3 Sheets—Sheet 1.

G. S. SELDEN & J. N. McLEAN.

BRICK-MACHINES.

No. 194,787. Patented Sept. 4, 1877.

FIG 1

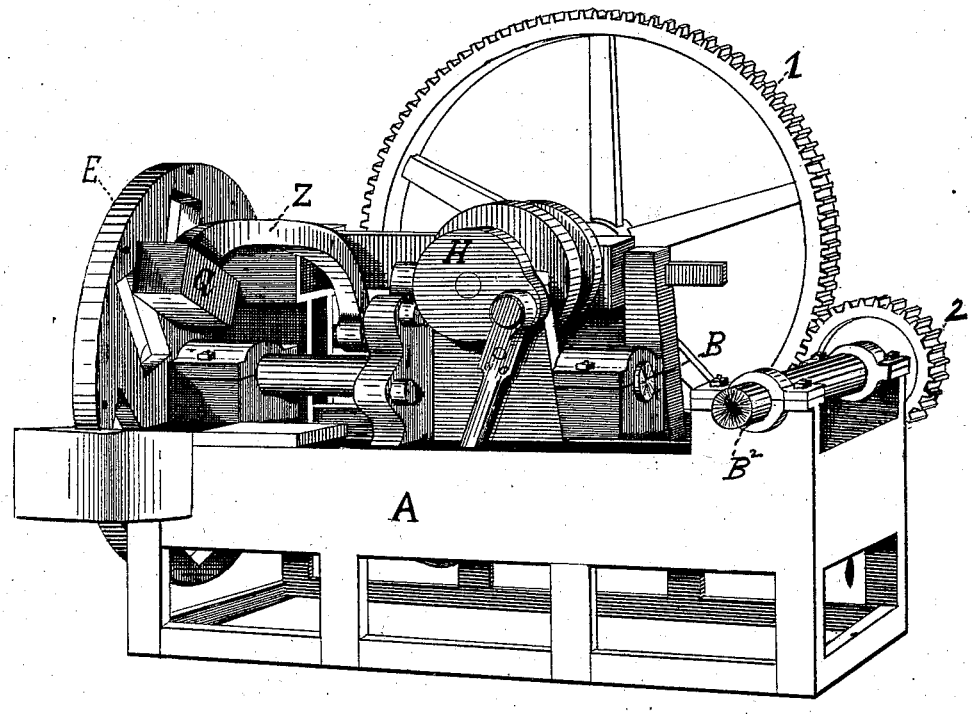

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FIG. 2.

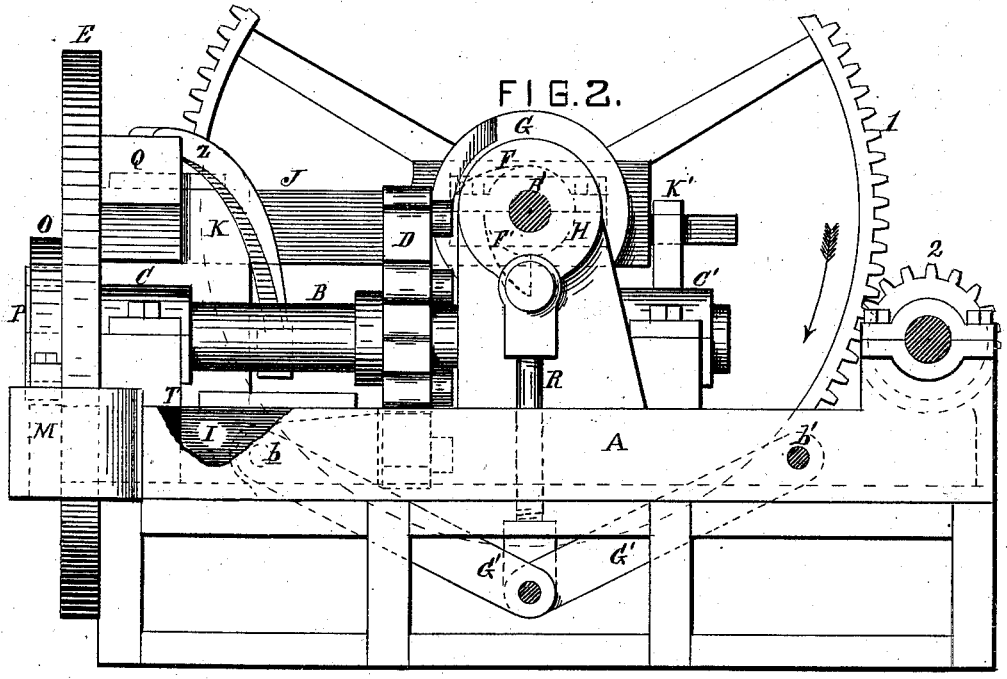

FIG. 3.

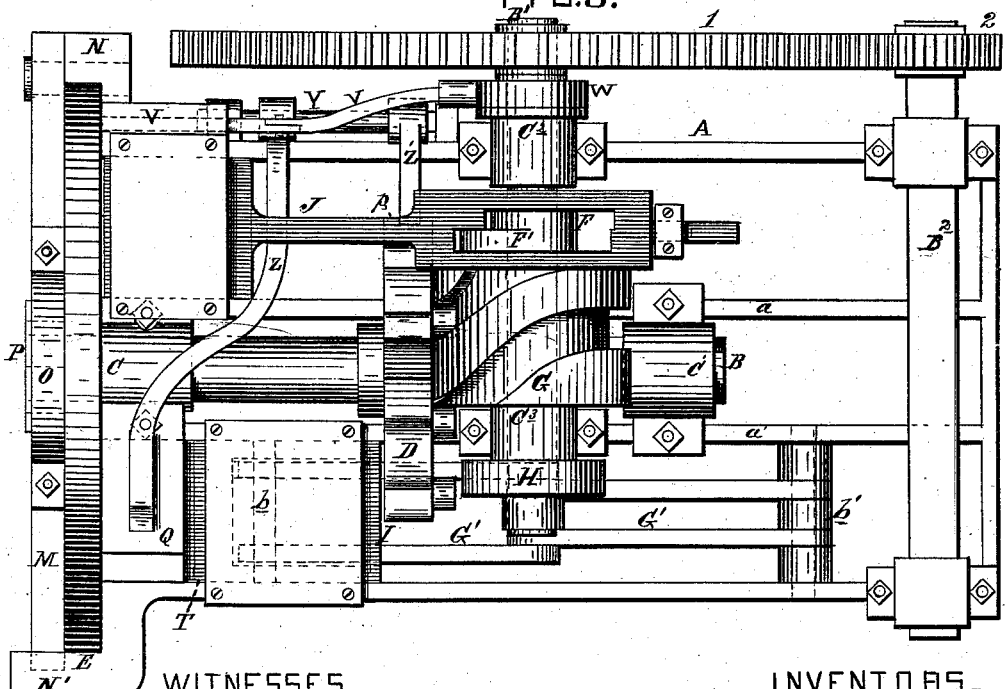

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FIG 4

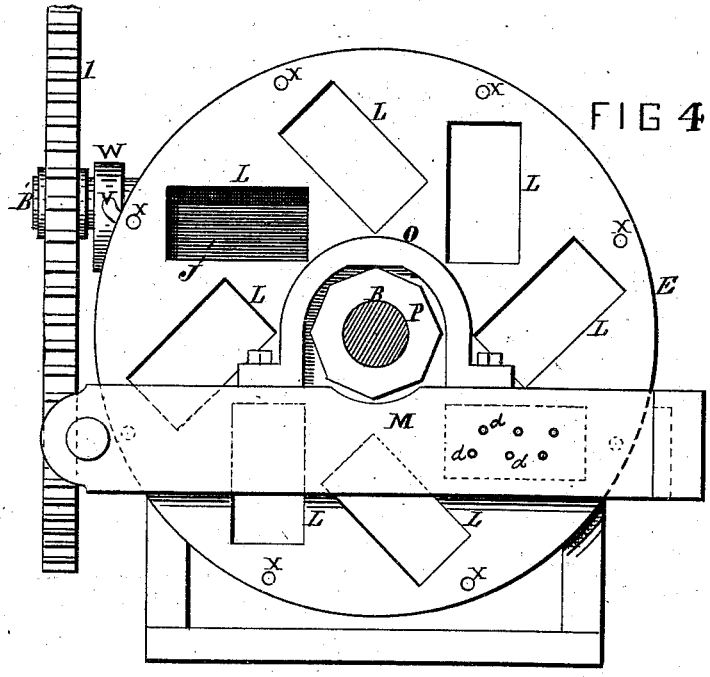
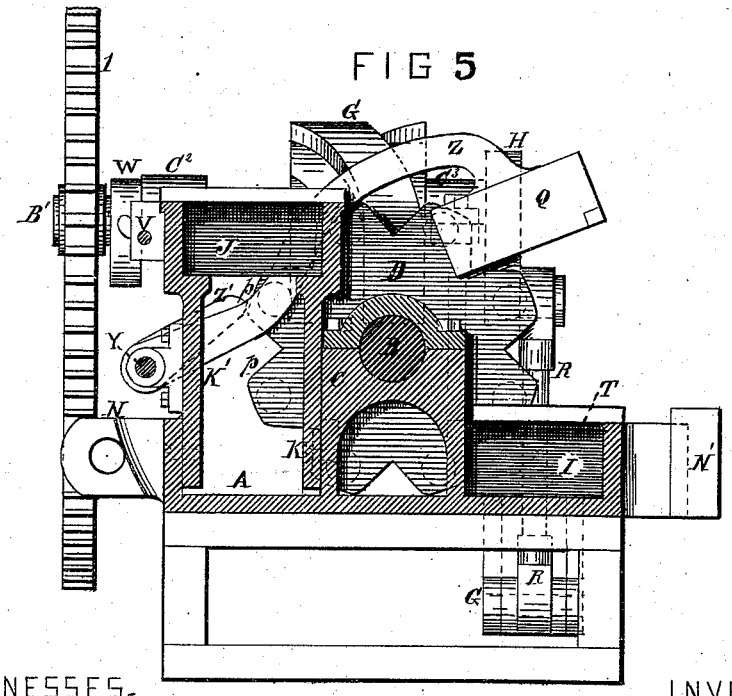


FIG 5



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UNITED STATES PATENT OFFICE.

GEORGE S. SELDEN AND JOHN N. McLEAN, OF PHILADELPHIA, PA.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. **194,787**, dated September 4, 1877; application filed September 14, 1876.

To all whom it may concern:

Be it known that we, GEORGE S. SELDEN and JOHN N. McLEAN, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Brick-Machines, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

This invention relates to that class of brick-machines in which the clay taken directly from the bank is compressed by a plunger into a mold, from which it is discharged after receiving pressure.

The object of our invention is to provide a machine of a cheap and simple construction, combining maximum of strength and durability, and of an easy and rapid operation.

Our present invention consists of a mold-wheel perforated with rectangular openings, which form the brick-molds, arranged in a vertical position at the front end of the machine, and having an intermittingly rotary movement imparted to it, as will hereinafter be more fully set forth.

Two plungers for compressing the clay into the molds, and discharging the molded bricks, are operated in conjunction with the wheel, and receive motion from a toggle-joint and crank and cams arranged on a transverse shaft at the upper part of the machine. This shaft also carries a grooved cam-wheel, which works in connection with a pin-wheel on the mold-wheel shaft, and produces an intermittent rotary movement of the wheel.

The mold-wheel, as stated, revolves in a vertical plane, the molds being brought successively up to the clay-box on one side of the machine and charged, the motion of the wheel ceasing while pressure is being applied, after which the molded brick is carried by the further movement of the wheel up to the discharging point on the opposite side of the machine.

The operation of molding and expelling the bricks is continuous. While one brick is being pressed into the mold on one side of the wheel, the plunger on the opposite side is at the same instant forcing out a finished brick. The finished bricks may be received on an endless belt or wires, whichever is found most convenient.

A movable platen, to receive the pressure of the molded brick, is placed across the front end of the machine, and is furnished with small openings for the discharge of superfluous clay.

Figure 1 is a perspective view of our improvement in brick-machines. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view of same. Fig. 4 is a front view of Fig. 2. Fig. 5 is a front view of the machine with the mold-wheel and platen removed.

A is a rectangular frame, with interior ribs *a* and *a'*, of the same height, and extending the full length of the sides, and is mounted upon feet or other suitable supports; or the sides, with the supports, may form one piece.

B, Figs. 2 and 3, is a longitudinal shaft, supported upon bearings C and C^1, and carrying a pin-wheel, D, and a mold-wheel, E, on its front end. B^1 is a transverse shaft, elevated above the shaft B, and supported in bearings C^2 and C^3, and carrying two cams, F and F', for operating the expelling-plunger, a cam-wheel, G, for operating the mold-wheel, and a crank-disk, H, for operating the compression-plunger.

The plunger I, (shown in Figs. 2, 3, and 5,) which compresses the brick, is placed within the clay-box T, and is operated by means of a toggle, G', the front or reciprocating end of which is pivoted to the plunger at the point *b*, and the rear end, which bears the thrust, similarly attached on a stationary pin, *b'*, with the center-point pivoted to the lower end of the connecting-rod R, which connects with the crank-pin of the disk H.

The plunger J, which is moved to and fro by the cams F F' to expel the finished bricks, is located on the opposite side of the machine, a certain distance above the compression-plunger I, and is supported in guides K and K', secured to or forming a part of the framing.

The rectangular openings L L L, &c., (shown in Fig. 4,) made in the wheel E, to form the brick-molds, are arranged so as to alternately assume a horizontal position above and below

the center of the wheel and directly opposite to the plungers. By this means the bricks are molded and discharged on different planes, rendering the operation of charging the clay-box much easier, owing to its being within easy reach in shoveling in the clay, and discharging the finished bricks at a more convenient height for bearing them off.

M is a platen, arranged across the front of the mold-wheel, and pivoted at one end to a projection, N, on the frame A, with the opposite end resting in a socket and bearing against a shoulder in the projection N′.

O is a yoke attached to the said platen, and passing over an eight-sided or angular nut, P, which is secured on the end of the shaft B. Each angle or corner of the nut bears against the upper part of the yoke as the wheel revolves and raises the platen to its proper horizontal position, and retains it in that position while the wheel is at rest. When the wheel is again set in motion the corners of the nut are carried around, which relieves and permits the platen to drop a short distance with the wheel and cut off or break the cohesion of the clay. This platen may be made stationary, if found preferable in practice.

All superfluous clay in the molds is discharged through openings *d d d*, &c., in the platen. These perforations are made tapering from the outside to insure a free outlet for the clay.

The wheel E is locked in position, when the molds are opposite the plungers I and J, by means of a sliding bolt, V, arranged on the left side of the machine, as shown in Figs. 3, 4, and 5, openings X X X, &c., Fig. 4, being made in the face of the wheel, on a line with the center of each mold, to receive the end of said bolt.

W is an eccentric on the shaft B^1, to operate the bolt, and is adjusted so as to project the end of the bolt a slight distance in advance of the expelling-plunger, and to withdraw the same before the plunger is entirely clear of the mold.

Q is a hammer, placed directly over the clay-box T, and is connected to a shaft, Y, Figs. 2, 3, and 5, by means of a long lever, Z. The said shaft is provided with a short arm, Z′, which rests upon projections *p p p*, &c., on the periphery of the pin-wheel D.

The motion of the pin-wheel raises the arm Z′, and produces a partial rotation of the shaft Y, causing the hammer Q to rise and fall at intervals directly over the clay in the box, the object of which is to strike or pound the clay sufficiently to drive out the air and solidify the clay to a certain extent before it is operated upon by the plunger.

The plunger I and toggle G′ can be arranged to produce a double pressure upon the brick in the mold. The crank being now so arranged as to apply the extreme pressure when the toggle is up to a perfectly horizontal line, if the throw of the crank is slightly lengthened the toggle will be drawn up a short distance above a horizontal line, and the extreme pressure for an instant released, and will be again applied as the crank descends, and the toggle again assumes a horizontal position before its final descent.

Motion is communicated to the shaft B^1 by means of the spur-wheel 1, which receives motion from a pinion, 2, mounted on a transverse shaft, B^2, at the rear end of the machine.

The wheel E is only required to move a short distance to bring the molds successively opposite to the plungers, and for this purpose the elevation or curved portion of the groove in the wheel G is only required to extend a short distance on the circumference. The remaining portion of the groove extends in a perfectly straight line around the balance of the periphery, by which means each pin on the wheel D remains stationary within the groove, while the mold-wheel is required to be at rest. At the proper time the curved portion of the groove is brought in contact with the pin, and a partial rotary movement is imparted to the wheel D, and also to the mold-wheel.

The clay is thrown into the box T through a hopper or otherwise, and after receiving a blow from the hammer Q is forced by the moving plunger I into the mold in the wheel E, and after receiving pressure is carried by the revolution of the wheel up to the expelling plunger J, where the brick is discharged.

What we claim as our invention is—

1. The combination of the shaft B^1, bearings C^2 and C^3, cams F and F′, grooved cam-wheel G, and crank-disk H, substantially as shown and described.

2. The combination of the expelling-plunger J, guides K and K′, cams F F′, and shaft B^1, arranged and operating as and for the purpose shown and described.

3. The combination of the clay-box T, compression-plunger I, toggle G′, connecting-rod R, and crank-disk H, with the mold-wheel E, arranged and operating as and for the purpose shown and described.

4. The combination of the shaft B, cams F F′, and expelling-plunger J, with the molds L L L, &c., of the mold-wheel E, arranged and operating as and for the purposes shown and described.

5. The circumferentially-grooved cam-wheel G, in combination with the pin-wheel D, having the pins on the side of the wheel, and mold-wheel E, arranged to operate substantially as described, for the purpose of giving an intermittingly rotary movement to the mold-wheel.

6. In combination with the wheel E, having molds L L L, &c., arranged to assume alternate horizontal positions above and below the center of the wheel, the reciprocating plungers I and J, operating to compress the

clay in each mold in succession, and at the same time expel a finished brick.

7. The combination of the wheel E, molds L L L, &c., movable platen M, yoke O, and nut P, substantially as and for the purpose shown and described.

8. The combination of the sliding bolt V, eccentric W, shaft B^1, and openings X X X, &c., in the mold-wheel, substantially as and for the purpose shown and described.

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