

*J. M. Hope,
Brick Machine.*

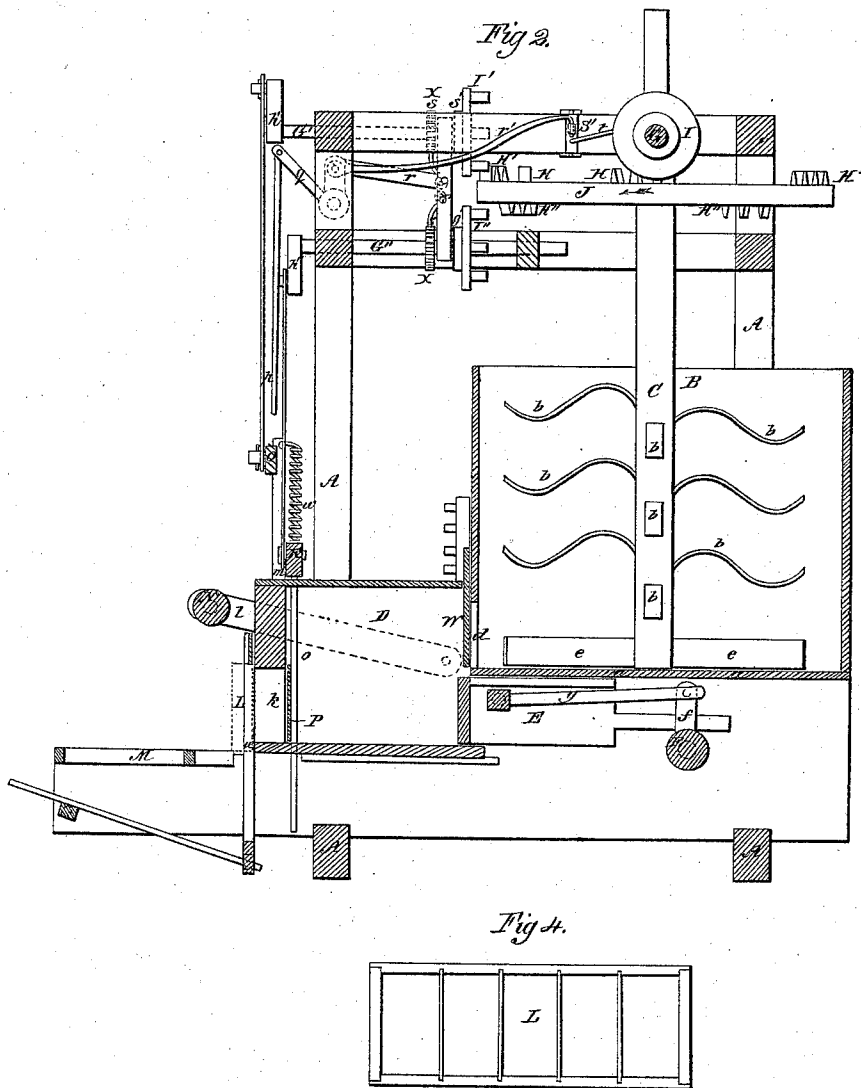
Patented June 4, 1850.



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N^o 7,414.



UNITED STATES PATENT OFFICE.

JOHN W. HOPE, OF NEW YORK, N. Y.

BRICK-PRESS.

Specification of Letters Patent No. 7,414, dated June 4, 1850.

To all whom it may concern:

Be it known that I, J. W. HOPE, of the city, county, and State of New York, have invented certain new and useful Improvements in Machines for Manufacturing Bricks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents a view in perspective of my brick machine. Fig. 2 is a vertical transverse section through the same. Fig. 3 is a plan of the cog tooth wheel detached from the machine, and Fig. 4 a plan of one of the molding-boxes.

My brick machine is constructed to grind the clay and to force it into the mold, it also grasps the mold-box firmly while the ground clay is being forced into it and stops the discharge of clay from the machine when the filled molds are withdrawn to be replaced by empty ones.

The machine is composed of a pugmill for grinding the clay, a chamber to receive the ground clay, and the various devices for supporting the molds, filling them with clay, striking the bricks, and shutting off the discharge of clay when the filled molds are withdrawn. The several members of the machine are all mounted upon and secured to a strong frame A; the pugmill B, consists of a rectangular case open at the top and closed at the bottom; an upright shaft C is stepped in the bottom *a* of the case and extends upward through a box *c* secured to the uppermost crossbars of the frame. A series of radiating knives *b* are secured to this shaft which cut and work the clay thrown into the open top of the case. An opening *d*, is made through the lower part of the front side of the pugmill, through which the clay ground by the knives is discharged into a chamber, D; the discharge of the clay into this chamber is effected by two curved wings *e, e*, secured to the lower extremity of the upright shaft. The bottom of the chamber, D, is considerably lower than that of the pugmill and the space between the two is closed by a movable piston, E, which extends the whole breadth of the chamber. The piston is alternately drawn outward and forced into the chamber by means of an arm *f* with which it is connected by a rod, *g*, and which projects from a shaft, F, to which a rocking motion is imparted from a horizontal shaft,

G, by means of a crank, *h*, connecting rod, *i*, and arm, *f'*. The shaft has a trundle wheel I secured to it which is operated by a double series of cog teeth, H, projected from the face of a wheel J secured to the upright shaft C of the pugmill. An opening *k*, is made through the front side of the chamber D corresponding in size with the face of one of the mold-boxes L and through this opening the clay in the chamber is forced into the cavities of the mold-box by the action of the piston. The mold-box which is constructed in this instance to contain five bricks is placed on edge with its open face against the opening in the front of the chamber and is supported in that position by a frame M; it is prevented from being forced outward by the pressure of the entering clay by a roller N which is depressed against the bottom of the mold-box (L) and remains in that position during the action of the piston E when it is raised to allow the filled mold-box to be removed. The gudgeons of the roller are supported by the outer extremities of two equal and parallel arms *l* hinged at their hinder extremities to the sides of the chamber D. In order to raise or depress the roller these arms are passed through slots in two sliding uprights *m* whose upper extremities are framed into a cross beam, O, which is connected by a rod, *i'*, with the pin of a crank, *h'*, secured to the end of a shaft, G', which is turned by a double series of cog-teeth, H', projected from the face of the wheel J. In order to prevent the discharge of clay when the mold-box is withdrawn, the opening in the front of the chamber is fitted with a gate, P, which is attached at each extremity to an upright rod, *o*; these rods pass through the top and the bottom of the chamber, and their upper extremities are connected with a cross-beam, R, which is raised or depressed to raise or depress the gate connected with it, by a crank, *h''*, on a shaft, G'', in the same manner as the roll N. The several shafts G, G', G'', for operating the piston E, the roll N, and the gate P, are constructed to slide longitudinally in their boxes, in such manner that they can be drawn outward from the upright shaft of the pugmill, to draw their respective trundle wheels I I' I'' out of the lines of motion of the respective series of cog-teeth which drive them, and can be forced inward toward the upright shaft when the piston, the roll, and the gate are to be brought into action. This

operation of throwing the trundle wheels in or out of gear is effected by the director of the machine who applies his hand to the rod *p*, and thus moves a rock shaft S, from
 5 a projecting arm *q*, of which the rod *p* depends; the rock shaft has two other arms *q'*, *q''*, projecting upward from it, the one *q'* is connected by a rod *r* with a shifting-bar T which acts at each extremity upon two
 10 collars *s s'*, *s'' s'''* secured to the two shafts *G'*, *G''*; the other arm *q''* of the rock shaft is connected by a rod *r'* with a second upright rock shaft *S'* to which a shifting lever *z*, is secured which acts upon the shaft *G*.
 15 The relative positions of the cranks *h'*, *h''*, for operating the gate and the roll are such that when not in action as represented in the drawing the gate is at its lowest position and the roll is at its highest; while under
 20 the same circumstances the piston E is withdrawn to the extremity of its back stroke. The several series of cog-teeth on the wheel, J, are also so arranged that when the trundle wheels are in gear the several members of
 25 the machine shall be brought into action in their proper order; thus, the wheel J is constructed to turn in the direction indicated by the arrow, hence the cog teeth will be first brought in contact with the teeth of the
 30 trundle *G'* which works the roller, as there are but three cog teeth in a series and as the trundle is furnished with six pins the shaft *G'* will be turned but half way around thus reversing the position of the crank *h'*, and
 35 depressing the roll against the bottom of the mold-box L presented to the opening, *h*; as soon as this is effected the cog teeth corresponding to the trundle, *G''*, begin to act and as the relative number of teeth in
 40 the wheel and this trundle are the same as in those of the roll, the position of the crank *h''*, will be reversed to draw up the gate P; as soon as the gate is raised the cog teeth corresponding to the trundle *G*, begin to act,
 45 thus forcing the piston, E, forward and shoving the clay through the opening into the mold-box held in place by the depressed roll. As the wheel continues to revolve the second series of three cog teeth
 50 *H''* acting upon the trundle *I''* depress the gate, and as soon as this is effected the roller N is raised and the piston withdrawn to its outermost position by the two series of teeth *H'*, *H*, acting upon their respective trundles
 55 *I'*, *I*. A striking wire *u* is added to the machine to separate the clay in the molds from the mass in front of the gate, P, which is operated by a foot treadle V to which the foot of the director is applied as soon as the
 60 gate, P, descends. The opening *d* between the pug-mill and the chamber D is fitted with a sliding gate, W, by which it can be closed when the first clay is thrown into the mill. As soon as the clay is sufficiently
 65 ground, this gate is raised and the chamber

is gradually filled by the action of the wings *e, e*; as soon as the chamber is filled empty molds properly soaked and sanded are applied to the front of the chamber and the
 70 trundle wheels are thrown into gear by moving the hand rod *p*; the operation of molding then proceeds automatically, successive empty mold-boxes being presented to the machine as the full ones are withdrawn; should the empty mold-boxes not be ready
 75 as soon as necessary the trundle wheels are thrown out of gear to prevent the discharge of clay, while the motion of the upright shaft and the grinding of the clay proceeds uninterrupted. It frequently happens that
 80 stones or hard lumps are mingled with the raw clay. These descend into the chamber D and if no arrangement was provided to obviate the difficulty one of these lodging beneath the descending gate, P, would be
 85 very likely to break the machine. To prevent this difficulty the connection of the cross-beam R, and the rod *i''*, is not rigid but a certain amount of play is allowed by lengthening the hole *v* in the lower end of
 90 the connecting rod, through which the coupling pin is passed; and in order to force the gate down to its lowest position a spring *w*, is attached to the rod *i''* and crossbeam R, sufficiently stiff to force the gate through
 95 ground clay but flexible enough to allow it to yield to a force that would break the machine. In order to prevent the revolution of the trundle shafts in the wrong direction a ratchet wheel X is secured to each, and a
 100 spring pawl *x* is arranged to act upon their teeth.

I do not confine myself to the precise arrangement and construction of the several parts above described but intend to vary
 105 them as circumstances may render expedient; thus, beveled wheels may be substituted in place of the trundle wheels and the wheel J instead of being attached to the pug mill shaft may be secured to a countershaft driven
 110 by gearing from the pug-mill shaft and arranged to revolve at a greater or less speed.

Having thus described my brick machine, what I claim therein as new and desire to secure by Letters Patent is—

Operating the roll (N) for holding the moldbox, the gate (P) for regulating the discharge of clay, and the piston (E) for compressing the clay into the molds, by means of a wheel (J) furnished with series
 120 of teeth (*H, H', H''*), secured to it and acting through trundles, shafts, cranks, and connecting rods, connected with the roll (N), the gate (P), and the piston (E), respectively substantially as herein set forth. 125

JOHN W. HOPE.

Witnesses:

C. F. YOUNG,
 PETER BRASS.