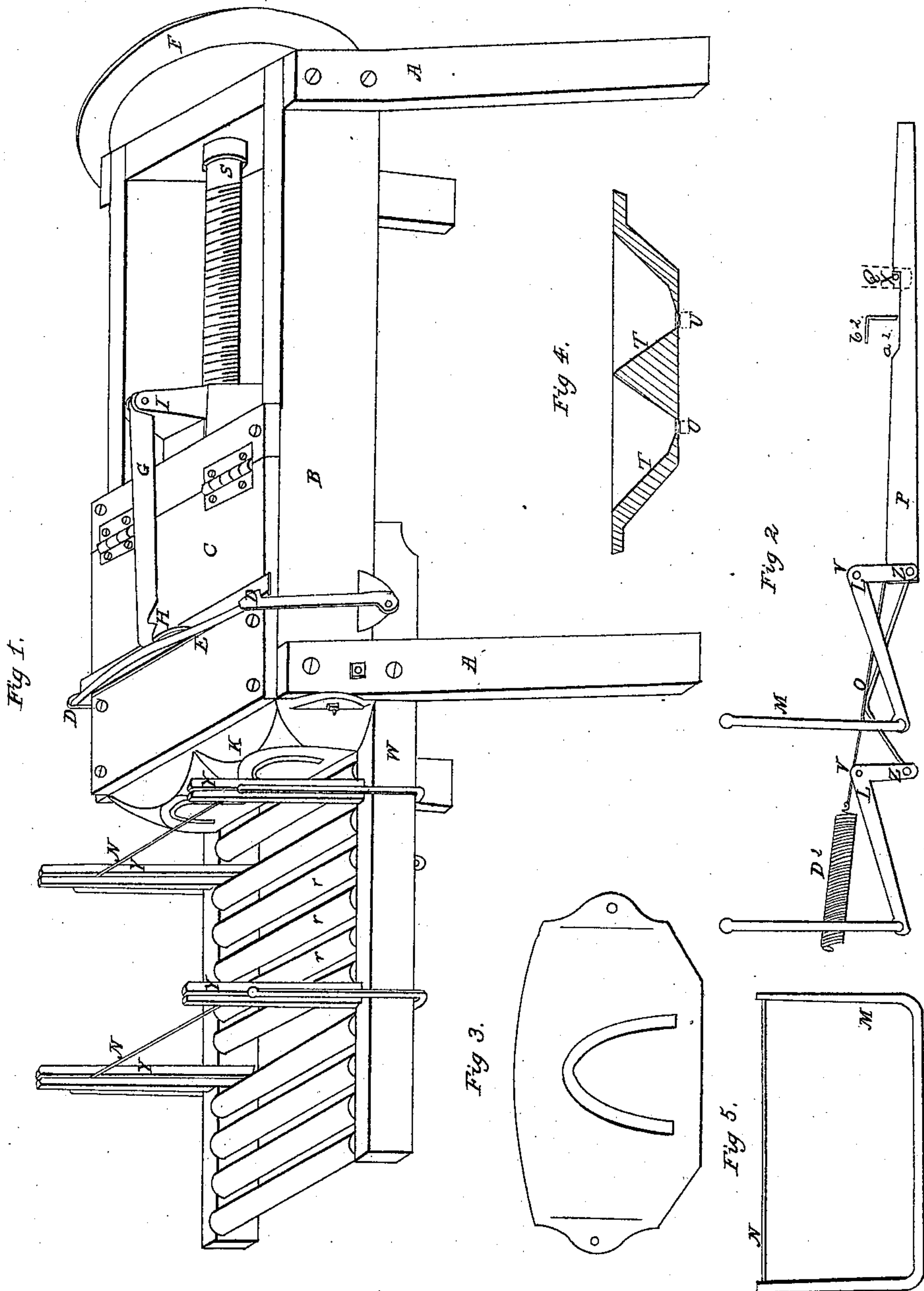


*J. Daines,
Tile Machine.*

No 24,379,

Patented June 14, 1859.



Witnesses;
Albert Croft
May Wells Croft

Inventor;
John Daines

UNITED STATES PATENT OFFICE.

JOHN DAINES, OF BIRMINGHAM, MICHIGAN.

DRAIN-TILE MACHINE.

Specification of Letters Patent No. 24,379, dated June 14, 1859.

To all whom it may concern:

Be it known that I, JOHN DAINES, of Birmingham, in the county of Oakland and State of Michigan, have invented a new and useful Machine called a "Drain-Tile Machine," for the purpose of making drain-tile from clay; and I hereby declare the following to be a full and clear description thereof, reference being had to the drawings herewith presented, which drawings constitute a part of said description, viz:

Figure 1 is an isometrical view of the whole machine. Fig. 2 is a vertical section of the parts connected with the cutting wires for cutting off the tiles.

A, A, are the standing posts or frame.

B, is the box or chamber in which the clay is placed and subjected to the pressure of a plunger or follower which is moved by the screw S.

C, is the lid or cover of the box. This is secured down by two hooks D, D. These are fastened on each end of a bar or shaft which lies across the under side of the box. This shaft is allowed to roll a little on its journal, and these hooks are connected together at top by a small bar E, (shaded red to distinguish it from adjacent parts). At Fig. 1 is seen a knob I, projecting upward from the nut which moves along the screw.

G is a hooked bar or latch jointed to the nut I, and extends over the cover C. This cover is furnished with a staple H. It may be seen that the latch G coming forward (with the piston) pushes against the bar E, while it rests down upon the staple H. Now the latch pushes off both catches, and then drops on to the staple, and as the piston begins to recede it pulls open the cover ready for another charge of clay.

K, is the die through which the clay is forced, and by which the tile is formed.

At *r, r*, is a series of apron rolls on which the tile rests as it passes out through the die.

N, is a tight wire which being forced downward in the guide slits, Y and Y, cuts off the tile. This wire is also arranged to work automatically, see Fig. 2, which is a side view of two pair of crooked levers L and L. The levers are fastened on each end of a shaft which lies across under the apron frame and consequently only one lever of each pair is visible, and only the end of the bar as we look at the side of the lever (at Z.). Now at the longest end of these levers

may be seen the wire-frame M (colored red for distinction). This lever has its fulcrum at V, and supports the frame M, of the cutting wires. Their fulcrum is secured to the inner side of the rail W, of the frame.

Fig. 5 shows a front view of the cutting wire N, and its frame M.

Similar letters denote similar parts in each figure.

The bar P, at Fig. 2 extends along under the box, and is attached by its left hand end to the connecting bar of lever L. A portion of the knob Q is represented by dotted lines projecting downward from the nut of the screw (not seen in Fig. 1). This knob has a pin X, seen only endwise; this bar P has its fulcrum on the bars of the levers L and slides in a slot at X and is pressed upward against the pin X, by a small spring. This bar P is so adjusted that when the piston is forced quite down the notch of P catches the pin X, and when the pin recedes the bar P is drawn along, and with it the foot of the lever L and the cutting wire is consequently depressed, and cuts off the tile. Now the bar advances far enough to bring the inclined plane a^{2d} against the bracket b^{2d} and throws the catch off from the pin X and the levers fly up by the spring D^2 which lies under the apron frame, and is attached to the bar P. So the wire frames are brought up in place.

O, is a plate of metal connecting the two bars and bent up in the middle in order to clear the frame M, so that both pair of levers operate simultaneously.

Fig. 3 is a front view of one of the dies.

Fig. 4 is a section of the same showing the inner surface T of the passage through which the clay is pressed in forming the tile; by giving the inner surface this tapering form and extending it upward we are enabled to use a die that will make a tile much bigger up and down than the height of the box in clear; thus we make tiles of any desired dimensions by using different dies adapted to the same press. This tapering of the aperture through the die not only enables the machine to be worked by the least possible power, but the clay being gradually compressed is more consolidated and makes a firmer and better article than can be made by forming the clay through the abrupt passage of a flat die in the usual way.

This machine may be constructed of wood

or metal but for strength and durability I prefer iron, and we may use two or more cutting wires according to the number of tiles to be made at each charge of clay.

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

1. The bar G and hooks D in combination with the cross bar E when used for the purpose of opening the lid C, automatically
10 as above described.

2. I claim the bar P, combined with the frames M in the manner aforementioned with the levers L for cutting off the tile by the returning of the plunger.

In testimony whereof I hereto subscribe in 15 presence of two witnesses.

JOHN DAINES.

Witnesses:

ELBERT CROFOOT,
MARY WELLS CROFOOT.