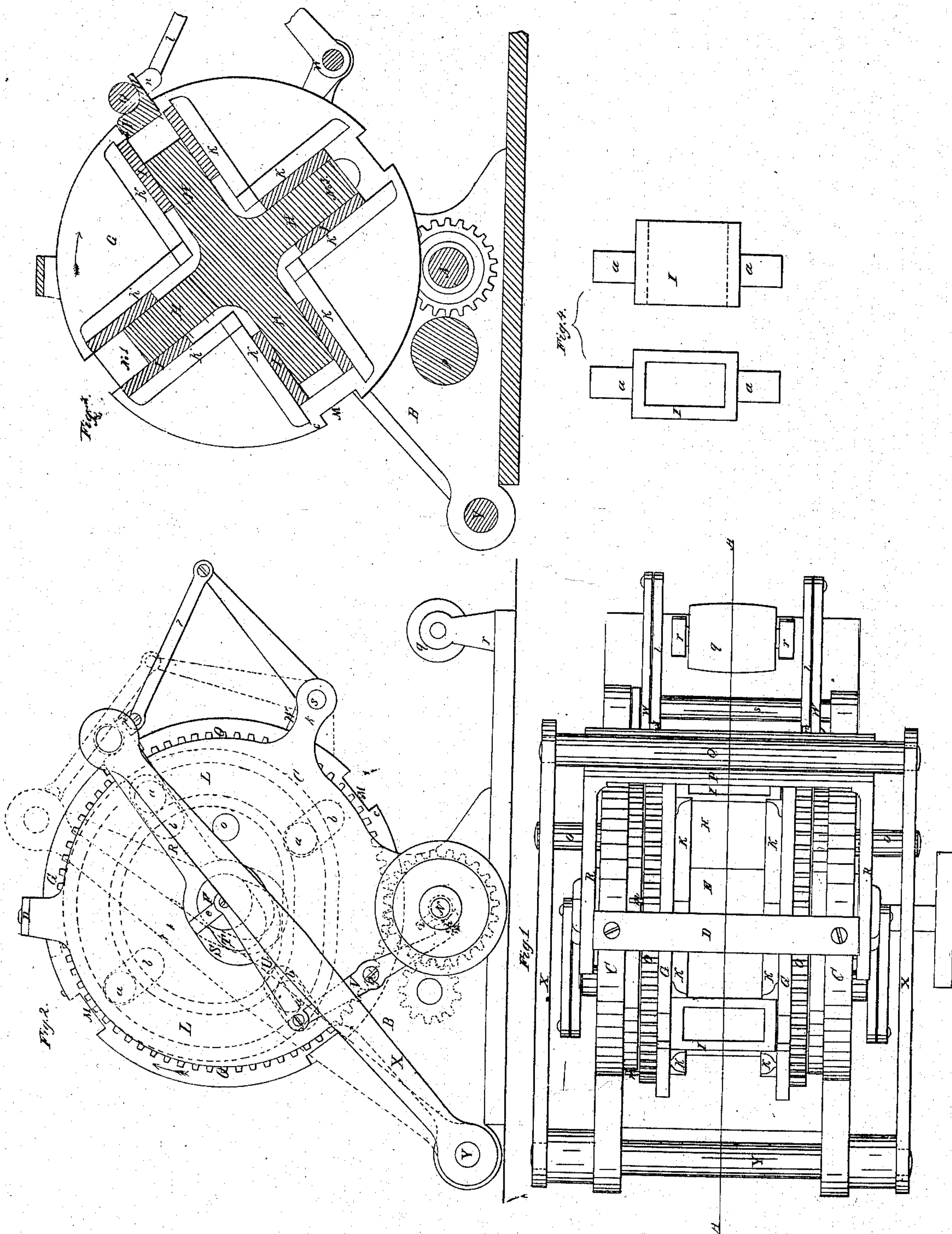


G. I. WASHBURN & E. H. BELLOWS.
BRICK MACHINE.

No. 17,131.

Patented Apr. 21, 1857.



UNITED STATES PATENT OFFICE.

G. J. WASHBURN AND E. H. BELLOWS, OF WORCESTER, MASSACHUSETTS, ASSIGNORS TO
THEMSELVES AND C. WASHBURN, OF SAME PLACE.

BRICK-MACHINE.

Specification of Letters Patent No. 17,131, dated April 21, 1857.

To all whom it may concern:

Be it known that we, G. J. WASHBURN and E. H. BELLOWS, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Brick-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, is a plan; Fig. 2, an elevation; Fig. 3, a vertical section on the line A A of Fig. 1; Fig. 4, details.

Our present invention consists in certain improvements on a brick machine for which Letters Patent were granted to use on the 7th day of October 1856 and has for its object to apply the pressure to the brick in the mold both on top and bottom and also consists in an improved mode of applying the pressure to a plunger.

In the said drawings B, are standards supporting the circular side frames C, which are braced together by the cross piece D. Between these side frames revolves the mold cylinder E, which carries the mold. The axle F of this cylinder is hung on suitable bearings in the frame C. It is composed of the two heads G, and between them the radial arms H, which do not extend out to the periphery of the cylinder. Over the ends of these arms slide the molds I. Attached to the inner side of each cylinder head are the rabbets K, which serve as guides in which the molds I, slide. The molds I, (one of which is shown in Fig. 4) have projecting from each end pins *a*, which enter slots *b*, in the cylinder heads G, and also fit in grooves L (seen dotted in Fig. 2,) in the side frames C. The grooves L are cut eccentric to the cylinder, so that as the latter revolves, the pins *a*, being guided in the grooves, slide in the slots *b* and the molds are moved up and down in the solid arms H. The cylinder heads G, have cut in their peripheries notches M. The head is a little cut down on one side of these notches at *c*, that the bar which carries the plunger may catch on the opposite side of the notch as the cylinder revolves and be guided into the mold. The cylinder is caused to revolve by suitable power applied to the shaft, N, which has its bearings in the standards B, cog wheels on which gear with the wheels O, on the outside of each head G.

P Figs. 1, and 3, is a broad bar extending across the machine and resting on the edge of each head G. The under side of this bar is enlarged forming a block or plunger (seen in section in Fig. 3) which fits into the molds I. The upper surface is grooved on forming a chair in which fits the rod Q, the raised part or back *d*, preventing the rod from falling over beyond the bar when the latter drops into the notches M; to each end of the bar P is attached an arm R, the other end of which is enlarged at S, and embraces the ends of the shaft F, in a slot T, across the portion S and beyond the end of the shaft F, is attached a bar *e*. To the middle of this bar *e* is pivoted at one end an arm U, to the other end of which at *f*, is pivoted a lever V, which vibrates on the screw *g*, which secures it to the frame C. On the lower end of the lever V, is a toe *h*, against which strikes a pin or cam *i*, attached to the shaft N. This cam by means of the lever and its connections, moves the arm R, endwise, the slot T, allowing it to slide on the shaft F, and raises the bar P, out of the notches M. The toe *h*, is arranged of such a length that the bar P shall be held up off of the heads G while it is being returned into the position seen in red in Fig. 2.

To an axle *s*, having its bearings in the pieces *k*, which project from the frames C, is attached a bell crank W, the short arm of which extends in between the frame C, and the cog wheel O, and is tripped at stated intervals by pins *m*, projecting from the side of the wheel O. To the long arm of this crank W, is pivoted one end of a rod *l*, the other end of which is pivoted to a projection *n*, on the back *d*, of the bar P. The above described arrangement of arms, lever, cams, and crank is in duplicate there being one set on each side of the machine. The rod Q, by which pressure is applied to the plunger bar P, has attached to each end a long lever X, which at its other end is attached to and vibrates on a shaft Y, which extends across the machine having its bearings in the standards B, near the foundation.

o, are stout pins projecting out from the frames C, one on each side, against which the levers X and arms R stop.

p, *q*, are drums running on shafts having their bearings, the former in the standards B, and the latter in short standards *r*, rising from the bed plate of the machine. These

drums are intended to carry a belt or apron on which the finished bricks are deposited and carried off from the machine. Motion is communicated to *p* by a cog wheel on its shaft which gears with one of the wheels on the driving shaft N.

Operation: The prepared clay or the partially dried brick to be re-pressed is placed in the mold No. 1 which is nearest to the top of the machine. As the mold cylinder is revolved in the direction of its arrow, the cam *v*, striking on the toe *h*, lifts the plunger bar P, out of the preceding mold I, and notch M, and holds it up clear of the edge of the heads G, thus avoiding the friction of their contact. At the time the bar P, is lifted out of the notch M, one of the pins *m*, strikes against the short arm of the bell crank W, which throws the bar P, with the arm R, and lever X, into the position seen in red Fig. 2, when the cam *i*, leaving the toe *h*, allows the bar P to rest on the edge of the heads G, a short distance in front of the notch M. As the cylinder moves on, the bar P, strikes against the higher side of the notch M, and drops into it and is now carried along with the cylinder, the rod Q following and resting on its groove, the arm of the bell crank having escaped from the pin *m*. As the arc traversed by the rod Q intersects the circumference of the mold cylinder at an angle more or less acute in proportion to the radii of the two circles the continued motion of the cylinder causes a pressure to be applied to the bar P, and its plunger which has entered the mold. As the cylinder has been progressing, the pins *a*, attached to the ends of the mold have followed the eccentric grooves L, which at the point where the pressure is first applied begin to recede from the exterior edge of the frames C. This causes the mold to be slid down over its arm H, (which thus becomes an inside plunger) a distance equal to one half of the descent of the top plunger, bringing an equal pressure on both sides of the brick. The amount which the plunger descends will depend on the relation existing between the length of the levers X, and the radius of the mold cylinder, a greater proportionate length of lever causing the plunger to descend a greater distance. When the levers X, have passed the

center of rotation of the cylinder the pressure is relieved and the cam *i* striking the toe *h*, the arm R begins to rise and lift the plunger bar P, out of the notch M ready to be carried back by the crank W, when the next pin *m*, comes in contact with it. The stop *o*, serves to arrest and support the lever X, and arm R, after the bar P, is cleared from the cylinder until the pin *m* catches the bell crank W. After the brick has been pressed, the mold is carried on as the cylinder revolves toward the lower part of the machine, the pins *a*, following the grooves L which here recede still farther from the edge of the frames, the slot *b*, in the heads G, allowing the pins to move toward the center, thus drawing the mold still farther over its arm H, as at No. 3, Fig. 3, which thrusts the finished bricks out of the mold onto the apron running on the drums *p*, *q*, by which it is carried off from the machine. As the emptied mold begins to ascend, the groove L again approaches the edge of the frames C, moving out the mold on its arm and opening the mold for the reception of another portion of clay or another brick when it has arrived in the position of No. 1.

By the above arrangement of parts we obtain a machine simple and durable in which pressure is applied on the upper and under sides of the brick at the same time without any complicated mechanism for raising the inside or lower plungers.

What we claim as our invention and desire to secure by Letters Patent is—

1. The method herein described of applying pressure to the plunger by means of the radial arms R, and levers X, operating in the manner substantially as herein set forth for the purpose specified.

2. We claim the combination of the radial arms H H, with the sliding molds I, I, and moving block or plunger P, when said parts are constructed and arranged to operate in relation to each other substantially in the manner and for the purpose set forth.

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Witnesses:

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A. J. BARTHOLOMEW.