F. M. MATTICE.

TILE MACHINE.

No. 20,286. Patented May 18, 1858.

Fig 2

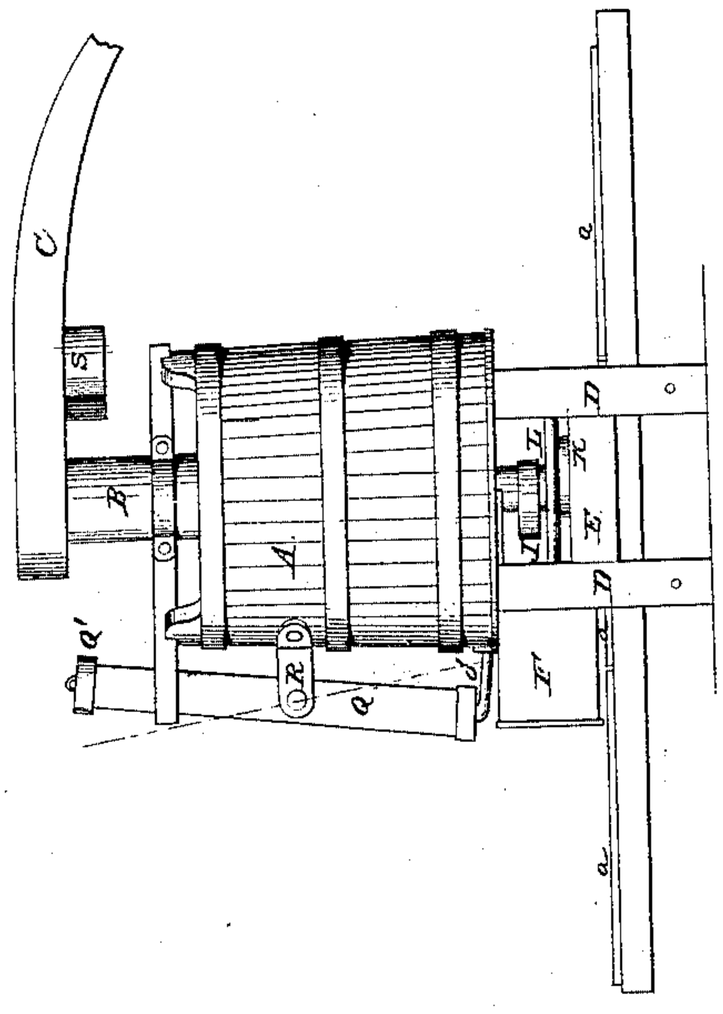


Fig. 6.

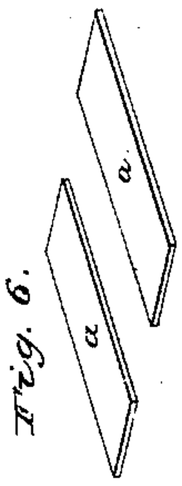


Fig. 4.

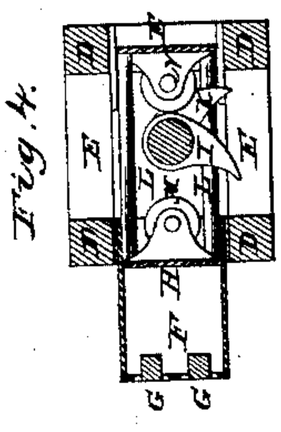


Fig. 3.

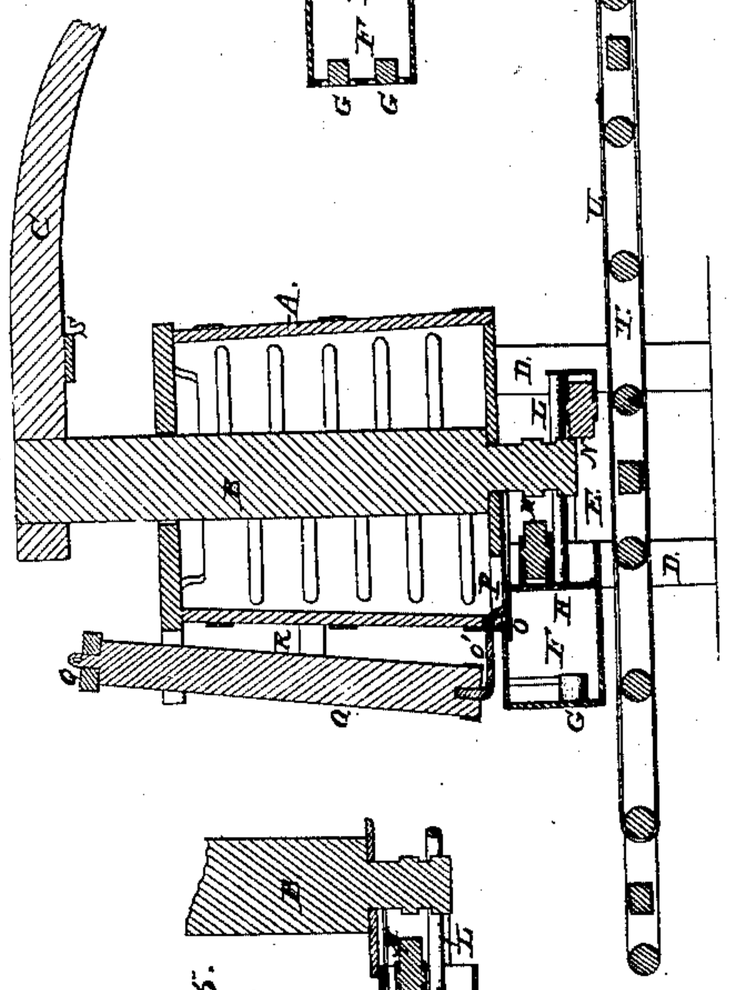


Fig. 7.

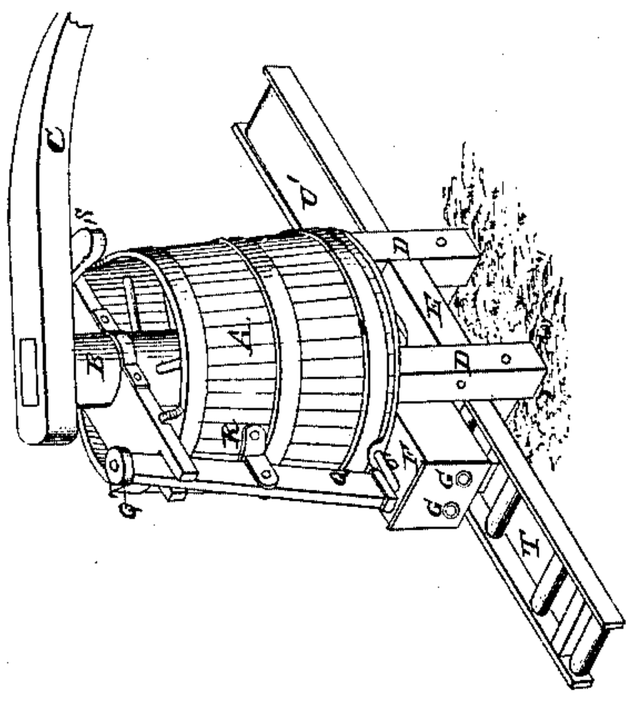
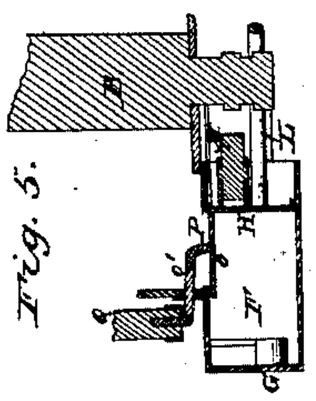


Fig. 5.



UNITED STATES PATENT OFFICE.

F. M. MATTICE, OF BUFFALO, NEW YORK.

TILE-MACHINE.

Specification forming part of Letters Patent No. 20,286, dated May 18, 1858; Reissued February 22, 1870, No. 3,851.

To all whom it may concern:

Be it known that I, F. M. MATTICE, of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Machinery for Manufacturing Drain and other Kinds of Tile; and I do hereby declare the following to be a full and complete description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a tile machine; Fig. 2, a side elevation; Fig. 3, a vertical section, and Figs. 4, 5, and 6, sectional views.

Like letters refer to like parts in the different views.

The nature of my invention consists in such a construction of the machine, and the arrangement of its several parts, that it may be self operating, that is, that when it is properly supplied with moistened clay, and put in motion by horse or other power, (horse power is generally used) that the clay may be wrought into mortar of the proper consistence, and formed into tile, delivered upon a handling board, and ready to be set away to dry, previous to placing in the kiln for burning.

The pug mill is constructed in the usual form of those for mixing clay for mud brick. It consists of a tub or mill A, in the center of which is a vertical shaft B, supported at the top and bottom of the tub or mill, and armed with pins for the purpose of mixing the mortar. The shaft is propelled by a sweep or draw beam C, Figs. 1, 2, and 3, which is placed upon the top of the shaft B. The mill is supported by the frame D, E, which consists of four short posts and girths, the bottom of the mill A, being secured to the top of the posts D.

A forming or mortar chest or box F, seen in Figs. 1, 2, 3, and 4, is attached to the underside of the mill A, at one side, as seen in the several figures. That portion of the chest F, that is under the mill A, opens into the mill, from which it directly receives the mortar. The outer end of the chest or box F, is provided with openings G, having an external form and diameter corresponding to the size and form of the tile, and having also a core, which forms the bore of the tile. This part is constructed in the usual form.

A plunger H, Figs. 3, and 4, works inside of the box F, the interior of which it accurately fits. This plunger is worked by cams I, and K, placed upon the lower end of the shaft B. The plunger is supported and guided by two rods L, L, which pass along upon the inside of the frame D, E. For the purpose of avoiding friction, in the movement of the cams, in operating the plunger, I introduce friction wheels M, N, Figs. 3 and 4. In drawing the plunger forward, for the purpose of pressing the clay through the orifices G, G, the cam I, acts upon the friction wheel M. After the stroke of the plunger, has been made, it is returned by the action of the cam K, upon the friction wheel N. The cams I, K, are so placed upon the shaft B, that as soon as the forward stroke of the plunger has been completed, the cam K, acts upon the friction wheel N, and returns the plunger, that is, draws it out from the box F, so that the shaft B, may perform nearly three fourths of a revolution, for the purpose of again filling the box F, with mortar, before the cam I, begins to act upon the cam M. Then the action of this cam is sudden, and it is immediately driven forward, so that the plunger is at rest for about three fourths of the time the machine is at work, and this interval is sufficient to allow the box F, to become filled from the mill A.

For the purpose of preventing the mortar from shoving back into the mill at A, when the plunger K is moved outward by the cam I, acting upon the roller M, I introduce a cut off valve O, Figs. 3 and 5, which at certain intervals, namely, just before the plunger begins to make its stroke, closes the openings Fig. 5, and cuts off the communication between the mortar in the mill A, and the chest F, so that the mortar in the chest is confined therein, having no place of escape, except through the orifices G, G. The movement of the cut-off, is effected by the upright lever Q, the fulcrum of which, is attached to the side of the mill A, as seen at R, Figs. 1 and 2, the lower end of the lever Q being attached to the valve O, by means of the connecting rod O′. This lever has a friction wheel Q′, upon the upper end, and is operated by a cam S, attached to the under side of the draw-beam C. The cams I, and K, are so placed in relation to the cam S, that when the beam C, sweeps around, and brings the cam S, into contact with the friction roller Q′ upon the upper end of the lever Q, it causes the bottom of

this lever to move inward, and closes the opening P, Fig. 5. The moment the opening P, is closed, the cam I, begins to act upon the wheel M, and thus upon the plunger H, driving the plunger forward and forcing the mortar through the orifices G, G. The connecting rod O′ passes through an opening in the bottom of the mill. The cut off valve O, is driven along by and with the plunger H, where it remains at rest, and for a time leaving the opening P, unobstructed, until the sweep C, has performed another revolution and brought the cam S into contact with the wheel Q′. The moment the cam I, leaves the wheel M, the cam K begins to act upon the wheel N, and drives the plunger back to its first position, leaving the passage P, into the chest, open, as above specified.

The tile, as they are formed, by the passage of the mortar through the orifices G, G, are delivered upon a handling board, *a*, Fig. 6, which boards are passed under the center of the machine upon a system of rollers T, and endless apron U. This apron is carried forward by the force of the tile as they protrude upon the boards *a*, from the orifices G, G, being formed in one continuous piece, and cut into proper lengths by means of a series of wires stretched upon a frame.

Each board is of suitable length for two or more lengths of tile, and as fast as the boards are filled, they are removed to a rack to dry the tile, and empty boards are placed upon the apron at U′ Fig. 1, from whence they are drawn under the machine by the movement of the apron U, as specified, viz., by the action of the forming tile, while passing through the openings G, G.

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

The cut off valve O, the lever Q, cam S, plunger H, chest F, and cams I, and K, when arranged, and operating in conjunction, for the purpose of opening and closing the passage P, while filling the chest, and discharging the contents of the same by the openings G, G, in the manner and for the purpose specified.

F. M. MATTICE.

Witnesses:
I. Brainerd,
S. H. Mather.

[First printed 1911.]