No. 720,218. PATENTED FEB. 10, 1903.

S. C. BRUSH.

BRICK MACHINE.

APPLICATION FILED AUG. 6, 1902.

NO MODEL.

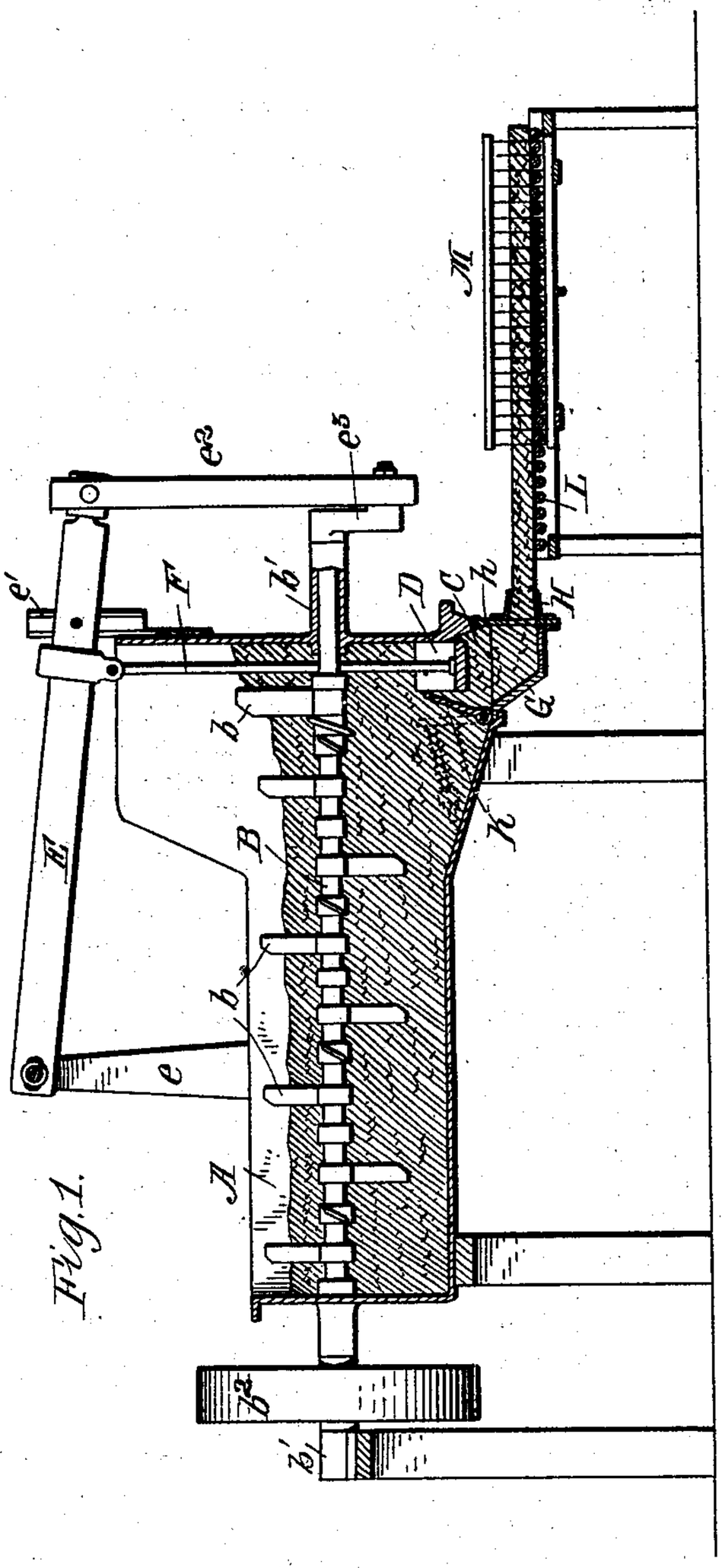

Fig. 1.

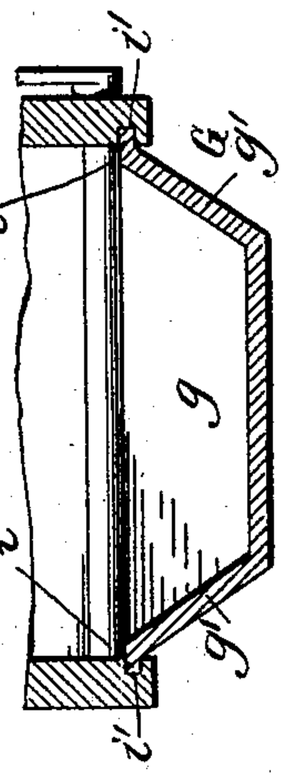

Fig. 4.

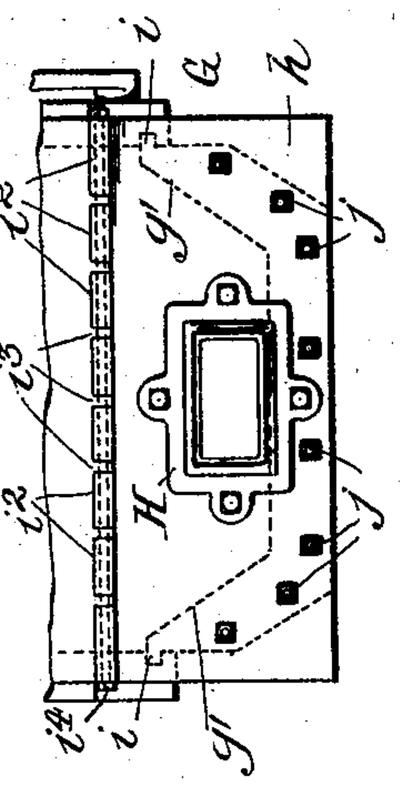

Fig. 5.

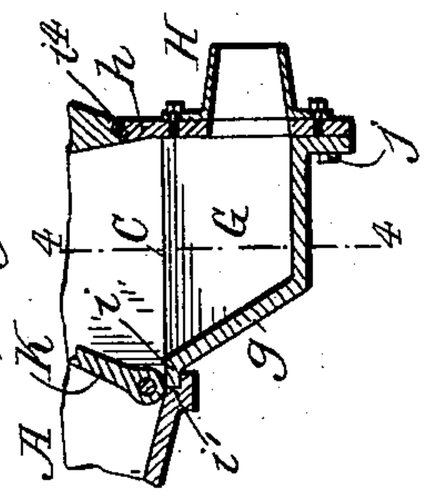

Fig. 2.

Witnesses,
E. A. Volk.
J. N. Snyder Jr.

Stephen C. Brush. Inventor,
By Wilhelm & Bonnell.
Attorneys.

UNITED STATES PATENT OFFICE.

STEPHEN CUSHING BRUSH, OF BUFFALO, NEW YORK.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 720,218, dated February 10, 1903.

Application filed August 6, 1902. Serial No. 118,618. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN CUSHING BRUSH, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Brick-Machines, of which the following is a specification.

This invention relates to that class of machines for making bricks, tiles, and pottery articles which comprise a pug box or trough, a horizontal shaft arranged in said pug-box and provided with mixer-blades which work up the clay or mud and feed it forward in the box, and a vertically-movable press-plunger which forces the clay or mud out through a die beneath the press-plunger. Machines of this kind are usually employed for operation upon what is known as "soft mud," and the mud issues vertically through the die into sanded molds which are placed beneath the die to receive and form the bricks.

The object of the present invention is to provide means whereby such a machine can with little trouble and expense be converted into a "stiff-mud" machine, in which the clay is forced by the press-plunger horizontally out through the opening of a die in the form of a continuous core or plug of a suitable cross-sectional shape to form bricks, tile, hollow articles, and the like, the core being divided into the finished articles by cutters in the usual manner.

In the accompanying drawings, Figure 1 is a vertical sectional elevation of a machine embodying the invention. Fig. 2 is an enlarged fragmentary section through the discharge-hopper and die. Fig. 3 is an end elevation of the parts shown in Fig. 2. Fig. 4 is a transverse section through the discharge-hopper in line 4 4, Fig. 2.

Like letters of reference refer to like parts in the several figures.

A represents the open-topped pug box or trough into which the clay or mud is fed at the rear end, and B the rotary mixer-shaft, which passes horizontally through the pug-box and is provided with radial blades or mixers b, which are set at an angle to the shaft and work up the clay or mud and feed it toward the front or discharge end of the machine. The shaft is journaled at its opposite ends in suitable bearings b' and is driven, for instance, by a belt (not shown) passing around the belt-pulley b^2, fixed on the shaft at the rear end of the machine. The pug-box is provided in its bottom at the front end of the machine with a discharge-opening C, and within the pug-box, over this opening, is arranged the vertically-movable press-plunger D for forcing the clay through the discharge-opening.

The press-plunger is operated from the rotary shaft by the following mechanism: E represents a lever which is arranged above the pug-box and is fulcrumed and has a slight endwise movement at its rear end on a suitable standard e, which rises from the sides of the machine. The forward end of the lever passes between vertical guides e' and is connected by a universal joint to the upper end of a pitman-rod e^2, which is connected at its lower end to the wrist-pin of a crank e^3, fixed to the front end of the mixer-shaft. The lever is connected to the press-plunger by rods F, secured to the plunger and loosely connected at their upper ends to the lever in rear of the guides for the latter. When the plunger is raised, the clay is forced forward beneath the plunger by the mixer-blades, and when the plunger again descends it forces the clay out through the discharge-opening.

G represents a discharge-hopper, which is secured to the machine beneath the discharge-opening, so that its open upper end communicates with the pug-box through the discharge-opening C. The hopper is provided with a forwardly-inclined rear wall g, inwardly-inclined side walls g', and a front wall which is formed by a die-plate h, which is provided with an exit-opening for the clay and supports the tapering die H, which surrounds the exit-opening. The discharge-hopper is detachably secured in place in the following manner: The upper edges of the side and rear walls of the hopper are provided with laterally-projecting flanges or ribs i, which engage in corresponding horizontal grooves i', provided in the side and rear walls of the discharge-opening C of the pug-box, and the upper edge of the die-plate is provided with spaced lugs i^2, which extend up between and are connected to lugs i^3 on the lower edge of the front wall of the box by a bolt or rod i^4. The hopper can be detached

by removing the bolt or rod i^4 and pulling the hopper forward to disengage its holding-flanges from their grooves. The die-plate is detachably connected by bolts j or otherwise to the hopper, and the die is also detachably secured to the die-plate, so that the die-plate and die for one style of brick or other article can be readily replaced by others, which are suitably formed for making bricks or other articles of different shapes.

K represents the usual relief valve or plate, which is hinged at its lower edge within the pug-box in rear of the press-plunger and is held yieldingly toward the latter by a spring. When too large an amount of clay is taken under the press-plunger, this valve is forced rearwardly and the surplus clay is allowed to return to the pug-box.

When the press-plunger descends, the clay beneath it is forced down into the discharge-hopper, and owing to the inclined rear and side walls of the latter the clay is compressed or compacted in the hopper and wedged or forced toward the front wall and out through the die-plate and die in the form of an unbroken core or plug, which as it issues horizontally is supported by a receiving-table L and cut into bricks by an ordinary cutter M. As the core issues horizontally, bricks, tiles, hollow ware, or articles of any desired shape and length can be produced by the employment of suitable dies. In the soft-mud machines the horizontal dies are secured to the pug-box beneath the discharge-opening in the same manner that the hopper and die-plate are attached, as above described, so that a soft-mud machine can be converted into a stiff-mud machine by simply detaching the die and substituting in its stead the discharge-hopper above described.

A machine constructed as herein described can operate successfully upon "fatty" clays and produce a fine quality of bricks free from lamination, while it is extremely difficult or impossible to prevent lamination when working such clay in machines where the clay is forced through the die by a screw or rotary presser device such as ordinarily employed in stiff-clay machines.

While the hopper and die are shown and described as applied to a machine provided with a horizontal mixer and a vertically-movable plunger, they are also applicable to other soft-mud machines in which the clay is forced through a bottom discharge.

I claim as my invention—

1. The combination with a pug-box, a mixing device and a vertically-reciprocating press-plunger, of a discharge-hopper arranged beneath said press-plunger and having a substantially upright wall and a forming-die supported by the substantially upright wall of said hopper and provided with an exit-opening through which the material is forced horizontally by said vertically-reciprocating press-plunger, substantially as set forth.

2. The combination with a pug-box, a mixing device, and a vertically-movable press-plunger, of a discharge-hopper arranged beneath said press-plunger and having a vertical wall and an opposite wall inclining downwardly toward said vertical wall, and a forming-die supported by said vertical wall of the hopper and provided with a horizontal exit-opening, substantially as set forth.

3. The combination with a pug-box, a mixer-shaft provided with mixers, and a vertically-movable press-plunger, of a hopper arranged beneath said press-plunger and provided with inclined rear and side walls, a die-plate forming the front wall of said hopper and having an exit-opening, and a die secured to said die-plate and surrounding said exit-opening, substantially as set forth.

4. The combination with a pug-box, a mixer-shaft provided with mixers, and a vertically-reciprocating press-plunger, of a hopper detachably secured to said pug-box beneath said press-plunger, and a forming-die supported by one of the upright walls of said hopper and provided with a horizontal exit-opening, substantially as set forth.

5. The combination with a pug-box provided in its bottom with a discharge-opening, a mixer-shaft provided with mixers, and a vertically-reciprocating press-plunger arranged over said discharge-opening, of a hopper arranged beneath said discharge-opening and provided with flanges which engage in grooves in the walls of said discharge-opening, means for detachably securing said hopper in place, and a forming-die supported by one of the upright walls of said hopper and having a horizontal exit-opening, substantially as set forth.

Witness my hand this 4th day of August, 1902.

STEPHEN CUSHING BRUSH.

Witnesses:
JNO. J. BONNER,
C. B. HORNBECK.