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E. R. GARD.

BRICK PRESS.

No. 265,667. Patented Oct. 10, 1882.

Fig. 1.

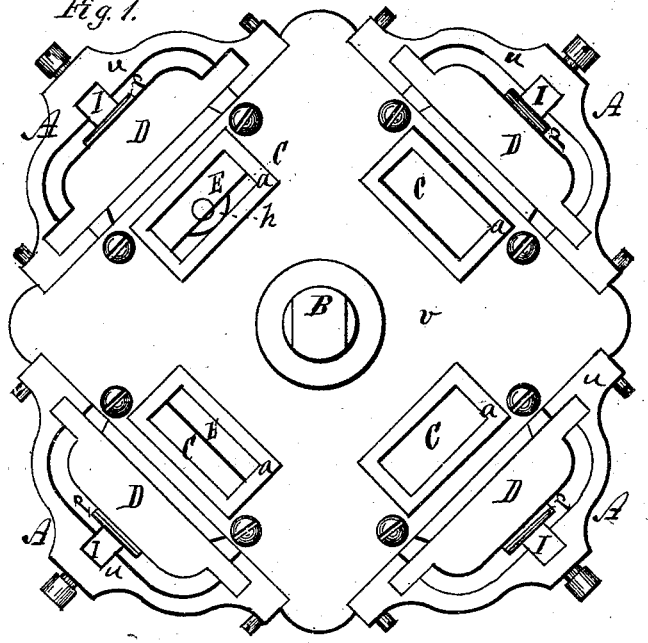
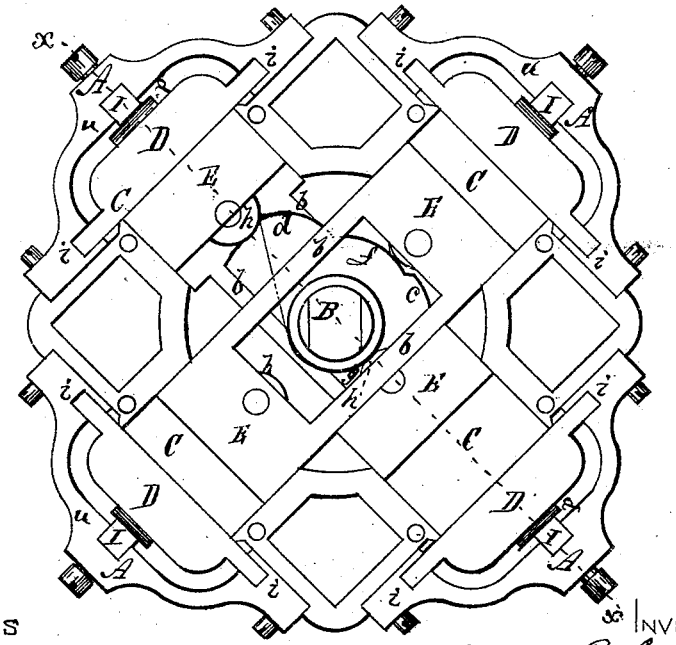


Fig. 2.



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J. S. Brown.

(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

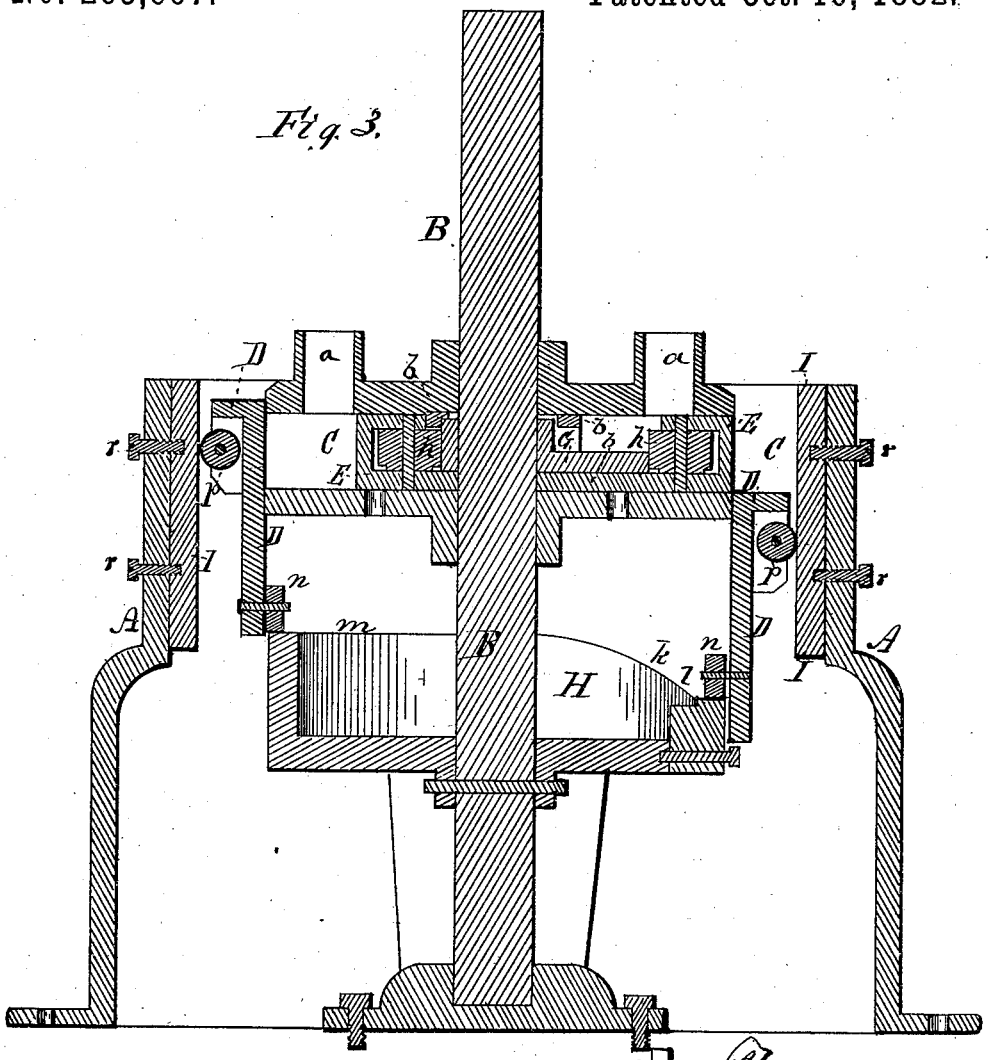


Fig. 5.

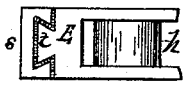
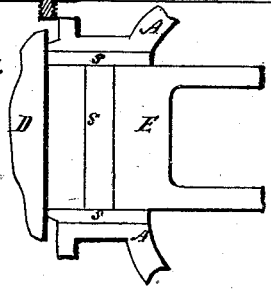


Fig. 4.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 6.

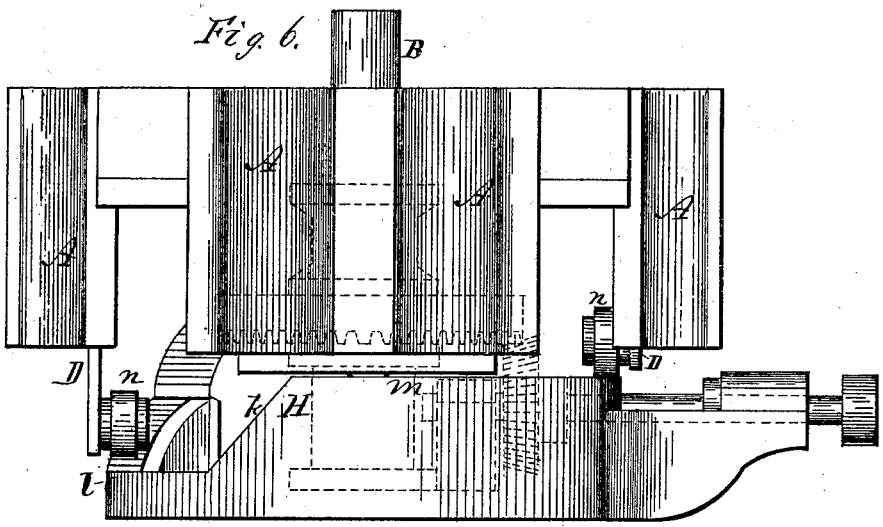
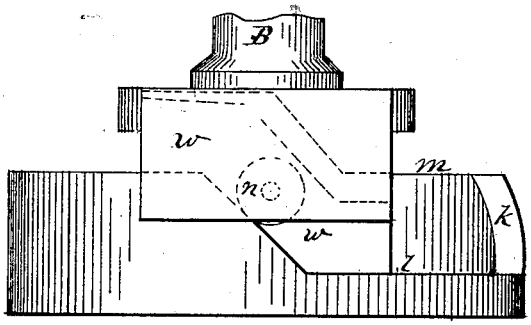


Fig. 7.



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UNITED STATES PATENT OFFICE.

EMERY R. GARD, OF BALTIMORE, MARYLAND.

BRICK-PRESS.

SPECIFICATION forming part of Letters Patent No. 265,667, dated October 10, 1882.

Application filed May 1, 1882. (No model.)

To all whom it may concern:

Be it known that I, EMERY R. GARD, of the city of Baltimore, in the State of Maryland, have invented an Improved Brick-Press; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a top view of the brick-press; Fig. 2, a top view of the same, the cap-plate being removed to show the interior construction; Fig. 3, a central vertical section in a plane indicated by the line *x x*, Fig. 2; Figs. 4 and 5, views of parts in detail; Fig. 6, a side view of a modified construction of the brick-press; Fig. 7, a side view of a part of the same, the view being taken at right angles to the view in Fig. 6.

Like letters designate corresponding parts in all of the figures.

This invention is an improved press for repressing bricks, and its construction unites simplicity, cheapness, compactness, efficiency, great capacity for work, and economy of power.

A compact iron frame or case, A, of substantially the form represented, has a vertical driving-shaft, B, located centrally therein, to the top of which shaft a sweep may be attached for driving by horse-power; or other power may be connected with the shaft either above or below the press. Around this shaft, at uniform distances therefrom and from one another, are located in the frame four pressing-molds, C C, in which bricks are pressed in quick succession, the operations of inserting the bricks in the molds, pressing them therein, and removing therefrom going on in turn and causing no delay in the continuous movement of the machine, while the pressing force is applied to only one at a time, so that, although the bricks are rapidly pressed, the power required at any moment is not great. Each mold has an inlet, *a*, somewhat tubular, as shown in Fig. 3, through which the bricks are dropped, thus guiding them into the mold in the proper position for acting thereon. The mold extends from under its inlet radially outward from the center of the machine, with its top, bottom, and sides solidly inclosed, and opens horizontally outward to or over a vertically-reciprocating bed-plate, D, which also serves as a lifter for the pressed bricks to take them out of the press. The bricks are pressed in the mold between this movable bed-plate and the plunger E, which forces the bricks outward to the bed-plate, and, after the pressing and the bed-plate descends to a position just below the bottom of the mold, pushes out the bricks upon the upper end of the said bed-plate, to be lifted from the press thereby.

The plungers E E are formed in pairs, extending centrally across the machine, the connecting-bars *b b* which unite each pair striding the driving-shaft B, with a space between long enough to allow the requisite movement of the plungers. The two pairs of plungers thus connected cross each other at right angles, and the cross-bars of one pair are over or under the cross-bars of the other, those of one pair being at the bottom and those of the other pair being at the top of the space in which they move, as shown in Fig. 3; and there is room between these bars for the location of the cam G, which reciprocates these plungers, and which is secured to the shaft B. This cam acts on the plungers successively in a circle to force them out to the limit of their movement, and, by consequence, in turn draws them inward successively, for it follows from the uniting of the opposite plungers that the moving of one plunger out draws the opposite plunger in, so that when one is fully out the other is fully in. The cam has two active parts, *c d*, the first part, *c*, bringing the plunger to the brick and producing the pressure thereon, (the main functional part of the machine,) and the other part simply moving the pressed brick out over the bed-plate D. Between these two active parts of the cam are two inactive parts or spaces, *f g*, the first to allow time for the bed-plate D to descend after the pressing far enough to permit the pressed brick to be pushed out over and upon the upper end thereof, as seen at the right-hand side in Fig. 3. At this part *f* the cam may recede a little from the advanced part, where the fixed pressure is produced, in order to relieve the pressure on the brick while the bed-plate is descending. The other space, *g*, (shown as the unoccupied hub part of the cam,) gives room to each plunger, after a brick is pressed in a mold, to be drawn inward while the opposite plunger (connected therewith) is pushing the brick

out of the mold. Suitable rollers, *h h*, are respectively mounted at the rear of the several plungers, for the cam to bear against to avoid unnecessary friction.

The bed-plates D D are caused to reciprocate up and down in ways *i i* of the frame by mechanism properly timed with the movements of the plungers. Thus, suppose a bed-plate is raised to its full height, as at the left, hand side in Fig. 3, then, after the brick has been pressed, while the said bed-plate remains in that raised position, its first movement is to descend, as above set forth, to the position shown at the right-hand side of Fig. 3, to allow the brick to be pushed out upon its upper end. It then must ascend to the first position named for the purpose of lifting the pressed brick to the top of the mold and of being in place for the next brick to be pressed against it. It there remains stationary while the next brick is pressing and the pressed brick is removing from the press. These movements are produced by a revolving cam, H, located under the molds and secured to the same shaft, B, that carries the plunger-cam G. This cam has the proper inclined surface, *k*, Fig. 3, for lifting the bed-plates, level parts *l m* to hold them at rest at their lowest and highest positions as long as required, and a declining portion for letting the bed-plates down from the highest to the lowest position. Friction-rollers *n n* are mounted on the respective bed-plates near their lower ends, to roll upon the cam H.

At the outside of each bed-plate D is located a friction-roller, *p*, and mounted thereon, being located centrally opposite to the mold when the bed-plate is in position to receive the pressure of the brick, as seen at the left-hand side of Fig. 3, and each roller rolls against a vertical way, I, as shown. The said ways are located and adjustable out and in in the frame of the machine by set-screws *r r*. The adjustment of each way is such that at the upper part of the same the roller *p* will be pushed inward, so as to hold the bed-plate close up to its mold; but below the way should recede enough to allow the bed-plate to ascend and descend without friction from pressure.

The molds C C, being formed in the cast-iron frame or bed of the press, have their sides lined with separate pieces or plates *s s*, Fig. 4, of steel or other hard material, and the faces of the plungers E E, Figs. 4 and 5, have similar plates secured thereto. My method of attaching and adjusting these plates accurately in place is shown in Fig. 5. The plunger (or it may be one side of the mold) has a tongue, *t*, of dovetail or equivalent form, with undercut sides on its face, and the plate *s* has a groove of similar form to fit over and around the tongue, but fitting loosely, so as to allow spaces between wide enough to pour therein some melted material. I employ a filling in sulphur, the plate being held accurately in position until the sulphur cools and hardens. The sulphur then holds the plate securely and firmly; and at any time the plate can quickly be removed by simply heating the plunger until the sulphur is softened.

The main bed or frame of the press has suitable cap-plates, *u u u*, for inclosing the working parts of the machine.

The modification shown in Figs. 6 and 7 consists in having the frame or body carrying the molds, plungers, and reciprocating bed-plates revolve by suitable gearing around the shaft B, which, as also its supporting-bed and the cams G and H, is stationary, instead of the reverse arrangement above described as the main invention. There is no essential change in the action caused thereby. Fig. 7 also shows a groove-cam, *w*, in which the bed-plate rollers run for bringing down the bed-plates by a positive action.

Through each bed-plate D one or two small holes should be made (not shown in the drawings) to allow the escape of any surplus clay in the brick more than the mold can hold.

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

1. The combination of the molds C C, the reciprocating bed-plates D D, having movements to positions below the molds, opposite to the molds, and up to the top of the press, the plungers E E, and the cams G H on the shaft B, one situated within and the other below the operative parts of the press, substantially as and for the purpose herein specified.

2. The plungers E E, provided with movable face-plates *s s*, secured in exact positions by a readily-fusible material, substantially as and for the purpose herein specified.

3. The adjustable counter-ways I I, in combination with the reciprocating bed-plates D D and molds C C, substantially as and for the purpose herein specified.

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Witnesses:
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ALEX. TINSLEY.