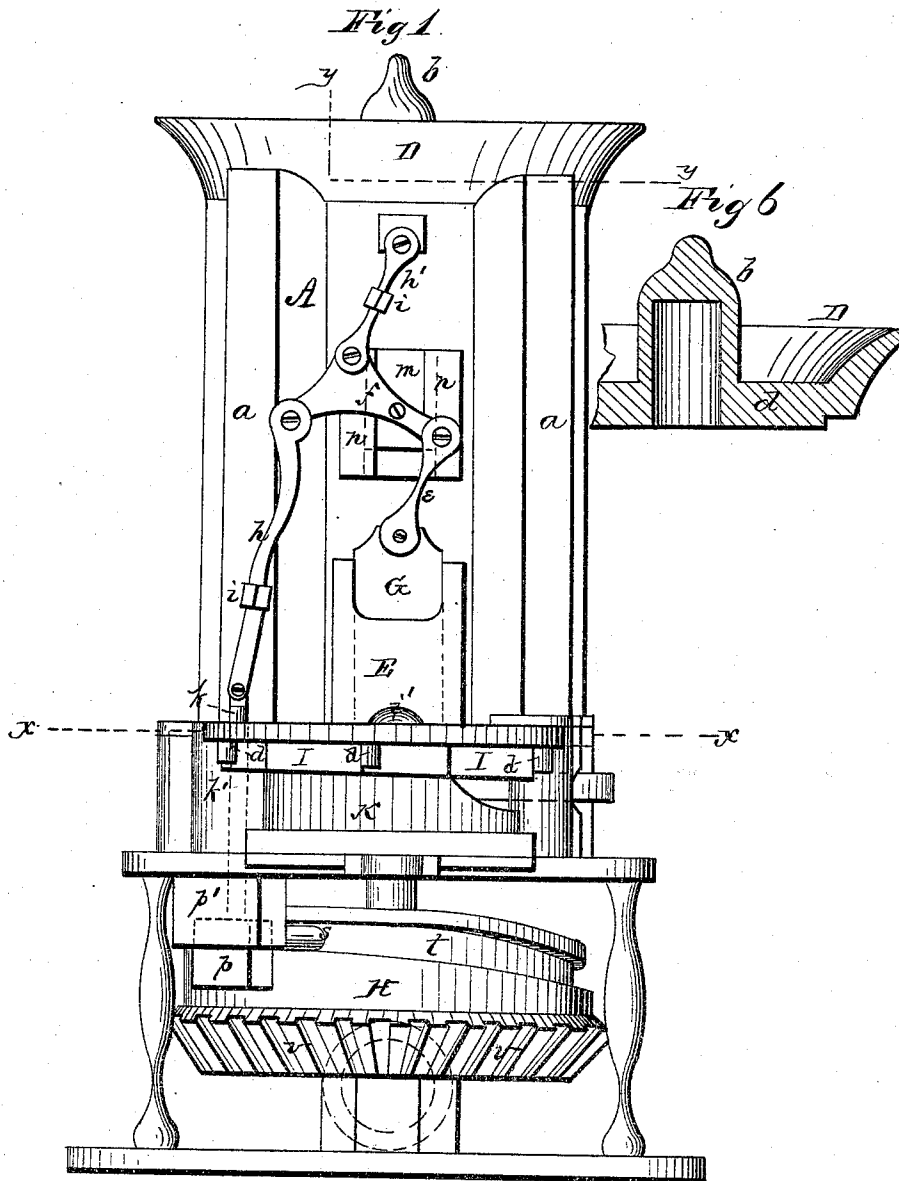


C. H. WILLIAMS.
Brick-Machines.

No. 150,924.

Patented May 12, 1874.



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Fig 2

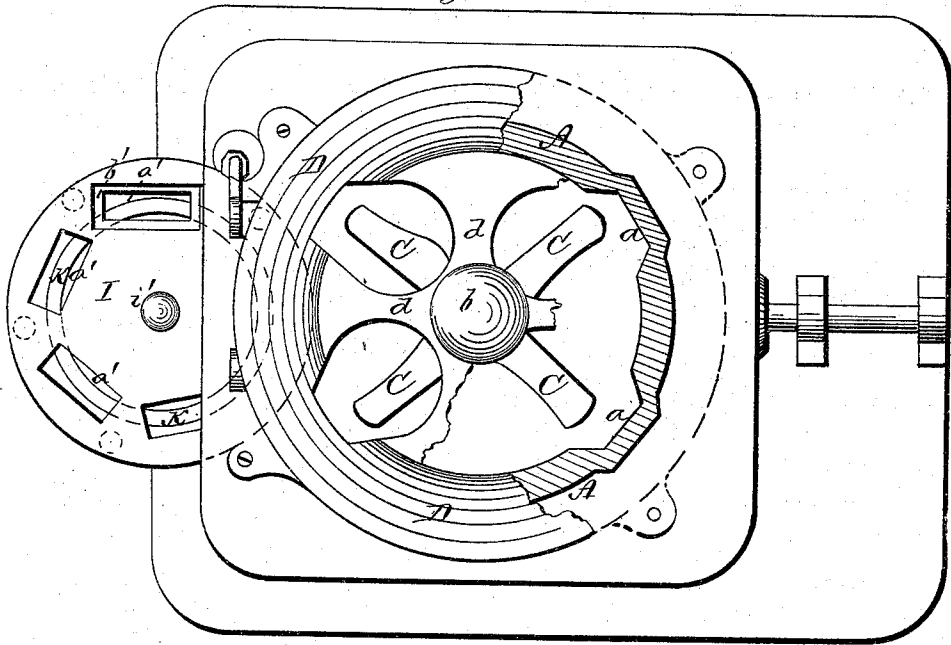


Fig 3

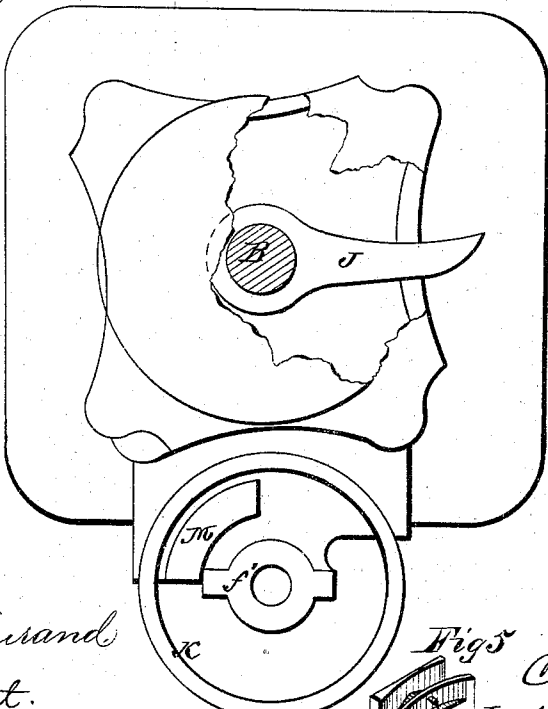
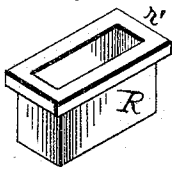


Fig. 7.



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CARMI H. WILLIAMS, OF MATTEAWAN, NEW YORK.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. **150,924**, dated May 12, 1874; application filed April 10, 1874.

To all whom it may concern:

Be it known that I, CARMI H. WILLIAMS, of Matteawan, in the county of Dutchess and in the State of New York, have invented certain new and useful Improvements in Brick-Machines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, making a part of this specification.

My invention consists in an improvement upon the patent granted to me April 5, 1870, and relates to that class of brick-machines which are provided with upright pug-mill cylinders and molding devices upon the outside thereof; and the nature of my invention consists, first, in the combination, with the cylinder and upright shaft therein, of a cast-metal dome, formed with a flaring or funnel-shaped rim, stayed by cross-arms, and having a central cap for the end of the shaft to revolve in; second, in a large beveled cog-wheel cast with a cam-groove on its periphery, and connected under the cylinder to the main shaft, and revolving therewith, to perform the double function of working the mud-knives and the plunger which presses the clay into the molds; third, in the employment of a long arm, arranged on the main shaft under the bottom of the cylinder, and working in the slotted cylinder-casing, to perform the double purpose of operating the horizontal mold-wheel and preventing the upward movement of the shaft; fourth, in the combination, with the cylinder and its plunger, of a certain arrangement of toggle-levers and arms for operating the same, all as more fully hereinafter set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a side elevation of a brick-machine embodying my improvements. Fig. 2 is a plan view of the same, the cylinder being partly in section. Fig. 3 is a horizontal section through the line *x x*, Fig. 1. Fig. 4 is a longitudinal vertical section of the cam-shaped ring and flange under the mold-wheel. Fig. 5 is a perspective view of the lower end of the follower

in the mold-wheel; and Fig. 6 is a vertical section of the top of the cylinder through the line *y y*, Fig. 1. Fig. 7 is a perspective view of a flanged mold to be used in countersunk recesses in the mold-wheel.

A represents the mud-receiver, which is cast or otherwise formed entirely of metal, and placed in an upright manner, as shown in Fig. 1. This receiver is made cylindrical in form, and is provided with a series of recesses, *a a*, which extend longitudinally the entire length thereof, for the purpose of receiving and retaining the stones, which will more or less be in the clay to be worked. Within the receiver or cylinder A is a vertical shaft, B, upon which is secured the usual knives and wipers C C. As the clay is put into the cylinder, and the shaft with its knives is rotated, the stones in the clay will be carried by centrifugal motion into the recesses and there held, so as to not be allowed to pass down with the worked clay into the brick-molds. By having these recesses the entire length with the cylinder the stones will be forced into them, not only at the bottom, but at the top and middle, and all parts of the cylinder, thereby preventing an excess of stones at any one point, and preventing liability of the breakage of the machinery by the crowding of stones into a single stone-box at the bottom, as is now known. The top of the cylinder A is formed of a flaring rim, D', cast with two diametrical bars, *d d*, crossing each other in the center, and with a hollow cap or dome, *b*, projecting upward from the center. This dome forms the support or bearing for the upper end of the central shaft B, and the rim D forms a funnel or hopper for the admission of the clay into the cylinder. At the lower end of the cylinder A on the side is formed a box, E, in which the plunger G works. The upper end of this plunger is, by a rod, *e*, connected with an L-shaped lever, *f*, at one end thereof. The other end of this lever is, by a link, *h*, connected with a rod, *k*, which passes vertically through a guide-tube, *k'*, and is operated up and down by means hereinafter described. The lever *f* is, by a link, *h'*, suspended from a projection at the upper end of the cylinder, said link being pivoted to the lever at the angle thereof. The lever *f* is, at a point about midway between the connections

of the rod *e* and link *h'*, pivoted to a dovetailed slide, *m*, which moves vertically up and down in corresponding guides *n n*, attached to or formed on the side of the cylinder *A*. By the up-and-down movement of the rod *k* and the connections, as described, the plunger *G* is moved up and down at the proper time—up to give room for the clay to enter the box *E*, and down to force and press the clay into the mold. The links *h* and *h'*, above mentioned, are each made in two pieces, joined together with nuts *i i*, which are cut with right and left hand threads, whereby the links may be lengthened and shortened at will, so as to adjust the length of the stroke of the plunger *G*. On the lower end of the rod *k* is formed a square slide, *p*, which is held and moves in a guide-box, *p'*, and is provided with a pin, *s*, on its inner side. This pin projects into a cam-groove, *t*, made in a wheel, *H*, around its circumference, said wheel being firmly attached to the lower part of the central shaft *B*, and has beveled cogs *v* on and around its lower edge. This wheel *H* thus receives motion directly from a main driving-shaft, and transmits it by means of the cam-groove *t* to the device for operating the plunger. *I* represents the mold-wheel, provided with a series of mortises, *a' a'*, for the insertion of the brick-molds. These mortises are countersunk around the upper edges, as shown at *b'*, Fig. 2, which will admit of the insertion of new molds, or molds of different shapes. Fig. 7 represents one of these molds, which has a rectangular recess, and will form a rectangular brick. Around the upper edge of this mold *R* is a flange, *r'*, which, when the mold is inserted in the mold-wheel, will perfectly fit in the countersink *b'*. The recess in this construction of mold may be of any suitable shape, such as diamond-shaped, polygonal, or other desired form. On the under side of the mold-wheel *I* are pins or rollers *d'*, which are struck by an arm, *J*, attached to the upright center shaft *B*, for the purpose of revolving the mold-wheel. The mold-wheel *I* rests upon a center hub, *j'*, and turns around a king-bolt, *i'*, attached therein, and under the wheel is a cam-shaped ring, *K*, upon which the follower *L* is placed and moves, said follower having a curved and beveled groove in its under side to fit over the ring *K*. On the inner side of the follower *L* is a projecting pin, *p''*, near the lower end, which works under a flange, *M*, arranged within the cam-shaped ring *K*, for the purpose of drawing the follower down as the mold-wheel revolves.

The operation of the machine is substantially as follows: The clay being passed through

the flaring top or hopper into the cylinder, it is worked by the cutters and wipers attached to the central revolving shaft, and fed into the boxes under the plungers. Any stones or other hard substances in the clay will be worked into and lodge in the corners or recesses formed in the cylinder, so that they will not pass out with the clay. While in said corners or recesses the stones are out of the way, and can do no injury whatever to any part or parts of the machine.

When the corners or recesses are filled with stones or other such substances they may be easily cleaned out by means of a hoe or any other suitable means or devices.

The plunger is operated by the cam-groove in the wheel at the lower end of the revolving shaft by the pin *s* on the slide *p* operating in said groove, and by the joints or toggles communicating motion to the plunger.

The plunger in its downward motion forces and presses the clay into the mold, the follower having been drawn down by the flange *M* and pin *p''*, and as the mold-wheel revolves the follower is forced upward, as is usual in this class of brick-machines, by sliding on the cam-ring *K*, and thus expelling the brick.

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

1. In combination with the upright cylinder and its shaft, the cast-metal top *D*, having a flaring or funnel-shaped rim, cross-arms *d*, and a central cap, *b*, all constructed substantially as and for the purposes herein set forth.

2. The large bevel-wheel *H*, provided with a cam-groove, *t*, on its periphery, and arranged under the cylinder, in combination with the main shaft and its knives, and with the levers and the follower, all substantially as and for the purposes herein set forth.

3. In combination with the shaft *B* and the revolving brick-mold, the long arm *J*, arranged under the cylinder's bottom, and working in the slotted frame-work, substantially as and for the purposes herein set forth.

4. The combination, with the follower and the wheel *H* *t*, of the rod *e*, lever *f*, links *h h'*, rod *k*, and slide *m*, all substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 19th day of March, 1874.

CARMI H. WILLIAMS. [L. S.]

Witnesses:

W. S. COLWELL,
H. N. SWIFT.