(No Model.) 4 Sheets—Sheet 1.

I. CULLEN, J. C. CONROY & H. D. KILGORE.

Brick Machine.

No. 237,729. **Patented Feb. 15, 1881.**

Fig. 1.

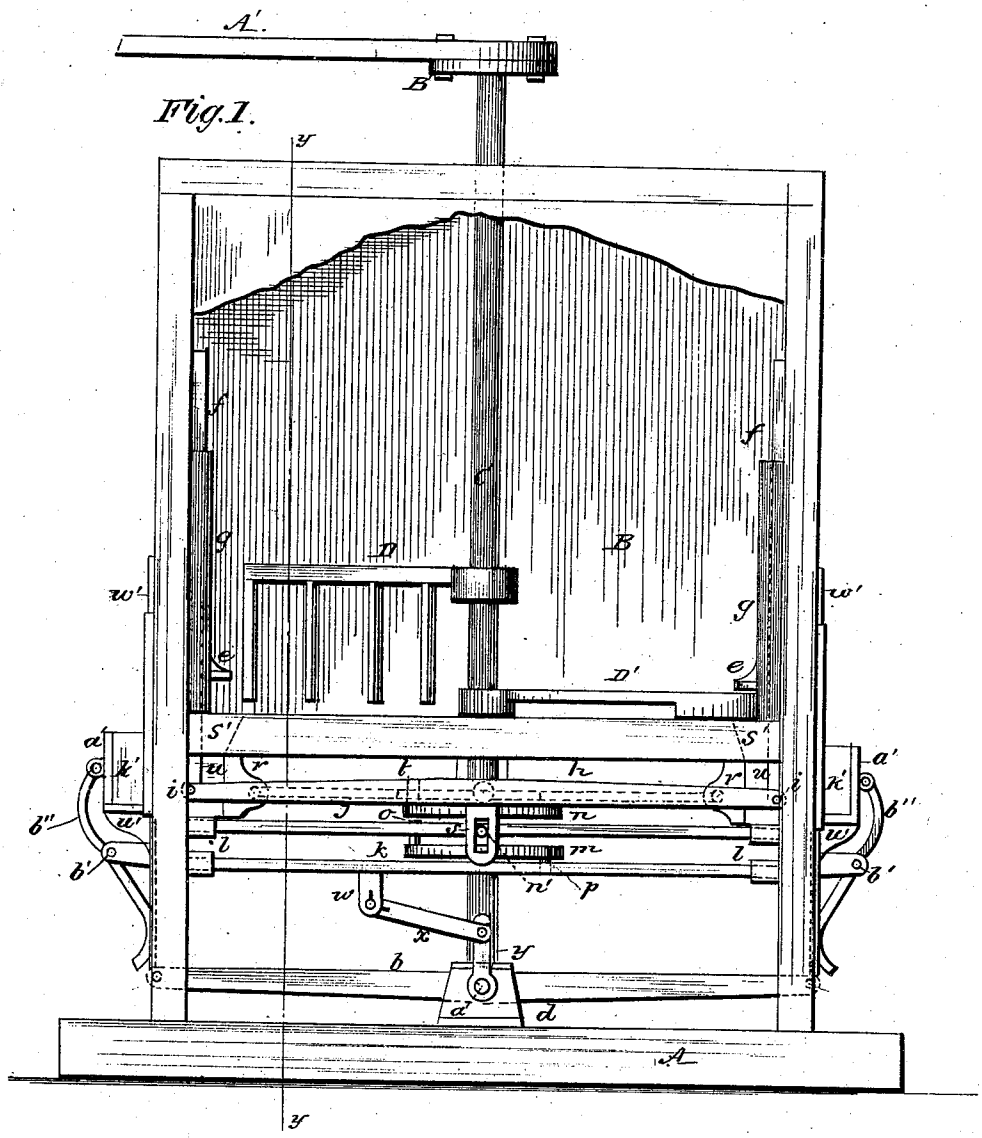

Fig. 4.

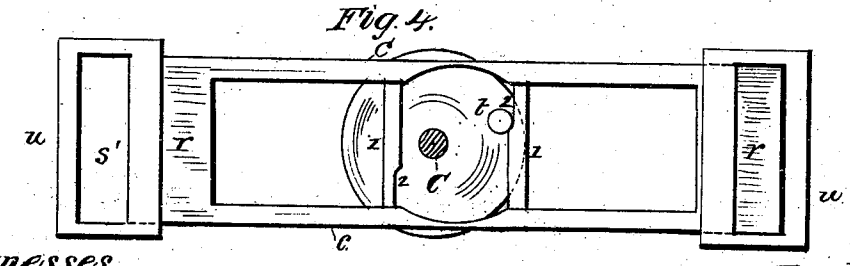

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Fig. 2.

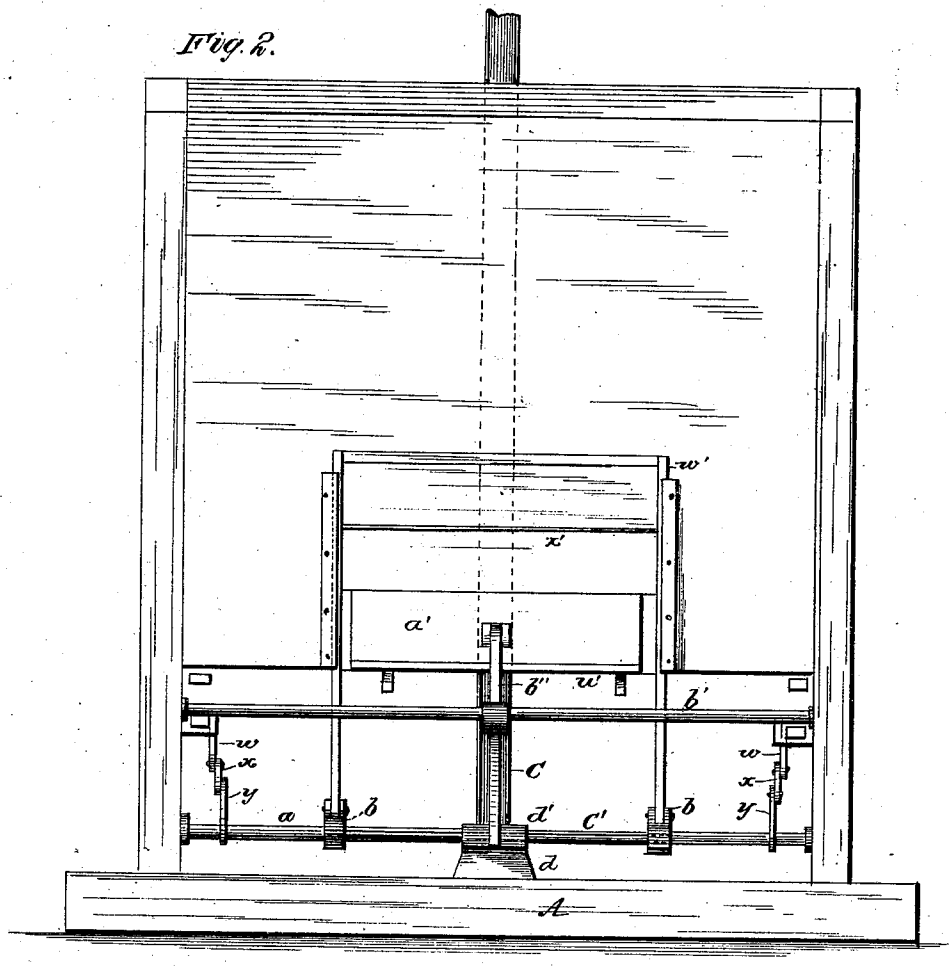


Fig. 3

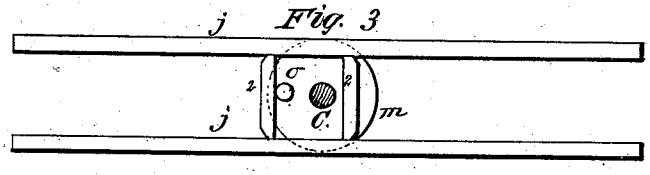


Fig. 5

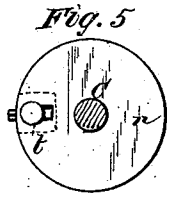


Fig. 6

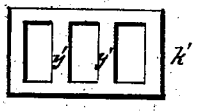


Fig. 7.

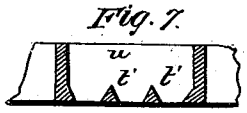
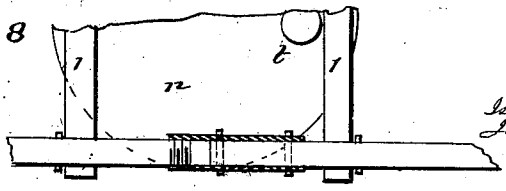


Fig. 8



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Brick Machine.

No. 237,729. Patented Feb. 15, 1881.

Fig. 3.

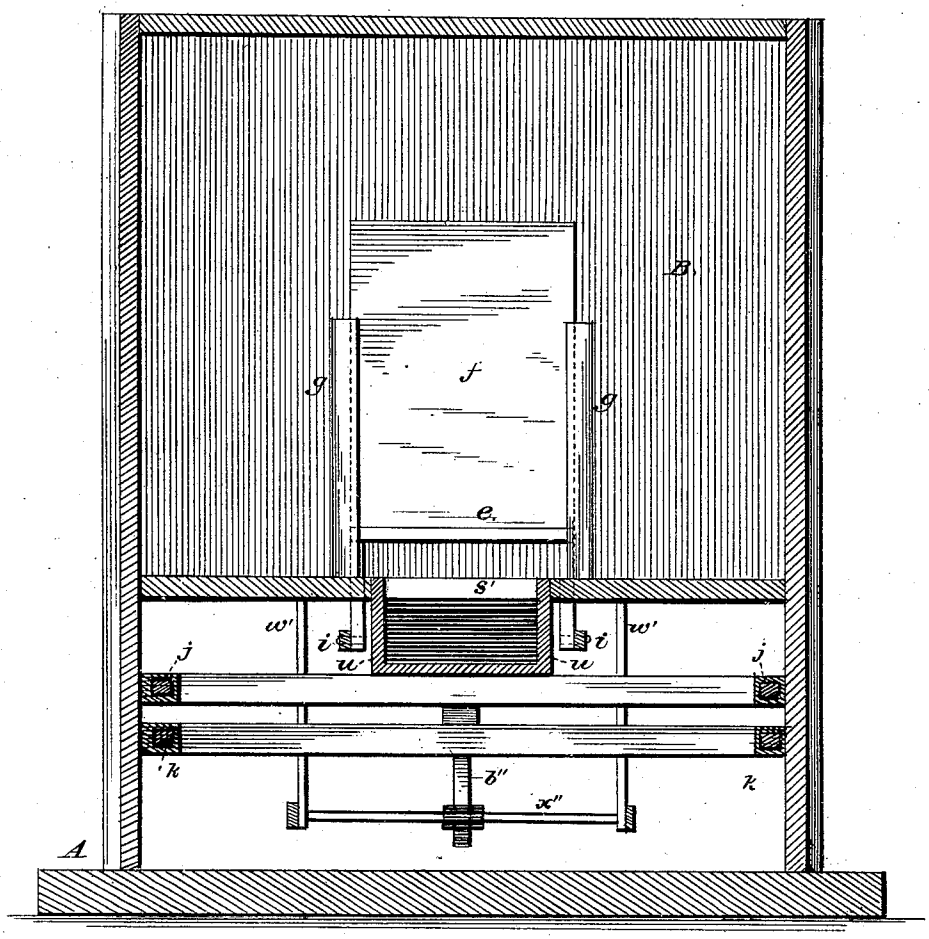

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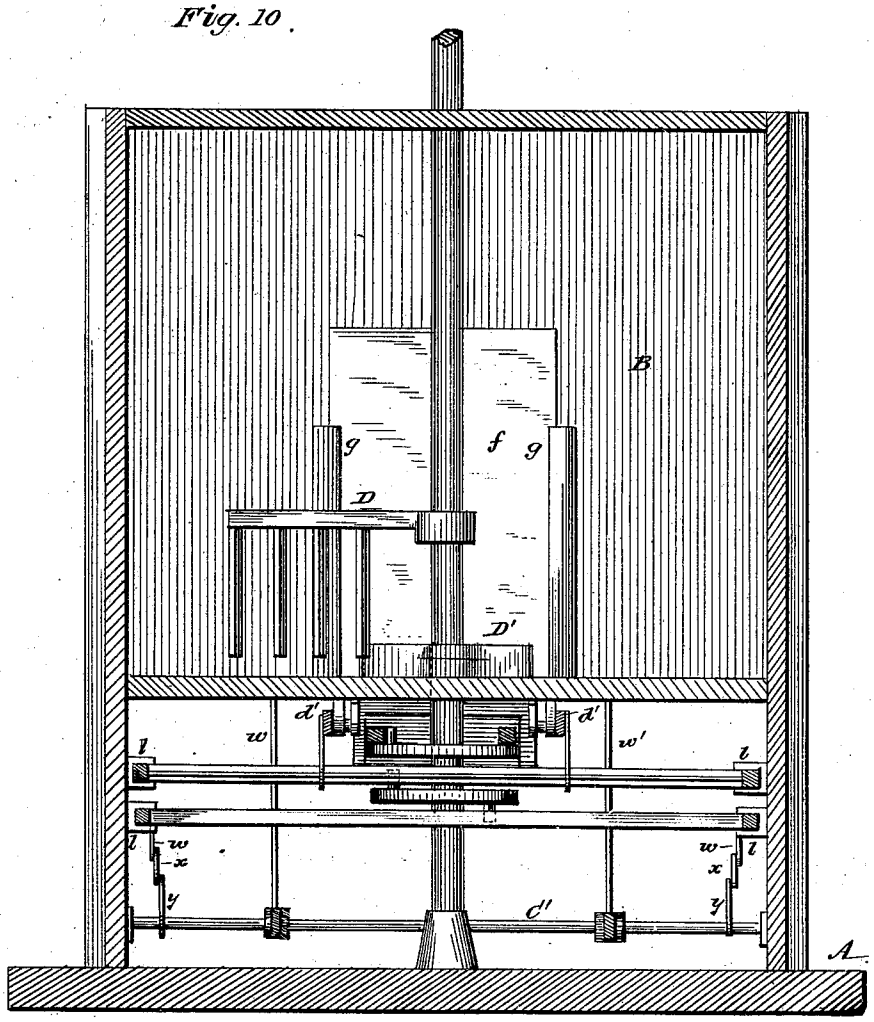
Fig. 10.



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UNITED STATES PATENT OFFICE.

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BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 237,729, dated February 15, 1881.

Application filed November 19, 1880. (No model.)

To all whom it may concern:

Be it known that we, ISRAEL CULLEN, JAMES C. CONROY, and HENRY D. KILGORE, all of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Brick-Machines; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Our invention relates to an improvement in brick-machines; and it consists of a tempering-mill furnished with two discharging-apertures for clay, with two plungers moving vertically over said apertures for forcing the tempered clay down into two receivers, where two plungers, moving at right angle to the vertical axis of said receivers, force the clay from them into brick-molds held in position with relation to the discharge of said receivers until they are filled with clay under pressure, after which they are relieved from the holding device for the purpose of allowing the clay pressed into said molds to expand prior to the operation of cutting the clay for separating the molds and the brick in them from the clay in the receivers, said mill, plungers, receivers, molds, and holding and separating mechanism operating with relation to each other as will hereinafter more fully appear.

To enable others skilled in the art with which our invention is most nearly connected to make and use it, we will proceed to describe more fully its construction and operation.

In the accompanying drawings, which form part of our specification, Figure 1 is a side elevation of our improvement in brick-machines, representing the side of the clay-mill broken away for purpose of showing the interior of said clay-mill. Fig. 2 is a front elevation of our improvement. Figs. 3, 4, 5, 6, 7, and 8 are detail views. Figs. 9 and 10 are vertical sections through line *y y* of Fig. 1 when viewed from opposite sides thereof.

In the accompanying drawings, A represents the frame of the machine, and B the mill for tempering the clay. In the bottom of this mill are two apertures, *s' s'*, through which the tempered clay is forced by two vertical-moving plungers, *e e*, into two receivers, *u u*, for charging the brick-molds *k'* with clay, which is forced from said receivers into said molds by means of two plungers, *r r*, which move horizontally in said receivers, with an alternate and reciprocating action imparted to them by the friction-roller *t* of the disk *n* on shaft C. The friction-roller *t* moves in a yoke formed by bars *c c* and cross-bars 1 1. Said bars *c c* are attached to the plungers *r r*, which move horizontally in receivers *u u*, that serve as guides for said plungers *r r* and bars *c c*, as represented by dotted lines, Fig. 1, and a top view of said parts, Fig. 4. The friction-roller *t*, coming alternately against the cross-bars 1 1, imparts to the bars *c c*, to which the plungers *r r* are attached, a reciprocating motion.

The bars *c c* may be constructed as indicated in Fig. 8, for the purpose of varying the distance between the cross-bars 1 1, thereby regulating the distance of travel of the plungers *r r*, and thereby secure the desired pressure of clay in the brick-molds. The bars 1 1 (see Fig. 4) are cut away at 2 for the purpose of allowing the clay to expand in the molds and receivers after receiving the force of the plungers. The friction-roller *t* coming opposite to this cut-away part of said bars, the plungers *r r* will move back by the expansive action of the clay in the molds and receivers, which expansion should take place prior to separating the mold and bricks therein from said receivers, which is caused by the downward movement of the wire or knife *x'*, which is of ordinary construction, the arrangement of which will hereinafter more fully appear.

To the outer ends of the rocking arms *h*, at *i*, are pivoted slides *f*, which move in guides *g*, said rocking arms being pivoted to pendants *d' d'*, as shown in Fig. 10.

To the slides *f* are attached plungers *e*, which, in their downward movement, force the tempered clay through the apertures *s'* into the receivers *u*.

The rocking arms *h* receive their motion through the medium of the pendants *s*, disk *m*, and friction-roller *o*, moving the slide-bars *j* by coming in contact with the cross-bars 2, as indicated in Fig. 3.

On the outer side of the slide-bars *j* is a pro-

jecting pin, n', which projects through the slot in the pendants s of the rocking arms h. Hence the motion imparted to the sliding bars j through the medium of pins n' is transmitted to the rocking arms h.

The disk m is secured on the shaft C, and receives its motion from said shaft—that is, it revolves with said shaft.

On the under side of the disk m is a friction-roller, p, which operates the sliding bars k, having cross-bars, (arranged in the same manner as the cross-bars 2 2 shown in Fig. 3,) against which the friction-rollers p act for the purpose of imparting to the sliding bars k a reciprocating motion.

On the under side of the bars k are pendants w, to which are pivoted connections x, which are pivoted to arms y on a shaft, a, having suitable bearings.

On the shaft a are secured rocking arms b, to the outer ends of which is pivoted the frame w', which carries the wire or knife x', which moves in a vertical plane with the frame w', which receives its motion through the medium of the rocking arms b.

The brick-molds k' are of the ordinary construction when made for forming or molding three bricks at a single charge. The molds are supported in front of the discharge-openings of the clay-receivers u by means of a stationary breast-plate, u', secured to the frame A. The discharge of the clay-receivers is divided by partitions t', having beveled sides, as shown in Fig. 7, said partitions corresponding in position to the partitions y' of the brick-molds k'—that is to say, the partitions of the receivers will be opposite to the partitions of the brick-molds when said molds are in position for receiving clay from the receivers u. The bottom a' of the brick-mold is detached from the mold and is pivoted to an S-shaped arm on a shaft, b', the bearings of which are secured to the frame A.

The rocking arms b have a rod or shaft, c', which extends from one to the other, as shown in Fig. 2, and on this rod or shaft c' is a friction-roller, d', which acts against the S-shaped arm b'' for holding the bottom a' firmly against the brick-mold k'.

The construction and arrangement of the several parts of the machine will be readily understood from the foregoing description and by reference to the accompanying drawings. We will therefore proceed to describe its operation.

Clay having been previously moistened with water, is charged into the tempering-mill B. The shaft C, being turned by means of the lever or "sweep" A', will revolve the tempering-arms D and filling-arm D', which will thoroughly temper the clay. The filling-arm D' will carry the tempered clay under the plungers e, which will force it down through apertures s' into receivers u, and the disk, with its friction-roller t, causes the plungers r to alternately force the clay from the receivers u into the brick-molds k', the friction-roller d' pressing against the lower part of arm b'', which will hold bottom a' of the brick-mold k' firmly against said mold during the operation of the plunger r, filling the mold, at which point the downward movement of the rocking arms b' will allow the bottom a' of the mold k' to move back slightly, and, the plunger r moving back slightly at the same time, the clay in the mold and receiver is allowed to expand the rocking arms b, moving downward the frame w', which carries the wire or knife x'. The latter, passing between the mold and receiver, separates the clay in the mold from the clay in the receiver. The mold is then removed and the brick discharged from it in the usual manner. The mold is then "sanded" and replaced on the machine, ready to be again filled.

Having thus described our improvement, what we claim as of our invention is—

1. In a brick-machine, the combination of the tempering-mill furnished with two discharging-apertures and two interior vertical plungers moving vertically over said apertures, two receivers arranged under said discharge-apertures, two plungers moving at right angles to the vertical axis of said receivers for forcing the clay from said receivers into the brick-molds, and means, substantially as described, whereby said molds are held in position until filled with clay under pressure, and subsequently relieved from pressure for the purpose of allowing the clay to expand in said molds prior to the operation of cutting the clay for separating the molds and the brick in them from the clay in the receivers, substantially as specified.

2. In a brick-machine, the combination of the plungers e r, receivers u u, molds k', and breast-plate or holding device u', arranged and operating with relation to each other substantially as herein described, and for the purpose set forth.

3. In a brick-machine, the combination of the shaft C, disks m n, furnished with friction-rollers o p t, sliding bars e j k, rocking arms b h, operating with relation to the molds k', arms b'', receivers u u, and plungers e r substantially as herein described, and for the purpose set forth.

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