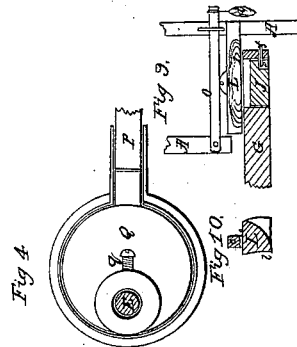
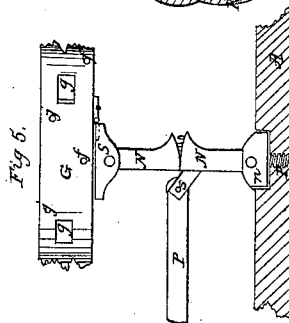
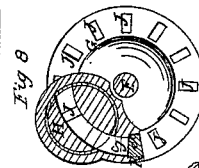
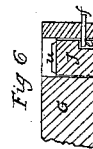
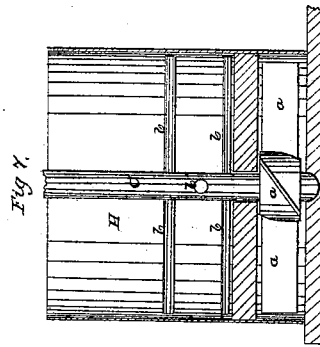
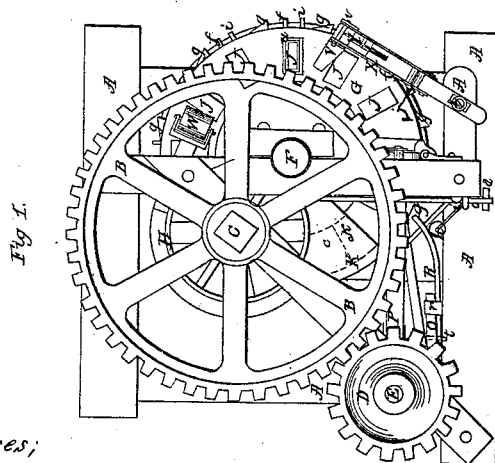
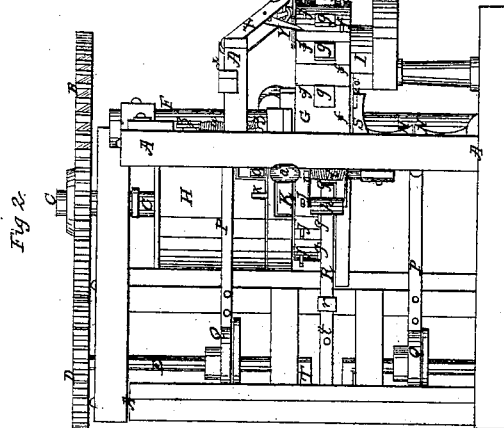
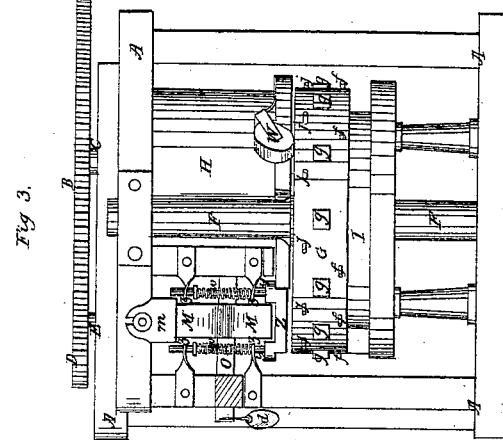


# *J. Hotchkiss, Brick Machine.*

*No 53,223.*

*Patented Mar. 13, 1866.*



*Witnesses;*

*Wm. B. Brown.  
A. J. Wright.*

*Inventor;*

*James Hotchkiss,  
By his atty.,  
J. B. Brown,*

# UNITED STATES PATENT OFFICE.

JAMES HOTCHKISS, OF SPRINGFIELD, OHIO, ASSIGNOR TO HIMSELF AND  
EZRA BUSS, OF SAME PLACE.

## IMPROVED BRICK-MACHINE.

Specification forming part of Letters Patent No. 53,223, dated March 13, 1866.

*To all whom it may concern:*

Be it known that I, JAMES HOTCHKISS, of Springfield, in the county of Clarke and State of Ohio, have invented an Improved Combined Brick Making and Pressing Machine; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a top view of the machine; Fig. 2, a side view thereof; Fig. 3, a front view of the same; Fig. 4, a top view of one of the eccentrics by which the pressing-toggles are actuated; Fig. 5, a side view of one set of the pressing-toggles, and showing their connection with other parts of the machine; Fig. 6, a vertical radial section of a part of the mold-wheel through one of the followers; Fig. 7, a central vertical section of the pug-mill; Fig. 8, a horizontal section, on a reduced scale, through the lower part of the pug-mill, and showing a plan of the mold-wheel in connection therewith; Fig. 9, a vertical radial section, on a reduced scale, of a portion of the mold-wheel, and showing, in elevation, the scraper over the mold-wheel and the manner of its arrangement; Fig. 10, a transverse section of the scraper.

Like letters designate corresponding parts in all of the figures.

I employ a pug-mill, H, in which the clay is tempered, and under this turns a mold-wheel, G, in which the bricks are both formed and pressed. These main parts and all their adjuncts are mounted in a suitable frame, A. The power is first applied to the vertical shaft C of the pug-mill, and motion is transmitted therefrom by a cog-wheel, B, and pinion D to another vertical shaft, E, by means of which the mold-wheel G is moved round on its shaft F, and by which the toggles M M and N N for pressing the bricks are actuated.

In the pug-mill H the usual tempering-arms *b b* are secured to the shaft C, and near the bottom four (more or less) broad transversely oblique or inclined arms, *a a*, are attached to the shaft their inclination being in the direction that will cause a downward pressure on the clay as they are revolved. By this action the clay is filled evenly and compactly in the molds. At the same time their inclined surfaces push forward stones and other obstructions, and by their centrifugal action work

them to the periphery of the pug-mill. In connection with this action of the inclined arms a side chamber, *c*, Figs. 1 and 8, extends from the pug-mill at the bottom over the exit path of the molds, substantially as shown. This chamber receives all the obstructions from the pug-mill by the action of the inclined arms, as above set forth. The chamber is closed by a block, K, (generally made of wood,) which is held in place by a wooden pin, *k*, passing down through the cover of the chamber and the block. Ordinarily this wooden pin will hold the block in the chamber; but if a stone or other obstruction gets partially into one of the molds and is carried forward by the mold-wheel the wooden pin breaks and allows the closing-block to be driven out instead of stopping the machine or breaking any of the parts thereof. The chamber *c* also holds a quantity of clay driven with force therein, which further compacts the clay in the molds.

The brick-molds, just after emerging from under the chamber *c*, pass under a scraper, L, the form and arrangement of which are indicated in Figs. 9 and 10. It has a sharp lower edge, *l*, which scrapes all superfluous clay from the mold-wheel and smooths the upper surface of the bricks. It rests upon the mold-wheel, being held in place by standards of the frame A, and it is pressed down upon the mold-wheel with the required degree of pressure by a lever, *o*, pivoted at one end to the frame and at the other end held down by a weight, *d*, which may be varied in size or in position on the lever to adjust the pressure of the scraper. The pressure of the bricks is accomplished while yet in their molds, after they pass under the scraper L, by means of two toggle-joints or pairs of toggles, M M and N N, the former being located above the mold-wheel and forcing a pressure-plate, Z, down upon the tops of the bricks in the mold, and the latter located below the mold-wheel and pressing a movable or hinged step or track, S, upward against the followers. The two act exactly or nearly at the same time and compress the bricks to any extent required, and that this may be varied at pleasure the bearing-step *n*, on which the toggles N N rest, is made adjustable up and down by a screw, *p*, or its equivalent.

The adjacent bearing-surfaces of the toggles

are formed in the arcs of circles, so as to roll on each other and prevent friction at the joint; and there may be dowel-pins *m m* projecting from the surface of one or both, which fit into holes in the other, and thus keep the toggles in their proper position in relation to each other.

When the lower toggle-joint, *N N*, is bent the hinged track *S* descends by its own weight; but when the upper toggle-joint, *m m*, is bent the pressure-plate *Z* is raised by springs *w w*, which press upward lifting-rods *y y* projecting from the plate and working in guides *z z*, as shown; or any equivalent device may be employed at pleasure for the purpose. The toggle-joints are alternately bent and straightened for producing the pressure by means of eccentrics *Q Q*, or their equivalents, secured on the revolving shaft *E*, and of connecting-rods *P P*, extending from the eccentrics to the toggle-joints to which they are jointed, as at *s*, Fig. 5.

While the pressure of the bricks is taking place the mold-wheel *G* is required to be at rest; and I provide for an intermittent movement of the said mold-wheel to suit this purpose. I effect this intermittent movement by means of a reciprocating pawl, *R*, which acts against a set of teeth or projections, *g g*, on the periphery of the mold-wheel equal in number to that of the molds in the mold-wheel, and at corresponding intervals. The reciprocating motion is given to the driving-pawl *R* by a crank, *T*, Fig. 2, of the revolving shaft *E*. Since this pawl acts in a horizontal plane, it is kept pressed against the mold-wheel by a spring, *i*, and friction-roller *h*, which bears against the pawl.

The pawl *R* is arranged to slide in sleeves *r r* by the side of a crank wrist-bar, *U*, and it is coupled thereto by a wooden pin, *t*, passing through both the pawl and the wrist-bar. This wooden pin is strong enough to hold to drive the mold-wheel round in its ordinary motion; but when a stone or other obstruction gets into a mold, so that power applied would otherwise break some part, the pin breaks and the motion of the mold-wheel ceases, so that the obstruction can be removed before the work continues.

The movements of the pawl *R* and the eccentrics *Q Q* are so arranged that the pressure of the toggles is produced when the pawl is drawing back and the mold-wheel is at rest, and the pressure must be completed and the toggles must begin to bend and relieve the pressure before the pawl begins to move the mold-wheel. In order to adjust these movements to one another, if necessary, the eccentrics *Q Q* are made adjustable on the shaft *E* by set-screws *g*, Fig. 4.

The movable step or track *S*, which is raised and lowered by the toggle-joint *N N*, is hinged at *o* to the stationary track *I*, upon which the mold-followers *J J* pass after the pressure of the bricks to lift them out of the molds. This track is an inclined plane of easy ascent, and gradually lifts the followers *J J* up even with

the upper surface of the mold-wheel, so that the bricks will be entirely raised out of the molds. They are then tilted off on the mold-wheel upon their edges by means of the following device:

A bar or pair of arms, *X*, is hinged vertically to a projecting part of the frame, so that its movable end will be located over the proper part of the mold-wheel to operate on the bricks at the time required; and to this end a plate, *V*, is pivoted at *v*, and projects inward across the track of the bricks as they are carried round by the mold-wheel. When the bricks strike this plate they are tilted thereby upon their edges, and in the act of tilting them the plate is turned on its pivot *v*, so that then it rests on the top edge of the bricks, the bar *X* rising to allow the movement. Then as the bricks are carried farther round the plate slides off, leaving the bricks on their edges, so as to be readily grasped by the hands for removal.

In order to insure the turning down of the plate *V* to the proper position for operating upon the next bricks in succession, a bent lever, *Y*, is pivoted to the bar *X*, and is so constructed and arranged, in connection with projecting pins *j j* at regular intervals on the periphery of the mold-wheel, as to have its lower end struck by the said pins, thereby causing its upper end to turn down the plate *V*.

The block to which the bar *X* is pivoted is adjustable on the frame *A* by means of a set-screw, *x*, or its equivalent, in order to adjust the tilting plate to the exact position required.

After the bricks are tilted from the mold-followers the track *I* terminates or declines to allow the followers to descend into their molds again. In order to insure the descent of the followers into the molds before they are carried under the pug-mill again, so as to prevent breakage of any part or injury to the cloth covering of the followers, a friction-roller, *W*, pressed downward by a spring of sufficient strength, is located in the proper position, substantially as shown in Figs. 1 and 3.

Each follower *J* is suspended in the molds by means of a notch or slot, *e*, Figs. 6 and 9, in the outer end thereof, and a pin, *f*, or its equivalent, extending into the same through the periphery of the mold-wheel. This arrangement sustains the followers at the desired height in the molds, so that no track is needed for them to run on, except where they are to be raised in the molds to expel the bricks. Thus the expense of additional track and the friction thereon are obviated.

This method of pressing the bricks enables me to form hollow bricks, or to make any figure, indented or in relief, on one or more surfaces thereof, as indicated at *v*, Figs. 1 and 6.

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

1. The combination of the continuously-revolving inclined arms *a a* in the pug-mill with the intermittently-moving mold-wheel *G*, substantially as herein specified.

2. The side chamber, *c*, extending from the

pug-mill over the exit-path of the mold-wheel, for the purpose set forth.

3. The removable block K, closing the outer end of the chamber *c* and held therein by the wooden or frangible pin *k*, for the purpose specified.

4. The arrangement of the scraper L, with its lever O and adjustable weight *d*, substantially as set forth.

5. The combination of the two toggle-joints or sets of toggles M M and N N, actuated substantially as described, in combination with the intermittently-moving mold-wheel G, for pressing the bricks while yet in the forming-molds, substantially as herein specified.

6. The combined arrangement of the adjustable toggle-moving eccentrics Q Q and of the crank T and pawl R, for giving an intermittent motion to the mold-wheel, substantially as herein described.

7. The combination of the crank-wrist U, pawl R sliding thereon, and the frangible pin *t*, for the purpose set forth.

8. The combined arrangement of the projections *g g* on the periphery of the mold-wheel,

the pawl R, and spring-pressure roller *h*, for the purpose specified.

9. The hinged or movable track S under the mold-wheel, in combination with the adjustable toggles N N beneath it, as herein specified.

10. The device for tilting the bricks edgewise from the followers upon the mold-wheel, arranged and operating substantially as herein set forth.

11. The arrangement of the spring-roller W, in combination with the mold-followers J J, for the purpose specified.

12. The suspension of the followers J J in their molds by means of the notch or slot *e* in each and the pins *f f*, or the equivalent thereof, substantially as herein set forth.

The above specification of my improved combined brick making and pressing machine signed by me this 12th day of December, 1865.

JAMES HOTCHKISS.

Witnesses:

JAS. L. TORBERT,  
EDW. P. TORBERT.