the shoulders *h* coming in contact with the wheel *P*.

If necessary or desired, the wheel *P* may have motion given it by means of gearing or other mechanism in order to exert an additional pressure upon the clay in the mould. As the arms *Q* pass from underneath the roller *s*, they are thrown outward, so that their lips or projections *j* will be out from the moulds, and are held in position by the springs *R*, previously alluded to, and the shoulders *h* of the plungers *O* then come in contact with a fixed cam, *T*, which force the compressed clay out from the moulds upon plates *U*, placed on an endless carrier, *V*. This carrier *V* may be of thin sheet metal or other suitable strong flexible material, perforated with holes, at suitable distances apart, to receive pins *o* at the under sides of the plates *U*. By this means the plates *U* are held on the carrier. The pressed clay or unburnt bricks are sanded from a box, *V*, which is attached to an arm, *p*, the latter projecting from the framing *K*. The plates *U* are designed to receive each a plurality of bricks, the plate being placed on the carrier *V*, over the roller *r*, near the wheel *L*, and taken off from the carrier over the roller *s* at the opposite extremity of the same.

It will be seen from the above description that it is essential that the elevator *I*, mould-wheel *L*, and carrier *V* have arbitrary movements, for a bucket, *b*, must be ready to fill the moulds *N* as they pass up in range with the hopper *J*, and the carrier *V* must move with such a speed as to allow the bricks to be discharged upon the plates *U* side by side.

I would remark that this invention is applicable to the manufacture of peat, and for moulding and pressing clay for the manufacture of tiles and other articles.

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

1. The fluted or corrugated rollers *B B' B''*, a rotary screen, *D*, and endless carrier or apron *F*, arranged substantially as and for the purpose set forth.
2. The tempering or moistening of the pulverized clay by jets of low-pressure steam from a steam-box, *H*, substantially as shown and described.
3. The evener *G*, the rotary screen *D*, and endless carrier or apron *F*, arranged substantially as and for the purpose specified.
4. The moulds *N* in the wheel *L*, in combination with the plungers *O* and the arms *Q*, operated in the manner substantially as herein shown and described.
5. The elevator *I* and endless carrier *V*, when used in combination with a rotary mould-wheel, substantially as and for the purpose specified.

E. W. CRITTENDEN.

Witnesses:

A. S. NICHOLSON,
GEORGE ALLEN.