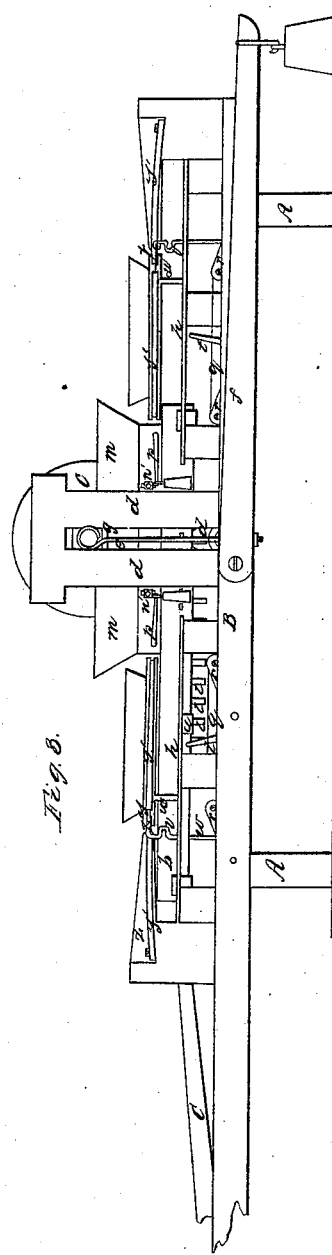
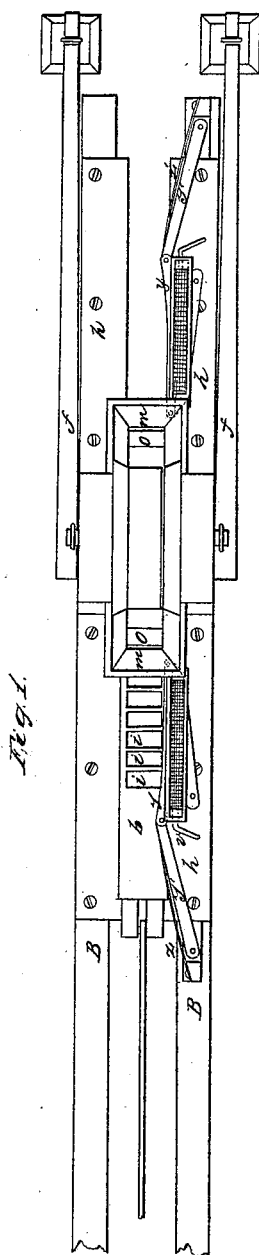
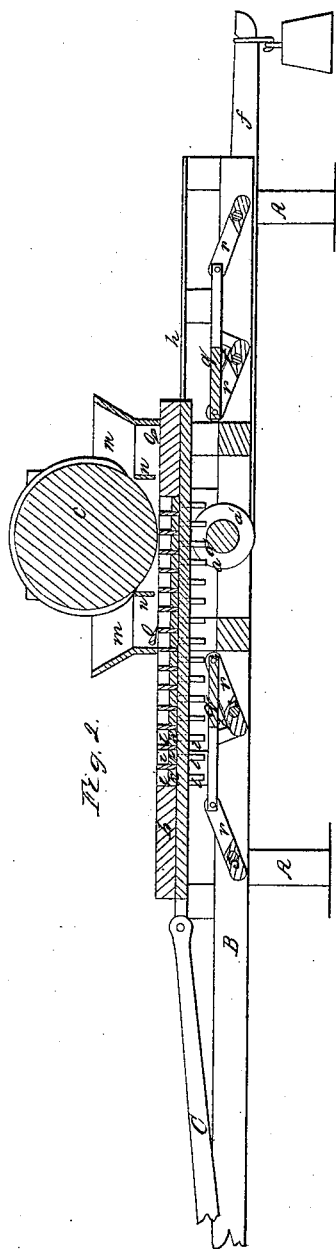


*T. Culbertson,*  
*Brick Machine.*

*Nº 4,521.*

*Patented May 16, 1846.*



# UNITED STATES PATENT OFFICE.

THOMAS CULBERTSON, OF CINCINNATI, OHIO.

## BRICK-PRESS.

Specification of Letters Patent No. 4,521, dated May 16, 1846.

*To all whom it may concern:*

Be it known that I, THOMAS CULBERTSON, of Cincinnati, in the county of Hamilton and State of Ohio, have invented new and useful Improvements in Machines for Making Bricks, and that the following is a full, clear, and exact description of the principle or character thereof which distinguishes it from all other things before known and of the manner of making, constructing and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of the machine; Fig. 2, a vertical longitudinal elevation, and Fig. 3, a vertical longitudinal section.

The same letters indicate like parts in all the figures.

My improvements are applied to a machine for molding and pressing bricks, patented by Parsons Owen on the 26th day of July, 1845, which consists in arranging the molds in a reciprocating carriage placed between two rollers, so that the clay is pressed by the upper rollers, (which is movable and pressed down by weighted levers) into the molds as they pass between the two rollers, the clay being supplied to the molds from a hopper and clay box on either side of the upper roller; but this machine presents several practical difficulties; 1st the bottoms or followers of the molds are made to slide up, and are provided with projections from their under side which run up inclined planes after the bricks have been molded and pressed to discharge them. This tends to cant the followers, and as all machinery employed in making bricks is unavoidably attended with much friction from the clay which is thrown about, in the course of a short time this part of the machine is deranged and fails in producing good results. 2nd, the clay after being pressed into the molds by the roller is carried to a knife which cut off the surplus, but as the knife is permanent, small stones and other hard substances which may and often do project above the upper edges of the molds, destroy the cutting edge, and frequently break the machine, the frequency of these occurrences seriously affect the operations of the machine. 3rd, no means is provided for regulating the supply of clay to the molds, so that the bricks are of unequal density, as

variations in the supply will change the quantity pressed into the molds by the roller, and 4th no mechanical means are provided for removing the bricks after they have been forced up from the molds. These defects and deficiencies are effectually removed and supplied by my improvements. The first by forcing the bricks out of the molds by means of a vertical movement. When the carriage of molds has moved in either direction sufficiently to have carried one set of bricks beyond the knife the projections or stems of the movable buttons or followers of the molds are then above a horizontal plate jointed at each end to the arms of two arbors which are made to turn by a projection on the carriage which comes in contact with an arm on one of these arbors. This lifts the plate, which in rising has a horizontal movement equal to that of the carriage so that the followers are forced up vertically avoiding the tendency to strain their stems, or to cant them in the molds. The second is avoided by making the knife broad and having the back attached to an arbor provided with a weighted lever which permits the cutting edge to rise and pass over obstructions, such as stones, &c., which otherwise would destroy the cutting edge. The third is effected by means of an adjustable gage in the hopper or clay box on each side of the pressure roller to cut off and permit only a given thickness of clay to project above the molds. And the fourth is accomplished by means of a bar jointed at either end to parallel vibrating arms operated horizontally in the same manner as the plate which lifts the followers of the molds, this bar being provided with a sand hopper and seine to sand the molds in passing over them.

In the accompanying drawings (A) represents the frame properly adapted to the various moving parts of the machine, and consisting principally of two long sleepers (B, B), provided with boxes in which turn the journals of the bearing roller (a) on the periphery of which rests the carriage (b) of molds, so that when pressure is made to force the clay into the molds the whole pressure is borne by this roller instead of having the carriage bear on a bed or slides. This roller is reduced in diameter between the two ends as at (a') to admit of the pass-

age of the stems of the sliding bottom or followers of the molds, so that only those parts of the carriage which form the sides of the molds rest on the roller. The pressure roller (c) is placed vertically over the bearing roller and above the molds, its journals turn in boxes that slide in ways between the vertical posts (d, d, d, d,) and project sufficiently far beyond them to turn in the eyes of the rods (e, e) which form the connection with two weighted levers (f, f,) by means of which the clay is forced into the molds as they pass under the roller, but when the carriage of molds passes without clay the sliding boxes of the roller rest on ledges (g) between the posts (d) and thus avoid pressure on the carriage.

The carriage (b) is guarded in its movements by embracing the four metal ways (h, h, h, h), (properly connected with the frame) and receives a reciprocating motion from a crank or other mechanical equivalent by means of a connecting rod (C). Any desired number of molds (i) are made in this carriage the number being governed principally by the extent of motion to be given to it, and to each mold is fitted a movable bottom or follower (k), which when at the bottom rests on ledges at the bottom of the mold, and to admit of lifting the followers, stems (l) of equal length project from their under surface.

Above the carriage of molds and on each side of the pressure roller there is a hopper (m, m) to be supplied with properly prepared clay in any desired manner. The sides of this hopper flare out in the usual manner of making hoppers, but the lower part of the ends and sides which rest on the carriage are vertical and constitute what I denominate the clay box, in this, and on each side of the pressure roller there is gage plate (n) the ends of which pass through slots (n') in the sides of the box and secured by screw nuts to admit of adjusting its position. The object of this gage is, as above stated, for the purpose of scraping off the surplus clay, and by the adjustment to regulate the quantity which shall be pressed into the molds by the roller. By means of the adjustment the upper edge of this gage is placed against the surface of the roller to scrape off any clay which may adhere to it.

The bricks are discharged alternately on opposite sides of the roller from one half of the molds, and the extent of motion of the carriage is such that the whole set of molds pass under the roller each way so that the clay is first pressed toward one side of the molds and on the return movement toward the other side to equalize the density of the clay. As the molds leave the clay box, either way, they pass under a knife (o) which cuts off the surplus clay, and renders

the surface smooth and even. These knives extend across the width of the clay box and are made broad, with their under surface inclined, the cutting edge when resting on the edges of the molds being the lowest, and the back is secured to an arbor which turns in the sides of the clay box, one end projecting beyond and being provided with a weighted lever (p) which keeps the cutting edge of the knife on the upper edges of the molds except when a stone or other hard substance projects above the surface and then it is lifted up and permits it to pass out, the elevation of the back being sufficient for this purpose. When one-half of the molds have passed out of the clay box the stems of the followers have passed onto and over a plate (q) jointed at each end to the arms (r, r) of two rocking shafts or arbors (s s), one of which is provided with another arm (t) which is then struck by a tappet (u) on the side of the carriage, and which by the continued motion thereof, in the same direction, causes the arbors to rock and to lift the plate (q) which forces up that half of the followers above it while at the same time by the rocking motion of the shafts the plate moves along in a horizontal direction corresponding with that of the carriage thus avoiding all tendency to cant the followers or strain and bend the stems thereof. So soon as the bricks have been carried up above the upper surface of the molds, another projection (u') on the side of the carrier comes in contact with and moves an arm (v) on a vertical rocking shaft (w) which has another arm (x) that gives a lateral movement to a bar (y), jointed at each end to parallel joint links (y' y') by which the bricks are pushed off the carriage onto a table, or onto a carrying belt as may be desired. To the back of this bar (y) is attached a sand hopper the bottom of which is a seine to sand the molds as it passes over them. On the return of the carriage the bar (y) is moved back by a spring (z) or weight and the plate (q) returns to its original position by gravity. And a like set of operations take place on the other side.

What I claim as my invention is—

1. Lifting the followers or movable bottom of the molds to discharge the bricks by means of a plate or equivalent therefor which while it is moved up to lift the follower has a horizontal movement with the carriage to avoid all strain on the molds and their followers, substantially as described.

2. Hanging the knives, for cutting off the surplus clay, on journals to admit of the passage of stones or other hard substances in combination with the movable molds, as described.

3. The employment of the gage in combi-

nation with the pressure roller and hopper or clay box, to determine the quantity of clay which shall pass under the roller, as described.

- § 4. The employment of the movable bar for removing the bricks in combination with the carriage of molds, as described, and in

combination with this the sand hopper and seine attached to and moving with the bar, as described.

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Witnesses:

A. P. BROWNE,

J. J. GREENOUGH.