

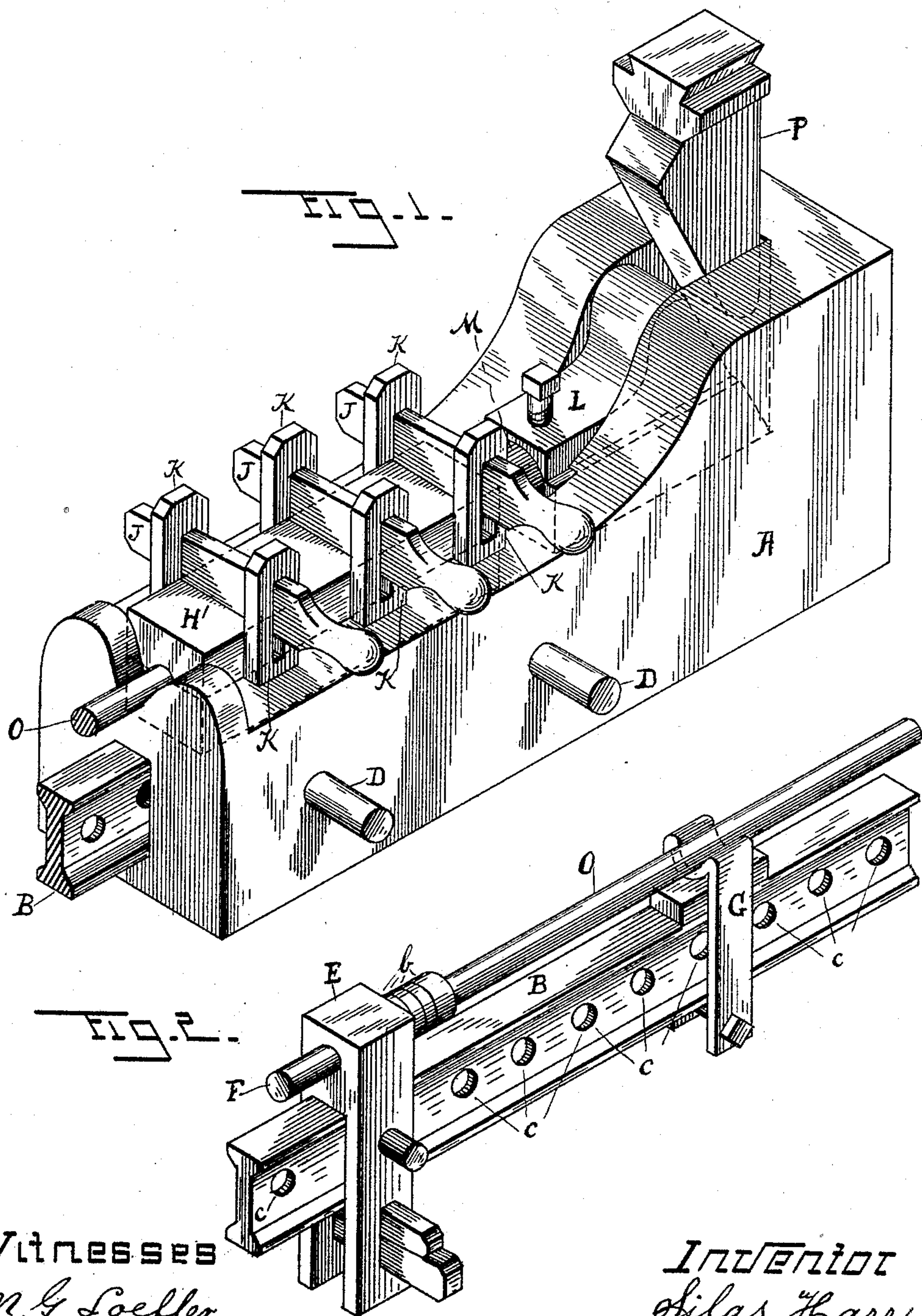
(No Model)

3 Sheets—Sheet 1.

S. HARRIS.
UPSETTING MACHINE.

No. 440,565.

Patented Nov. 11, 1890.



Witnesses

M. G. Loefer.

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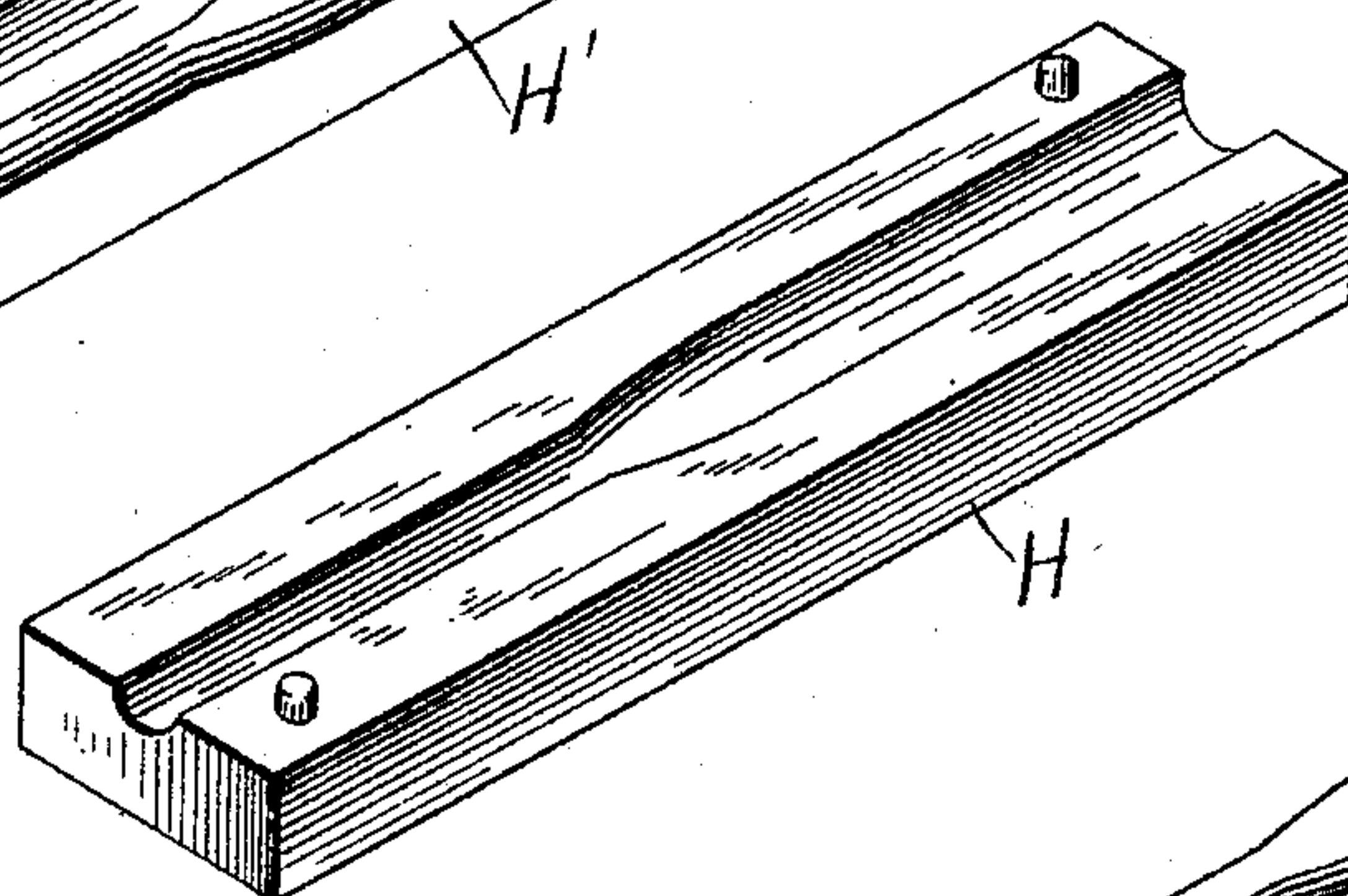
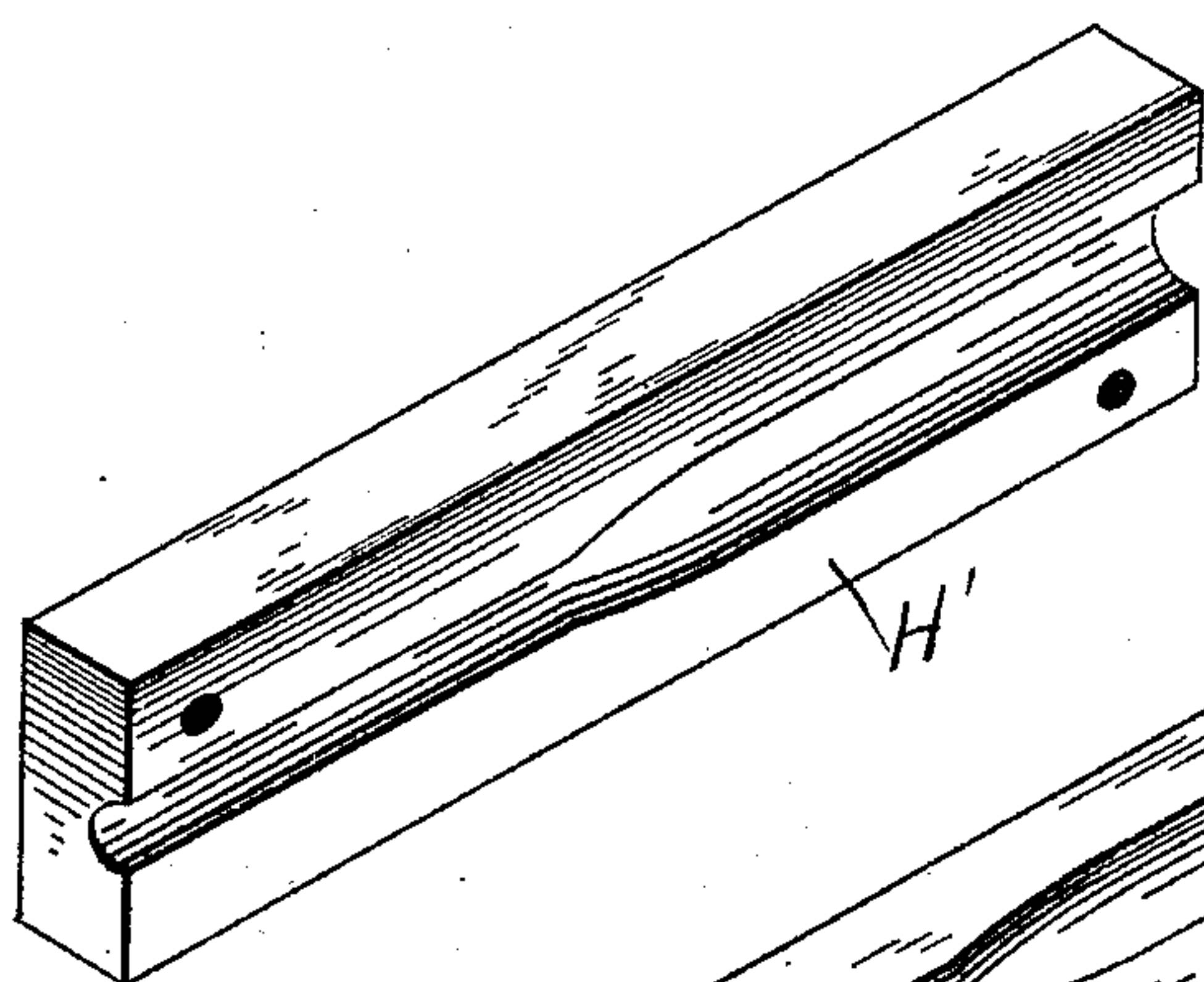
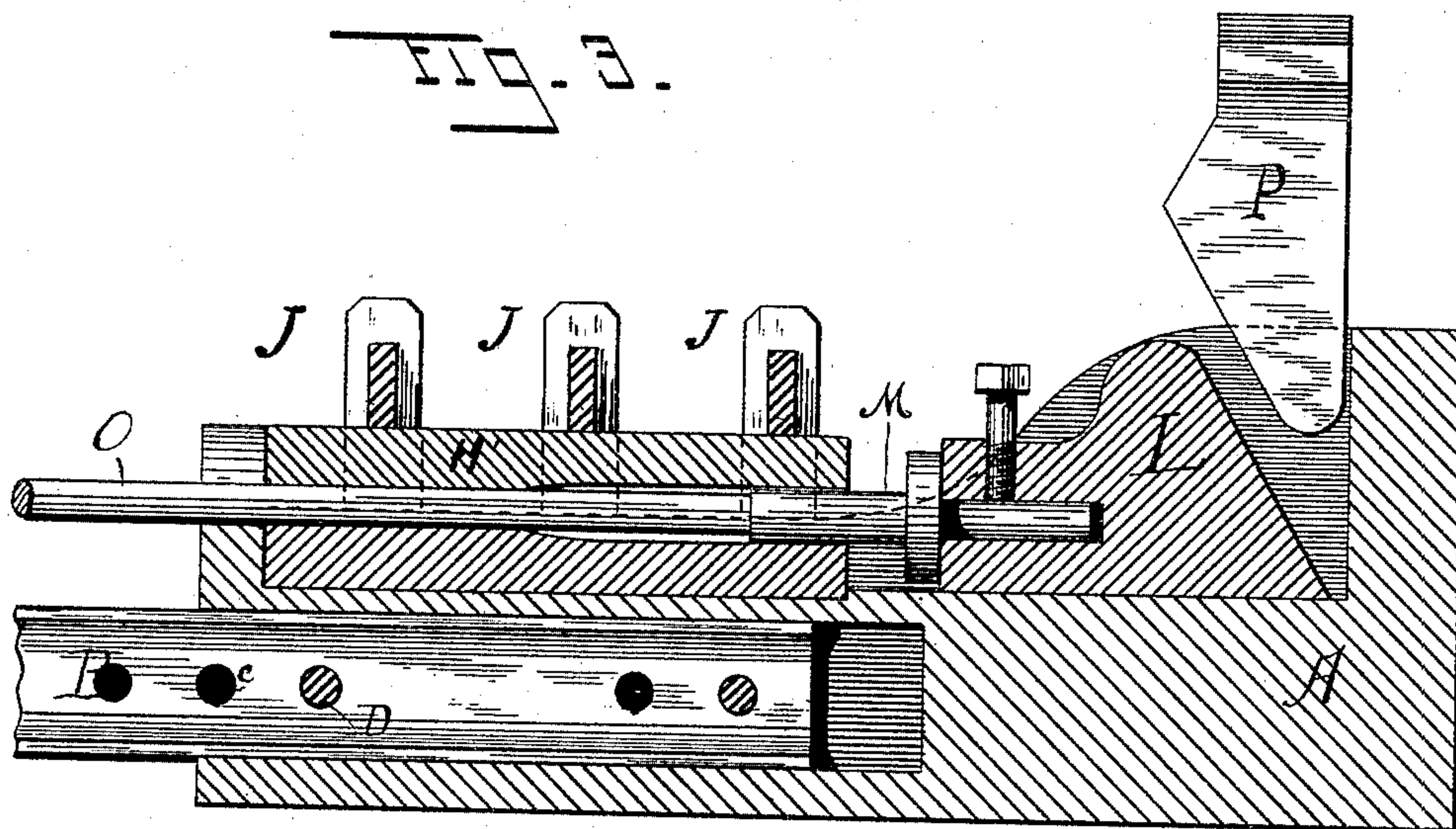
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S. HARRIS.
UPSETTING MACHINE.

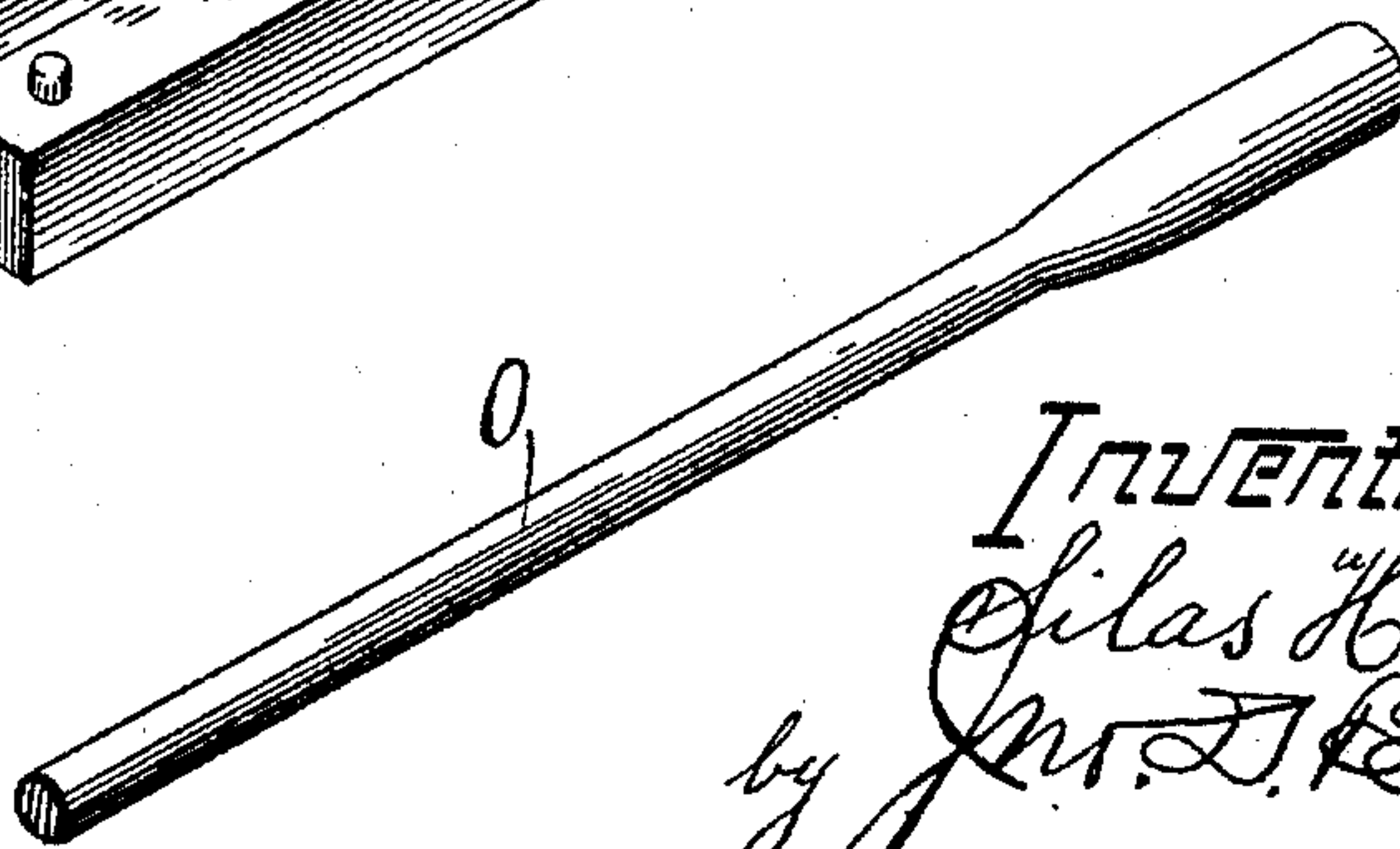
No. 440,565.

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(No Model.)

3 Sheets—Sheet 3.

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FIG. 6.

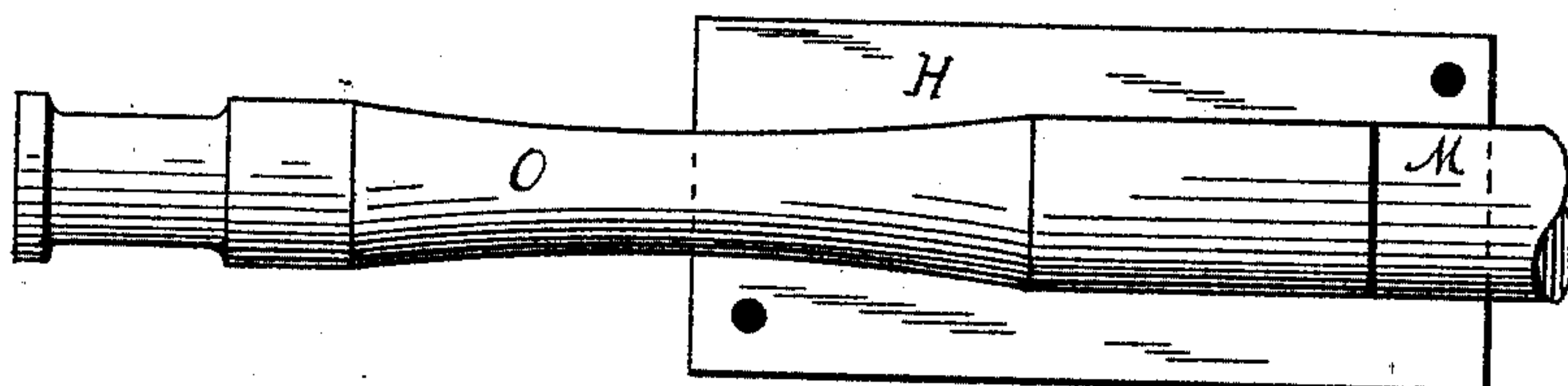


FIG. 7.

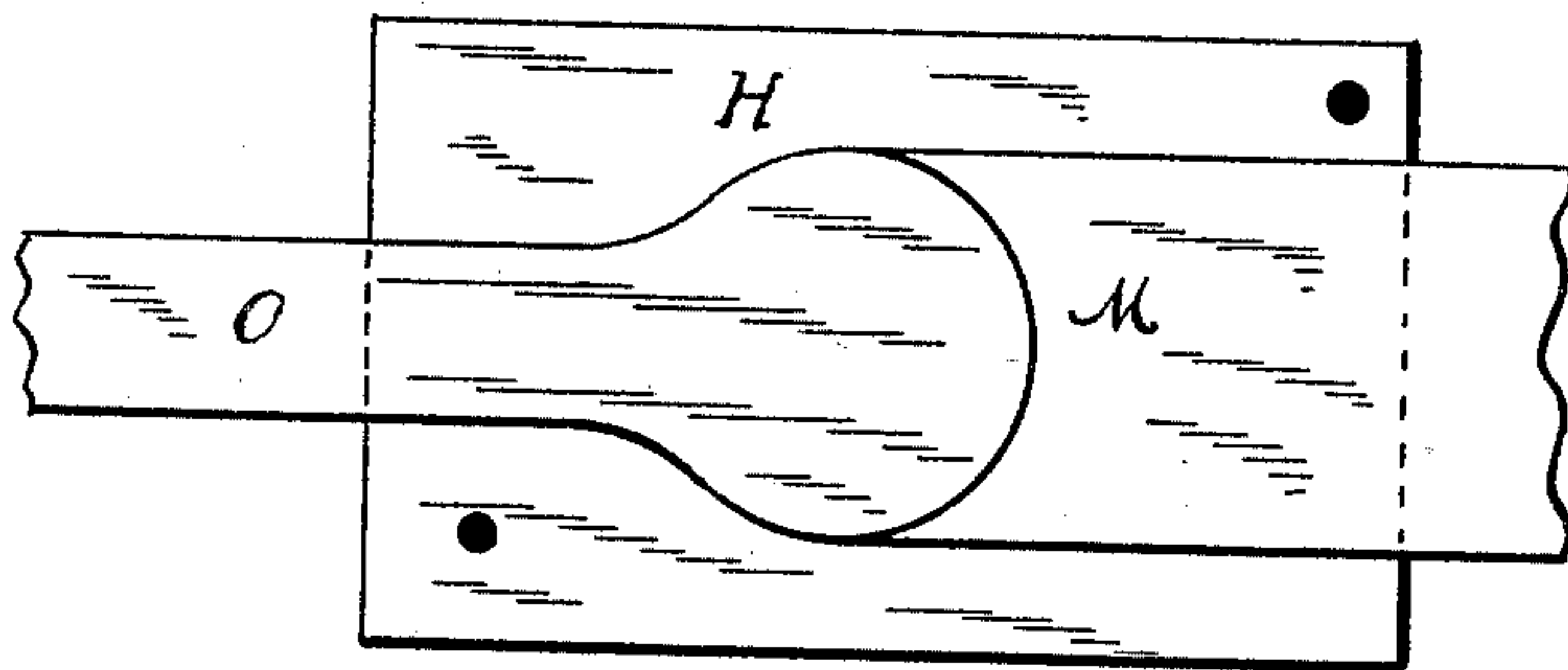
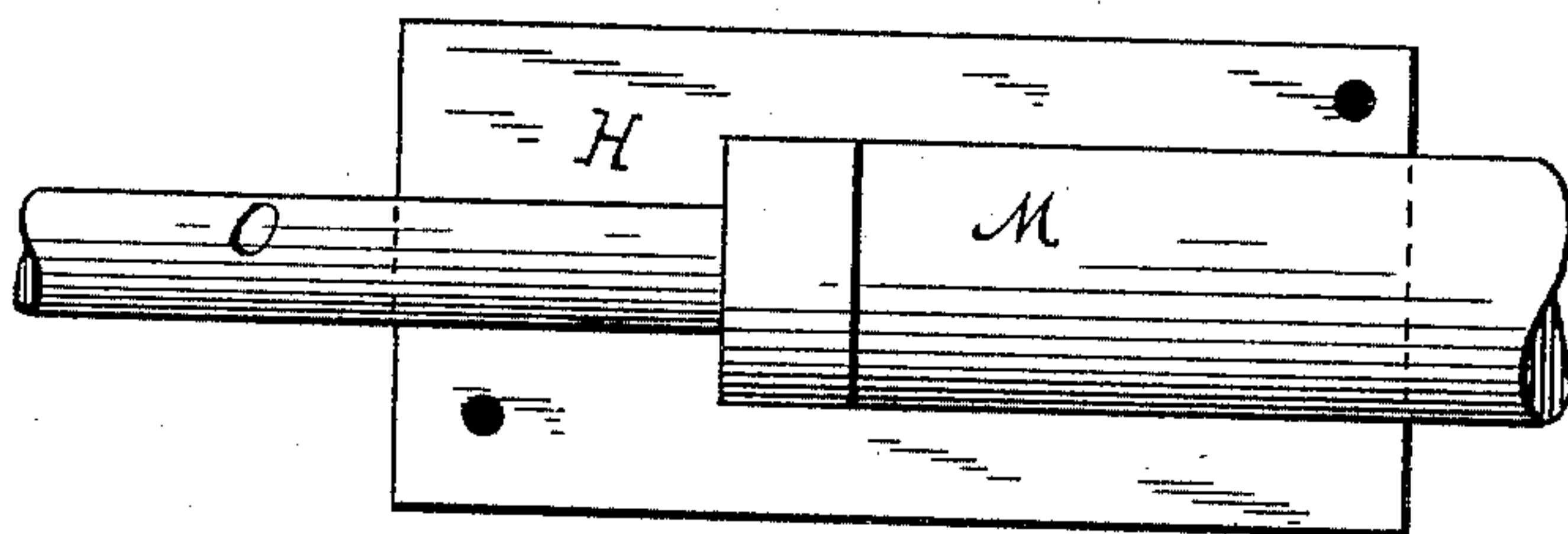


FIG. 8.



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UNITED STATES PATENT OFFICE.

SILAS HARRIS, OF SAN FRANCISCO, CALIFORNIA.

UPSETTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 440,565, dated November 11, 1890.

Application filed February 15, 1890. Serial No. 340,661. (No model.)

To all whom it may concern:

Be it known that I, SILAS HARRIS, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Upsetting-Machines, and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

My invention relates to an improved machine for upsetting the ends of metallic rods and bars in order to adapt them for use in the various branches of bridge and truss work.

It consists of a combined clamp and die, which is arranged to hold the rod whose end is to be upset in line with a piston that moves in the die-chamber and is driven by a drop, (not shown in the drawings,) which is permitted to fall upon a wedge and through its medium to force a slide so as to actuate said piston, so that when the drop-hammer falls the piston is driven against the end of the rod and the metal condensed and forced into the form of the die-chamber, all as hereinafter more fully described.

Referring to the accompanying drawings, Figure 1 is a perspective view of my machine, showing my machine ready to operate upon a bar or rod. Fig. 2 is a detached portion of Fig. 1, being an extension of the beam and rod, showing the device for holding the rod and resisting the end-thrust. Fig. 3, Sheet 2, is a side sectional elevation of the machine. Fig. 4, Sheet 2, shows the two halves of a die-clamp. Fig. 5, Sheet 2, is a view of a rod with its end upset, and Figs. 6, 7, and 8, Sheet 3, are plans of various modifications of dies for forming heads of different kinds on the ends of rods or bars.

A represents a strong iron bed-piece slightly higher at one end, which I will call the "front end." This bed-piece has a recess or channel cut in it, so that it forms a long narrow box, as represented at Fig. 1.

B is an iron beam, which is preferably made in the ordinary I form and which has a series of holes *c c* made through its web. An opening is made in the rear end of box A, ex-

tending lengthwise of the box, corresponding in shape with the shape of this beam, so that the beam can be inserted through the opening as far as desired and secured by a pin D, which passes transversely through the box and through one of the holes *c* in the beam.

The projecting portion of beam B has a thrust-block E clamped upon it near its extremity, through which a pin F passes. On the front end of this pin I place as many rings *b b* as may be required, as will be explained farther on.

G is a rest or bearing, which is clamped upon beam B, between its projecting extremity and the rear end of the bed-piece A, for the purpose of supporting the rear end of the rod or bar to be upset in its proper position.

H, Fig. 4, is the lower and H' the upper die-piece between which the rod to be upset is held inside the box or base-piece A. These die-pieces are grooved out at one end to fit and clamp tightly upon the rod or bar to be upset, while the other end is grooved or chambered out to form the die or mold in the shape it is desired to form the end of the rod or bar, as illustrated by Figs. 3, 4, 6, 7, and 8.

After the beam B is inserted in the rear end of the base A to the desired point and fixed by the pin or key F, I place the lower die-piece H in the chamber or recess of the bed-piece, as shown at Fig. 3. I then take the bar or rod O, the end of which is to be upset, and after its end is properly heated I place it in position with its heated end in the die-shaped recess of the die-pieces. It will then rest in the groove of the die-piece and also be supported at or near its middle by the rest or bearing-piece G, outside the box, while its opposite end will abut against the rings *b* of the thrust-block E. I then place the upper half of the die-piece H' upon the lower piece, as shown in Fig. 3, and clamp the two together by means of key-wedges J J, which pass through holes in uprights K K on the opposite sides of the box A. In the front end of the box or base-piece A is a horizontal slide L, the end or face of which next the end of the box is inclined at an angle of sixty degrees approximately to the vertical end of the box. A piston M, which corresponds to the shape of the die-recess in the die-pieces H H',

is secured to the front end of this horizontal slide, so that when the slide is driven forward the piston will enter the die-recess and strike against the heated end of the rod or bar O and condense and force it into the die-chamber, thus upsetting the end and giving it any desired form according to the form of the die-chamber.

To give the required blow I place the front end of the base-piece A in proper position below a steam or other drop hammer. I then permit the drop or steam hammer to fall upon the wedge P, one side of which is vertical and the other inclined to an angle corresponding with the angle of the horizontal hammer-piece L. This drop-hammer will then enter between the vertical end of the base-piece A and inclined face of the horizontal slide L and drive the hammer L and piston against the end of the rod O. The end-thrust of the rod O is received by the rings *b b* and thrust-block E at the opposite end of the rod. The exact position of the rod O is obtained by taking off or adding more rings *b*, so that a length of rod to form the upset is allowed to project into the die-chamber.

By this device or machine I can enlarge or shape the ends of rods and bars with great facility and at the same time with great benefit to the metal, because the pressure and condensation of the metal render it more compact and durable and especially adapt its for bridge and truss work, where it is required to resist great strains.

Having thus described my invention, what

I claim, and desire to secure by Letters Patent, is—

1. The chambered bed-piece A, adapted to contain the die-pieces H H' and hold the rod or bar to be upset in line with a piston M, and having the horizontal slide L, arranged to be driven against the piston M by an inclined wedge P, substantially as described.

2. The horizontal die-pieces H H', having a die or mold chambered out between them and arranged to clamp the rod or bar O and hold its end in position in the die-recess, in combination with the piston M, slide L, and wedge P, substantially as described.

3. A machine for upsetting the ends of rods and bars, consisting of a box-shaped casting A, having the die-pieces H H', arranged to hold the rod O, so that one end will be central in a mold or die chamber in said die-pieces, an adjustable thrust-beam B, provided with a thrust-block E, for resisting the end-thrust of said rod, a horizontal slide L, provided with an inclined face at one end, and a piston M, which enters the die-recess in the blocks H H' at its opposite end, and a wedge P having one inclined and one vertical face, combined and arranged to operate substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

SILAS HARRIS.

In presence of—

A. H. STE MARIE,
M. G. LUEFLER.