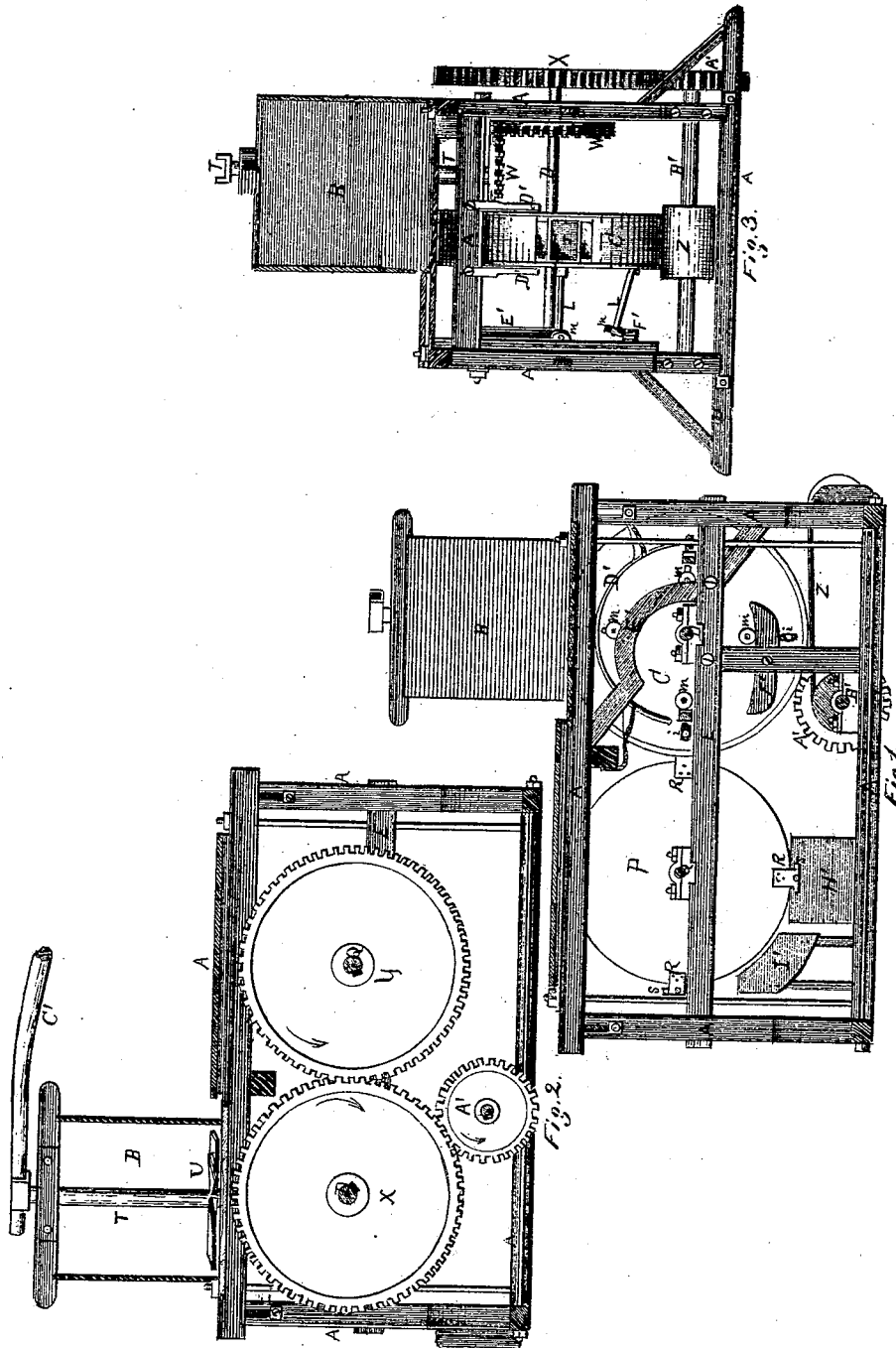


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Brick Machine.

No. 108864.

Patented Nov. 1. 1870.



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M. D. Williams, 2. Sheets, Sheet 2.

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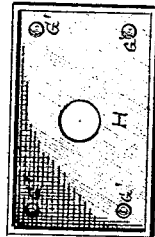


Fig. 6.

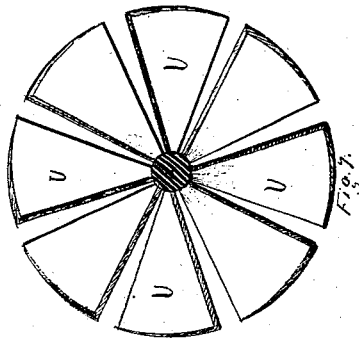


Fig. 7.

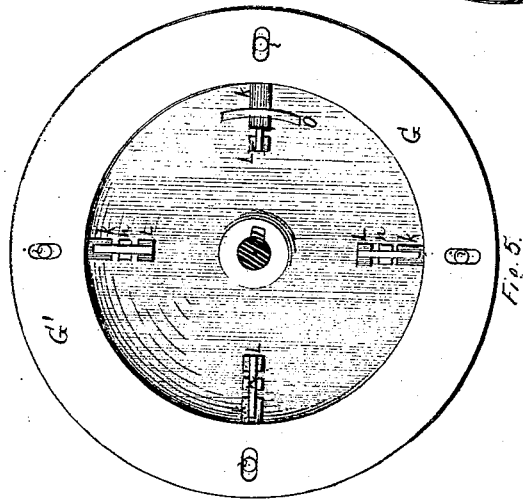


Fig. 5.

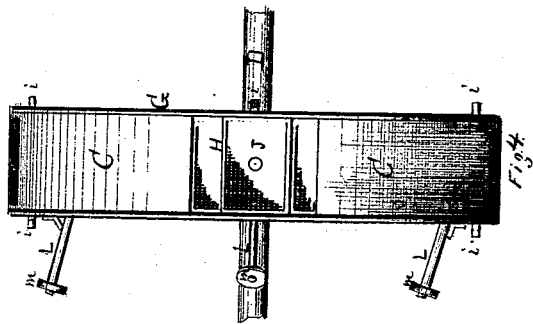


Fig. 4.

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MORRIS D. WILLIAMS, OF DAKOTA, IOWA.

Letters Patent No. 108,864, dated November 1, 1870.

IMPROVEMENT IN BRICK-MACHINES.

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, MORRIS D. WILLIAMS, of Dakota, in the county of Humboldt and State of Iowa, have invented a new and improved Brick-Machine; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing forming part of this specification.

Figure 1, sheet 1, is a side elevation of my improved brick-machine, showing the devices for operating the molds and for pressing and carrying off the bricks.

Figure 2, sheet 1, is a similar view of the opposite side of the machine, part of the pug-mill being broken away to show the interior.

Figure 3, sheet 1, is a front elevation of the machine.

Figure 4, sheet 2, is an edge view of the mold-wheel, detached from the machine.

Figure 5, sheet 2, is a detached side elevation of the same wheel.

Figure 6, sheet 2, is a plan view of one of the molds detached from the wheel, and with the false bottom removed.

Figure 7, sheet 2, is a detached plan view of the tempering and pressing-wheel.

Similar letters of reference indicate corresponding parts in the several figures of the drawing.

My invention has for its object to improve the construction and operation of machines for pressing bricks; and to this end,

It consists—

First, in the combination of adjustable false bottoms with the brick-molds, which bottoms are held stationary in the act of pressing bricks, while the molds move, and which are moved to discharge the bricks and receive fresh clay while the mold is held stationary.

It consists, secondly, in the construction of the oscillating platens, whereby they are held in the proper position within the platen-wheel to bear upon the molds as both platen and mold-wheels are rotated.

It consists, thirdly, in the combination of devices for discharging the bricks and holding the molds in position while being filled.

It consists, lastly, in the construction and combination of various parts of the machine, as will be hereinafter described.

In the accompanying drawing—

A is the frame of the machine, constructed in the proper form to receive the working parts, and

B is the pug-mill, mounted upon the frame in the usual manner.

C is the mold-wheel, mounted upon a horizontal shaft, D, which has its bearings in the side timbers E of the frame. This wheel is so arranged with relation to the pug-mill that its periphery shall pass immedi-

ately beneath an opening formed in the bottom of said mill, at one side, to receive the clay, as hereinafter described.

The mold-wheel is constructed with a circular recess upon one side, surrounding the shaft D, and its periphery, between the annular plate G and flat side of the wheel, is recessed at regular intervals to receive the brick-molds H, which are provided with journals *h* upon opposite ends, fitting and working within radial slots formed in the annular plate G and the flat side of the wheel. These slots are so arranged that when the molds are drawn in, their outer edges shall be within the wheel a short distance, but when pushed outward their outer edges shall be flush with the periphery.

The molds are each formed with a movable false bottom, J, provided with a short stem or shank, K, upon its under surface, which extends through an opening formed centrally in the bottom of the mold into the recess in the side of the wheel, as shown in fig. 5.

The false bottoms of the molds are operated by means of short levers L, which pass laterally through the flat side of the wheel, to which they are pivoted in such a manner as to admit of motion only in lines radiating from the center of the wheel.

Their outer ends are provided with friction-rollers *m*, and their inner ends are pivoted to short links *n*, which, in turn, are pivoted to the shanks of the false bottoms. By this arrangement the false bottoms are adapted for independent movement within the molds when the short levers L are operated.

Instead of connecting the inner ends of the levers to the stems of the false bottoms by means of the links *n*, the latter may be dispensed with and the stems extended to connect directly with the levers, after passing through short guide-strips or blocks affixed to the wheel within the recess a short distance from the annular plate G, as shown at O, fig. 5.

The object of either connection is to prevent the circular movement incident to the inner end of the levers from being communicated to the false bottoms during their movements within the molds, as it is absolutely essential that they shall move in lines perfectly parallel to the sides of the molds in order to properly form a brick.

P is the platen-wheel, mounted in rear of and in line with the mold-wheel upon a horizontal shaft, Q, having its bearings in the side timbers E of the frame.

This wheel is constructed with a continuous peripheral recess, and is provided, at regular intervals, with short radial arms R, projecting a short distance from the periphery to furnish bearings for the journals of the platens S.

The mold and platen-wheels are rotated in opposite directions, and the platens are so arranged upon the latter that they shall close the molds successively.

Within the pug-mill is arranged a vertical shaft, T, having a series of inclined wings or bands, U, so arranged upon it as to sweep over the bottom of the mill when the shaft is rotated to temper the clay and force it through the opening in the bottom into the brick-molds.

Upon the lower end of the vertical shaft, beneath the bottom of the pug-mill, is secured a beveled gear-wheel, W, engaging with a similar wheel mounted upon the shaft of the mold-wheel.

From this latter shaft motion is communicated to the platen-wheel through the medium of gear-wheels X Y, mounted respectively upon said shaft and the shaft of the platen-wheel.

Z is an endless belt or apron arranged upon transverse shafts immediately beneath the mold-wheel to receive the bricks and discharge them from the machine.

Motion is communicated to this apron by means of a small gear-wheel, A', upon the shaft B', engaging with the gear-wheel X, as fully shown in fig. 1.

By the application of suitable power to the sweep C', affixed to the vertical shaft T, the mechanism above described is put in motion.

Where steam or water is used, however, the sweep may be dispensed with and the power affixed to the shaft of the mold or platen-wheel.

The operation is as follows:

The machine being set in motion the mold and platen-wheels rotate toward each other.

One of the molds being under the opening in the bottom of the pug-mill is filled with clay by the rotating vanes V, and while being filled its outer edges are held up flush with the periphery of the wheel C, by means of segmental guides, D', suspended from the under side of the frame upon each side of the wheel C, and upon which the journals of the molds rest.

This operation insures the complete filling of the molds, from the fact that while they are being forced out the false bottoms are held stationary against the main bottoms.

This is accomplished by means of the levers L, whose outer-ends rest upon a cam, E', affixed to the frame of the machine outside the wheel C, as shown in fig. 1, while the molds are being filled.

As the wheel C continues to rotate the filled molds and pressing-platens are brought together, the latter resting upon the edges of the molds between the flanges of the wheel C, and covering the entire surface or mouth of the molds.

Just before a filled mold reaches the pressing-platen the journals of the former clear the segmental guides D', and the lever L clears the cam E'.

As the platen presses upon the mold the latter is forced back into the wheel, and as the false bottom is stationary during this operation, the clay is pressed to form the brick between said bottom and the platen; that is to say, the moving molds decrease in depth to bring the false bottoms nearer to the platen to press the clay.

After the bricks are pressed the ends of the levers strike a cam, F', affixed to the side of the frame, as shown in fig. 1, moving said levers upward, and the false bottoms out of the molds to discharge the bricks upon the endless apron Z, by which they are carried out of the machine.

The false bottoms are again carried to the bottoms of the molds to receive a fresh supply of clay by the contact of the lever with the cam E'.

The rollers m upon the levers are designed to facil-

itate the passage of the latter over the cam E' by reducing the friction.

The platens are adapted to oscillate in their bearings to conform perfectly to the edges of the molds, and are made a trifle heavier on one side of the center to hold them in their proper position to bear upon the molds as both are rotated.

The main bottoms of the molds are provided with set-screws, G', upon the points of which the false bottoms are adapted to rest.

By adjusting these screws the thickness of the bricks is regulated, from the fact that the movement of the molds with relation to the false bottoms is increased or decreased.

As the clay, after being pressed, is liable to adhere to the metallic surface of the false bottoms by atmospheric pressure, and so injure the bricks, I propose to face said bottoms with flannel, or equivalent material, in order to overcome this difficulty.

I also propose to cover the working surfaces of the platens with a slight coating of sand for the same purpose, by placing a water-tank, H', and sand-box, I', in the path of their rotation, arranged in such a manner that the platens shall pass first through the water, as shown in fig. 1, which will wet them sufficiently to cause the adhesion of the sand.

The shaft of the platen-wheel is made adjustable longitudinally upon the timbers E, by any suitable means, for the purpose of adjusting the pressure of the platens upon the molds to regulate the consistency of the bricks.

The pressing surfaces of the platens are made slightly convex, so that they shall leave the surface of the bricks, after pressing, slightly concave, to prevent the latter from being forced out of shape by their own gravity when falling from the molds upon the endless apron.

Having thus described my invention,

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

1. The combination, substantially as herein shown, of the adjustable false bottoms with the movable molds, for the purpose specified.
2. The convex oscillating platens S, constructed with one end heavier than the other, to hold them in the proper position within the platen-wheel to bear upon the molds, as both platen and mold-wheel are rotated, as herein set forth.
3. The combination, with the mold and platen-wheels, of the oscillating platens S, the movable molds H, and false bottoms J, substantially as described for the purpose specified.
4. In combination with the mold-wheel, the movable molds H, and adjustable false bottoms, J, substantially as described, for the purpose specified.
5. In combination with the molds H, and false bottoms J, the levers L, and cams E' F', substantially as described for the purpose specified.
6. In combination with the pivoted molds H, the segmental guides D', substantially as described for the purpose specified.
7. In combination with the molds H, and false bottoms J, the set-screws G', substantially as described for the purpose specified.
8. The arrangement of the water-tank H', and sand-box I', with reference to the platens S, substantially as described, for the purpose specified.

M. D. WILLIAMS.

Witnesses:

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G. H. FROST.