2 Sheets—Sheet 1.

J. K. CALDWELL.

Brick-Machines.

No. 206,771. Patented Aug. 6, 1878.

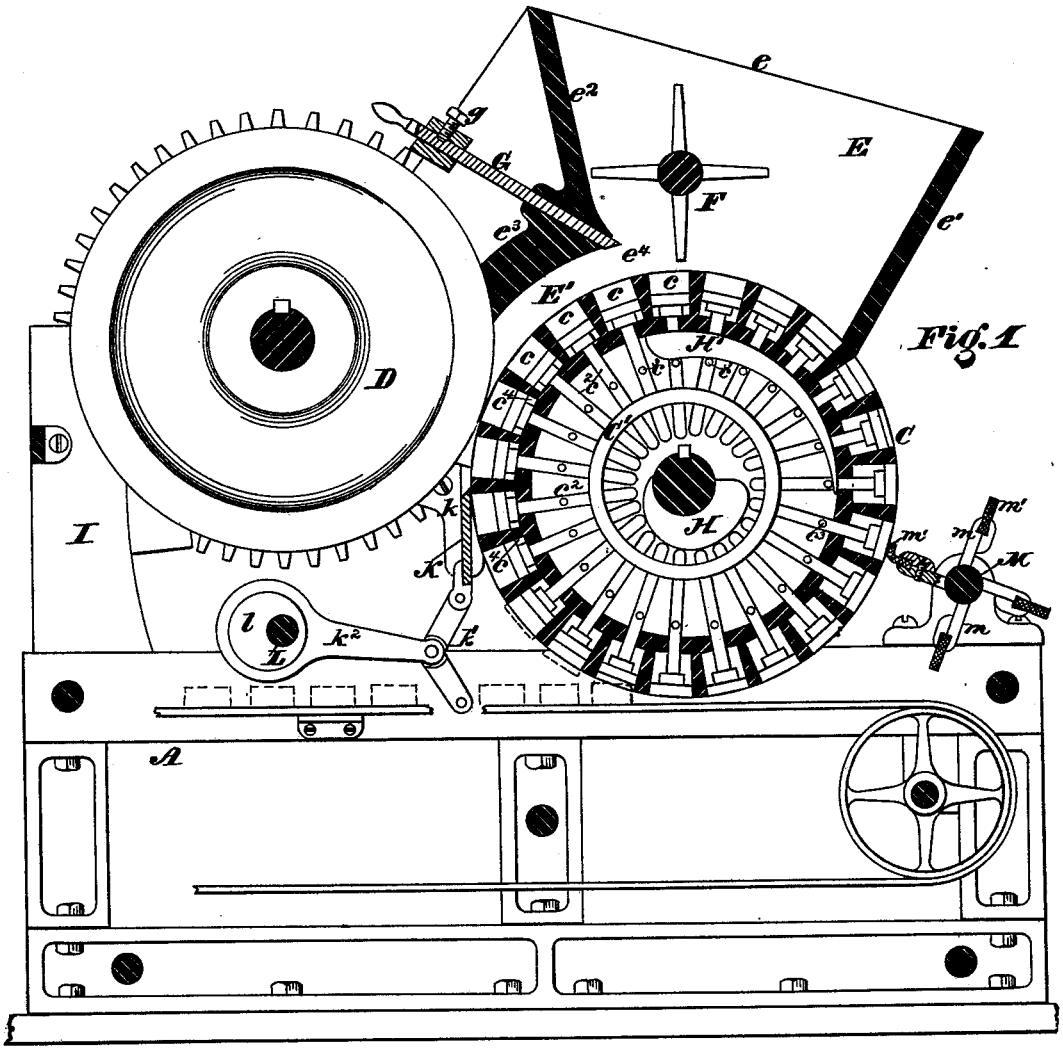

Fig. 1

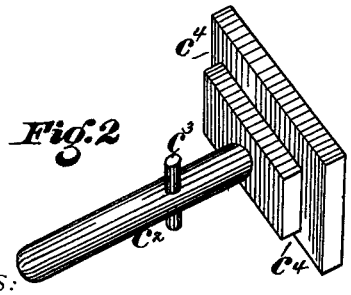

Fig. 2

WITNESSES:

Saml. J. Van Stavoren.

J. B. Connolly

INVENTOR.

John K. Caldwell

By Connolly Bros.

ATTORNEYS.

J. K. CALDWELL.

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Fig. 3

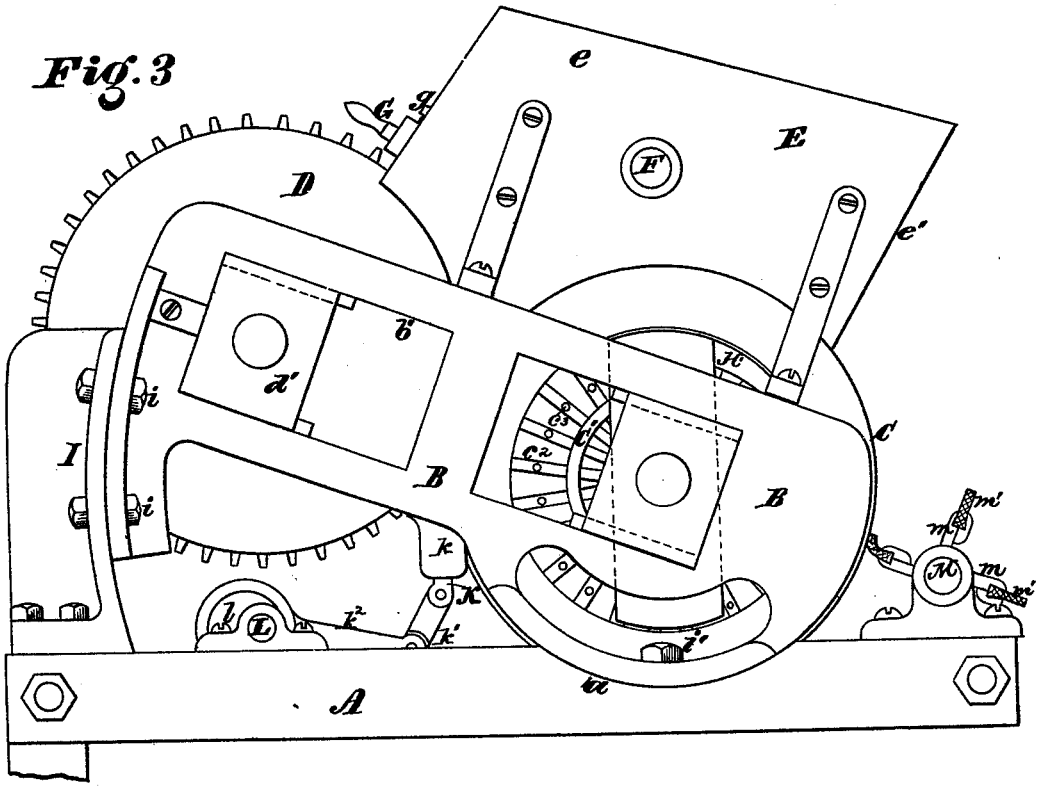
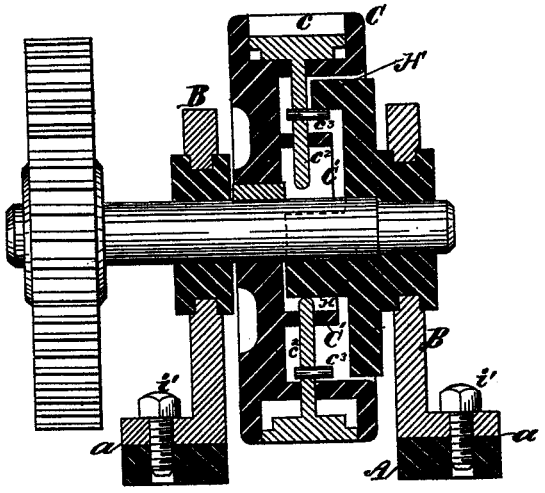


Fig. 4



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UNITED STATES PATENT OFFICE.

JOHN K. CALDWELL, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. **206,771**, dated August 6, 1878; application filed December 11, 1877.

To all whom it may concern:

Be it known that I, JOHN K. CALDWELL, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Brick-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a vertical longitudinal section; Fig. 2, a perspective detail of the plungers; Fig. 3, a side elevation, and Fig. 4 a transverse vertical section, of my invention.

My invention consists in the peculiar construction and combination of parts hereinafter set forth, having reference particularly to the following points: first, so constructing the hopper that the mold-wheel will be charged therefrom with loose clay and the additional clay required to form the bricks when compression is applied will be measured before being acted upon by the pressure-wheel; second, to constructing the hopper with a division forming a separate measuring-chamber and combining therewith a peculiarly-arranged slide for adjusting the area of the entrance to said measuring-chamber; third, to the provision of a rotating wiper having rubber, leather, or equivalent strips inserted in radial blades for cleaning the faces of the mold-boxes and plungers; fourth, to the provision of a secondary bearing or guide for the plunger-stems; fifth, to the formation on the under side of the plungers of chambers for the reception of clay that may work to the bottom of the mold-boxes around the sides of said plungers.

Referring to the accompanying drawing, A designates the main frame of the machine; B, the housing, in which are sustained the mold and pressure wheels C and D, respectively; and E, the hopper. The sides of the hopper are indicated by the letter *e*, and e^1 shows one of its ends. The other end consists of a partition, e^2, which terminates a short distance above the mold-wheel C, where it is attached to a board, e^3, concentric with the said wheel. Said board e^3 forms the ceiling and said wheel the bottom of the measuring-chamber E′, the sides of the hopper forming the side walls of said chamber.

The partition e^2, with the board e^3, is designed to be vertically adjustable, so as to increase and diminish, as may be required, the depth of the chamber E′ or the distance between its ceiling e^3 and the mold-wheel C.

F represents a stirrer or radially-armed shaft, having bearings in the sides of the hopper, the object of said stirrer being to keep the clay in the hopper in a pulverized condition, to prevent its packing, and also to feed such clay into the mold-boxes and the measuring-chamber.

G represents a slide, which moves between the sides *e* of the hopper, and is made fast when adjusted by means of a set-screw, *g*. Said slide is inclined, as shown, so that when pushed in or down it will cover or encroach upon the passage e^4, which forms the entrance to the measuring-chamber E′. The angle of inclination of this slide is such as would make the line of said slide, if extended, form a tangent to the circle described by the outer extremities of the arms of the stirrer F, and would cause it to intersect the periphery of the mold-wheel C.

The mold-wheel C has boxes or molds *c* in its periphery or face, and within these boxes are plungers or ejectors, designed to effect the ejection of the bricks after being molded. The stems or rods of said plungers are shown at c^2, and pass through the bottoms of the boxes *c* and radially through openings in an annular flange, C′, affixed on the side of and moving with the mold-wheel C, said flange affording a secondary bearing or guide for said stems. H and H′ are cams affixed to the housing B, and operating to alternately push out and to withdraw said plungers by contact, respectively, with the inner ends of the stems of the latter and with cross-pins c^3 therein.

The backs or under sides of the plungers are rabbeted, as shown at c^4, to form, with the bottom and sides of the boxes *c*, chambers to receive any clay which may work in or around the edges of said plungers, and which would prevent said plungers from coming home to their seats on the bottoms of said boxes.

The feed and pressure wheel D has a plain periphery, and may be run either by frictional contact with the mold-wheel or by gearing with

the latter, as shown. This wheel feeds the clay from the measuring-chamber E into the mold-boxes and compresses the same therein. To vary the quantity of clay so fed or taken by said pressure-wheel D, the housing B is vertically adjustable, swinging or swiveling in its seat *a* on the frame A, and being made fast when the desired adjustment is secured by means of retaining pins or screws *i*, passing through the standard I, and similar devices *i'*, entering the frame A.

To increase the feed of wheel D the housing B is lowered, while to diminish such feed said housing is raised, swinging on its fulcrum or seat, as already suggested. To vary the distance of the pressure-wheel D from the mold-wheel C, which distance is not affected by the swinging, as described, of the housing, the former is mounted in sliding bearings or boxes *d*, which may be moved in slots *b* in said housing.

K represents the cut-off knife for removing excess clay from the bricks after they have been molded and before being ejected from the boxes. Said knife is caused to reciprocate rapidly in guides *k*, being actuated by a toggle, k^1, which derives its movement, through a lever and collar, k^2, from an eccentric, *l*, on a fast-running shaft, L. The effect of this movement of the knife is to remove, by a series of short rapid strokes, the excess clay, and thereby to obtain a cleaner surface or cut than is obtainable by means of a stationary knife against which the bricks are pressed or borne by the rotation of the mold-wheel.

M represents a shaft sustained on the frame A, and having radial blades *m*, in which are inserted strips of rubber, leather, or equivalent material *m'*. This shaft is arranged in such proximity to the mold-wheel C and is run at such speed that it will completely rotate at least once, and preferably twice, while each mold-box is passing, so that the faces of the mold-boxes and of the plungers will be wiped once or twice by each of the strips *m'* in passing the shaft M.

The operation is substantially as follows: Clay fed into the hopper is kept from packing by means of the stirrer F, which feeds such clay into the measuring-chamber E' and into the mold-boxes *c* as they pass beneath. The loose clay in the measuring-chamber is fed into the mold-boxes by the feed and pressure wheel D, which compresses said clay therein and forms the bricks. The mold-wheel continuing to rotate, the bricks therein are brought into contact with the cut-off knife, which, by a series of short rapid strokes, cleanly and sharply removes all excess clay. The bricks are then ejected from the mold-boxes by the plungers, which remain out with their faces in line with the periphery of the mold-wheel until they have passed the wiper M. The plungers are then withdrawn by the action of the cams H', leaving the mold-boxes free to receive a fresh charge. Any excess clay which may work down around the plungers will pass into the chambers c^4, and be retained there until removed by cleaning out. A stationary oiler may be used to oil the faces of the plungers before they pass into the hopper, such device to be of any suitable material that will hold oil and rest lightly on the mold-wheel.

What I claim as my invention is—

1. In a brick-machine having a rotary mold cylinder or wheel, C, the combination therewith of a hopper, E, provided with a separate measuring-chamber, E', substantially as shown and described, and for the purpose set forth.

2. In a brick machine having a mold-wheel, C, the combination, with the latter, of the hopper E, having the separate measuring-chamber E', in communication therewith, said measuring-chamber having the capacity of its mouth adjustable or variable, substantially as and for the purpose set forth.

3. In a brick-machine, the hopper E, having a division forming a separate measuring-chamber, E', and an inclined slide, G, arranged substantially as shown, so as to adjust the area of the entrance to said measuring-chamber, as and for the purpose set forth.

4. In combination with the mold-wheel C, the reciprocating cut-off knife K, arranged and operating substantially as shown and described.

5. The revolving wiper consisting of the shaft M, having blades *m* and flexible strips *m'*, substantially as shown and described.

6. The plungers c^2, rabbeted at c^4 to form chambers for any clay which may work around their edges or sides, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 8th day of December, 1877.

JOHN K. CALDWELL.

Witnesses:
SAML. J. VAN STAVOREN,
CHAS. F. VAN HORN.