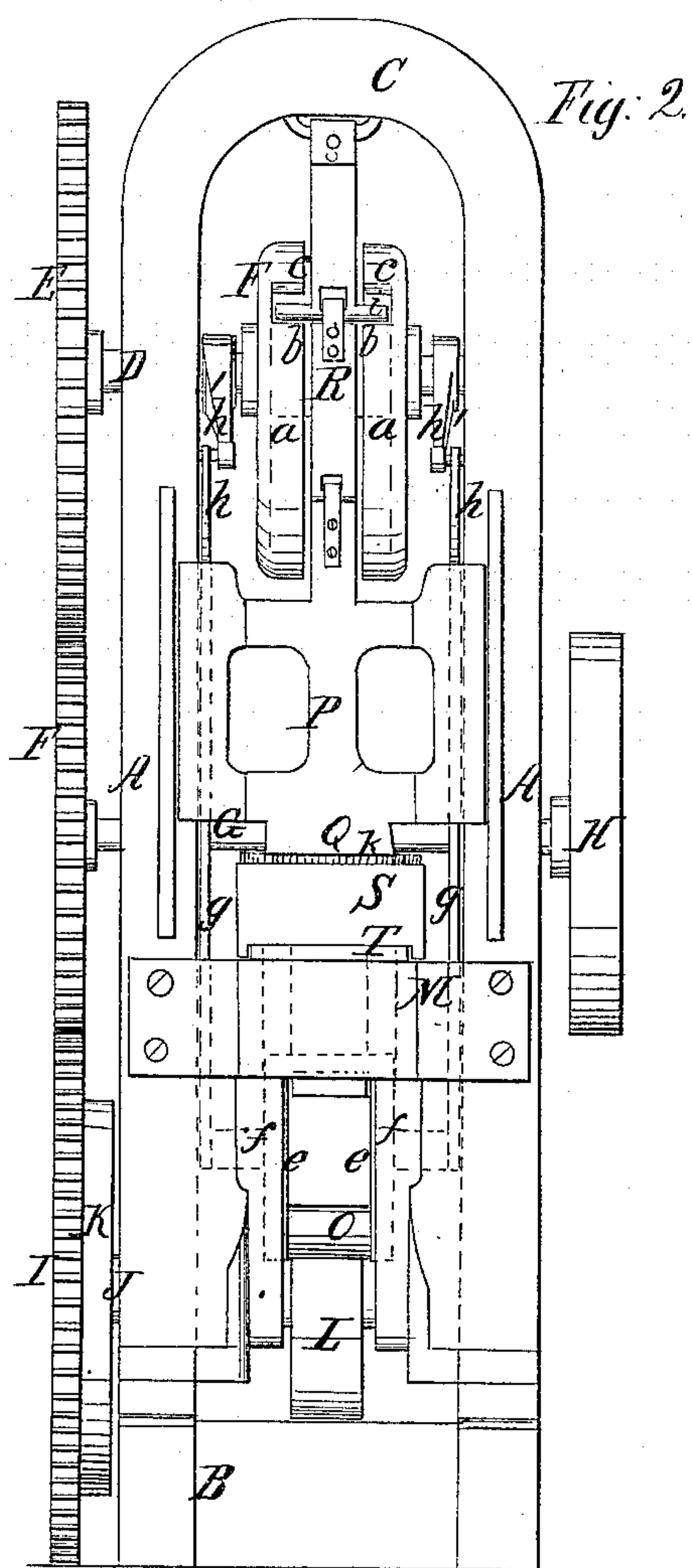
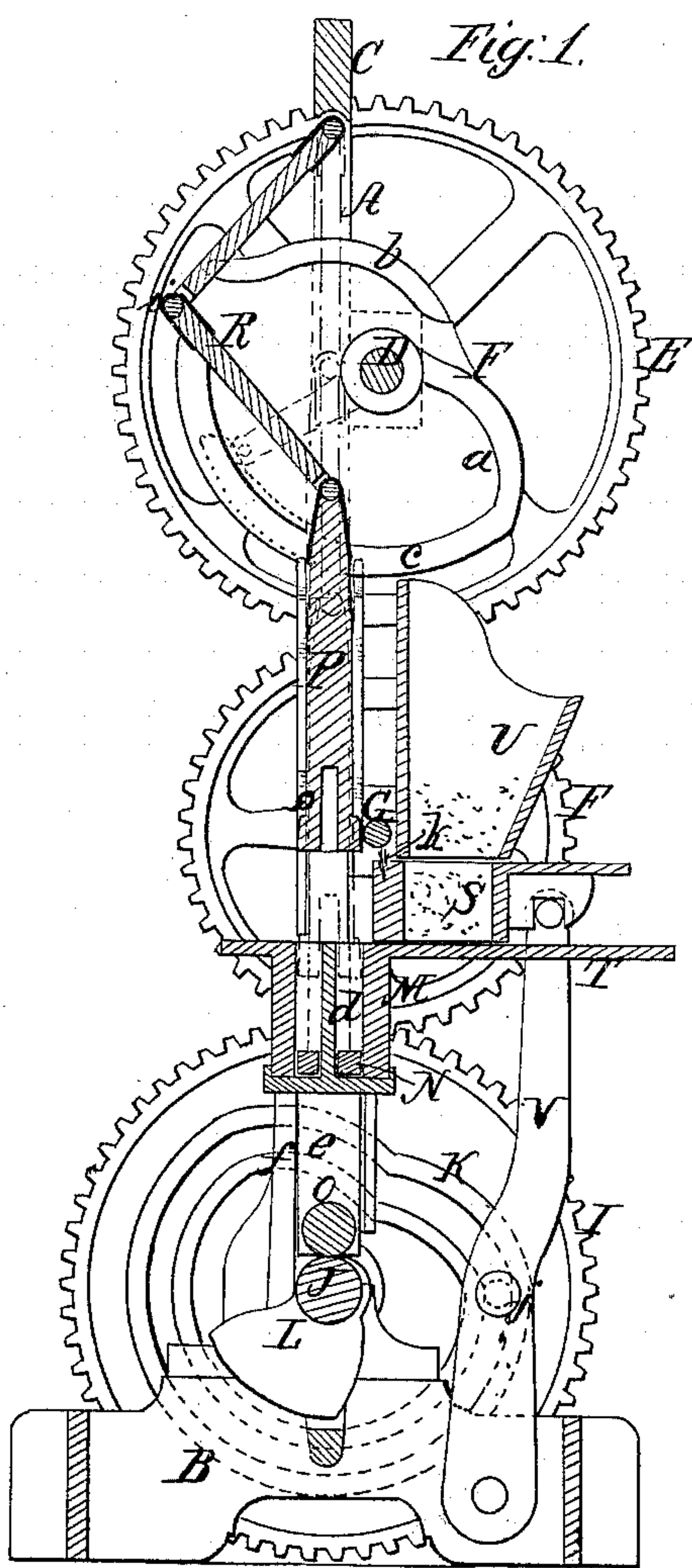


M. & J. H. BUCK & F. A. CUSHMAN.

MACHINE FOR MAKING HOLLOW BRICKS.

No. 16,174.

Patented Dec. 9, 1856.



UNITED STATES PATENT OFFICE.

M. BUCK, J. H. BUCK, AND F. A. CUSHMAN, OF LEBANON, NEW HAMPSHIRE.

MACHINE FOR PRESSING HOLLOW BRICK OR BUILDING-BLOCKS.

Specification of Letters Patent No. 16,174, dated December 9, 1856.

To all whom it may concern:

Be it known that we, MARTIN BUCK, JAMES H. BUCK, and F. A. CUSHMAN, of Lebanon, in the county of Grafton and State of New Hampshire, have invented a new and Improved Machine for Molding and Pressing Hollow Brick or Building-Blocks; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a transverse vertical section of our improvement, the plane of section being through the center. Fig. 2, is a front view of ditto.

Similar letters of reference indicate corresponding parts in the two figures.

To enable those skilled in the art to fully understand and construct our invention, we will proceed to describe it.

A, A, represent two uprights, the lower ends of which are attached to a proper base B, the upper ends of the uprights being connected by an arched cross-piece, C.

D, represents a shaft which has its bearings on the upper parts of the upright A, A. This shaft has a toothed wheel E, at one end, and a cam F, is placed on the center of the shaft, said cam being formed of two eccentric plates (a), (a), having ledges (b), (c), at their edges, said ledges projecting inward or toward each other, as shown in Fig. 2. The wheel E, gears into a corresponding wheel F', which is placed on one end of a shaft G, which has its bearings at about the centers of the uprights A, A. This is the driving shaft, and a pulley H, is placed on the end opposite to the end on which the wheel F', is placed. The wheel F' gears into a similar wheel I, which is placed on one end of a shaft J, having its bearings at the lower parts of the uprights A, A. On the inner side of the wheel I, two eccentric ledges or projections are formed which constitute a cam K, and a cam L, is placed on the center of said shaft between the two uprights A, A.

M, represents the mold-box which is of rectangular form and secured permanently between the two uprights A, A. The mold box has a core (d), fitted within it, and also a plunger N, which has a rectangular opening made through it to allow the core to pass through, the core being of rectangular form. To the lower surface of the plunger

N, two vertical strips (e), (e), are attached. These strips are fitted and work in ways or guides (f), (f), attached to the inner sides of the uprights, and a friction roller O, is fitted between the lower ends of the strips (e), (e), said roller bearing upon the cam L. To the outer side of the strips (e), (e), vertical bars (g), (g), are attached, one to each. These bars extend upward along the inner sides of the uprights A, A, and have curved arms (h), on their upper ends, which arms are acted upon by arms (h¹), on the shaft D. The object of this will be hereinafter explained.

P, represents a cross head which works between the uprights A, A, above the mold box M. The lower part of the cross head has a plunger Q, attached to it which works in the mold box M, said plunger having an opening made in it to receive the core (d).

R, is a toggle, the lower end of which is attached to the upper end of the cross head P, and the upper end is attached to the arched cross piece C. A cross pin (i), at the joint of the toggle is acted upon by the ledges (b), (c), of the cam F.

S, represents a sliding box which is fitted and works upon a bed T, which is flush with the upper end of the mold box M; and U, is a hopper which is permanently secured to the back parts of the uprights A, A, and at a sufficient distance above the bed T, to allow the box S, to pass underneath the hopper U.

V, is a lever the lower end of which is pivoted to the base B. The upper end of this lever is attached to the box S, and a projecting pin (j), on the lever is fitted between the ledges or projections of the cam K. To the upper surface of the box S, at one end there is attached a strip of cotton waste (k), or other suitable material, the use of which will be presently shown.

The operation is as follows: The clay, lime and sand, or other material of which the brick or blocks are formed, is properly prepared and placed within the hopper U. Motion is given the driving shaft G, in any proper manner and the clay or other material passes down from the hopper U, into the box S, and when the box is filled it is moved forward by the lever V, which is operated by the cam K, said box being moved directly over the mold box M. The clay passes from the box S, down into the mold box M, the plunger N, being at its

lower end and the box S, is immediately moved back underneath the hopper by the lever V. At this time the cross head falls and the plunger Q, strikes the clay within the mold box M, compressing it to a certain extent. The plunger is allowed to fall in consequence of the pin (i), of the toggle passing behind or inside the ledges or projections (c), (c), of the cam F. The inner surfaces of the ledges (b), (b), of the cam F, then bear against the pin (i), of the toggle and force down the plunger Q, the lower cam L, slightly raising the lower plunger N, and holding it firm till the pressure of the plunger Q, upon the clay is completed. The plunger Q, is then elevated in consequence of the outer surfaces of the ledges (c), (c), bearing against the pin (i), and the cam L, also raises the plunger N, and the molded and pressed brick is forced upward out of the mold box M, the upper surface of the plunger N, is raised flush with the bed T, and the brick is forced off therefrom by the box S, as it is moved forward over the mold box M.

It will be seen that the cam K, is so shaped or formed that the box S, is allowed to remain underneath the hopper until the clay within the mold box is compressed and raised therefrom, and then the box S, is moved forward.

The cotton waste (k), which should be supplied or saturated with oil cleanses the under surface of the plunger Q, and prevents the clay, lime and sand or other material of which the bricks or blocks are formed from adhering or sticking to the plunger.

The plunger N, is prevented from sticking in the mold box M, and is forced down at the proper time in consequence of the arms (h¹), (h¹), striking against the curved arms (h), (h), on the rods g, g.

The advantages of this machine are, in common with some others: 1st. The bricks

or blocks are compressed on two sides both top and bottom, and consequently all parts of the bricks or blocks will be fully compressed and both surfaces will be smoothed in consequence of being forced out from between the two plungers. 2nd. The under or face surface of the upper plunger is kept perfectly clear in consequence of the cotton waste (k), passing underneath it. 3rd. The clay or other material is subjected to a powerful pressure in consequence of the action of the plunger Q, which first falls with its own weight and that of the cross head P, upon the clay and is then pressed upon the clay when the toggle R, is nearly in a vertical position thus obtaining a great lever power. 4th. The lower plunger N, is prevented from sticking within the mold box by the operation of the bars (h), (h), actuated as described. But the particular point in which this machine differs from other machines of similar construction is, in the manner of operating the upper plunger; the mechanism used being quite simple, and not liable to get out of repair and yet very effective and powerful.

We do not claim the sliding box S, nor the general arrangement of the machine, for machines similarly constructed have been previously used; but,

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is,

Operating the plunger Q, by means of the peculiarly constructed cam F, in combination with toggle R, and cross-pin i, when the cams are constructed and arranged to operate in relation to each other in the manner and for the purpose set forth.

MARTIN BUCK.

J. H. BUCK.

F. A. CUSHMAN.

Witnesses:

CHAS. HAWKINS,

GEORGE M. AMSDEN.