

M. Hastings.

Drop Hammer.

N^o 48,394.

Patented Jun. 27, 1865.

Fig. 2

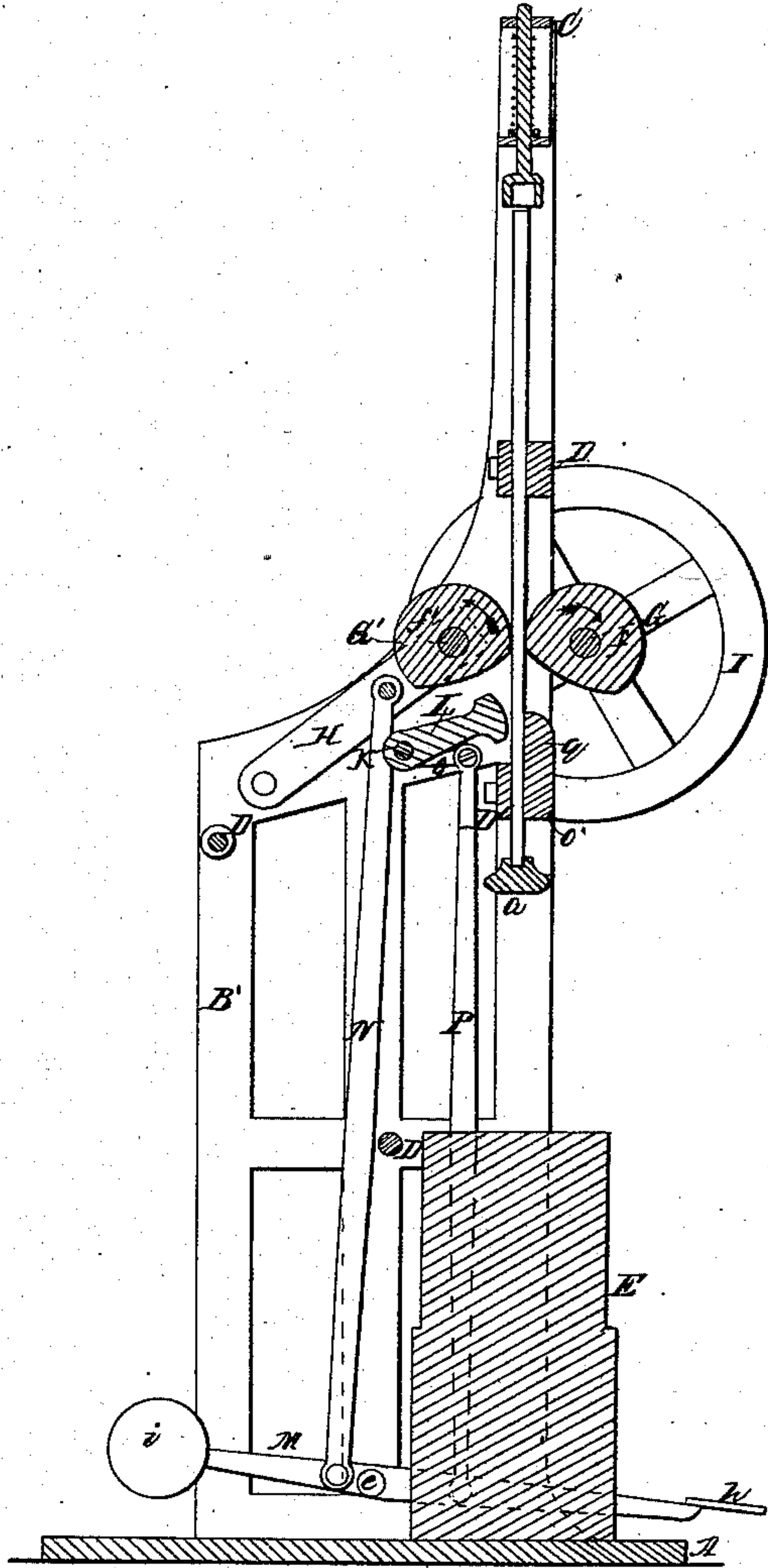


Fig. 1

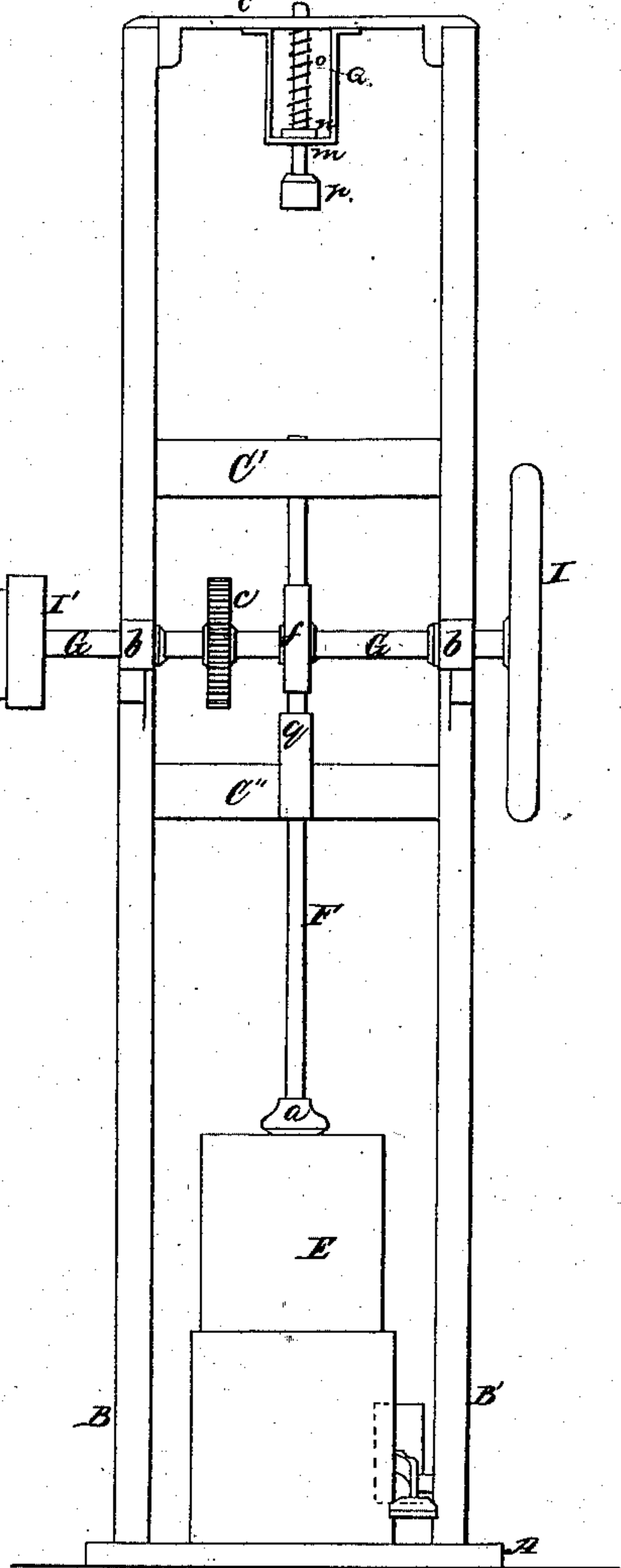
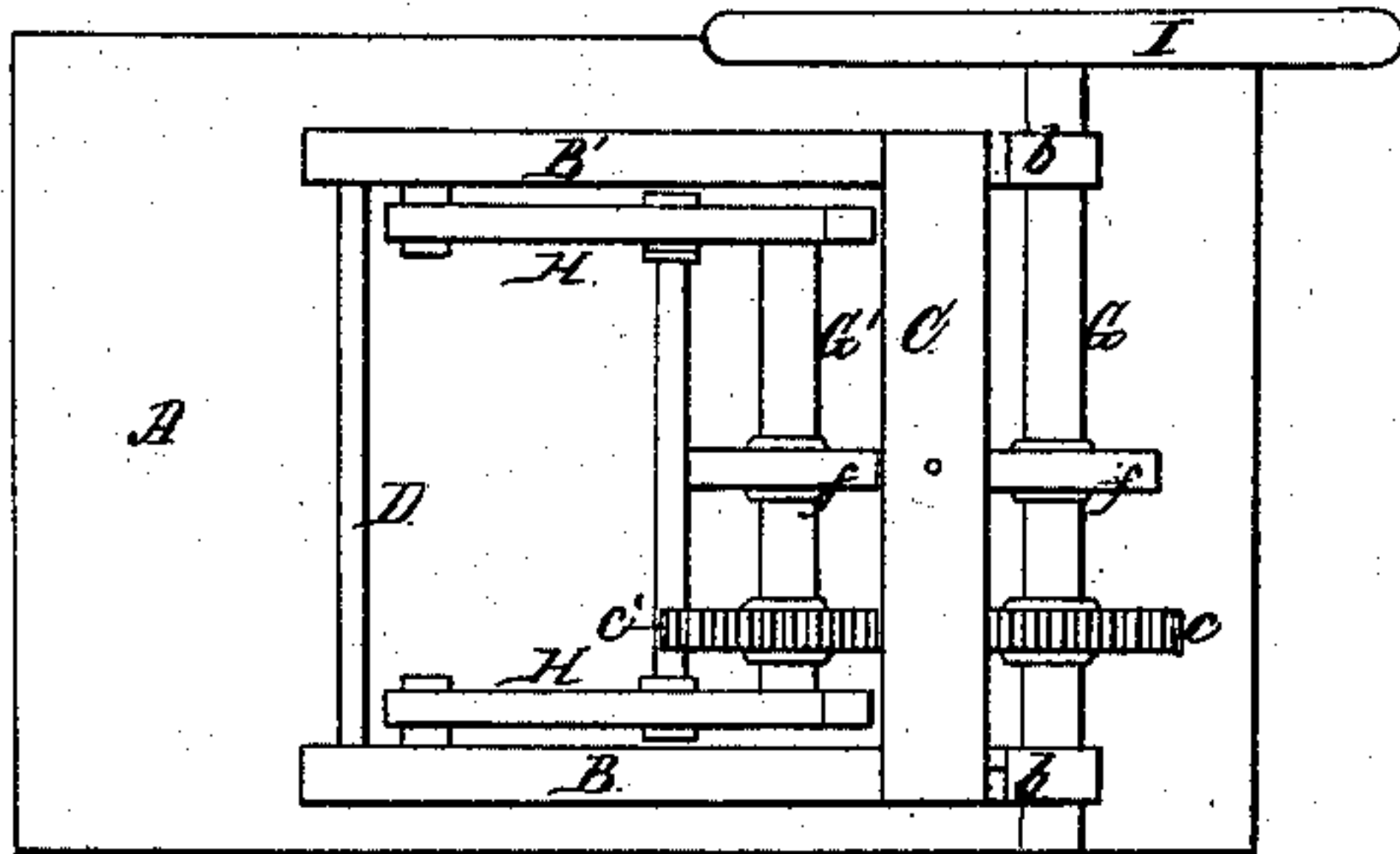


Fig. 3



Witnesses:

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Inventor;

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by his Attorney
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UNITED STATES PATENT OFFICE.

MATTHEW HASTINGS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVED GOLD-BEATING MACHINE.

Specification forming part of Letters Patent No. 18,394, dated June 27, 1865.

To all whom it may concern:

Be it known that I, MATTHEW HASTINGS, of Philadelphia, Pennsylvania, have invented an Improved Gold-Beating Machine; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists, first, in the employment, for beating gold, of a vertically-guided hammer, which is raised and permitted to fall with uniform force by the mechanism hereinafter described, or the equivalent to the same; secondly, in certain devices, fully described hereinafter, for arresting the descent of the hammer.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a front elevation of my improved gold-beating machine; Fig. 2, a sectional elevation, and Fig. 3 a plan view.

Similar letters refer to similar parts throughout the several views.

To the base A of the machine are secured two side frames, B and B', which are connected together by the cross-pieces C, C', and C'' and the cross-stays D D.

To the base A, between the uprights B B', is secured an anvil, E, and in brackets attached to the cross-pieces C' C'' slides a vertical rod, F, to the lower end of which is secured a hammer, a.

In brackets b attached to the side frames B turns a shaft, G, on which is a toothed wheel, c, the latter gearing into a similar wheel, c', on a shaft, a', which turns in the front end of a rock-frame, H, hung between the side frames B.

Adjacent to the wheel c on the shaft G is a cam, f, and on one end of the shaft is a fly-wheel, I, and on the other a driving-pulley, I'.

Opposite the cam f on the shaft G' is secured a cam, f', the cams f and f', during a part of the revolution, bearing simultaneously one against each side of the rod F.

To a shaft, K, which turns in the side frames, B B', below the rock-frame H, are secured the arms L and O, the front end of the former,

when depressed, bearing against the inner side of the bar F, the opposite side of the said bar being in contact with a plate, g, which projects from the upper edge of the cross-piece C''.

To a pin, e, at the inner side of the frame B', near the lower end of the same, is hung a lever, M, on the outer end of which is a foot-plate, h, and on the inner end a weight, i.

To the side of the lever M, between the pin e and the weight i, is jointed the lower end of a rod, N, the upper end of which is so jointed to the rock-frame H that the weight i shall tend to depress the latter and maintain the cam f' in contact with the rod F.

To the arm O of the shaft K is connected the upper end of a rod, P, the lower end of the latter being jointed to the lever M between the pin e and the foot-plate h.

Motion is imparted to the shaft G, so that the latter and the shaft G' shall rotate in the directions of the arrows, Fig. 2, the peripheries of the cams f being brought in contact with the rod F and raising the same from the anvil. The package technically termed the "mold," which is composed of layers of gold-beaters' skins and intervening sheets of gold, is then placed upon the face of the anvil E and held by the attendant, so that on the cams f turning away from the rod F the latter will descend and the hammer a be brought smartly on the top of the mold. As the cams revolve the rod F is raised and allowed to drop as before, the attendant moving the mold after each blow, so that it shall be struck by the hammer a in the same manner as when it is beaten by hand. When it is necessary to arrest the descent of the hammer the attendant must depress the outer end of the lever M with his foot, when the rock-frame H will be raised and the cam f' be removed from contact with the rod. At the same time the arm L is brought against the rod, which is thus confined between the said arm and the plate g. On releasing the end of the lever M the weight i will restore the latter and the parts connected with the same to their original positions.

Care should be taken to drive the machine at such a uniform speed that the rod F may be caught by the cams as the hammer rebounds from the mold, for, should the latter be struck by the hammer after it has rebounded from

the same and before being again raised by the cams, the inequality in the force of the blows will have a tendency to injuriously shatter the gold.

Attempts have been heretofore made to beat gold by machinery, the ordinary tilt-hammer having been used, in all cases without success, owing, I believe, to the springing of the shaft of the hammer when the blow is struck, and to the consequent indirectness of the blow.

After many careful experiments I have found that by the use of a hammer so carefully guided that it can fall perpendicularly without any lateral spring and with uniform force on the mold the gold may be beaten as effectually as by hand, while the necessity of employing skilled mechanics is avoided.

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

1. The employment, for beating gold, of a vertically-guided hammer, which is raised and permitted to fall with uniform force by the mechanism herein described, or the equivalent to the same.

2. The shaft K, with its arm L, the rock-frame H, and cam f' , the whole being arranged for joint action on the rod F substantially as and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

M. HASTINGS.

Witnesses:

HENRY HOWSON,
JOHN WHITE.