2 Sheets--Sheet 1.

C. H. WILLIAMS & W. W. ALLPORT.

Brick-Machine.

No. 164,243. Patented June 8, 1875.

Fig. 1.

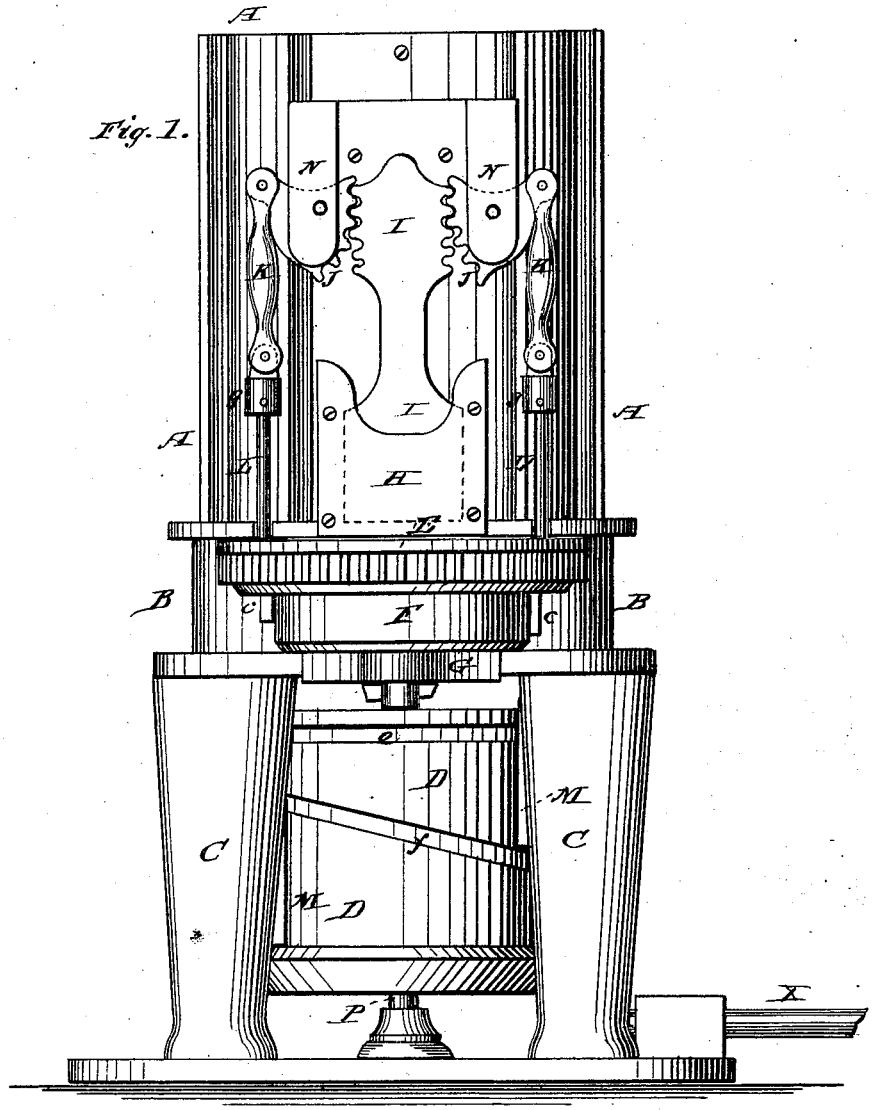
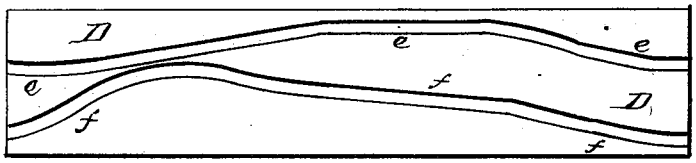


Fig. 2.



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2 Sheets--Sheet 2.

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Fig. 3.

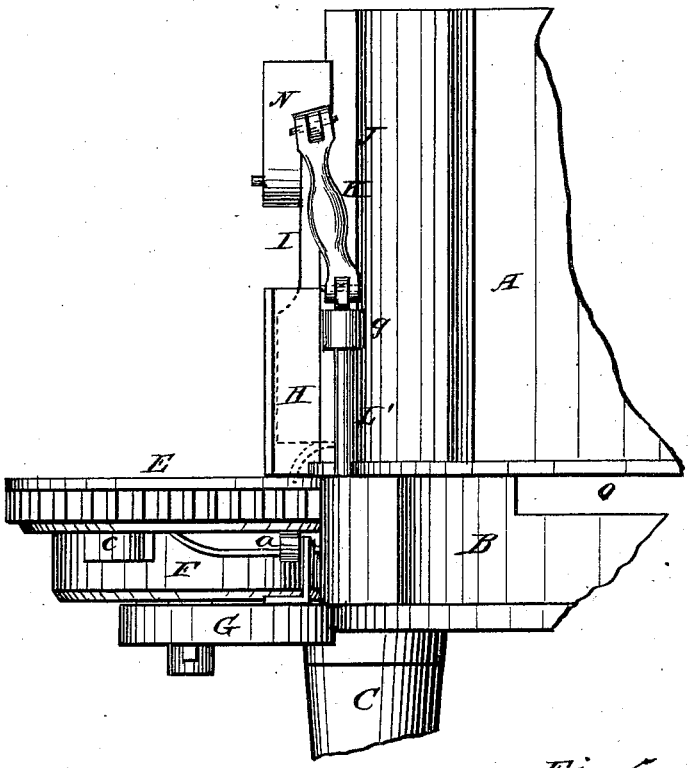

Fig. 5.

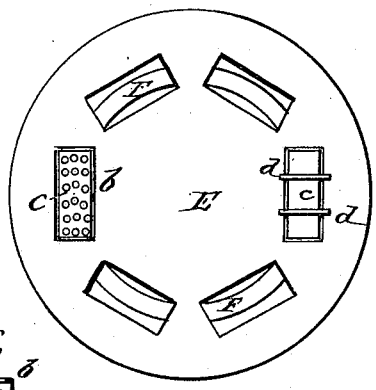

Fig. 4.

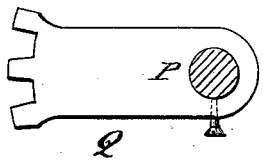

Fig. 6.

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UNITED STATES PATENT OFFICE.

CARMI H. WILLIAMS AND WALTER W. ALLPORT, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. **164,243**, dated June 8, 1875; application filed May 7, 1875.

To all whom it may concern:

Be it known that we, CARMI H. WILLIAMS and WALTER W. ALLPORT, of the city of Chicago, county of Cook and State of Illinois, have invented new and useful Improvements in Brick-Machines, of which the following is full description, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation; Fig. 2, a flat view of the cam cylinder surface; Fig. 3, a side elevation, with a portion broken away; Figs. 4, 5, and 6, details.

The object of this invention is to improve the construction and operation of brick-machines; and its nature consists in an improved mode of operating the plunger or plungers, and in certain improvements in the mold-followers, and arrangement for moving the molds, as hereinafter more fully described.

In the drawings, A represents any suitable or ordinary pug-mill; B, the secondary frame, in which the followers are placed and operate; C, the base or supporting frame; D, the main or cam cylinder; E, the revolving mold or former; F, the cylinder beneath the mold for operating the followers; G, the bracket or bearing for the mold; H, the casing in which the plunger is operated; I, the plunger; J, the tooth or cog-arms for operating the plunger; K, the coupling-arms; L L′, the shafts or rods connected with the coupling-rods, and by means of which the plunger is operated; M, the casing or guide-bars for keeping the rods L L′ in position; N, the brackets or frame to which the arms J are pivoted; O, the opening or openings in the secondary frame B, into which the mold enters; P, the main shaft; Q, the toothed arm for rotating the molds; *a*, the roller or rollers for supporting the inner edge of the mold; *b*, the follower; *c*, the arms of the follower; *d*, the knives or cutters in the mold; *e f*, the cam grooves in the cylinder D; *g*, the coupling-nuts.

The pug-mill A is made in any of the well-known suitable forms, and is provided with the usual blades, and at the bottom with a curved plate or wiper, arranged to press the clay through a suitable opening out under the plunger. The main shaft P of the pug-mill passes through the frame B and the base-frame, and is supported on a suitable step or bearing beneath in the frame B. The arm Q is attached to the shaft P on a line with the gear or teeth on the mold or former E, and is arranged to engage with the teeth on the mold when the plunger is elevated or partly elevated, and has sufficient teeth to carry the former one step, and bring a fresh mold under the plunger.

In machines of large capacity the same mold or former E is attached to each of the four sides of the machine, and they are all rotated by the single arm Q.

In order to support the mold E under heavy pressure, the inner edge is supported upon two adjustable anti-friction rollers, *a*. These rollers are placed on each side of the plunger, and are made adjustable by slotting the bearing-blocks, so that they can be raised or lowered and fastened in position, or by a screw working from beneath, so that as the parts become worn they can be readjusted, and hold the mold up against the plunger-case H.

The plunger is operated by toothed cams or levers J, the teeth of which engage with corresponding teeth on the upper end of the plunger I, as shown, and the teeth on the plunger are crowned over to correspond with the circle of the movement of the cams J, so that when the greatest pressure is needed the cams are acting with the greatest leverage.

The levers J at their outer ends are connected with and operated by coupling-arms K, which, at their lower ends, are attached to sliding rods L L′ by right and left hand coupling-nuts *g*, so as to adjust them to proper lengths or positions. These rods L are arranged to operate in unison, the rod L being operated by a pin and roller in the cam-groove *f*, and supported in position by the guide-frame M, and the rod L′ is operated by a pin and roller projecting into the cam-groove *e*, and is held in position by a similar guide-frame, M, which is made shorter than the guide-frame of the rod L. These grooves *e* and *f* are so arranged as to work in unison on each of the four sides of the machine, and also to operate alternately, so as to equalize the strain on the machine.

The followers are arranged to lift the brick to the top of the mold by means of arms *c*, projecting through the former E, which arms are

provided with a pin operated by a flange on the circular plate F in the usual manner, and for making brick they may be made plain and solid at the top, if desired, but for pressing peat, or other material containing surplus water, they are provided with perforated caps *b*, which are supported on the follower by a central ridge, as shown at Fig. 6, with as many cross-ridges as may be necessary to give a firm support. The cutting away of the follower beneath the plate permits the water to flow down through the plate and down at the sides of the follower, which may be provided with grooves at the sides to facilitate the further discharge of the water, if desired.

This device will be found useful in pressing peat, and when used as a peat-machine a part or all of the molds are or may be provided with cross-knives *d*, which, as the material is pressed in, will divide it into smaller bricks or sections, which will obviate the necessity of breaking the blocks for use as fuel. When these knives are inserted grooves will be made in the follower so as to lift the sections without disturbing the knives.

The base-frame C may be made in any suitable manner, and power may be applied to the machine by means of the shaft X, provided with suitable gearing to engage with the gearing on the cylinder D, as shown, or by any other suitable means.

In the operation of the machine considerable more clay passes under the plunger than is required to form a brick. Curved or inclined holes are made in the lower end of the plunger, so as to pass the surplus material back into the pug-mill. This disposition of the surplus material causes a movement through the clay, which effectually expels the air, and forms a perfect brick with less pressure than would otherwise be required.

What we claim as new is as follows:

1. The plunger I, provided with the toothed rack at the top, and toothed levers J J, in combination with jointed shafts L L′, and follower E, with arms *c*, substantially as and for the purpose set forth.

2. The combination of the shafts L L′, coupling-arms K, and toothed levers J, with the plunger I, substantially as and for the purposes specified.

3. The main cylinder D, having cam-grooves *e* and *f*, and shafts L L′, in combination with the follower E, coupling-arms K, toothed arms J, and plunger I, all as and for the purpose described.

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Witnesses:
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