

H. REYNOLDS.  
Molding-Machine.

No. 203,778.

Patented May 14, 1878.

fig. 1

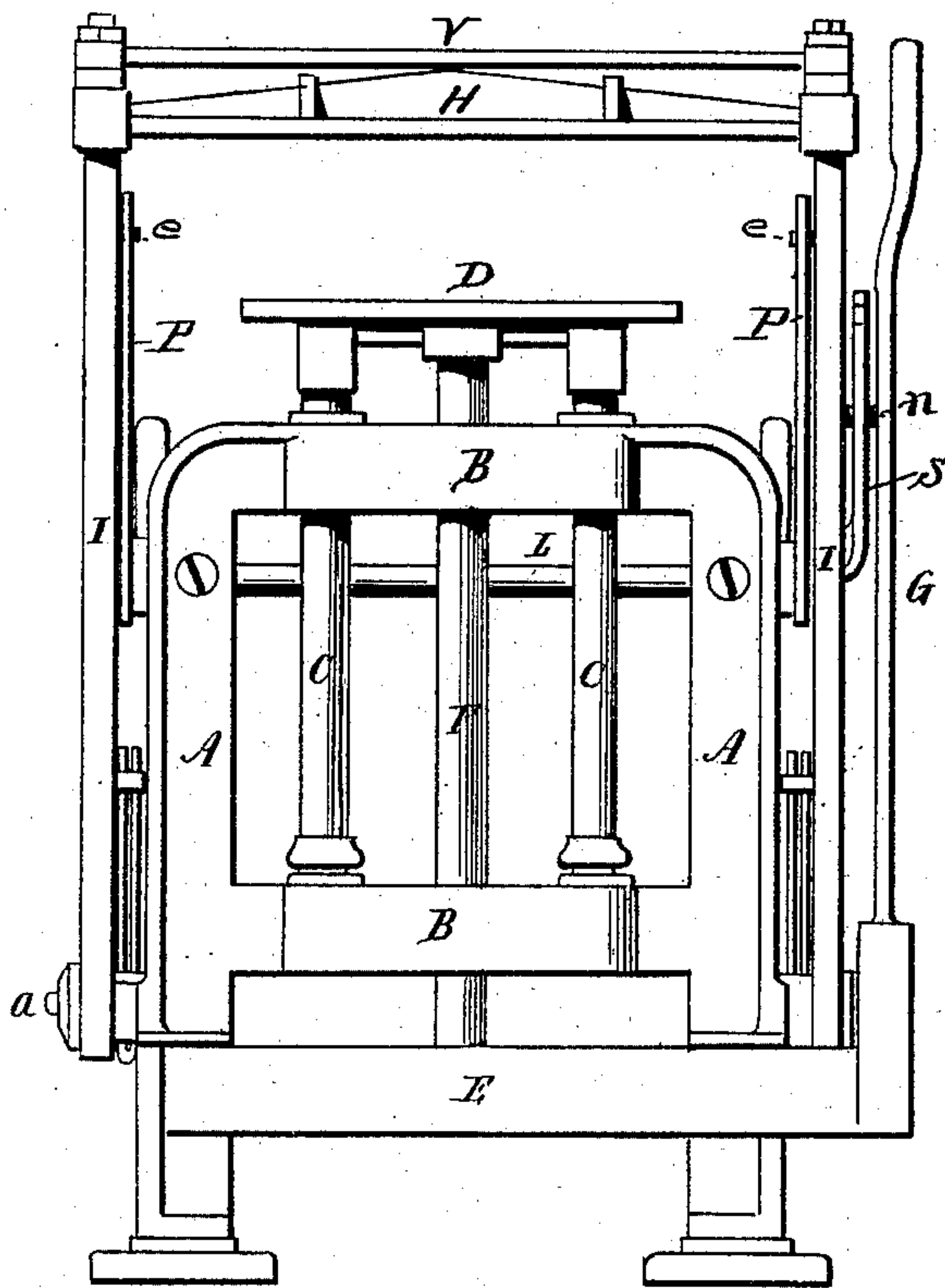


fig. 2

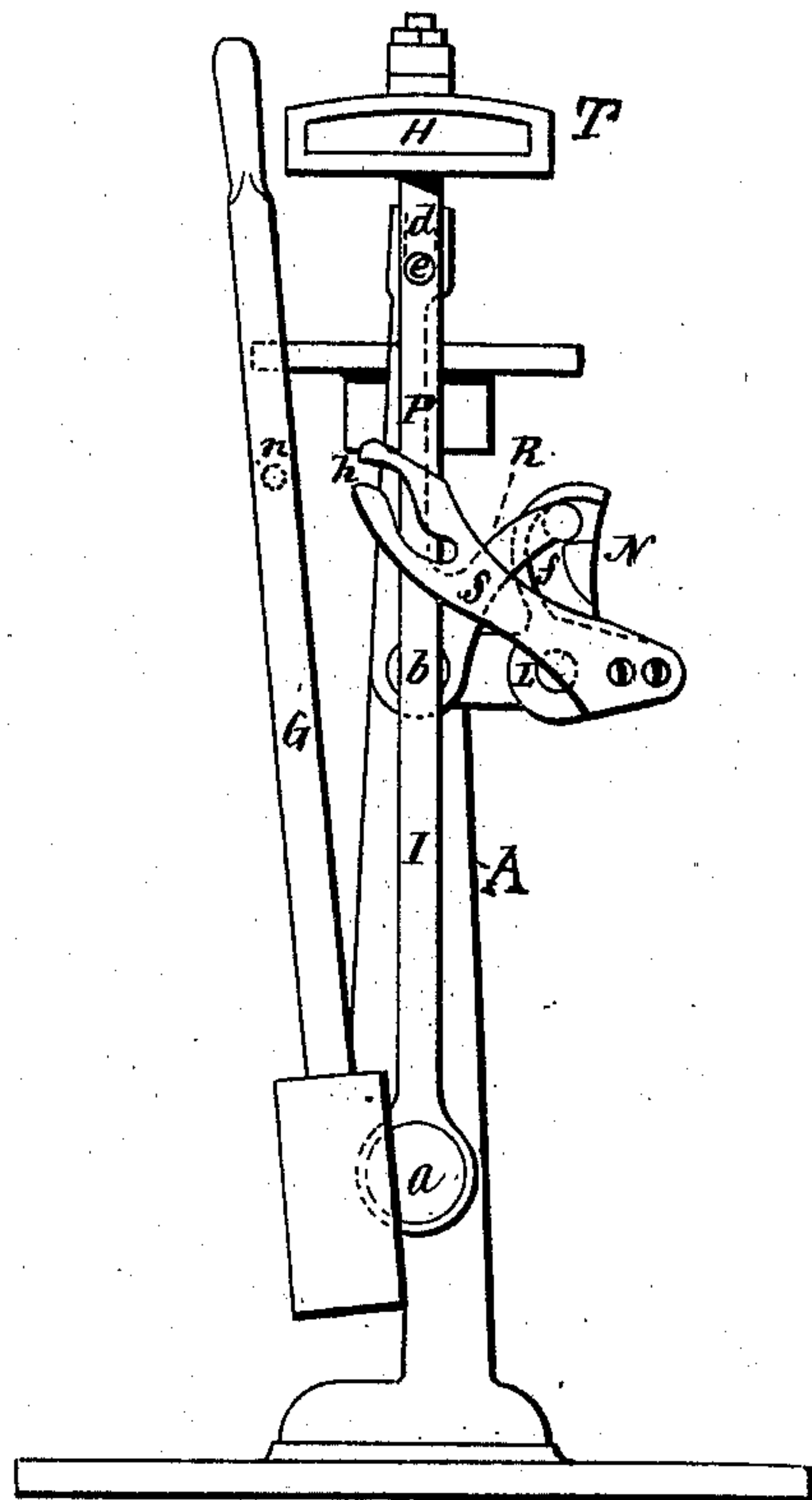


fig. 4

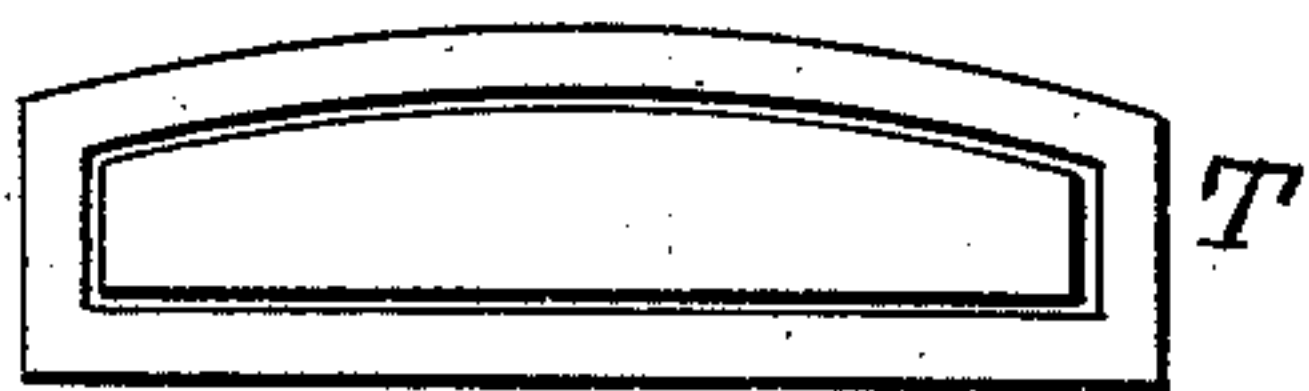
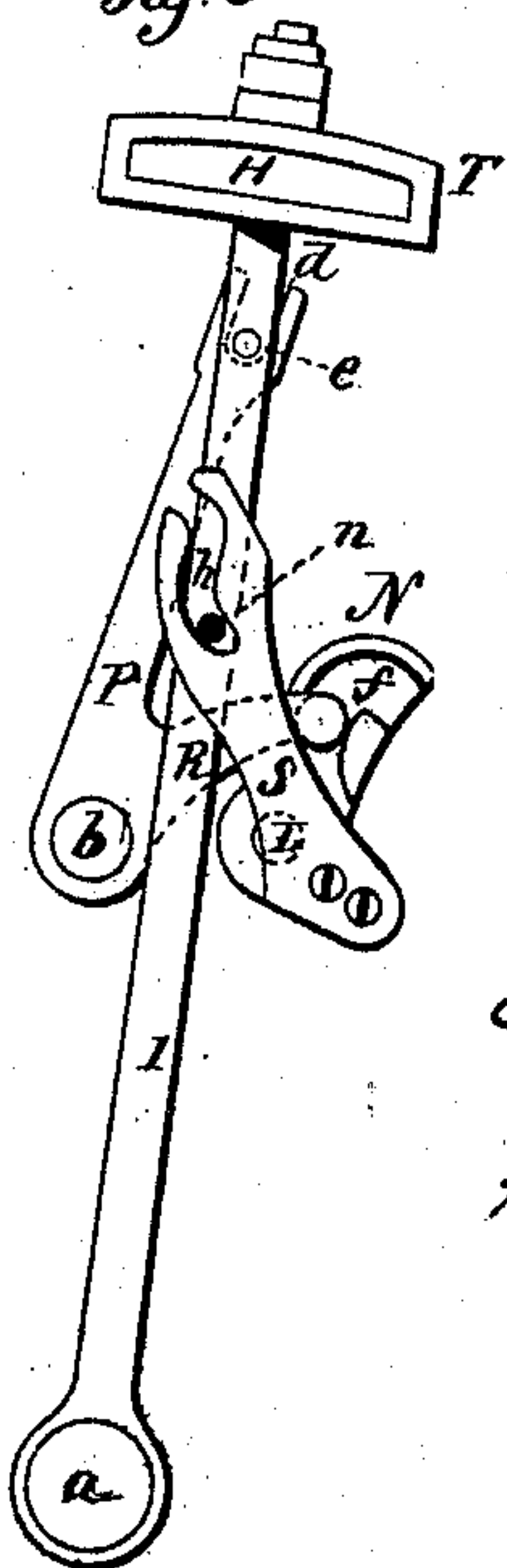


fig. 3



Witnesses.

J. A. Murray  
W. H. H. H.

Henry Reynolds  
Inventor.

By atty.

Wm. E. Cook

# UNITED STATES PATENT OFFICE.

HENRY REYNOLDS, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO  
REYNOLDS & CO., OF SAME PLACE.

## IMPROVEMENT IN MOLDING-MACHINES.

Specification forming part of Letters Patent No. **203,778**, dated May 14, 1878; application filed  
April 3, 1878.

*To all whom it may concern:*

Be it known that I, HENRY REYNOLDS, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Molding-Machines; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, front view; Fig. 2, side view; Figs. 3 and 4, detached views.

This invention relates to an improvement in machines for molding or casting, and particularly to the machine for which Letters Patent were granted to Henry Reynolds, dated January 1, 1878, but applicable to molding-machines generally in which the upper platen is turned backward from over the flask while the molding is being done, and then brought forward for the compression. This movement of the upper platen has usually been done by the workmen in a movement independent of other parts of the machine.

The object of this invention is to thus move the platen by the same lever by which the pressure is given, thereby avoiding the usual independent backward and forward movement of the upper platen; and it consists in the mechanism, as hereinafter described, and more particularly recited in the claims.

A A are the two side pieces, and B B cross or connecting bars, and in which the vertical slides C of the lower movable platen D are arranged; E, the rock-shaft, operating upon the upper platen through the connecting-rod F and by means of the hand-lever G, in the same manner as in the Reynolds patent before referred to—that is to say, so that by turning the lever forward the platen D is raised, and backward the platen is accordingly lowered, for the purpose of making a compression.

H is the upper platen, connected to a rod, I, at each side, and to a pivot, *a*, below, and so that the platen, turning on the said pivot *a*, may be moved backward or forward. This arrangement of the platen is substantially the same as in the Reynolds machine before mentioned.

In rear of the machine a rock-shaft, L, is arranged in suitable bearings, and at each end of this shaft there is a grooved cam, N, and on the frame of the machine, above the pivot *a*, a lever, P, is pivoted, as at *b*. It is slotted at its upper end, as at *d*, the slot embracing a stud, *e*, on the rod I, as seen in Figs. 2 and 3.

An arm, R, extends from the lever P backward and into the groove *f* in the cam N.

From the rock-shaft L an arm, S, extends forward, with an open slot, *h*, in its end, and on the lever G is a stud, *n*, which, when the lever G is turned backward, will enter the slot *h* in the arm S, and then, as the lever is pressed farther back, it will cause the arm S to turn, and with it the rock-shaft L and the cams N at each end. In their turn the said cams N operate upon the levers P, and so as to turn them backward from the position in Fig. 1 to the position in Fig. 3, carrying with them the other platen. When the lever G is again moved forward it returns the arm S and cams N, and with them the platen, to the perpendicular position, bringing the platen H into its proper relative position to the platen below, and the forward movement of the lever then continued raises the lower platen to produce the required compression.

The shape of the groove in the cam N is such, as shown, that when the platen H is in the proper position over the lower platen the groove ceases to act upon the lever P, because at that point the groove in the cam is made concentric. Thus a positive mechanical movement is given the swinging platen to move it forward and back, and by means of the same lever through which the compression is produced.

If, however, it is desirable to produce this mechanical movement of the swinging platen independent of the compressing mechanism, as in the case where a screw-presser is applied, then an independent hand-lever may be applied, through which to operate the swinging mechanism; and in this machine there may be, if preferred, say, one handle at one end to operate the swinging mechanism, and another handle at the other end to operate the compressing mechanism.



The handle for operating the rock-shaft and cams N may be applied directly to the shaft, and in that case the slotted arm S would not be required.

The platen may be attached directly to the levers P; in that case the rods I may be dispensed with. But the construction as shown is preferred.

In this class of machines it has usually been the practice to rigidly attach the platen to the swinging arms; or in some cases the swinging platen has been pivoted at its two ends, so as to be capable of a rolling motion unlimited. A difficulty is experienced in the first construction, in that an unequal density of the sand will be produced unless the quantity be distributed with the greatest possible care; and then in cases where the platen is considerably thicker at one side of the flask than the other, the greatest density will be obtained where the sand is thinnest. The latter construction overcomes this difficulty, but raises a greater, in that the platen, being free to tip to any extent, may make a still greater irregular pressure, and requires manipulation to properly introduce the flask. To obviate these difficulties, the levers I at each side are provided with a yoke, T, hung in a longitudinal slot, into which the ends of the platen H are fitted, as seen in Figs. 2 and 3, but so as to lie loosely therein, as shown, and allow one edge to rise higher than the other, should occasion require, the upper surface of the slot being of segmental form, and the corresponding surface of the platen of the same shape, so as to allow the platen to rock. In other words, the platen is attached to the rods, so as to allow a limited rocking, but yet come to a firm bearing.

The two levers I should be connected as by a rod, V, so that they may be kept in the same vertical plane in the backward and forward movement, and without dependence upon the platen for so doing.

I claim—

1. In a molding-machine in which the upper platen is arranged to swing backward and forward, the combination, with such platen, of the cams N, slotted arm S, arm R, and lever P, with a lever for operating said slotted arm, substantially as described.

2. The combination of the swinging platen, the rods by which it is hung to the frame, cams N, slotted arm S, lever P, arm R, and operating-lever to work in said slotted arm, substantially as described.

3. The combination, with the swinging platen, of the cams N, arm R, and lever P, with means for turning the said cams, substantially as described.

4. The combination, in a molding-machine, of the upper swinging platen, the lower platen, and a single lever, with intermediate mechanism, whereby a single movement of the said lever operates both the swinging and compressing platens, substantially as described.

5. In a molding-machine, the swinging platen attached at each end to a rod hinged below the lower platen, the said rods being constructed with a horizontal yoke to receive the corresponding ends of the said platen, the said ends being of less area than the opening in the yoke, and so as to leave the platen free therein, substantially as described.

HENRY REYNOLDS.

Witnesses:

JOHN E. EARLE,  
H. A. KITSON.