

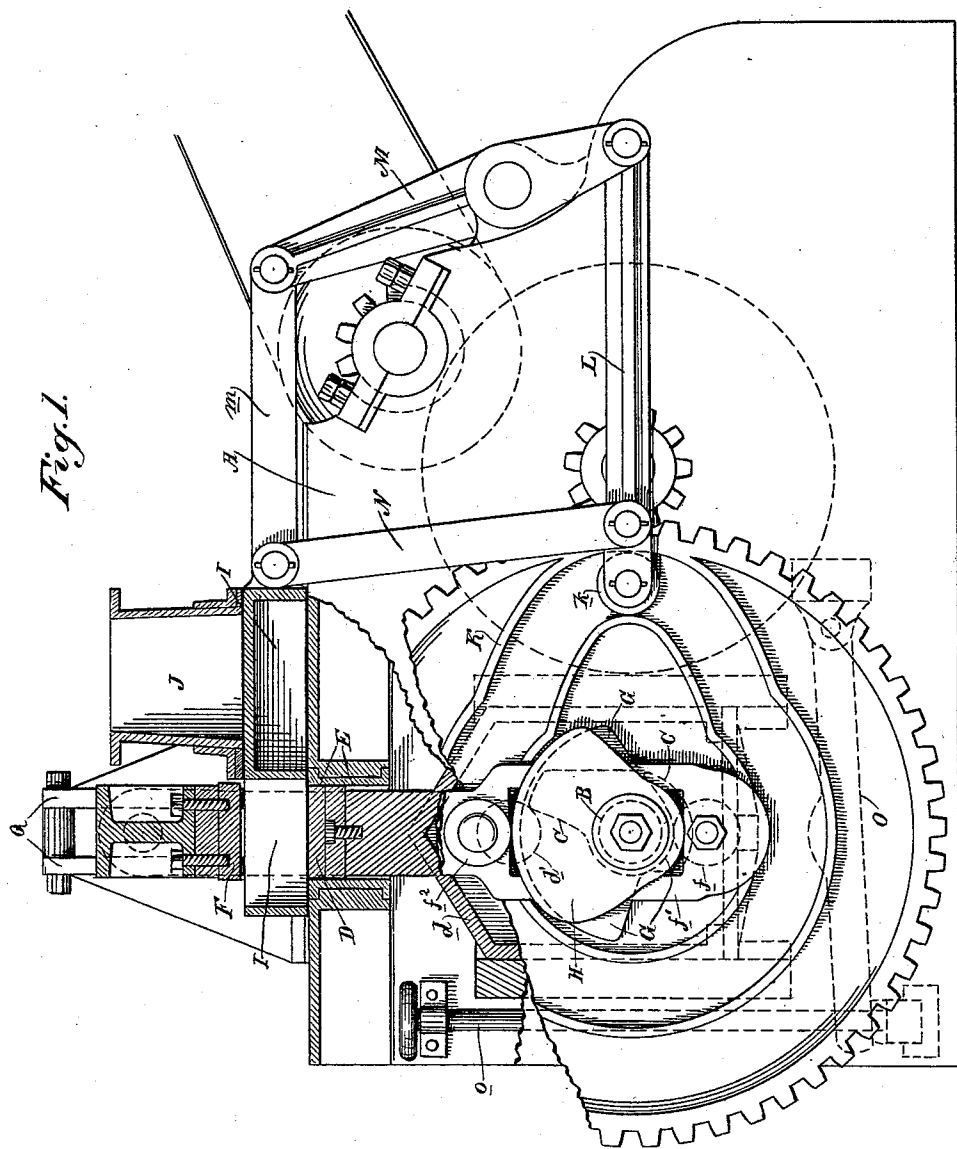
(No Model.)

3 Sheets—Sheet 1.

W. BURKMAN.
BRICK MACHINE.

No. 478,915.

Patented July 12, 1892.



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Inventor,
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(No Model.)

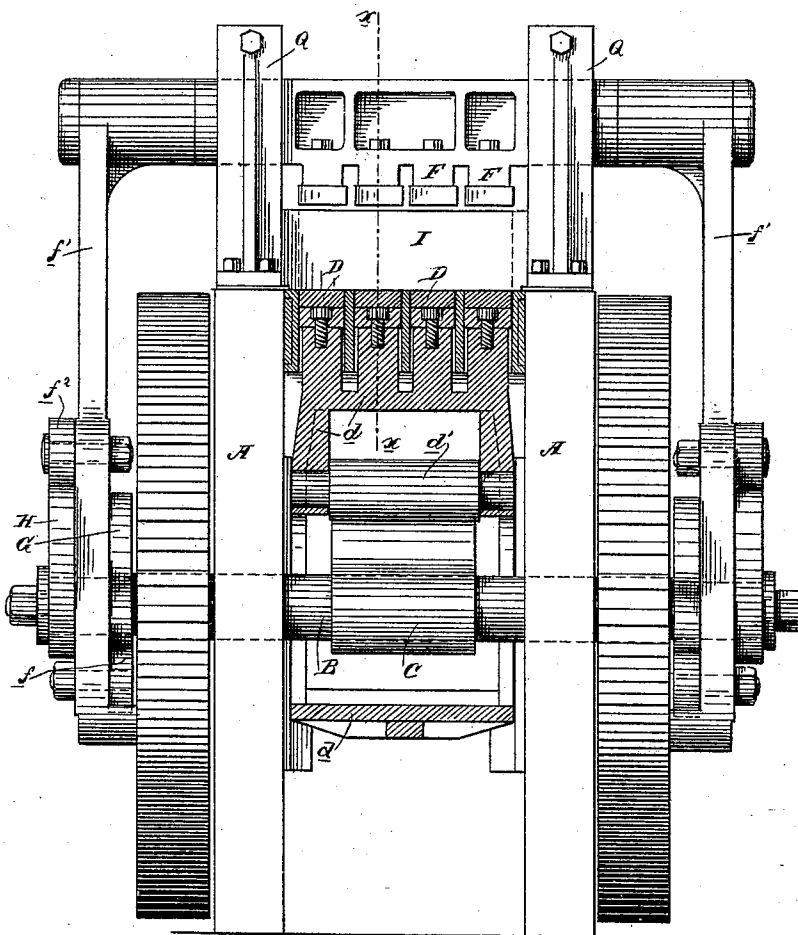
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Fig. 2.



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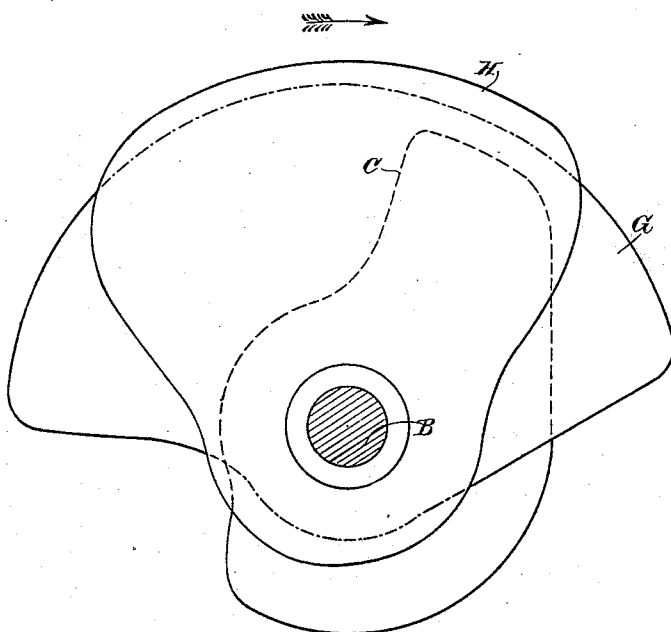
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Fig. 3.



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UNITED STATES PATENT OFFICE.

WALFRID BURKMAN, OF SAN FRANCISCO, CALIFORNIA.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 478,915, dated July 12, 1892.

Application filed May 15, 1891. Serial No. 392,893. (No model.)

To all whom it may concern:

Be it known that I, WALFRID BURKMAN, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Brick-Machines; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of machines for compressing plastic material into shape in which opposing plungers operate upon the material, which is delivered to the mold by a reciprocating feed-box.

My invention consists, essentially, in plungers the movements of which are so timed that the material will be compressed partially from one side, then more forcibly from the opposite side to a plane beyond its center, and finally again and fully compressed from the first side.

It also consists in the mechanisms by which these movements are timed and effected and in the novel constructions and combinations hereinafter fully described, and specifically pointed out in the claims.

The object of my invention is to provide a machine of this class especially for making bricks in which the pressure shall be applied to the material in the most effective manner to obtain an equal and general compression throughout the mass, thereby making a superior brick.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a side elevation, the upper portion being in cross-section, on line *x x* of Fig. 2. Fig. 2 is a front view, the lower plunger being in section. Fig. 3 is an elevation of the cams C, G, and H, showing their shape and relative arrangement.

The machine consists of a frame A, in which is mounted the main shaft B, operated by suitable means. Upon shaft B is a cam C of the shape shown. Around this cam is fitted the hollow base *d* of the set of lower plungers D, said base serving as a housing and protection for that portion of the shaft and for the cam. In this hollow base is a roller *d'*, against which the cam C operates, whereby the lower set of plungers is raised and allowed to descend. The plungers D are adapted to work

upwardly into the molds E and are shaped to correspond with said molds.

F is the upper set of plungers, adapted to work down into the molds. These plungers are drawn down by means of cams G on the shaft B, on each side, which said cams operate on rollers *f* in the lower ends of side arms *f'*, the upper ends of which are connected with the main body or cross-head of the upper plungers. These plungers are raised by means of other side cams H on shaft B, operating upon rollers *f*² in arms *f'* and serving to hold the plungers up and keep them from descending faster than the cams G force them down. I do not confine myself to two separate cams in this connection, as a grooved double cam would answer the purpose.

I is the reciprocating feed-box, working under the feed-hopper or clay-spout J and over the molds E. It is reciprocated by means of a cam K, which operates on a roller *k*, attached to the connecting-rod L, which is itself connected with a swinging lever M, the upper end of which is connected by a link *m* with the feed-box. A guide-link N connects the rod L and link *m*.

Under the hollow base of the lower plungers is an adjustable stop-bar O, pivoted at one end and having a spindle and hand-wheel adjustment *o* at its other end, whereby it can be raised and lowered. This stop is to regulate the movement of the plungers to the quantity of material to be pressed. The upper plungers are kept in position by guides Q. The arms *f'* are guided at their lower ends by being slotted over the main shaft B.

The feed-box I is formed with a chamber, as shown, for receiving the material to be fed to the molds. This chamber will be directly under the feed-hopper or clay-spout J when the feed-box is drawn back to the limit of its stroke, and the box when moved over to the other limit will push the pressed work out and drop the fresh material into the mold.

The operation of the machine is as follows: When the bottom plungers are raised to the plane of the top of the mold, the upper plungers are lifted high enough above it to permit the passage of the feed-box under them and over the mold. At this time the cam C bears on roller *d'* with the first corner of its

long point, and the side cams H are similarly in contact with the rollers f^2 of arms f' , whereby the upper plungers are held up, and the cam K is in such position with its roller k that it is ready to move it to cause the feed-box to travel on its forward stroke. Now upon rotating shaft B the cam K will advance the feed-box, so that its chamber, full of material from the hopper, will carry said material over the molds. When the feed-box has advanced over two-thirds of the mold, the cam C has advanced so that the last corner of its point is bearing on roller d' and the lower plungers begin to drop. The contents of the feed-box chamber is thereupon discharged into the molds. The lower plungers will descend until the roller d' touches the smallest part of cam C, and this is the limit of its downward movement unless a smaller quantity of material should be needed, in which case the limit is raised by raising the stop-bar O to allow the base of the plungers to come in contact with it, and thereby to be arrested sooner. As the lower plungers descend the feed-box is advancing over the remaining third of the molds, and when it has passed fully over the molds it begins to return, while the lower plungers remain at rest. When the feed-box is withdrawn, the side cams G push the upper plungers down into the molds, thereby partially compressing the material from above, and said plungers then remain stationary in the molds, being held positively by the cams below, while the cam C raises the lower plungers. These press upon the material from the under side and compress it through beyond its center plane. When the lower plungers are as high as required and have compressed the material as desired, they remain still, and thereupon cams G force the upper plungers down still farther, so as to finally and fully compress the upper portion of the material. Both plungers remain for a short time tightly pressed on the material.

Then the lower plungers move upwardly, and the upper plungers, relieved by cams G, also rise under the action of cams H. The pressed material is thereby raised into the path of the feed-box, which, advancing, passes under the upper plungers and pushes the pressed brick out just as the lower plungers raise it to the proper level. The lower plungers then drop and more material is fed into the molds.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The mode of pressing plastic material in molds by means of plungers, which consists in first partially compressing the material from one side and holding the plunger stationary to said compression; second, compressing the material from the other side to a line beyond its central plane and holding the plunger stationary to said compression, and, finally, compressing the material fully from the first side, substantially as herein described.

2. In a brick-machine, the combination of the mold, the upper plunger, the lower plunger having the hollow base, the main shaft passing through said base, the cam C on said shaft within the hollow base and adapted to raise and lower the lower plunger, an adjustable stop-bar below for limiting the movement of said lower plunger, the cams G on the main shaft, operating on the side arms of the upper plunger to draw said plunger down, and other cams H on said main shaft operating on said arms to raise the upper plunger and to control its downward movement under the action of the cams G, substantially as herein described.

In witness whereof I have hereunto set my hand.

WALFRID BURKMAN.

Witnesses:

S. H. NOURSE,
J. A. BAYLESS.