

(No Model.)

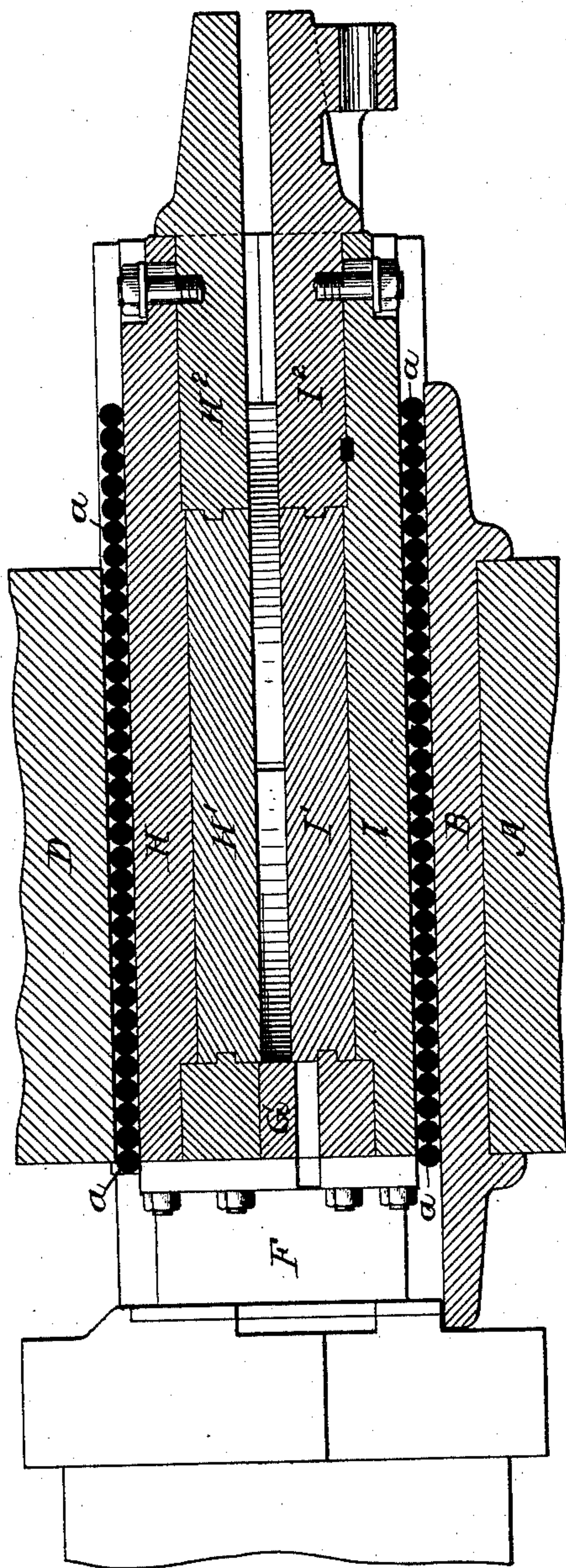
4 Sheets—Sheet 1.

H. W. LOSS.  
MACHINE FOR FORGING EYE BARS.

No. 476,155.

Patented May 31, 1892.

FIG. 1.



Witnesses:  
Murray C. Boyer  
Fred H. Goodwin

Inventor:  
Henry W. Loss  
by his Attorneys  
Howson & Howson



(No Model.)

4 Sheets—Sheet 2.

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FIG. 2.

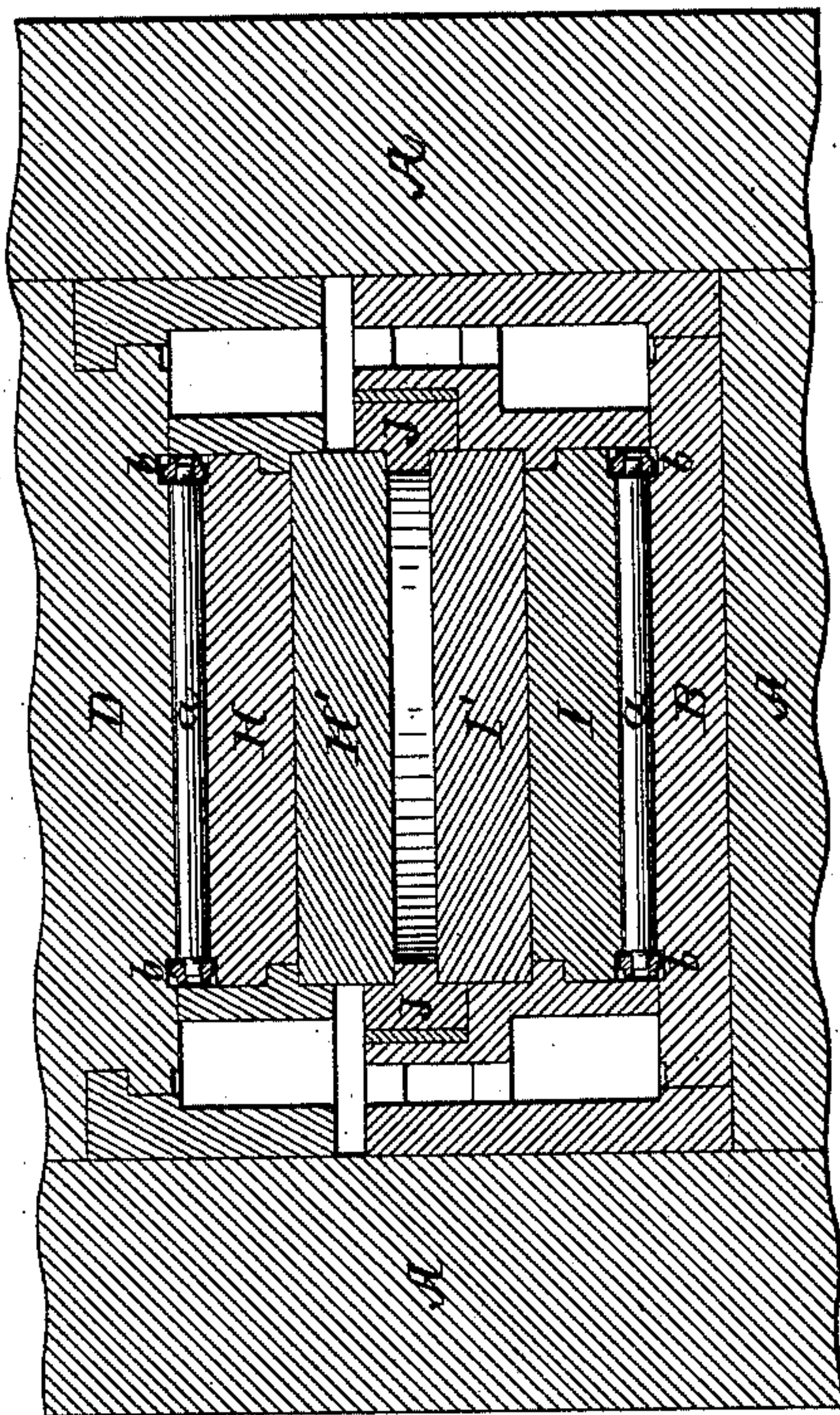
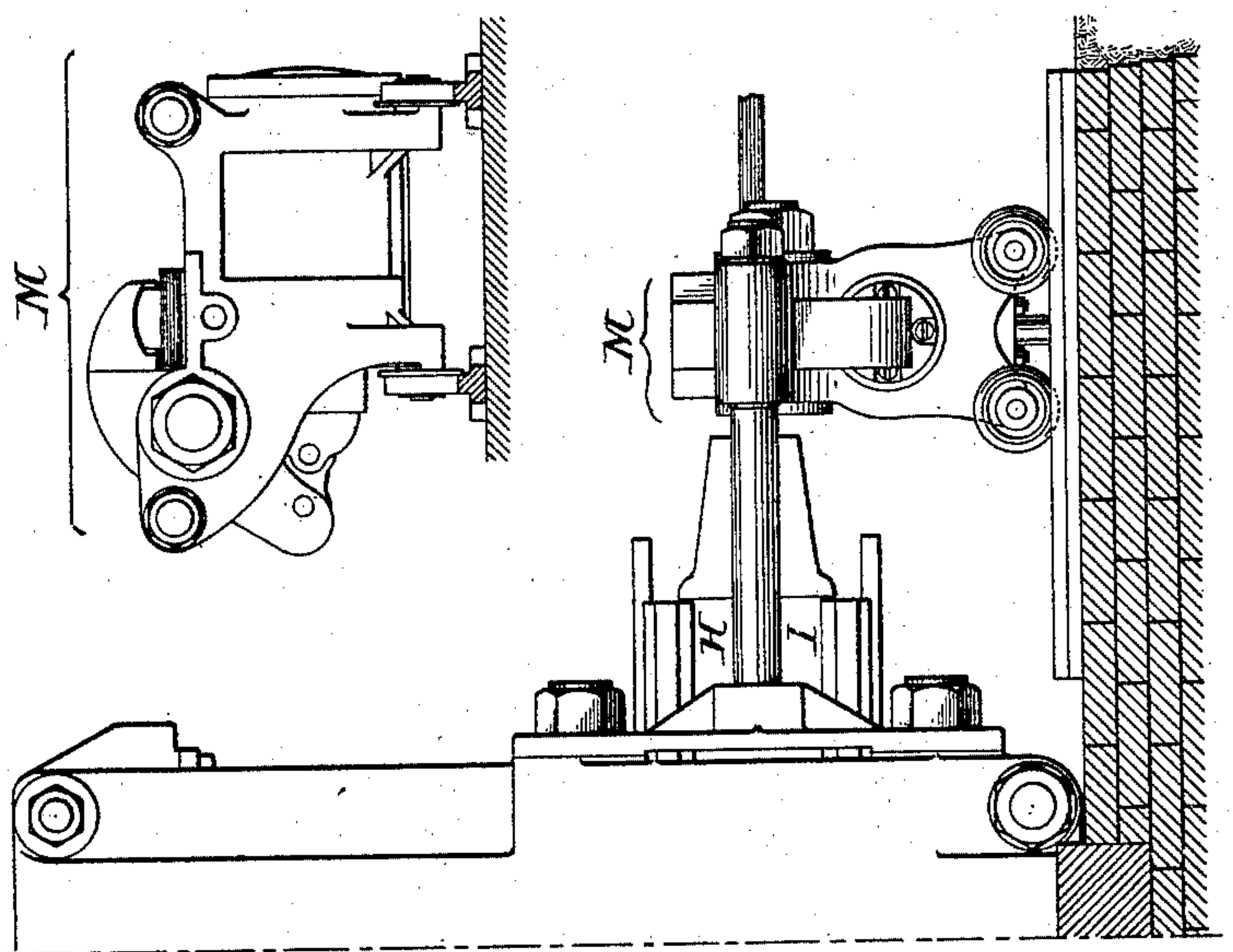


FIG. 5.



Witnesses:  
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FIG. 4.

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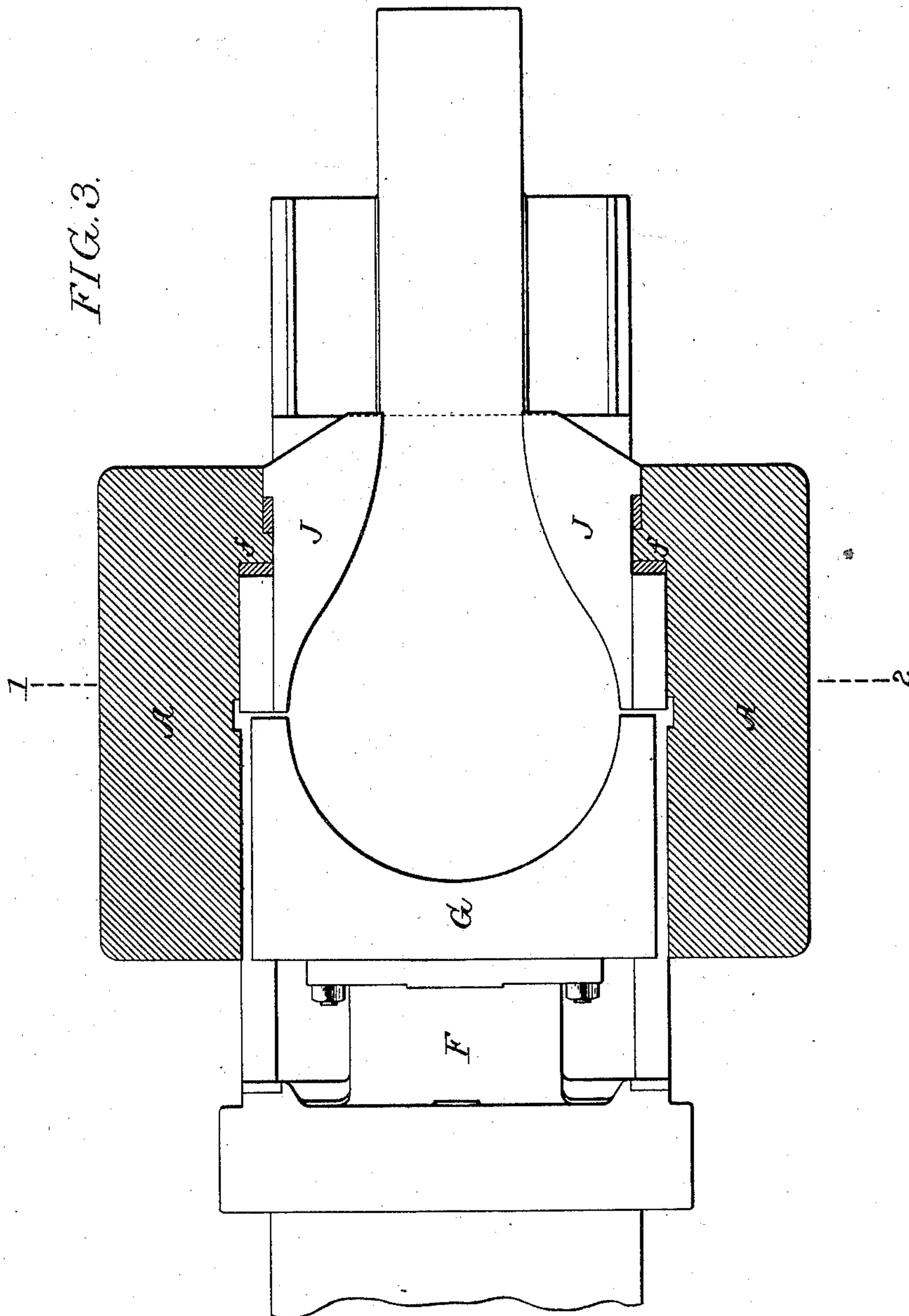
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(No Model.)

4 Sheets—Sheet 4.

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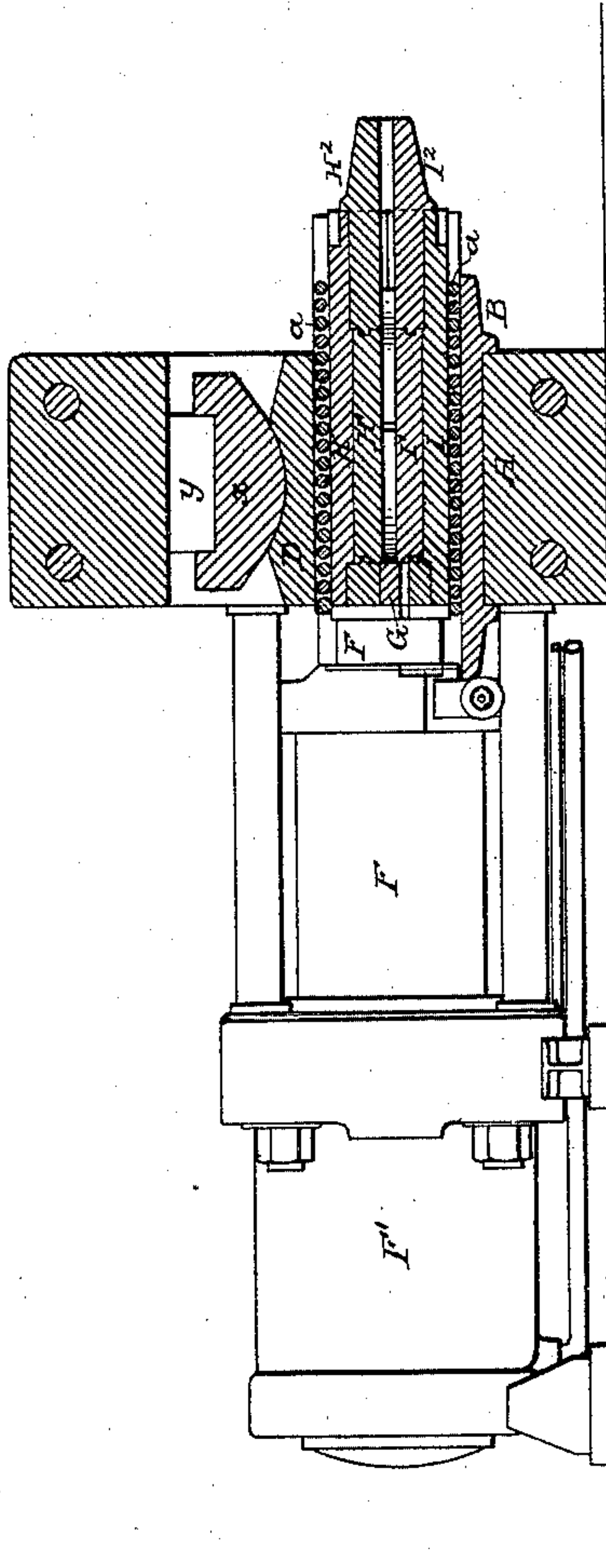


FIG. 7.

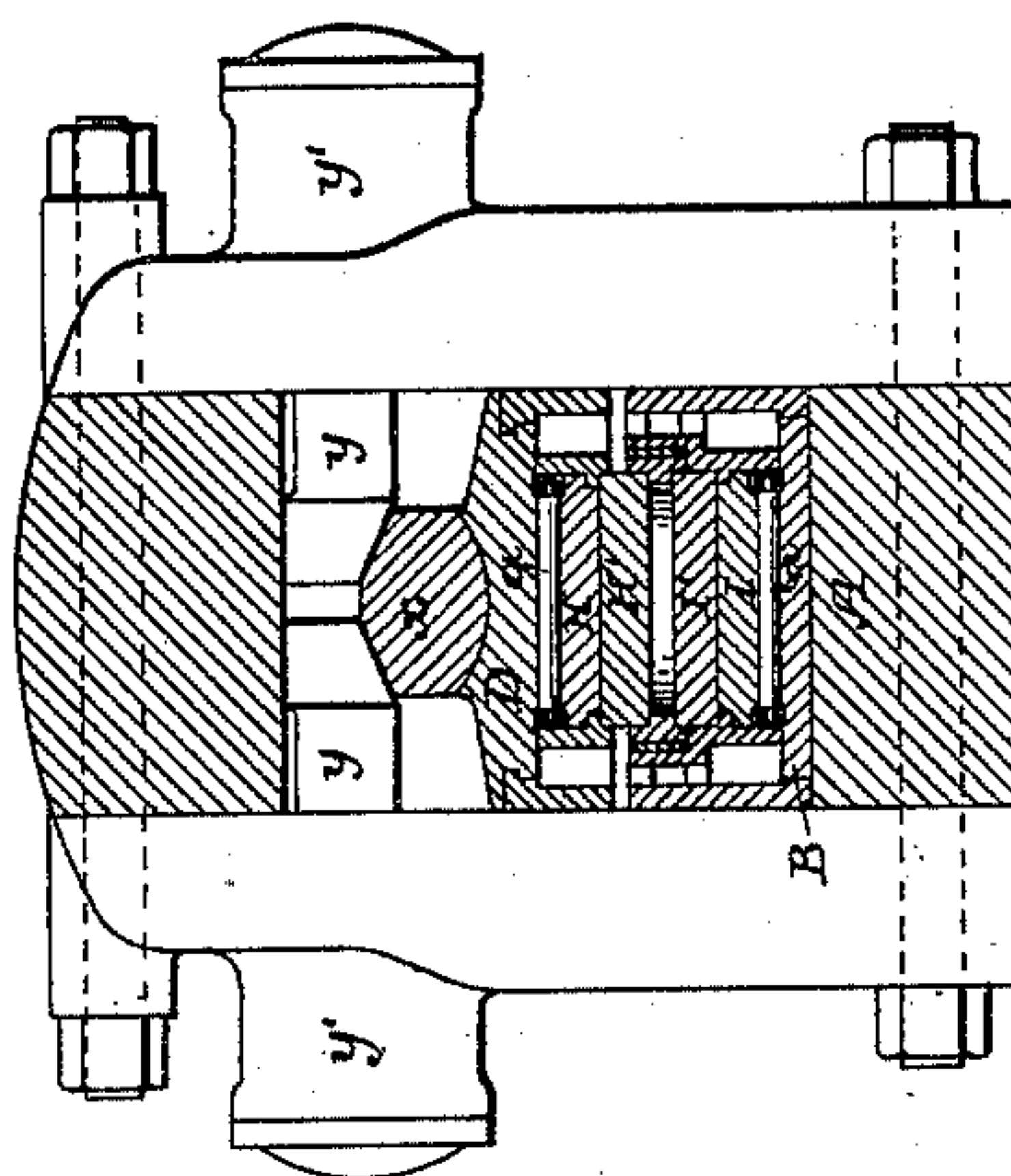


FIG. 6.

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Inventor:  
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# UNITED STATES PATENT OFFICE.

HENRY W. LOSS, OF PHILADELPHIA, PENNSYLVANIA.

## MACHINE FOR FORGING EYE-BARS.

SPECIFICATION forming part of Letters Patent No. 476,155, dated May 31, 1892.

Application filed August 17, 1891. Serial No. 402,822. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY W. LOSS, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Eye-Bar-Forging Machines, of which the following is a specification.

My invention relates to hydraulic machines for upsetting the end of a bar of iron or steel, so as to give it the external contour of an eye, which is afterward completed by punching the central opening, the objects being to provide for the formation of the eye in the most effective manner without waste of power and to prevent buckling of the bar when the upsetting pressure is first exerted against the end of the same and before it has shouldered against the cheek-pieces sufficiently to resist such pressure. These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section of sufficient of a hydraulic eye bar-forging machine to illustrate my invention. Fig. 2 is a transverse section on the line 1 2, Fig. 3. Fig. 3 is a plan view partly in section. Fig. 4 is a side view of part of the machine and of the gripping device for the bar, and Fig. 5 is a front view of said gripping device. Figs. 6 and 7 are respectively an end view, partly in section, and a side view, partly in section, illustrating a forging-machine in its entirety, but without the gripping device, these views being on a smaller scale than the other views of the drawings.

A represents part of the housing of the machine; B, a bed-plate carried thereby; D, an upper ram to be connected to or acted on by the plunger of a suitable hydraulic cylinder, and F a longitudinal ram likewise intended to be connected to the plunger of a hydraulic cylinder.

Secured to the forward end of the plunger F is a header-die G, an upper die H, and a lower die I, so that all three of these dies move with the ram F as the latter is projected or retracted, as I find that the best results are attained when the three dies thus move together. In order, however, that this movement may be effected without absorbing too large a percentage of the power of the ram F, I interpose

between the lower die I and the bed B a series of hardened steel rollers *a*, which are coupled together at the ends by suitable frames *b*, Fig. 2, and a like series of rollers is interposed between the upper die H and the bottom of the ram D, so that the longitudinal movement of the dies can be very readily effected even though the pressure exerted by the ram D is excessive. The upper and lower dies H and I have detachable facing-blocks *H'* *H*<sup>2</sup> and *I'* *I*<sup>2</sup>, so as to provide for the renewal of the acting-faces of these dies when required, and against suitable shoulders *f* in the opposite sides of the housing are seated cheek-pieces J, which while detachable are always stationary during the action of the machine, and are so shaped as to form the neck of the eye, the heading-die G forming the outer rounded end of the same, and said heading-die G is also detachable, so that by the change of dies and cheek-pieces the machine is adapted for acting upon bars of different sizes and for forming eyes of different sizes and shapes.

Owing to the fact that the upper and lower dies travel with the header-die in the operation of the machine, and therefore project considerably beyond the housing when the formation of the eye has been completed, it becomes necessary to locate the gripping device M for the bar at a point so remote from the machine that it will be out of the way of the top and bottom dies when they are projected at the conclusion of the operation, the gripping device here referred to being the one which holds the bar when the upsetting or heading die G first commences to act upon the end of the same and before there has been any such shouldering of the bar against the cheek-pieces as will withstand the longitudinal strain to which said bar is subjected. At the commencement of the operation there is a considerable length of bar between the gripping device and the ends of the dies, and in order to prevent buckling or bending of this portion of the bar when the upsetting pressure is exerted against the end of the bar I employ a power-actuated gripping device which acts upon the top and bottom of the bar, and can thus be provided with broad gripping-jaws, which will not only serve to hold



the bar longitudinally, but will also tend to prevent any deflection from a horizontal plane of that portion of the bar which is between the gripping device and the dies until the  
5 shouldering of the bar against the cheek-pieces transfers the strain to the latter and relieves the projecting portion of the bar.

The form of gripping device which I prefer to use is that set forth in my application for  
10 patent filed July 13, 1891, Serial No. 399,313.

By "power-actuated gripping device" I mean one in which the power for holding the bar is independent of the pressure imparted to the bar itself by the heading-die, so that  
15 the grip upon the bar can be regulated and controlled and the bar permitted to slip through the gripping device rather than cause breakage of any part of the same, and in this respect the grip differs essentially from that  
20 form of grip which has been proposed, in which the hold of the gripping-jaws upon the bar is dependent upon a wedging action due to the longitudinal pressure upon the bar itself.

25 On reference to Figs. 6 and 7 of the drawings it will be seen that the upper ram D of the machine carries a block  $x$ , which is adapted to a rounded seat in the ram and is acted upon by laterally-moving wedge-like plungers  
30  $y$ , connected to rams in the cylinders  $y'$ , and that the ram or plunger F, carrying the header-die G, is actuated by a hydraulic cylinder

F', suitably connected to the frame of the machine.

Having thus described my invention, I 35 claim and desire to secure by Letters Patent—

1. The combination, in a hydraulic eye-bar-forging machine, of the housing with its supporting-bed and ram, the longitudinally-mov- 40 able upper, lower, and heading dies, and two sets of rolls, one interposed between the lower die and the bed and the other between the upper die and the ram, substantially as specified.

2. The combination of a hydraulic eye-bar- 45 forging machine having longitudinally-movable upper and lower dies with a power-actuated gripping device for the bar, located beyond the limit of movement of said dies and having jaws which grip the upper and lower 50 faces of the bar, and thereby serve to prevent buckling of that portion of the bar which is between the gripping device and the dies at the commencement of the operation, substantially as specified. 55

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

HENRY W. LOSS.

Witnesses:

EUGENE ELTERICH,  
HARRY SMITH.