

J. Steele,
Brick Machine.

N^o 47,684.

Patented May 9, 1865.

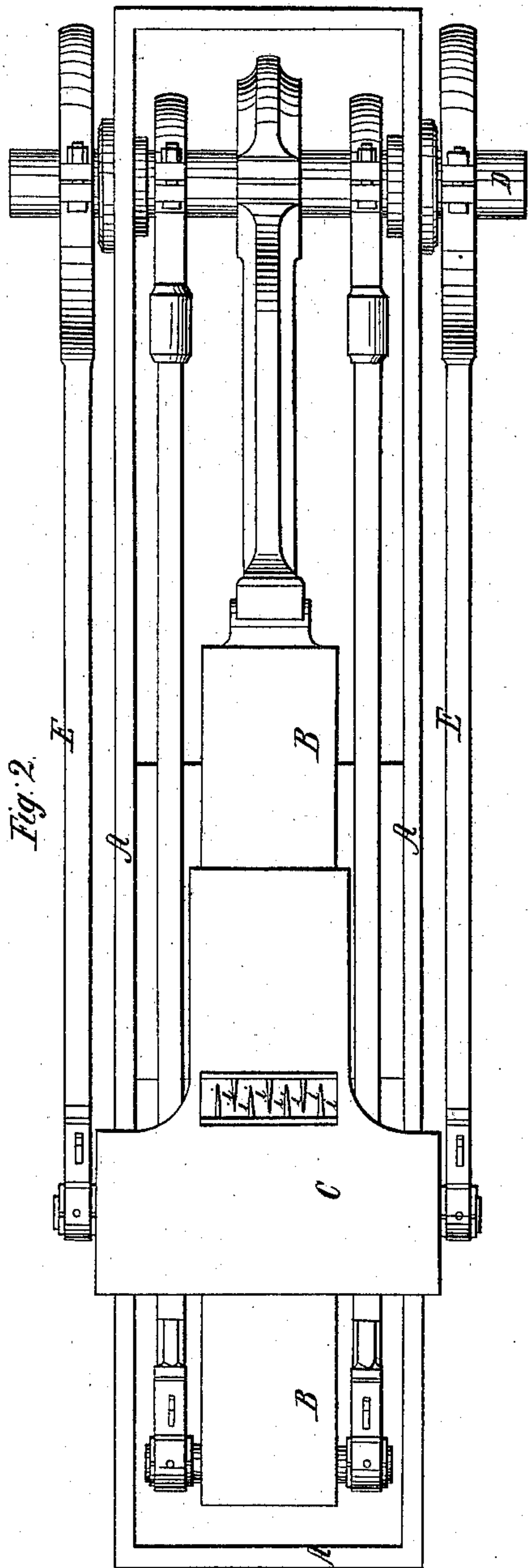


Fig. 2.

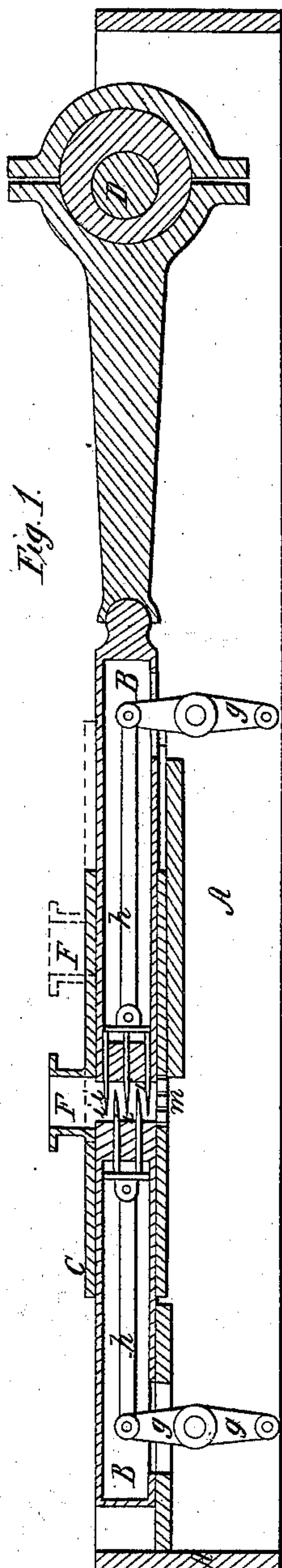


Fig. 1.

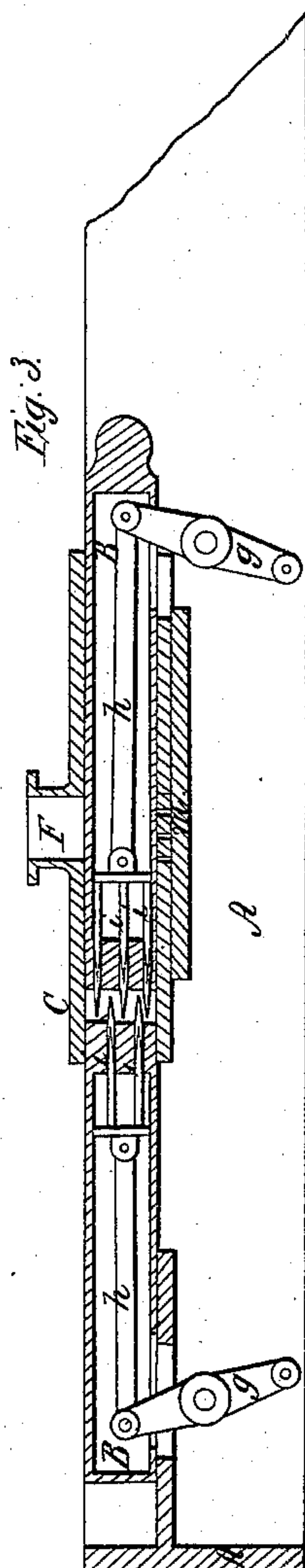


Fig. 3.

Witnesses;
J. Graser
J. A. Davis

Inventor;
John Steele

UNITED STATES PATENT OFFICE.

JOHN STEELE, OF BUFFALO, NEW YORK, ASSIGNOR TO LAUREN C. WOOD-
RUFF, CORYDON KARR, AND HIMSELF.

IMPROVED MODE OF PRESSING DAMP CLAY.

Specification forming part of Letters Patent No. 47,684, dated May 9, 1865.

To all whom it may concern:

Be it known that I, JOHN STEELE, of the city of Buffalo, in the county of Erie and State of New York, have invented a new and improved mode of pressing damp clay, sand, or cement, for making brick and other purposes; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a central longitudinal section of a machine designed for my improved mode of pressing. Fig. 2 is a horizontal or plan view of the same. Fig. 3 is a horizontal section through the platens B B and sliding mold C, showing the clay in the act of receiving the final pressure to form a brick.

Like letters designate corresponding parts in all the figures.

In molding clay or other material into brick, tiles, &c., a certain degree of moisture is necessary to the perfect adhesion of the particles. In an uncondensed state it is freely absorbed by capillary attraction, and if, when the mass is compacted by pressure, the excess is retained, it is with obviously a detrimental effect.

It is the object of my invention to provide for the expulsion of any excess of moisture over the amount required to make the particles adherent, thus rendering brick or other ware formed from plastic material more compact and indurated, and prepared to retain its form more perfectly, and requiring less time for drying or burning; and my invention consists in forming cells or perforations in the wet clay, when placed in the mold, by means of suitable instruments, to be retained until sufficient pressure has been employed to render the clay self-sustaining in form, but withdrawn before the final pressure is applied, to leave apertures into which the air and moisture escape from the substance of the clay.

It also consists in the method of applying the pressure to the clay equally upon both sides at once by means of platens which simultaneously approach each other, by which the clay is rendered equally dense or compact on either surface of the brick, and much of the friction of the clay against the sides of the mold is overcome, the results of this friction being exhibited from the center to each face

of the brick or equally in both directions from the center. This produces a brick with the angles equally perfect on both sides, which is not the case with bricks pressed from one side only, and enables the clay to be worked in a stiffer condition, while it economizes the power of the machine, as there is less resistance of friction on the mold to be overcome.

I do not confine myself to any particular apparatus for producing these results, but shall describe a machine of suitable form and adaptation for making brick by my method.

As represented in the drawings, A is the frame of a horizontal brick-press, having two platens or pistons, B B, working horizontally within the mold C, which is a trunk, open at both ends for the convenience of operating the platens, which are worked, preferably, by eccentrics on the shaft D, to which the power is applied. The mold is also connected by means of the rods E E, or their equivalents, with similar eccentrics or cams on the shaft D, for the purpose of sliding it away so that the mouth or opening F will be removed from the brick, so that it is pressed in a wholly confined space. The platens are provided each with a concealed head, having spurs or pins *i i* which heads are connected by rods *h h* with rock-levers *g g*, also operated by suitable cams or other mechanism so arranged as to withdraw them at the proper time. These spurs protrude from the face of the platens when they are drawn apart to form a space to receive the damp clay, which is passed in through the mouth F of the mold and forms around the spurs. The motion of the machine then cuts off the clay by withdrawing the mold until its mouth is sufficiently removed, when the platens B B begin to approach each other, compressing the clay between them from both sides.

The spurs remaining in the clay will, it is obvious, form perforations when withdrawn, which is effected by a movement of the rock-lever at the instant the pressure has become severe, but before the final pressure is imparted. The clay having become so dense as to retain its form, the perforations thus left constitute chambers, into which the air and moisture before contained in the pores of the clay escape, leaving the brick nearly dry, and of a solid and uniform texture throughout. A

degree of compactness and solidity is attained by this method, which enables the brick to be immediately subjected to the kiln and retain their shape without warping or cracking.

To admit of the free expulsion of air in filling the mold, perforations are made on the lower side at *m m*, for the purpose of ventilating, which prevents any portion of the air from being compressed into the mass of clay, which would otherwise occur if the joints around the pistons were so tight as to retain it. By the movement of the mold after filling, these perforations do not interfere with the act of pressing.

It will be obvious that by this mode of pressing damp clay the great power applied condenses the particles of moisture and air together into much less space than they before occupied, and the air—being the more elastic of the two—immediately expands on the withdrawal of the spurs *i i*, which permits it to resume its ordinary bulk, and in escaping it takes up or absorbs the minute atoms of moisture, removing them from the clay. Thus the bricks after pressure remain the same as before the pistons are removed; but if the air and moisture had not been removed by this operation they would by their expansion, when relieved from pressure, also expand the

clay to some extent, producing striæ and imperfections that become apparent as fractures on burning the brick.

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

1. The mode herein described of pressing damp clay or other plastic material to admit of the escape of the air and moisture therefrom before the final pressure is imparted, substantially as and for the purposes described.

2. The method of pressing the clay for bricks, tiles, and other purposes by applying the pressure simultaneously from two opposite directions, by means substantially as shown, and for the purposes described.

3. Ventilating the mold by means of the perforations *m m* in one of the parts thereof, which is exposed while being filled, but removed before the pressure is applied, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN STEELE.

Witnesses:

J. FRASER,

J. A. DAVIS.