

T. T. JOYCE.
Brick-Machine.

No. 159,931.

Patented Feb. 16, 1875.

FIG. 1.

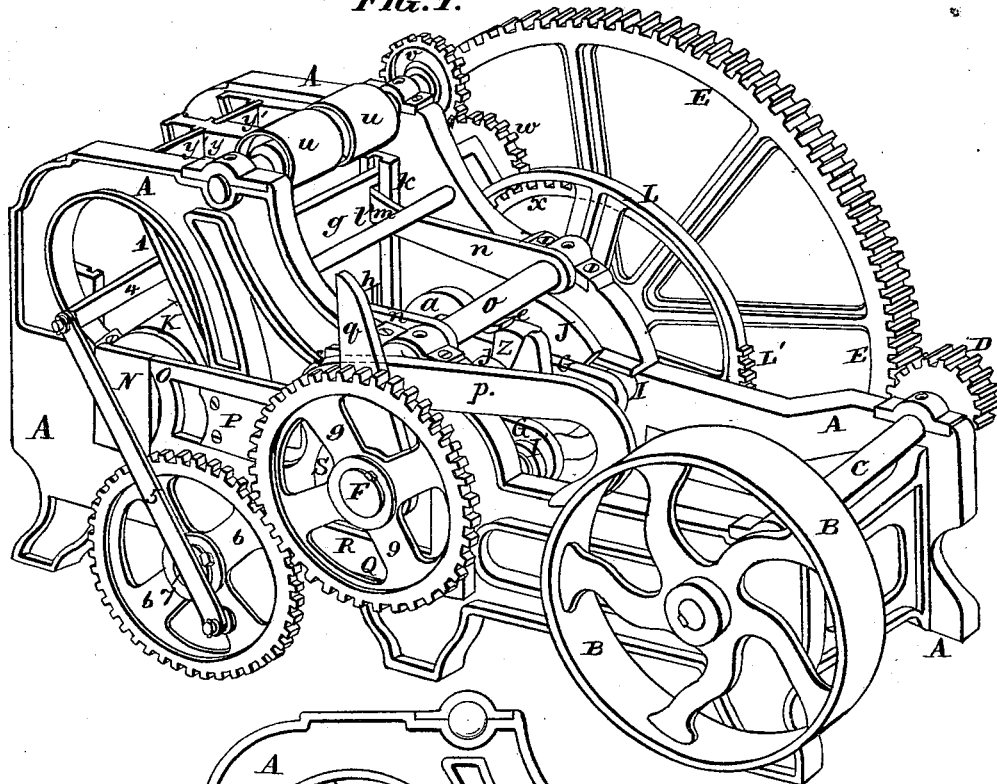
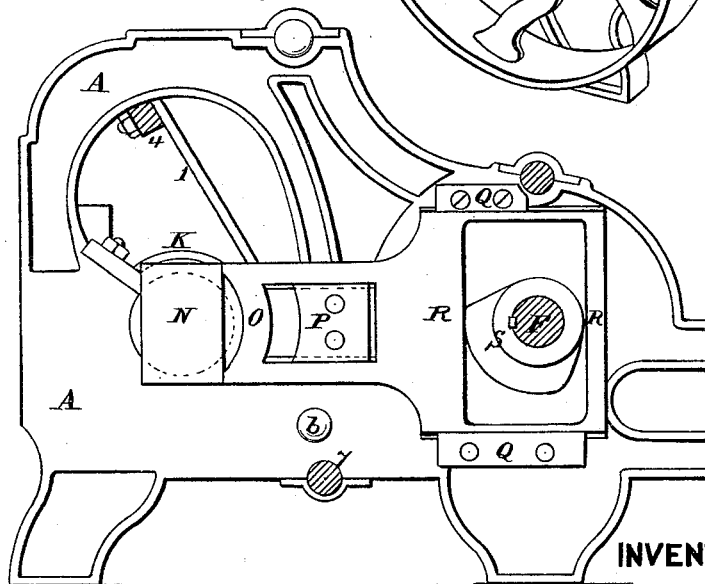


FIG. 2.



ATTEST:

Walter Allen
Henry Tanner

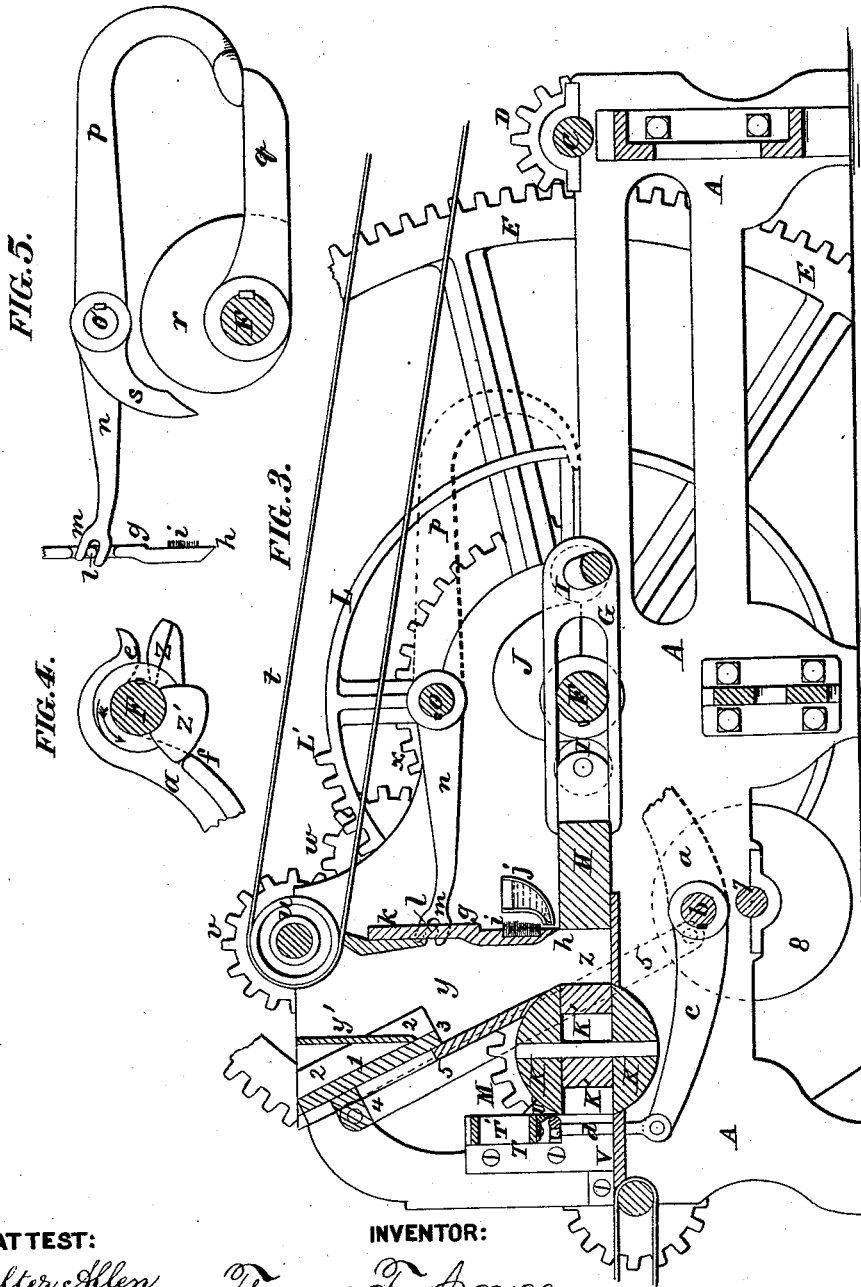
INVENTOR:

Thomas T. Joyce.
By *Wright & Co.* attorneys.

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UNITED STATES PATENT OFFICE.

THOMAS T. JOYCE, OF NEW YORK, N. Y., ASSIGNOR TO CATHARINE THOMAS,
OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. 159,931, dated February 16, 1875; application filed
October 20, 1874.

To all whom it may concern:

Be it known that I, THOMAS T. JOYCE, of the city, county, and State of New York, have invented certain new and useful Improvements in Brick-Machines, of which the following is a specification:

The present invention is an improvement on the brick-machine patented July 8, 1873, to John S. Thomas, the whole title in which patent was assigned to me.

The first part of my improvement consists in a sliding plate, which moves to and from the rectangular end of the mold-cylinder, and holds it firmly in position while the bricks are being pressed therein.

The second part of my improvement relates to the clay-feeding apparatus. This consists of a reciprocating plunger at one side of each hopper, which forces down the clay to the vent of the hopper. These plungers are so arranged as to admit of being made thicker or thinner by the addition or removal of metallic re-enforce plates, so as to regulate the amount of clay fed by changing the face area of the plunger.

The third part of my improvement consists of a guillotine-knife, which cleans the face of the mold-plunger on each retraction of the latter.

The fourth part of my improvement consists in a frame which has vertical reciprocation in front of the molds, and which carries at its lower end a knife that cuts off any superfluous clay from the outer face of the bricks. In the frame are apertures for the reception of the bricks, which are carried up with the frame while the cylinder is turning.

In the drawings, Figure 1 is a perspective view of my machine. Fig. 2 is a longitudinal section through a portion of the machine, to show the mode of operating the sliding plate, by which the mold-cylinder is held in position while the bricks are being pressed into the molds on one side, and discharged on the other. Fig. 3 is a longitudinal section on a plane passing through one of the hoppers and molds, and showing the cam movement by which the plunger is operated. Fig. 4 is a side view of a portion of the arm, and the cam by which the brick lifting and trimming frame

is drawn down. Fig. 5 is a diagram, showing the lever and cam movement, by which the knife that cleans the plunger is operated.

The frame A of the machine may be made in any manner suitable to give support and bearing to the working parts. The machine is, in its main principle of action, like the machine described in the aforesaid Patent No. 140,742, the mold-cylinder and plunger being substantially similar; but in the present case the pug-mill is dispensed with, and the clay in condition for molding is brought to the hoppers and directly forced into the receptacle, from which it is forced by the plungers into the molds.

The means employed to turn the mold-cylinder is substantially the same in this as in the former patented machine; but the means for holding the mold-cylinder in position differs materially.

The power is communicated to the machine by a belt on the pulley B. The shaft C of this pulley carries a spur-wheel, D, which engages a spur-wheel, E, upon the main shaft F, which passes through slots in the arms G of the plunger H. The arms G G carry anti-friction rollers I I', against which act cams J J upon the main shaft, to advance and retract the plunger, which slides horizontally and longitudinally backward and forward. The mold-cylinder K is similar to that of Patent No. 140,742, to which reference is made for description. The operation of the plunger H therein is also similar in the present case to the said patent. The mold-cylinder has intermittent semi-rotation by means of a cog-sector, L', on the wheel L, this wheel being upon the main shaft. The said sector has half the number of teeth of the cog-wheel upon the mold-cylinder, (with which it engages,) so as to cause a semi-rotation of the mold-cylinder to each rotation of the wheel L. Upon the end of the mold-cylinder opposite to the wheel M is a rectangular part or block, N, and at each semi-rotation of the cylinder the latter is held in position for the entrance of the clay by a sliding plate or frame, O, which is pressed against one of the flat sides of the block N, and holds the cylinder in the exact position for the reception of the clay at one side, and

the discharge of the pressed bricks at the other. The slider O works in guides P Q, and has a cam-yoke, R, in which turns a cam, S, upon the main shaft, and by this cam it receives its movements.

When the bricks are discharged from the cylinder in the former machine, (covered by Patent No. 140,742,) they are received directly on a table; but in the present machine they are received in apertures T' of a vertically-reciprocating frame, T, at whose lower edge is a knife, U, which trims off the outer side of the bricks in the molds as the frame descends. As the frame reaches its lowest position, the bottom of the apertures T' is on a level with the bottom of the molds K' and the table V. As one set of bricks is forced out of the molds it pushes the previous set from the apertures T' to the table, and the bricks ejected from the molds take their places in the apertures T', and are in turn lifted up with the frame, to give the knife U an opportunity to shave the outer sides of the next set of bricks.

The frame T is moved up and down by cams Z Z', acting on the lever a, supported on a rock-shaft, b, having arms c, connected to the bottom of the frame by pitmen d. The cams rotate in the direction shown by the arrow, and the cam Z comes in contact with the curved surface e at the end of the lever, and by raising this end depresses the frame T. Then the continued rotation of shaft F brings the cam Z' in contact with the lug f on the side of the lever, and by depressing this end of the lever raises the arms c and the frame T. g is a sliding frame, carrying at its lower end a knife, h, which, when the plunger is in its backward position, as shown in Fig. 3, descends in front of the plunger and cleans off its face. Above the knife is a recess or recesses, containing a brush, or brushes, i, which lubricate the face of the plunger after it has been cleaned off by the knife h, the frame g descending low enough to bring the brush in contact with the plunger-face. The brush i is supplied with lubricating liquid from a vessel, j, whose mouth is partially closed by porous material, so as to allow a sufficient escape of the lubricant. The frame g works in vertical guides k, and has at its ends or sides pins l, which engage in forks m at the ends of arms n. The arms n are attached to a rock-shaft, o, which carries at the end an arm, p, against which acts a cam-arm, q, upon the main shaft. By the action of the cam-arm q the arm p is raised, and the arms n and frame g depressed. r is a cam upon the main shaft, which comes in contact with the arm s, and raises the knife-frame g, so as to clear the way for the forward movement of the plunger. The hoppers are fed with clay by belts or conveyers t upon pulleys u, which are upon a

shaft turned by spur-wheels v and w, engaging with spur-wheel x upon the main shaft. The top of the front side of each hopper is made of vertical plates y', having capacity for vertical adjustment; and in front of and beneath each plate y' works a reciprocating feeder, 1, whose lower end pushes before it as it descends a certain amount of clay into the receiver z, between the plunger H and the mold-cylinder K. The feeders 1 have side flanges 2, working in side recesses in the hopper, so that the outer side of the flange is flush with the inner side of the hopper.

The purpose of this form of feeder is to allow the thickness of the feeder to be increased by addition of plates between its flanges, so as to cause it to carry down more clay by increasing the area of its working face or end 3. These feeders are attached to a transverse bar, 4, whose ends are connected, by bars 5, to wrist-pins on a spur-wheel, 6, and disk 8 on a shaft, 7, that receives rotation from a spur-wheel, 9, on the main shaft. The re-enforce plates may be attached to the flanges 2, or secured to the front sides of the feeders in any other manner, and the plate y' is vertically adjusted, so as for its bottom edge to come lightly in contact with the inside of the feeder, whatever its thickness may be, so as to scrape the clay from the side of said feeder in its upward movement.

I claim herein as new and of my invention—

1. The sliding plate O and its operating-cam S, in combination with the mold-cylinder K, having a square portion, N, to receive the impact of the plate, substantially as set forth.
2. The reciprocating plunger or feeder 1, with its operating crank-disk and wheel 6 and 8, in combination with the hopper y, mold K, and mold-plunger, substantially as set forth.
3. The plunger 1, when provided with side flanges 2, for attachment of re-enforce plates, in combination with the clay-hopper y, substantially as set forth.
4. The plunger 1 and vertically-adjustable plate y', in combination with the fixed part of the clay-hopper y, substantially as set forth.
5. The knife h, cam-arm n p, and cams q r, in combination with the mold-plunger, substantially as set forth.
6. The knife-frame T and operating-cams Z Z', lever a c c, and pitmen d d, combined with the molds K', substantially as set forth.
7. The knife-frame T U, having brick-apertures T', to raise the bricks above the level of the table, substantially as and for the purpose set forth.

THOMAS T. JOYCE.

Witnesses:

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MAURICE J. JOYCE.