W. L. GREGG. 2 Sheets—Sheet 1.

BRICK-MACHINE.

No. 192,431. Patented June 26, 1877.

Fig. 1.

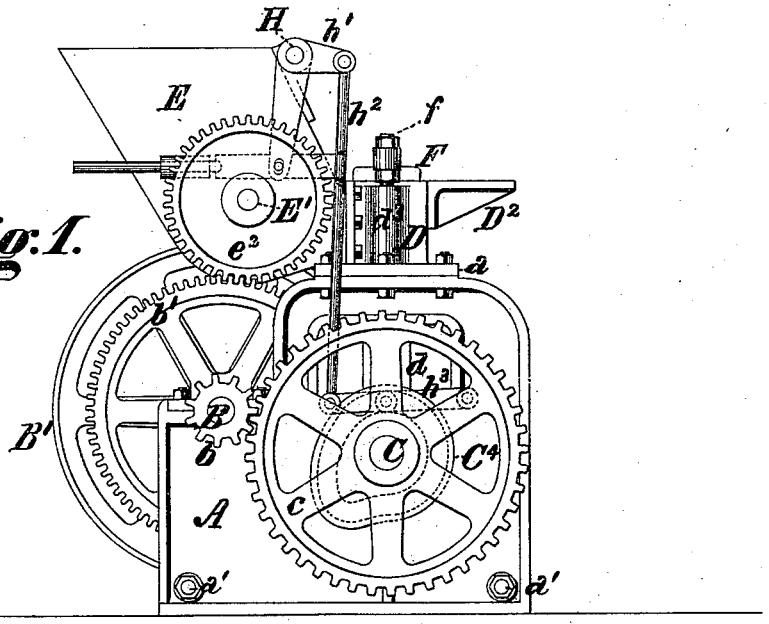
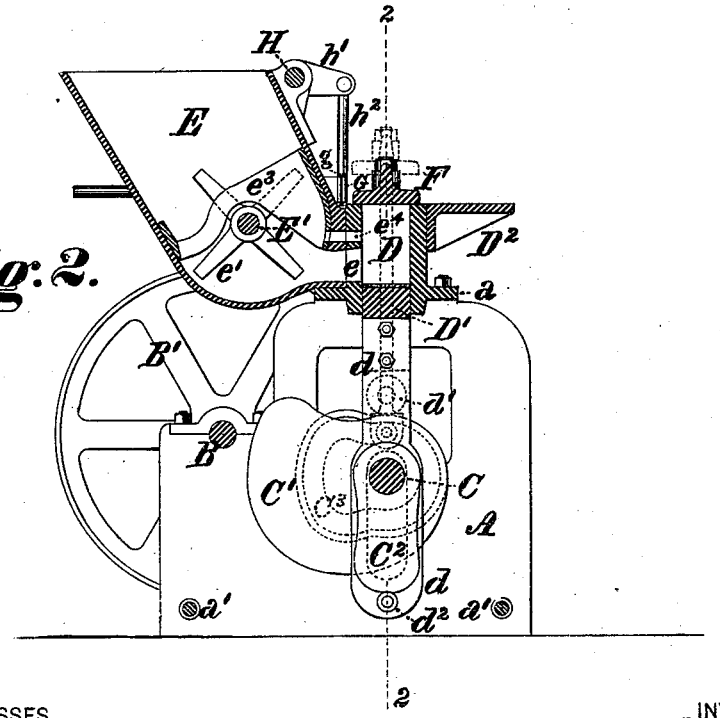


Fig. 2.



WITNESSES

Wm E. Morgan.

Chas V. Morgan

INVENTOR

Wm L. Gregg.

by J. Snowden Bell.

ATTORNEY

2 Sheets—Sheet 2.

W. L. GREGG.

BRICK-MACHINE.

No. 192,431. Patented June 26, 1877.

Fig. 3.

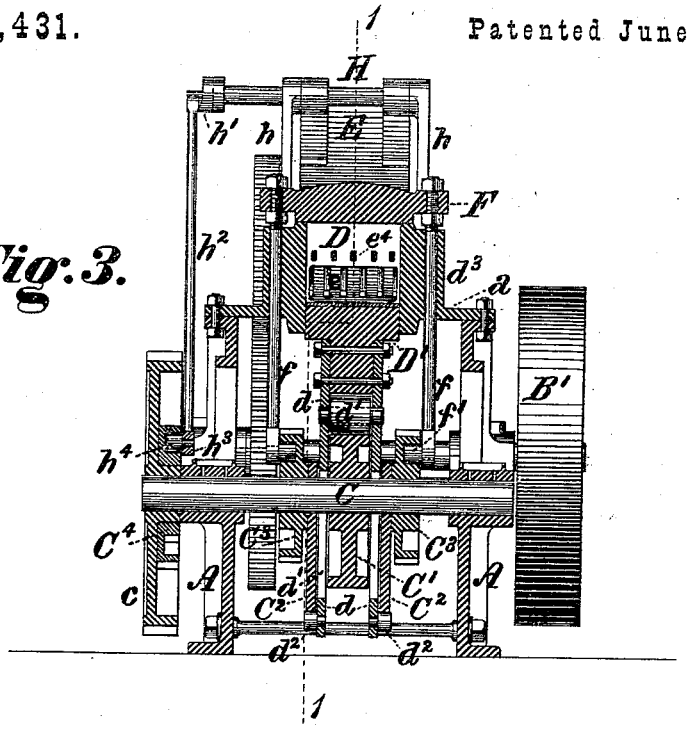
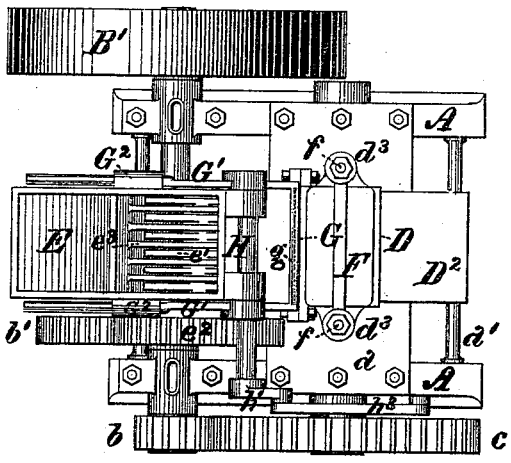


Fig. 4.



WITNESSES

Wm. E. Morgan.

Chas. V. Morgan.

INVENTOR

Wm. L. Gregg.

by J. Thornden Bell.

ATTORNEY

UNITED STATES PATENT OFFICE.

WILLIAM L. GREGG, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. **192,431**, dated June 26, 1877; application filed April 20, 1877.

To all whom it may concern:

Be it known that I, WILLIAM L. GREGG, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Brick-Machines, of which the following is a specification:

The object of my invention is to provide a simple and compact machine by the use of which clay, in the condition in which it is taken from the bank, may be prepared for and subjected to the pressure requisite for compacting it into bricks of uniform texture, density, and dimensions, and which may likewise be used for the purpose of repressing previously-formed bricks. To these ends my improvements consist in the combination of a mold-box, a reciprocating piston or plunger, and an operating cam or cams with a pressure-plate which is held stationary during the operation of pressing the brick, and is elevated thereafter to admit of its discharge from the mold-box.

My improvements further consist in the combination of a mold-box, a reciprocating piston or plunger, an intermittently-moving pressure-plate, and a device for removing the brick and lubricating the pressing-surfaces.

My improvements further consist in the combination of a mold-box with a feed-hopper, apparatus for disintegrating and feeding the clay to the mold-box, and a device for relieving the mold-box of any surplus of clay during the pressing operation.

My improvements further consist in the combination of a mold-box and its pressing mechanism with a removable feed-hopper and disintegrating apparatus, all as hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a side view, in elevation, of a brick-machine embodying my improvements; Fig. 2, a vertical longitudinal section at the line 1 1 of Fig. 3; Fig. 3, a vertical transverse section at the line 2 2 of Fig. 2; and Fig. 4, a plan or top view of the same.

The operative mechanism of my improved brick-machine is supported on two vertical frames or housings, A, united at top to a cap-plate, *a*, and at bottom by brace rods or bars *a'*. A horizontal driving-shaft, B, mounted in bearing in the housings, carries upon one end a driving-pulley, B', to which power is communicated from a prime mover, and upon the other a spur-pinion, *b*, meshing with a gear, *c*, upon one end of a cam-shaft, C.

An open-topped mold-box, D, is formed upon or secured to the cap-plate *a* above and in line with the cam-shaft C, and a piston or plunger, D^1, is fitted accurately within the mold-box, its upper surface being preferably faced with steel. A downwardly-projecting bar, *d*, is secured to each side of the plunger D^1, at the lower portion thereof, which is recessed or reduced in width to admit of the free passage of the arms in the mold-box on the upward movement of the plunger, and long slots are formed in the arms, through which the cam shaft C passes.

The plunger is elevated for the purpose of pressing and discharging the brick by a cam, C^1, secured upon the shaft C, on which cam a roller, d^1, journaled in the bars *d*, rests. The downward movement of the plunger is effected by cams C^2, secured on the shaft C, and bearing on rollers d^2 at or near the lower ends of the bars *d*. The cams C^2 may be dispensed with, if preferred, and the plunger drawn downward by suitably-formed cam-grooves in the cam C^1 engaging the rollers d^2, which, in such case, would be placed above instead of below the shaft C; but I deem the employment of a separate cam or cams more convenient and practical in the operation of the machine.

A feed-hopper, E, is secured by bolts, so as to be readily removable, to one side of the mold-box, and communicates with the lower portion of the same by a feed-opening, *e*. The disintegrating and feeding apparatus is arranged within the feed-hopper E, and consists of an agitator-shaft, E', provided with a series of arms or blades, e^1, and rotated by a spur-pinion, e^2, upon one of its ends (meshing with a corresponding gear, *b'*,) on the driving-shaft B. The agitator-blades e^1 rotate between a series of fixed blades, e^3, secured within the hopper, the outer ends of the agitator-blades passing

in their rotation close to the feed-opening *e*, and in the passage of the clay between the fixed blades it is freed from lumps and comminuted to the requisite degree of fineness by the agitator-blades, by the rotation of which it is also fed through the opening *e* to the mold-box D.

For the purpose of permitting the discharge from the mold-box of any excess of clay which may be supplied to it, I provide a series of relief passages or slots, e^4, by which communication is established between the feed-hopper and mold-box above the feed-opening *e*, and through which the surplus clay is discharged by the plunger in its upward movement.

The pressure imparted to the clay by the plunger D^1 in the formation of the brick is applied against a pressure-plate, F, resting upon the top of the mold-box, and connected by vertical rods *f*, passing through guides d^3 on the sides of the mold-box, with rollers f', fitted to grooves formed in cams C^3 secured upon the shaft C. The curvature and throw of the cams C^3 and their position relative to that of the pressing cam C^1 are such that during the operation of pressing the brick the plate F is held firmly in position against the top of the mold-box, and immediately thereafter the cams C^3, acting on the rollers f', impart an upward motion to the plate F coincident with that of the plunger D^1, and elevate the plate into the position shown in dotted lines in Fig. 2, to admit of the removal of the finished brick, after which they return it to its former position against the top of the mold-box, in readiness for the next operation.

The throw of the pressure-cam C^1 is sufficient to elevate the top of the plunger, upon which the compacted brick rests, to the level of the top of the mold-box, and the brick is pushed off the plunger to a table D^2, or to a conveyer-belt, by a reciprocating sweep, G, connected to arms G^1, working in guides G^2 on the feed-hopper, and operated by arms *h* on a rock-shaft, H, journaled on the hopper. An arm, h^1, on the rock-shaft H, is coupled by a connecting-rod, h^2, to a vibrating arm, h^3, which is pivoted to one of the housings A, and carries a roller, h^4, fitted to a groove in a cam, C^4, on the shaft C, or, as shown, on the hub of the gear *c*, the throw of the cam C^4 and the relative lengths of the rock-arms h h^1 being such as to cause the sweep G to traverse the full width of the plate F, and thereby to push the brick from beneath the same to the discharge-table D^2, after which the cam C^4 returns the sweep to the position shown in the drawings.

An oiled brush, *g*, is secured to the sweep G, so as to project both above and below it, for the purpose of enabling it to fulfill the additional function of cleaning and lubricating the working-faces of the pressure-plate and plunger.

In the operation of the machine the crude clay which is supplied to the feed-hopper is disintegrated and fed by the agitator-blades to the mold-box, within which it is compacted by the pressure applied to the plunger by the pressing-cam during the interval of rest of the pressure-plate. Upon the completion of the pressure, during which any surplus clay has been discharged from the mold-box through the relief-passages, the continued action of the pressure-cam discharges the finished brick, the pressure-plate being simultaneously elevated by its cams to admit of the discharge, and the sweep pushes off the finished brick and lubricates the working-surface, after which the operating parts are returned to their original positions for a succeeding operation.

By the removal of the feed-hopper and its accessories, which can be readily and expeditiously performed, a convenient and efficient repressing-machine is presented, the bricks to be operated upon being in such case introduced to the mold-box through the feed-opening. To facilitate the removal and replacement of the feed-hopper, the sweep-guides and rock-shaft may, if desired, be mounted upon the discharge-table instead of on the hopper, as shown, their operation being similar in either position.

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

1. The combination, in a brick-machine, of a mold-box, a plunger adapted to be elevated within the same for pressing and discharging the brick, a pressure-plate, closing the top of the mold-box during the pressing operation, but fitted to be raised during that of discharging the finished brick, and a reciprocating sweep for pushing the brick from the top of the mold-box, substantially as herein set forth.

2. The combination, in a brick-machine, of an open-topped mold-box, a reciprocating plunger working therein, a pressure-plate closing the top of the mold-box, a supply-hopper communicating, by a feed-opening, with the mold-box, and a relief passage or passages, connecting the hopper and mold-box between the feed-opening and pressure-plate, substantially as set forth.

3. The combination, in a brick-machine, of an open-topped mold-box, a plunger working therein, an intermittently-moving pressure-plate, which closes the top of the mold-box, and a reciprocating sweep and brush, which remove the finished brick and lubricate the working-surfaces of the pressure-plate and plunger, substantially as set forth.

4. The combination, in a brick-machine, of a mold-box, a feed-hopper, communicating by a feed-opening directly therewith, and provided with a shaft carrying a series of agitator-blades, which pass in their rotation between correspondingly-arranged stationary blades