J. K. CALDWELL.

BRICK-MACHINE.

No. 172,384. Patented Jan. 18, 1876.

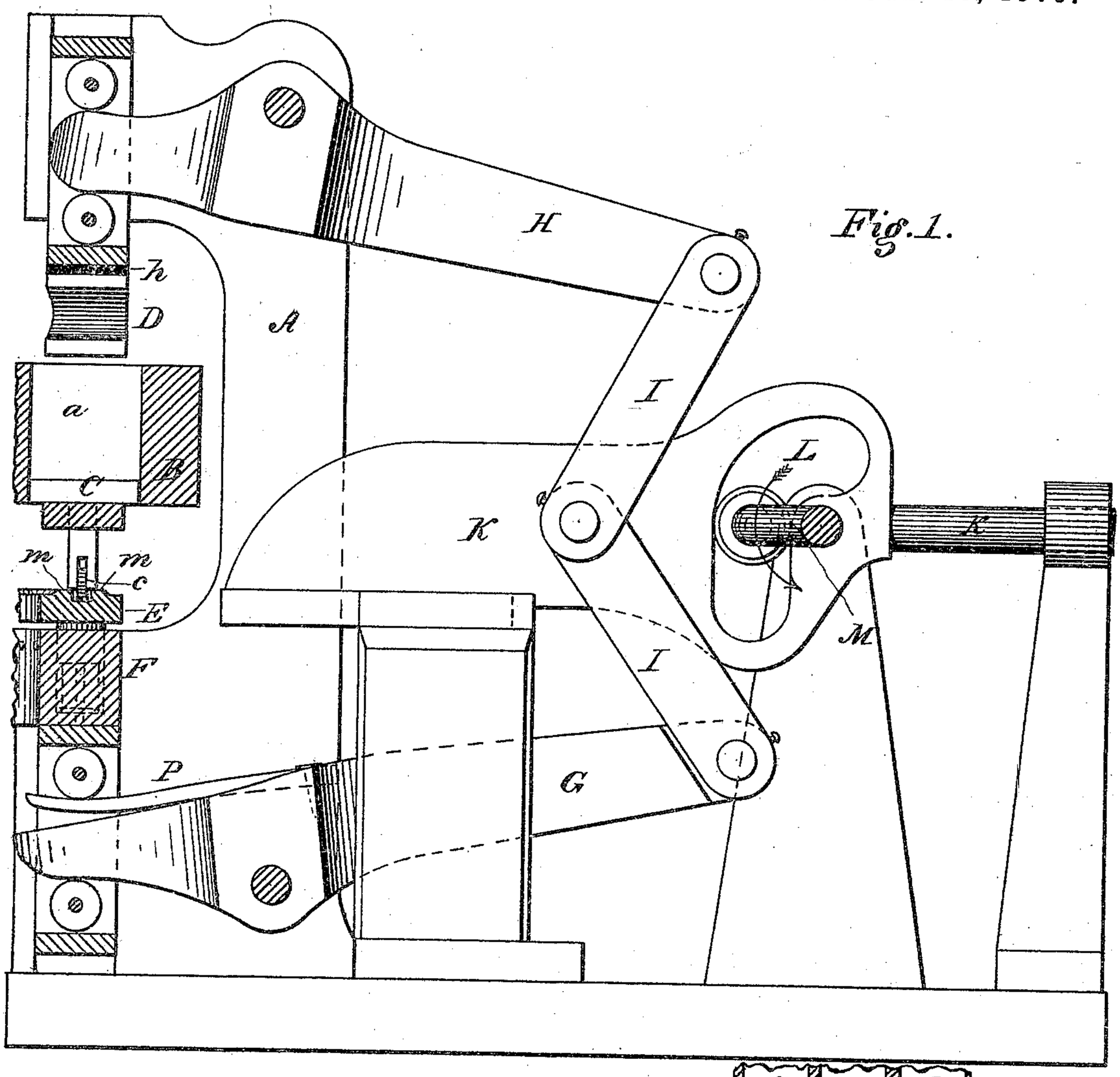


Fig. 1.

Fig. 3.

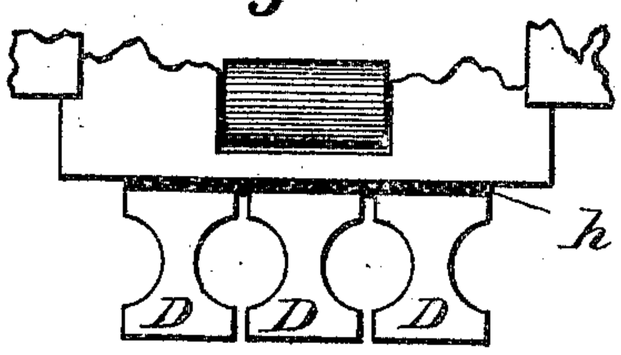
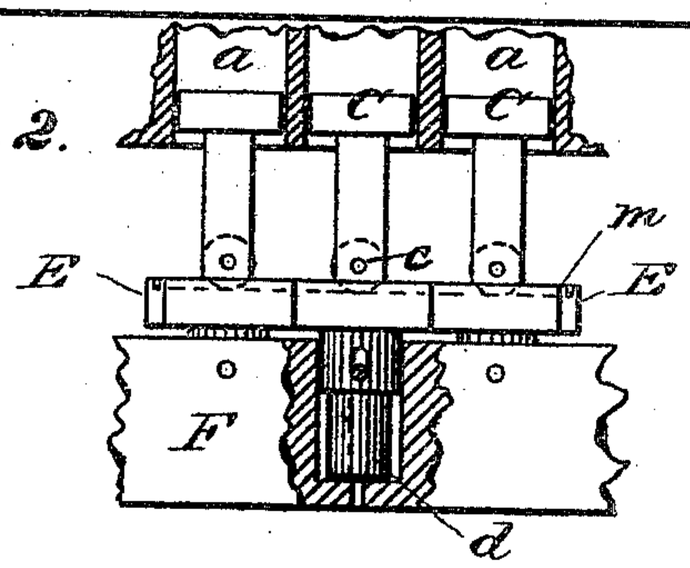


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN K. CALDWELL, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. **172,384**, dated January 18, 1876; application filed December 30, 1875.

To all whom it may concern:

Be it known that I, JOHN K. CALDWELL, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Brick-Machines, of which the following is a specification:

My invention relates to improvements intended more especially for application to the machine for which Letters Patent were granted to me on the 18th day of May, 1875, No. 163,299. The improvements consist in a novel combination of mechanism for operating the pressing-plungers; in a novel manner of constructing the parts to relieve the rollers of the lower plungers from strain when the pressure is being applied, and in a novel manner of constructing and arranging the parts to apply a yielding or spring pressure to the plungers, as hereinafter fully explained.

Figure 1 represents a vertical section of one side of the mold-table and my improved pressing mechanism; Fig. 2, a section showing the manner in which the lower plungers are sustained during the application of the pressure; Fig. 3, a face view of the upper plungers.

In its general construction and mode of operation my present machine resembles that hitherto patented by me.

A represents the frame of the machine; B, the intermittently-rotating mold-table, provided at regular intervals with groups of molds or cells *a;* C, the movable bottom plungers, mounted one in each mold; and D, the upper pressing-plungers, mounted on a sliding head in the main frame. The bottom plungers are each provided at the foot with a supporting wheel or roller, *c*, traveling on a circular track, E. At a point below the pressing-plungers D the track E is divided into as many short sections as there are molds and plungers in each group, and each of said short sections is provided with a neck on its under side, entering a hole in a block, F, and seated on a rubber spring, *d*, therein, as shown in Fig. 2.

With the parts thus arranged it will be seen that when the molds are under the pressure-plungers the bottom plungers C will be supported, each upon a separate section of the track, sustained by its own spring independently of the others, as is clearly represented in Fig. 2, so that when the pressure is applied each bottom plunger can yield independently of the others. The block F, on which the yielding sections of the track are mounted, is seated in vertical guides, and connected with the end of a horizontal lever, G, by means of which latter the block, the sections of track, and the plungers upon the latter can be raised for the purpose of pressing the clay from below. The sliding head-block, to which the upper pressing-plungers D are attached, is operated by a horizontal lever, H, which has its rear end connected, by toggle-links I, with the end of the lever G, by which the bottom plungers are raised. The toggle-links have their ends united by a pin or bolt passing through a horizontally-sliding bar, K, mounted in fixed ways or guides, as shown, so that upon moving said bar endwise it operates the links and levers, and moves the upper and lower plungers to or from each other. The sliding bar K is provided with a slot, L, and operated by means of a crank, M, working in said slot, as shown. The upper end of the slot is curved in the arc of a circle having a radius equal to the length of the crank, as shown in the drawing. The crank, being turned in the direction indicated by the arrow, first works in the lower vertical portion of the slot, and moves the bar backward, thereby straightening up the toggle-links and applying the pressure to the clay, after which it rises and moves forward through the upper end of the slot, first moving the bar forward and separating the plungers, and then, while the crank is descending in the curved portion of the slot, allowing the plungers to remain at rest, so that the mold-table may be advanced.

It will thus be seen that by employing the curved slot I am enabled to impart an intermittent movement to the slide and plungers from the crank having a continuous rotary motion.

It will also be observed that by arranging the parts in the manner shown, so that the crank exerts its greatest power upon the slide at the time the toggle-links are nearly straightened up, the pressure applied to the clay is very great at the finish, the plungers being moved quickly when the pressure commences,

and then with decreasing speed and increasing power, as the compression of the clay increases the resistance.

In order to reduce the friction and wear of the working parts the crank is provided with an anti-friction-roller, and rollers also placed in the sliding heads for the operating-levers to act upon, as shown in the drawing. In order to permit the upper plungers to yield slightly independently of each other, a sheet of rubber, *h*, is interposed between them and the head-block on which they are mounted, as shown in Fig. 3. In order to give the parts additional relief, in the event of the application of excessive strain, the lower lever G is provided on its upper side with a flat steel spring, P, made of such strength that it will apply the required pressure to the clay, but yield when a greater strain is applied. If preferred, several springs may be arranged side by side, and the necks on the sections of track E extended downward and rested thereon.

In order to relieve the rollers in the bottom plungers from strain when the clay is being pressed, I provide the movable sections of the track with side flanges or ribs *m*, which extend up by the sides of the rollers against the lower ends of the plungers, as shown in Figs. 1 and 2, so that the pressure is received upon the flanges instead of the rolls.

It is obvious that, in place of the crank and slot, other devices may be used for the purpose of moving the sliding bar endwise, and that, in place of the rubber springs *d*, metal springs of suitable form may be employed in the block F to sustain the sections of the track.

Having thus described my invention, what I claim is—

1. In combination with the mold bottoms or plungers C, arranged and operating as shown, the track E, having movable sections supported upon separate springs, substantially as shown and described.

2. The track-sections E, provided with necks seated upon springs *d*, mounted in pockets in the block F, substantially as shown.

3. The combination of the levers G and H, operating the upper and lower plungers, with the links I and the horizontally-sliding bar K.

4. The combination of the levers G H, links I, sliding bar K, provided with the slot L, of the form shown, and the crank M, working in said slot, as shown and described.

5. In combination with the block F, having the plungers C supported thereon, the lever G, provided with the spring or springs P.

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Witnesses:

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