

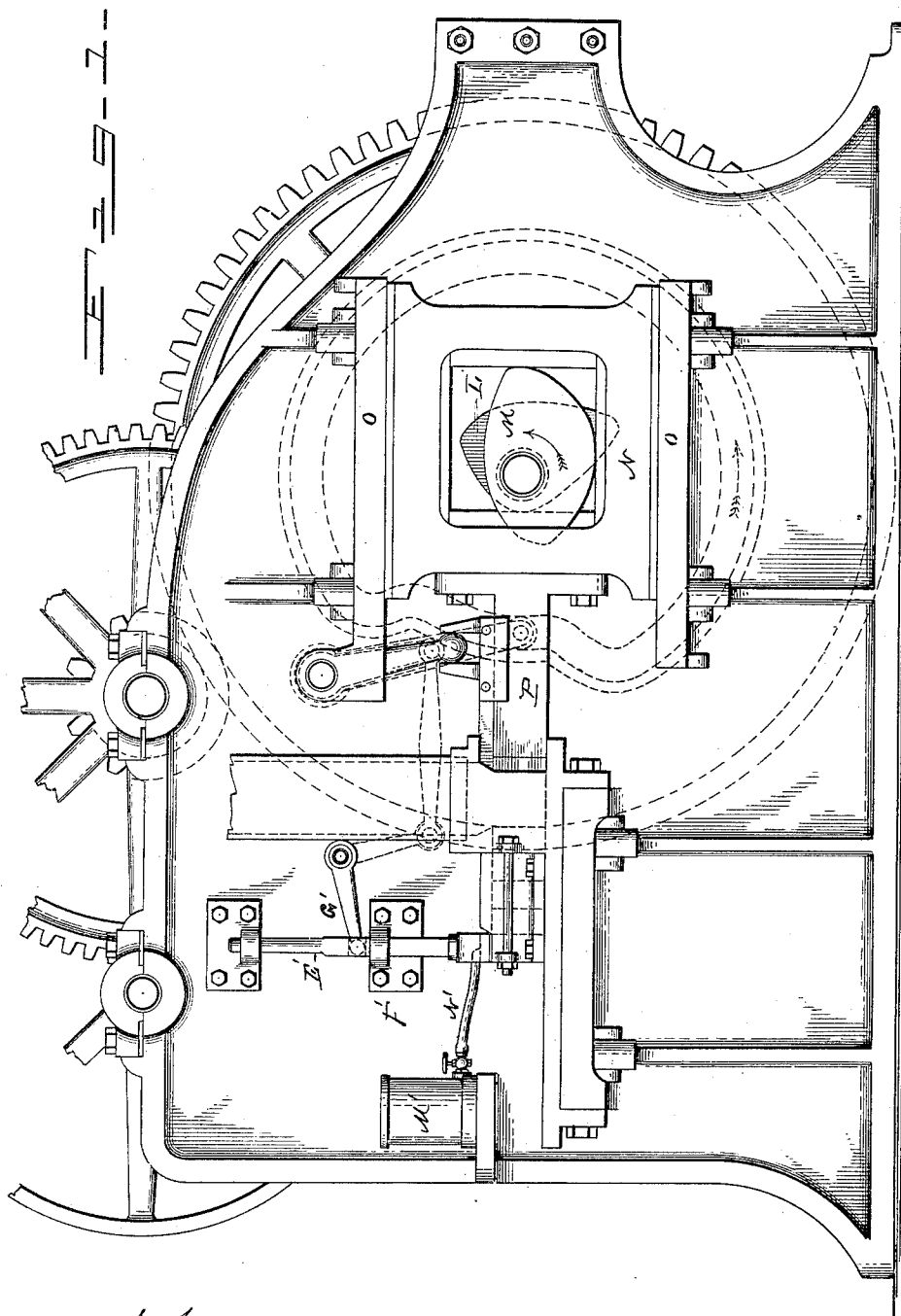
(No Model.)

4 Sheets—Sheet 1.

J. C. ANDERSON.
BRICK MACHINE.

No. 468,059.

Patented Feb. 2, 1892.



Witnesses,
Henry Frankfurt,
Alex Mahon

Inventor,
J. C. Anderson
By
Wm. J. S. S. S. S. S.
att'y

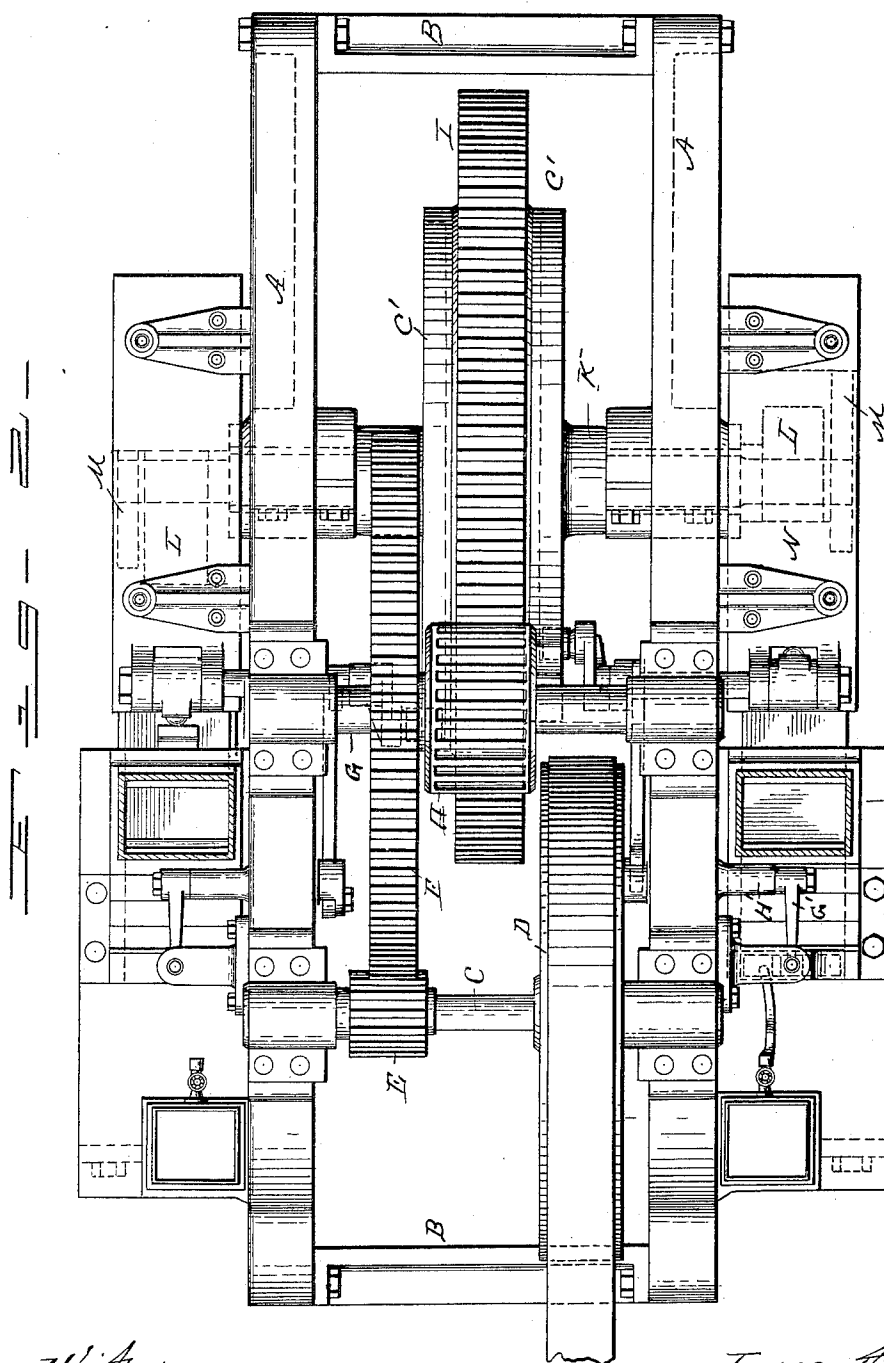
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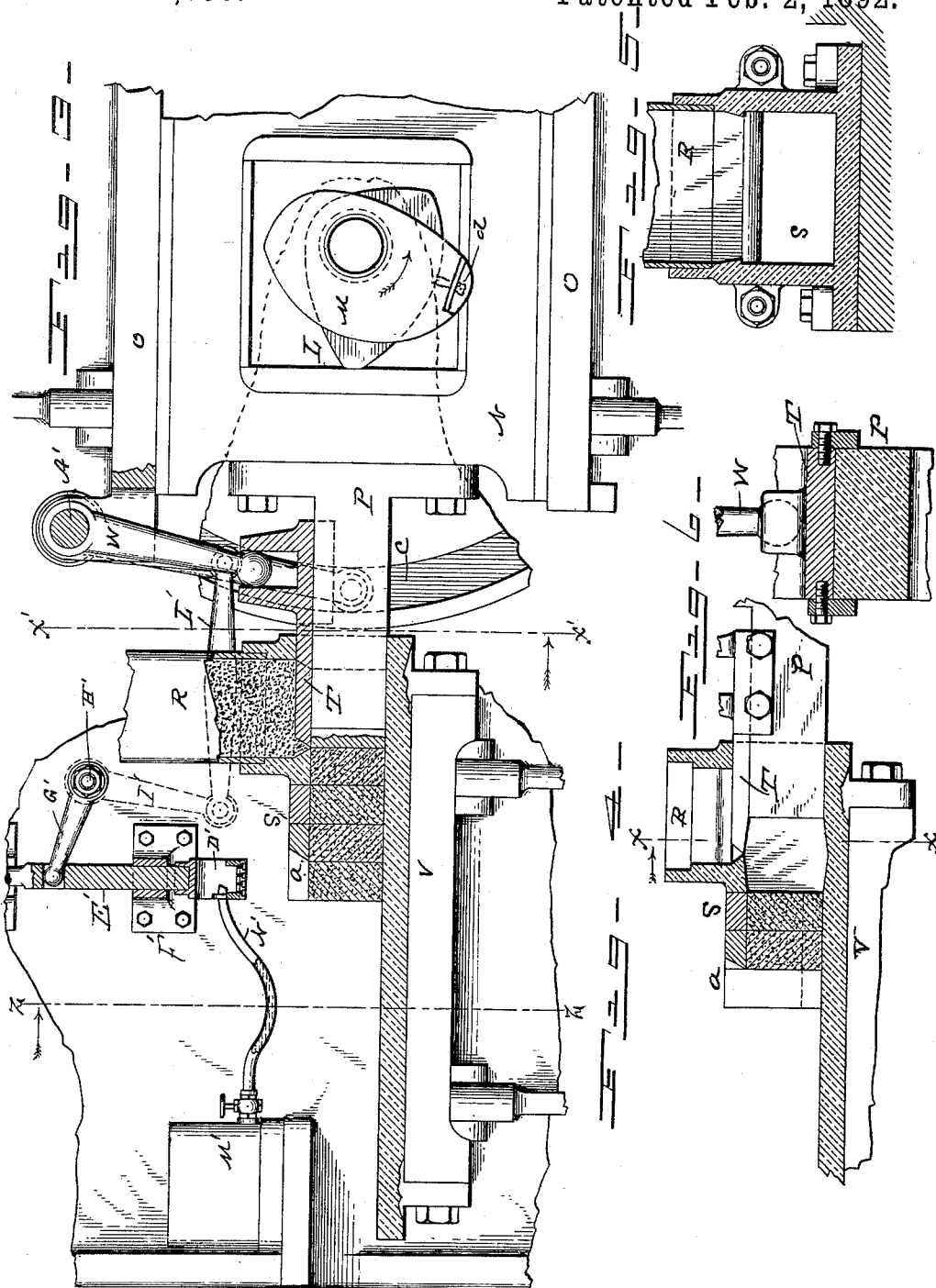
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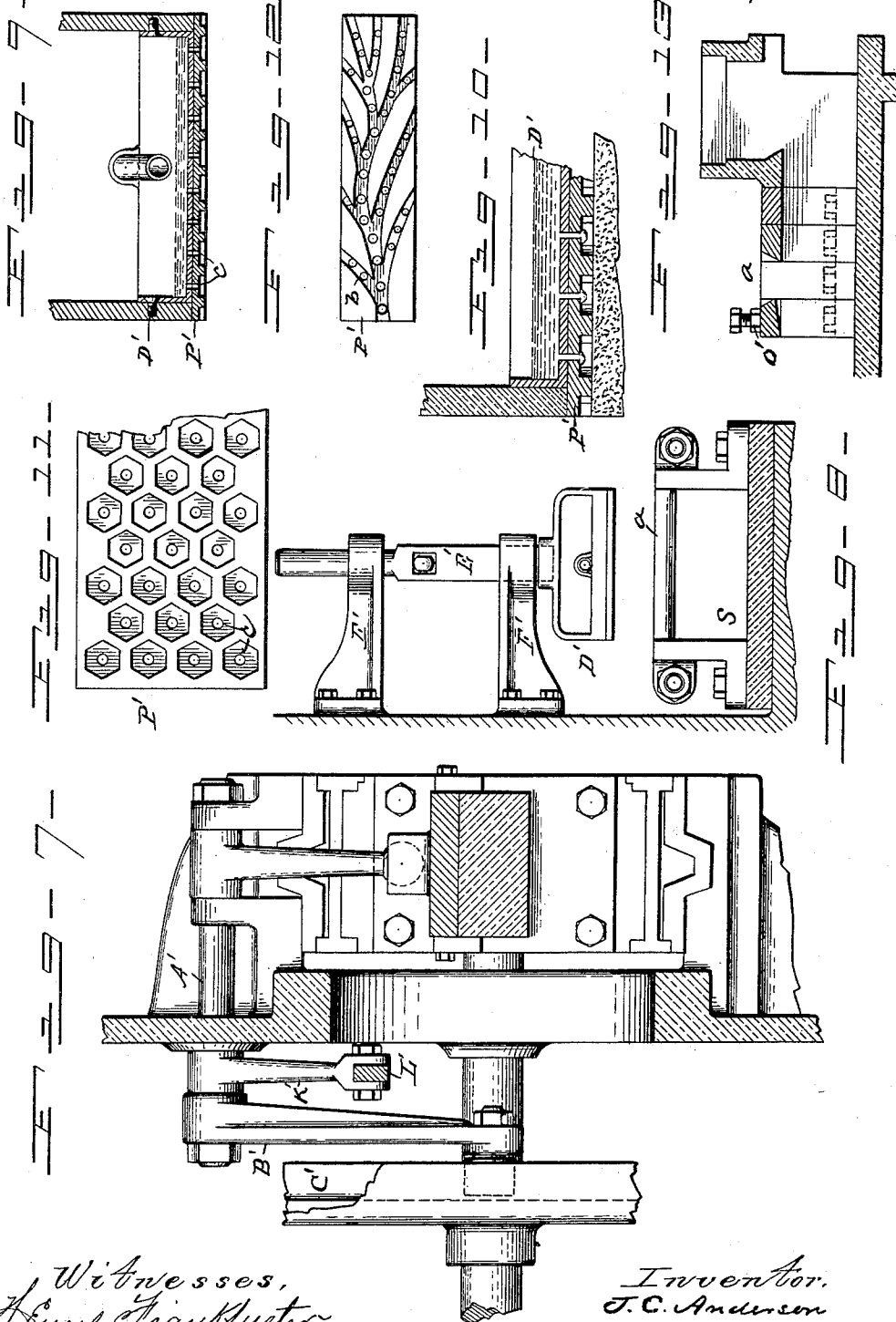
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UNITED STATES PATENT OFFICE.

JAMES C. ANDERSON, OF HIGHLAND PARK, ILLINOIS.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 468,059, dated February 2, 1892.

Application filed April 19, 1888. Serial No. 271,192. (No model.)

To all whom it may concern:

Be it known that I, JAMES C. ANDERSON, a citizen of the United States of America, residing at Highland Park, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Brick-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The object of my invention is to provide a mechanism whereby bricks are produced having the main body thereof of a granular texture of a sufficiently porous nature to properly absorb the moisture from the mortar, to
15 allow the same to set while being laid in the wall, and at the same time to provide the face or weather edge of said brick with a surface of such firm texture that the said surface will be entirely impervious or free
20 from osmotic action by the absorption of the moisture from without or the exudations of salts to the surface from the walls of the building, furnishing an effectual barrier to the action of the weather, and, furthermore,
25 in forming on said surface a crusting of crystal-like beads, studs, and drosses of various colors and designs; and to this end I have devised a mechanism for molding the main part of the brick from dry clay powder and
30 the facing part thereof of wet clay slip simultaneously into one homogeneous body, whereby such brick, when molded, is rendered susceptible to vitrification on the face part thereof and more refractory in the main body of
35 the same, so that when fired to the condition of pottery the bricks themselves, while composed practically of one homogeneous body, possess the desired characteristics above described. The main body of the brick is
40 molded into form from the dry clay powder under great pressure, while the face part is molded to and made a part thereof from the clay in the wet state in the form of a slip. It may be proper here to state that the same
45 clay when molded into form out of dry clay powder by pressure requires a much greater degree of heat to put it in the condition of pottery than when put into form in the wet state. The bottom die-matrix heretofore
50 used for resisting the force exerted for pressing dry clay powder into brick form is dis-

pensed with in this mechanism, the die-box or molding-chamber in which the bricks are formed being elongated to provide friction-surface equivalent to the force exerted in
55 compacting the clay into brick form, one end of said chamber being open to allow the bricks as they are formed to pass there-through, the other end of the chamber being provided with a plunger, which compresses
60 the clay against the newly-formed brick, relying upon the friction or impact of a series of brick within the mold box or chamber for an equivalent resistance to the pressure exerted by the plunger necessary to properly
65 press the brick into form.

In the drawings, Figure 1 is a side view of my improved machine. Fig. 2 is a top or plan view. Fig. 3 is a side view, partly in section, of the novel feature of my invention.
70 Fig. 4 is a detached view of a modified form of the cavity or chamber in which the brick are formed, together with a clay spout and plunger. Fig. 5 is a sectional end view of the chamber in which the brick is formed and
75 its connection with the feed-spout. Fig. 6 is a detached view, partly in section, of a portion of the plunger and slide-plate for cutting off and supplying clay to the mold-box with its connection to the operating-arm. Fig. 7 is
80 an end view, partly in section, of the devices which operate to raise and lower the hollow plunger containing the slip, taken on the line $x' x'$ of Fig. 3, as well as the mechanism for operating the plate which opens and closes the
85 feed-spout. Fig. 8 is a side view of the hollow plunger containing the slip and an end view of the chamber in which the brick are formed. Fig. 9 is a sectional view of the plunger for depositing the wet clay or slip on the brick.
90 Fig. 10 is a partial sectional view of the plunger containing the wet clay or slip, showing the perforated rubber face and its application to a brick. Fig. 11 is a face view of the perforated rubber facing of the plunger which
95 contains the wet clay or slip. Fig. 12 is a face view of a rubber facing of the plunger, showing a different design in the arrangement of the openings. Fig. 13 is a sectional view of the brick-forming chamber with a device at
100 the end for smoothing the slip to form plain surfaces on the brick.

A indicates the sides of the machine, which are secured together in a substantial manner by cross-bar B.

C is a shaft mounted in suitable bearings in the sides of the machine, said shaft being provided with a band-pulley D, by which said shaft is driven from any suitable source of power.

E is a pinion-wheel mounted on the shaft C, which meshes with and imparts motion to the spur-wheel F on the shaft G. The shaft G is provided with a pinion-wheel H, which meshes with the gear-wheel I and imparts motion to the shaft K, on which it is mounted. Each end of the shaft K is provided with cams L and M, which work in yokes N, adapted to slide back and forth in suitable guides O, secured to the sides of the machine, the plungers P being secured to the yokes N and worked back and forth by the cams L and M, as heretofore stated.

The devices which have just been described—*i. e.*, the shafts, spur and pinion wheels, cams and gibs or yokes carrying the plungers, and the general driving mechanism—are shown and described in Patent No. 348,445, granted to me August 31, 1886, and such portions, together with their operation, need not be further described by me in this specification.

The cam M for withdrawing the plunger from under the feed-spout differs from the cam used for the same purpose in the patents above referred to in that a portion of its face is made adjustable by means of a screw-bolt *d* or in any other suitable manner, so that the throw of the plunger can be regulated, and in this way the quantity of clay admitted to the mold box or chamber can be increased or diminished by increasing or diminishing the size of the clay-cavity and determining the thickness of the brick.

R is the feed-spout through which the dry and pulverized clay is fed into the mold box or chamber S, the supply of clay powder being cut off from the mold-cavity by a sliding plate T, which will be more fully described hereinafter.

The mold cavity or chamber S is supported by the bracket or table V and is open at its rear end, the other or front end being adapted to receive the end of the compression-plunger P. As before intimated, T is a plate adapted to slide back and forth on top of the plunger P to cut off or supply clay from the feed-spout to the mold-cavity, said plate being operated by the swinging arm W, secured to the outer end of the shaft A'.

B' is an arm secured to the inner end of the shaft A', the lower end of said arm being provided with a stud and friction-wheel, which projects into the cam-groove C', formed on the side of the gear-wheel I. The cam-groove C' is so formed and so timed in its revolution that it will move the plate T forward to close the exit of the feed-spout just before the plunger starts forward to compress the clay

in the mold box or chamber and hold said plate in such position until the plunger has finished its stroke, when it is drawn back, together with the plunger, to open the feed-spout and allow a charge of clay to fall therein.

At each stroke of the plunger in the direction of the mold box or chamber the clay is driven forward against the brick which has been previously pressed, the impingement, friction, or impact of a series of brick within the mold box or chamber forming the resistance to the pressure exerted by the plunger to properly press the brick into form, and at each stroke of the plunger a perfectly-formed brick is ejected from the end of the mold-box.

The mold box or chamber S is made up of sections adapted to be screwed or otherwise secured to the bracket V, so that the chamber can be lengthened or shortened to meet the requirements and peculiarities of the different kinds of clay, as some clays require more pressure, so that having a greater number of bricks in the mold-box increases the resistance offered to the plunger, and the charge of clay will be more or less compact in proportion to the length of the mold box or chamber.

In Fig. 4 I have shown a modified construction of the mold box or chamber, and in order to give equal density to both sides of the brick I have relieved the friction in that part of the mold box or chamber in which the initial pressure takes place in forming the brick by opening that part of the chamber slightly outward and then compacting the side of the brick farthest from the pressure exerted by the matrix by inclining that part of the chamber inwardly to the same degree, thus wedging and compacting the brick to an equal density at both sides of the same.

As before explained, a brick is ejected from the mold box or chamber at each forward stroke of the plunger, and while such brick is still standing in the open end of the chamber (the top being left off for the purpose, as shown at *a*) I automatically deposit on the edge of the brick a facing of wet clay by means of the following devices.

D' is a hollow plunger provided with a perforated bottom, said plunger being guided by an extension E', which works through openings in the arms or brackets F'.

G' is a lever, one end of which is secured to the rock-shaft H', while the other end is secured in a flexible manner to the extension E' of the plunger D'. The inner end of the rock-shaft H' is provided with an arm I', as shown in dotted lines in Fig. 3, said arm being connected to an arm K', Fig. 7, secured to the shaft A' by means of the bar or pitman L'. In the operation of this portion of my device it will be noticed that after the plunger has exerted its pressure to form the brick it has pushed a brick out into the open end of the mold-box, and on the return movement of the plunger the cam C operates the shaft A' to retract the plate or slide T. This move-

ment, through the devices already described, operates the arm G' to depress the plunger D' and bring it in contact with the edge of the brick, as shown in Fig. 10, and deposits the facing of wet clay onto the same. The clay in the slip state is supplied to the plunger D' from the tank M' through the bent pipe N', and as the plunger D' is depressed it also depresses the end of the pipe N' and allows a portion of the slip to pass into the interior of the plunger D' at each downward movement of the same. When I desire to produce these incrustated brick with a smooth facing, I employ a cross-bar O', as shown in Fig. 13, to smooth down the clay and deposit it uniformly over the edge of the brick.

P' is a rubber pad secured to the under side of the plunger D', said pad being provided with cavities b, of any desired configuration, and apertures c in the bottom of the plunger D', so that when the plunger D', with the rubber bottom, has been brought down on the brick and suddenly withdrawn the force of suction draws the slip through the apertures of the plunger and deposits it in the form of drops or raised figures on the brick and when the brick are burned the surface will be decorated with crystal-like studs and other irregular ornamentations. The pad P' is made of soft rubber, the raised portions or ribs being sufficiently high and thin so as to give it a creeping motion on the surface of the brick when pressed down on the same analogous to a rubbing motion of an ordinary pad upon the surface, or a slight vibratory or rubbing motion may be imparted to the slip-plunger to spread the slip over the face of the same, and, as has been previously stated, when the slip-plunger is suddenly withdrawn from the face of the brick raised portions or drops of the slip will be formed on the plain surface.

I prefer to employ the same clay for the facing as for the body of the brick, in order to secure an equality of expansion and contraction between the respective bodies, although I may employ a facing of a better quality of clay than the main body of the brick, or clay that will burn a different color from that of the main body when desirable; but it will be

understood that the main object of my invention is to produce these incrustated brick with a high degree of decorative surface in various colors and drosses, which colors and drosses I obtain by mixing with the clay slip before it is deposited on the surface of the brick the various color-giving metallic oxides and metals for producing various-colored drosses thereon, the said brick produced being the subject-matter of a separate application filed of even date herewith, Serial No. 271,191.

What I claim, and desire to secure by Letters Patent, is—

1. A machine for the manufacture of faced and ornamental brick, consisting of a mold and plunger portion for forming the main body of the brick and a supplemental portion adapted to deposit a facing of wet clay on the face edge of said brick before it is removed from the machine, as set forth.

2. In a machine for manufacturing brick, an open-ended mold box or chamber, a plunger working within said chamber, a feed-spout admitting clay in front of the plunger, a movable plate for admitting or shutting off the supply of clay from the feed-spout to the mold-box, and a shaft having an arm actuating said plate and an arm actuated by a cam, as set forth.

3. The hollow plunger D', provided with the perforated bottom, in combination with the pipe N' and slip-tank M', whereby a facing of the slip is deposited on the brick.

4. In a brick-machine of the character described, the open-ended mold-chamber S, having the open portion a, and a hollow plunger adapted to automatically descend and deposit the slip on the edge of the brick, as set forth.

5. The plunger D', having the perforated bottom and perforated and recessed rubber block or plate secured thereto, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

J. C. ANDERSON.

Witnesses:

L. W. SINSABAUGH,
J. C. STODDARD.