

(No Model.)

3 Sheets—Sheet 1.

E. FALES & I. McMANIS.

BRICK MACHINE.

No. 303,502.

Patented Aug. 12, 1884.

Fig. 1.

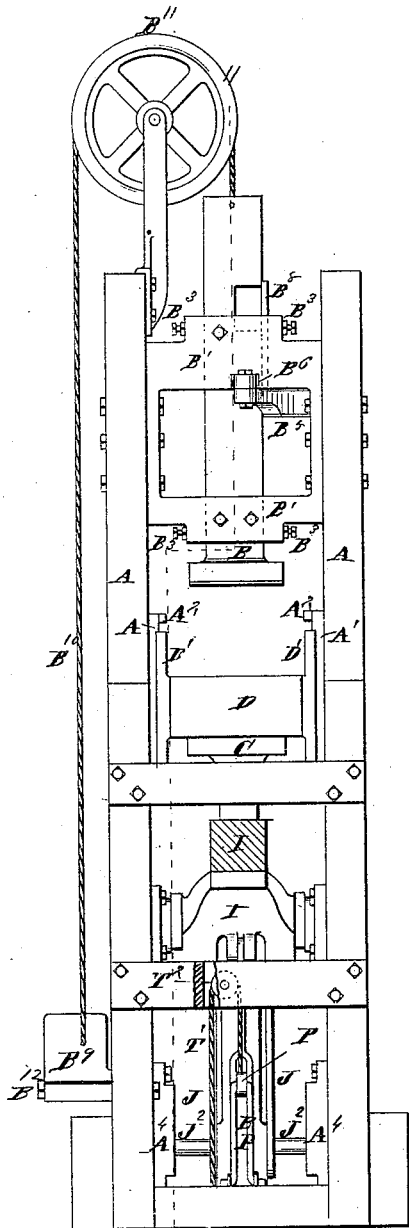
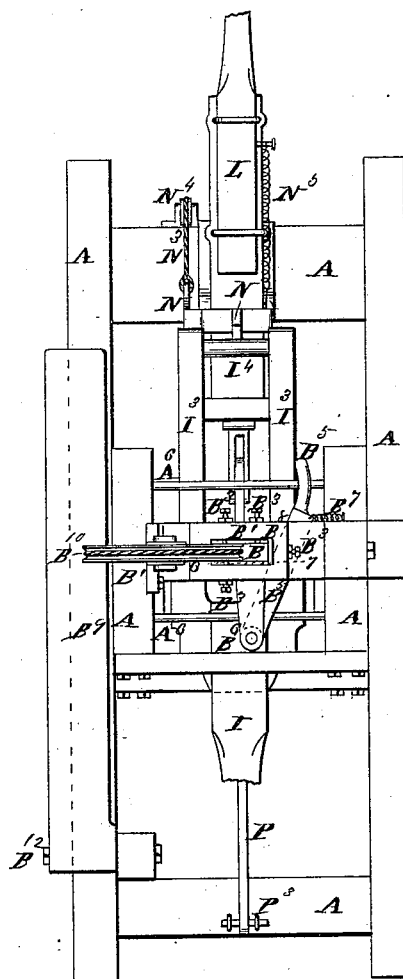


Fig. 2.



Attest:

Charles R. McManis
George W. Hipson

Inventors:

Edward Fales.
Igora McManis.

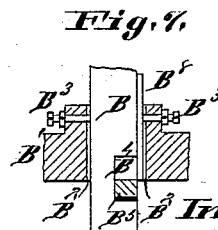
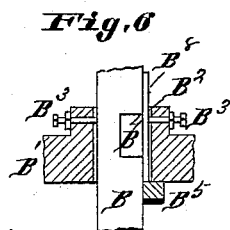
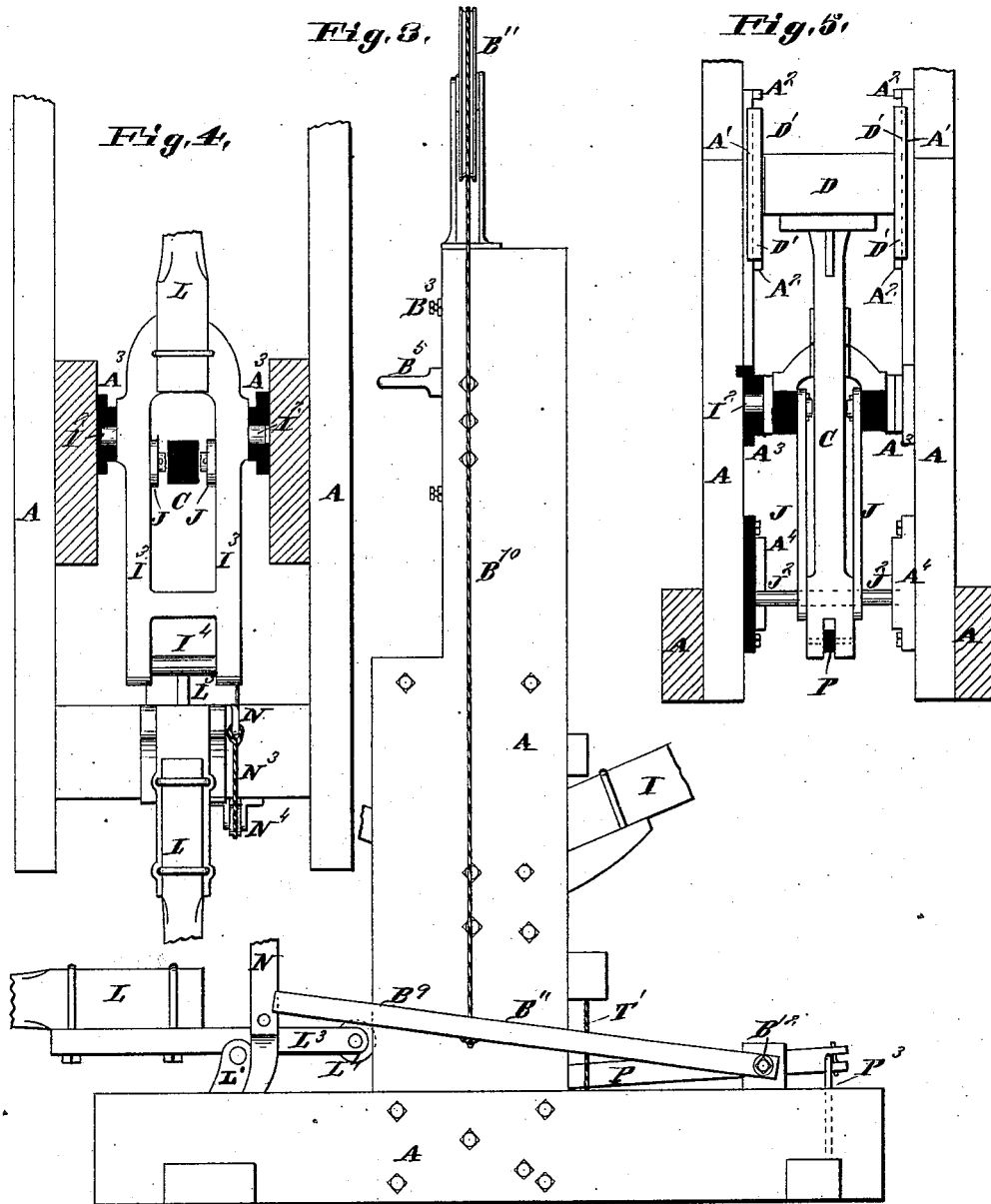
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3 Sheets—Sheet 3.

BRICK MACHINE.

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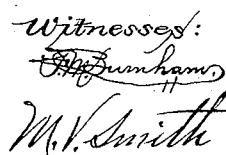


Fig. 9.

Inventors

Edward Fales
 Izora McManis
 By E. M. Simsbaugh
 atty

UNITED STATES PATENT OFFICE.

EDWARD FALES, OF ST. LOUIS, MO., AND IZORA McMANIS, OF HAMILTON, ILL.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 303,502, dated August 12, 1884.

Application filed July 18, 1884. (No model.)

To all whom it may concern:

Be it known that we, EDWARD FALES, of the city of St. Louis, in the State of Missouri, and IZORA McMANIS, of Hamilton, in the county of Hancock and State of Illinois, have invented a certain new and useful Improvement in Brick-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is an end elevation, the simple lever being in section. Fig. 2 is a top view, both the simple and the compound lever being broken off. Fig. 3 is a side elevation with the levers broken off. Fig. 4 is a detail horizontal longitudinal section taken on line 4 4, Fig. 11. Fig. 5 is a detail vertical transverse section taken on line 5 5, Fig. 11. Figs. 6 and 7 are detail vertical sections taken on line 6 7, Fig. 2, illustrating the manner in which the upper end of the upper plunger is guided and held in place, Fig. 6 showing the plunger up and Fig. 7 showing it down. Fig. 8 is an enlarged transverse section taken on line 8 8, Fig. 11. Fig. 9 is a similar view taken on line 9 9, Fig. 11. Fig. 10 is a similar view taken on line 10 10, Fig. 11; and Figs. 11 and 12 are vertical longitudinal sections taken on line 11 12, Fig. 1, showing some of the parts in side elevation, Fig. 11 showing the parts in the position they occupy when the machine is at rest or before the plungers are brought together to press the brick, and Fig. 12 showing the parts in the position they occupy just as the brick is finished being pressed.

Our invention relates to a brick-machine adapted to be operated by hand-power through means of a simple and compound lever; and our invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Referring to the drawings, A represents the frame of the machine.

B represents the upper, and C the lower, plunger. The upper plunger is supported by and has vertical movement in a head or frame, B', made open, forming two bearings, as shown in Figs. 1, 11, and 12, and being bolted or otherwise secured to the frame A, as shown in Fig. 1. The head has openings B² to receive the plunger which is held concentrically therein

by set-screws B³, so that the holes do not have to be dressed out smooth and to just the size of the plunger, but may be considerably larger than the plunger and as rough as they come from the mold. This plunger has a notch or recess, B⁴, in one side, to receive an arm, B⁵, pivoted at B⁶ to the head B', by which the plunger is held in its lower position, as more fully described in the operation of the machine. When the arm is released it is pulled back out of engagement with the plunger by a spring, B⁷, (see Figs. 2 and 8,) that connects its free end to the head B'. To give a bearing for the set-screw B³ that is opposite the notch B⁴ in the plunger, we place a plate or strip, B⁸, (see Figs. 1, 6, 7, and 8,) in the upper hole or opening, B², beside the plunger, which gives a long bearing for this screw extending over the recess B⁴, when the plunger is in its upper position, as shown in Fig. 6. This plunger is raised to its upper position by means of a treadle, B⁹, to which it is connected by a rope, B¹⁰, passing over a pulley, B¹¹, secured to one side of the frame A, as shown in Figs. 1 and 3. The treadle is pivoted at B¹² to the lower part of the frame A.

D represents the mold of the machine supported between the vertical parts of the frame A. It has end projections or flanges, D', which are grooved, as shown in Fig. 9, to receive cleats A', secured to the frame A. The mold can thus have a vertical movement, for a purpose hereinafter specified, and its upward and downward movements are limited by stop projections A² on the cleats A', against which the flanges D' strike, (see Fig. 5;) but this movement could be arrested by other suitable means.

I represents the simple lever pivoted at I' to the frame A, as shown in Figs. 1, 4, 5, 11, and 12, by means of gudgeons I² thereon fitting in boxes A³, secured to the frame A. It has extensions I³ beyond the pivot-points that are connected to the plunger C, near the pivot-point, by links J, the lower ends of which have slots J', to receive a pin or rod, J², passing through the lower end of the plunger, its ends entering grooves in blocks A⁴, secured to the frame A, (see Figs. 5 and 10,) thus guiding and holding in place the lower end of the plunger. The upper end of the plunger is held in place by the mold.

L represents a compound lever when acting in conjunction with the extensions I² of the lever I. It is fulcrumed on a bracket, L', secured to the frame A. (See Figs. 11 and 12.) It has an extension, L², to which is pivoted a bar, N, having a shoulder, N', to engage a pin or rod, I⁴, that passes through the outer ends of the extensions I³. (See Figs. 4, 11, and 12.) At the proper time the bar N is pulled over to engage the notch N' with the rod or pin I⁴, by means of a weight, N², connected to the lower end of the bar by a rope or cord, N³, passing over a pulley, N⁴, secured to the frame A. (See Figs. 11 and 12.) This bar is pulled back at the proper time to disengage the notch from the pin, by means of a spring, N⁵, connecting its upper part to the lever L. (See Figs. 2 and 12.) When the brick is pressed, as shown in Fig. 12, it is removed from the mold by first pulling the free end of the block B³ back, disengaging it from the plunger B, and then pressing down on the outer end of the lever I, (which will start the upward movement of the two plungers and brick,) until notches O' in bars O, pivoted to and depending from the lever I, engage beneath a pin, P', in a bar, P, connected to the lower end of the plunger C by a pin, P², and pivoted by its outer end to the frame A by means of a U-shaped rod, P³. (See Figs. 1, 2, and 3.) As soon as the notches have engaged with the pin P², the outer end of the lever I is raised, lifting the plungers until the brick is removed from the mold. The lever is then released, and the plunger C falls to its lower position, being prevented from falling too rapidly by a counterbalance-weight, T, connected to the lever or bar P by a rope, T', passing over a pulley, T². (See Figs. 1, 11, and 12.) In case the plunger should stick and not start this downward movement, it is started by raising the lever L from the position shown in Fig. 12 to that shown in Fig. 11, (a position it has to be placed in before the next brick is pressed,) when the end of the extension L², which has a friction-roller, L⁴, strikes the outer end of a clevis, U, pivoted by a pin, U', to bar P, and held from moving downward by a pin, U², passing through the bar P beneath the clevis. The free end of the clevis will rise to let the projection L² pass on its upward movement, and will then fall again onto the pin U².

The operation is as follows: The mold is first filled with dirt and the upper plunger is then dropped, by releasing the treadle B³, into the mold, striking the dirt with a heavy blow, compressing it, and this is quite a valuable point in the machine. The next thing to be done is to force the block B³ into the notch B⁴ of the plunger B, thus locking this plunger from upward movement when the lower plunger, C, is raised, which is the next thing to be done. The first part of the movement of this plunger is effected by depressing the outer end of the simple lever I. When this lever reaches the position shown by dotted lines, Fig. 12, the weight N² pulls the bar N over and engages the notch N' with the pin I⁴.

The outer end of the compound-lever is then depressed until the brick is completed, which is thus done under an exceedingly high pressure. During the pressing of the brick by the plunger C the mold is moved upward, as described, and thus we get as much pressure on the brick from above as below. When the brick is completed the various parts occupy the positions shown in Fig. 12. The next thing to be done is to pull the block B³ back out of the notch B⁴, which allows the plungers and brick to be raised, which is done, the first part of the distance, by depressing on the outer end of the lever I (as soon as this is commenced the spring N⁵ pulls the bar N back and disengages the notch N' from the pin I⁴) until the notches O' of the bars O engage beneath the pin P' in the bar P, and then the outer end of the lever I is raised, thus lifting the brick out of the mold by a quick movement, and just as the brick is out of the mold the lower curved ends of the bars O come against a rod, V, secured to the frame A, which causes the bars to be forced back, disengaging the notches O' from the pin P', allowing the plunger C to fall to its lower position, and thus the operation goes on. As soon as the brick is removed from the mold, the mold drops to its lower position. As soon as the plungers and brick are raised until the plunger B is above the mold, so that it can be raised without causing a vacuum in the mold, it is raised away from the brick to its upper position by the treadle B³. When the brick is finished, the weight N² rests upon a support, so that the rope N³ is loose, allowing the spring N⁵ to pull the bar N back, as stated. The frame A is strengthened by tie-rods A⁶.

We claim as our invention—

1. In a brick-machine, an upper plunger adapted to drop into the mold and to be locked therein, the lower plunger adapted to be moved toward the upper one, and the mold adapted to be moved upward by the friction of the clay and the lower plunger as the brick is pressed, substantially as and for the purpose set forth.

2. In a brick-machine, a plunger adapted to be moved and fixed in position, and a plunger adapted to be moved toward the fixed plunger, and the mold adapted to be moved in the direction of the moving plunger as the brick is pressed, substantially as and for the purpose set forth.

3. In a brick-machine, the notched upper plunger, pivoted block for locking the plunger in its lower position, lower plunger, and compression-levers, arranged and operating substantially as and for the purpose set forth.

4. In a brick-machine, the mold and upper plunger adapted to be dropped into the mold, in combination with the lower plunger, and levers for operating the same, as set forth.

5. In a brick-machine, the combination of the mold, lower plunger, and upper plunger, with the pulley, rope, and treadle, whereby the upper plunger is raised from the mold, as set forth.

6. In a brick-machine, a heavy upper plunger adapted to fall into the mold to compact the clay therein, provided with a notch to receive a catch or latch for holding said plunger within the mold while a further compression of the clay is made by the lower plunger, and a spring for withdrawing said latch when the motion of the levers is reversed.

7. A brick-machine the lower plunger of which is operated by a lever of the first order, and a compound lever adapted to engage with the inner or fulcrum end of the first lever, whereby an increased compression is given to the brick in the final or finishing pressure by the assistance of the compound lever.

8. In a brick-machine, the combination of the mold and plungers with the simple lever connected to the lower plunger, and having an extension, a compound lever, and bar pivoted to the compound lever, and adapted to engage with the extension of the simple lever, all arranged and operating substantially as and for the purpose set forth.

9. A brick-machine in which the lower plunger is operated by a simple lever pivoted in the side of the machine, in combination with a bar pivoted to said lever back of its pivotal point, said bar being adapted to engage with a horizontal bar connected to the lower end of the plunger, whereby when the outer end of the lever is raised the brick will be ejected from the mold, as set forth.

10. In a brick-machine, the simple lever connected to the lower plunger by slotted links and a rod, the ends of the rod fitting in slotted blocks secured to the frame, an extension on the lever, a compound lever, a bar pivoted to the lever and provided with a notch, a weight for pulling the bar over to engage

the notch with a rod or pin in the extension of the simple lever, and a spring for pulling the bar back, arranged and operating substantially as and for the purpose set forth.

11. In a brick-machine, the simple lever having an extension and connected to the lower plunger, a compound lever having an extension and a pivoted bar, a bar provided with a clevis and connected to the lower plunger, bars depending from the simple lever and having notches to engage a pin in the bar secured to the plunger, and rod securing said plunger-bar to the frame of the machine, arranged and operating substantially as and for the purpose set forth.

12. In a brick-machine, the combination of the mold and plungers, a simple lever having an extension and connected to the lower plunger, a compound lever having an extension, and a notched pivoted bar adapted to engage the extension of the simple lever, a bar provided with a clevis, and connected to the lower plunger, bars depending from the simple lever and having notches to engage a pin in the bar secured to the plunger, and curved lower ends, rod securing said plunger-bar to the frame of the machine, a weight connected to the bar by a rope passing over a pulley, and a rod secured to the frame of the machine, and adapted to disengage the bars secured to the simple lever from the pin secured to the plunger-lever, all arranged and operating substantially as and for the purpose set forth.

EDWARD FALES.
IZORA McMANIS.

In presence of—

CHARLES R. McMANIS,
GEORGE W. HIXSON.