

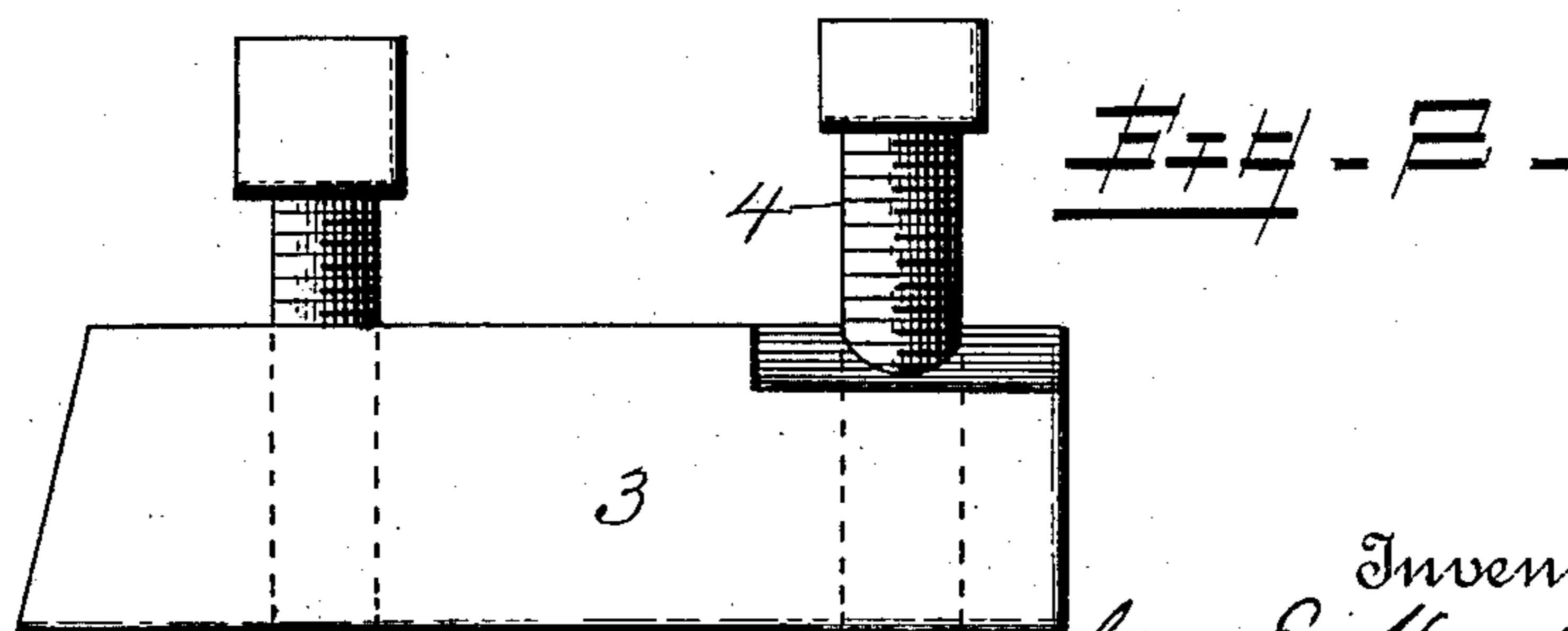
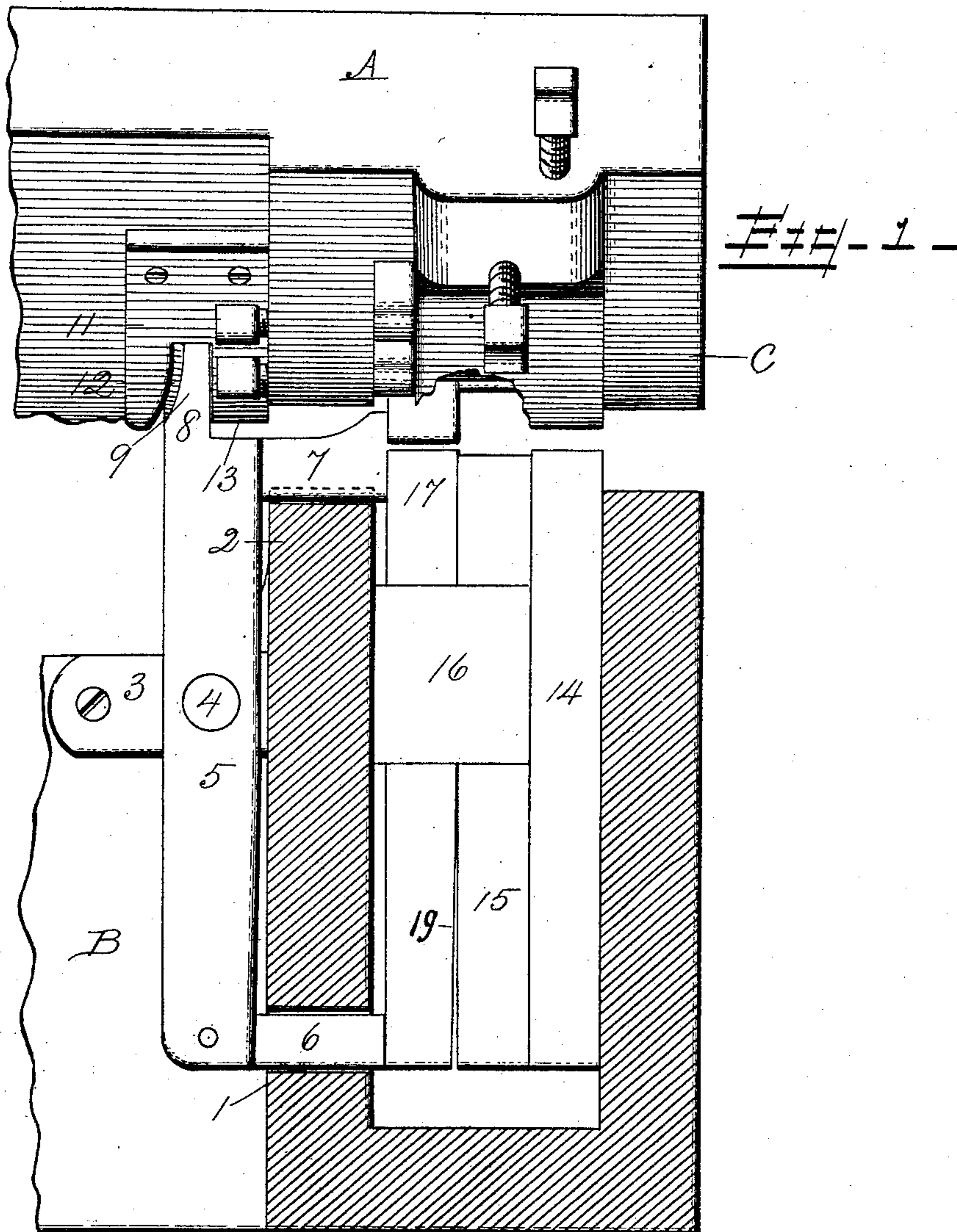
(No Model.)

4 Sheets—Sheet 1.

C. E. HOUGHTON.  
NAIL MACHINE.

No. 472,604.

Patented Apr. 12, 1892.



Witnesses

Albert B. Blackwood  
Wm. H. Bates

Inventor

Chas. E. Haughton  
By A. G. Huffman,  
Attorney

Attorney

(No Model.)

4 Sheets—Sheet 2.

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Fig. 3.

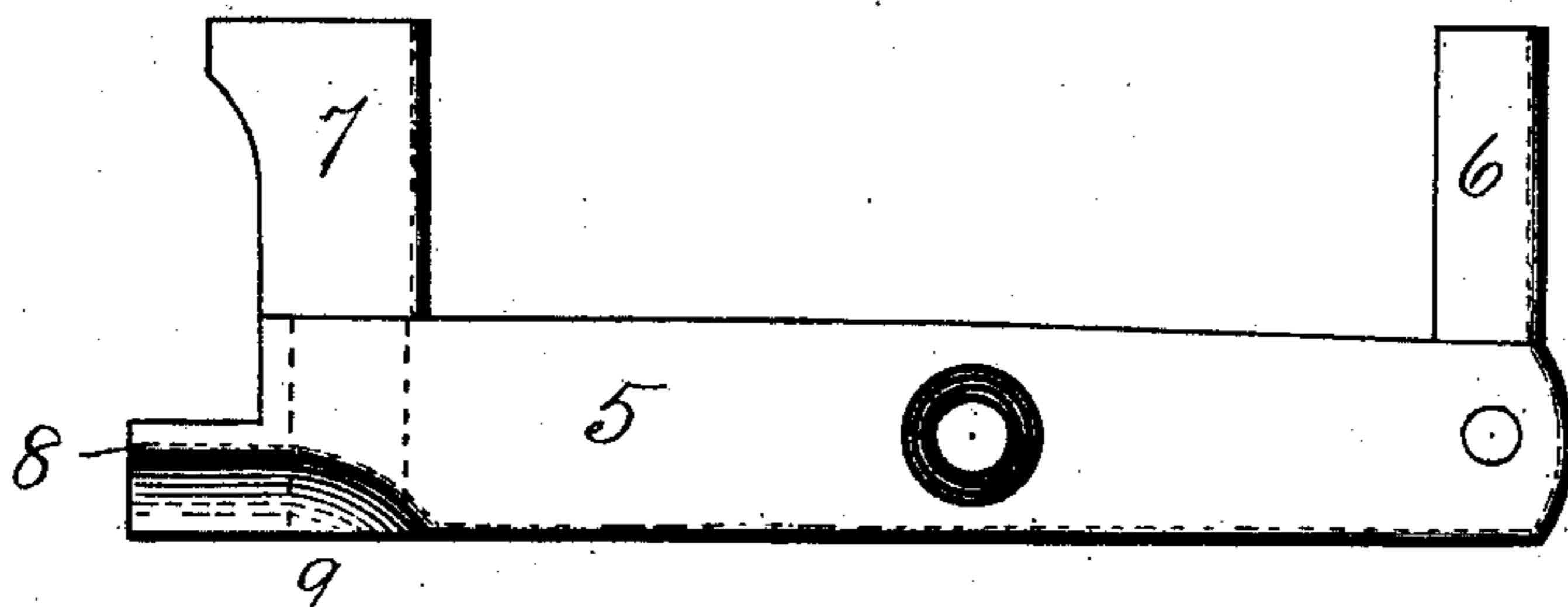


Fig. 4.

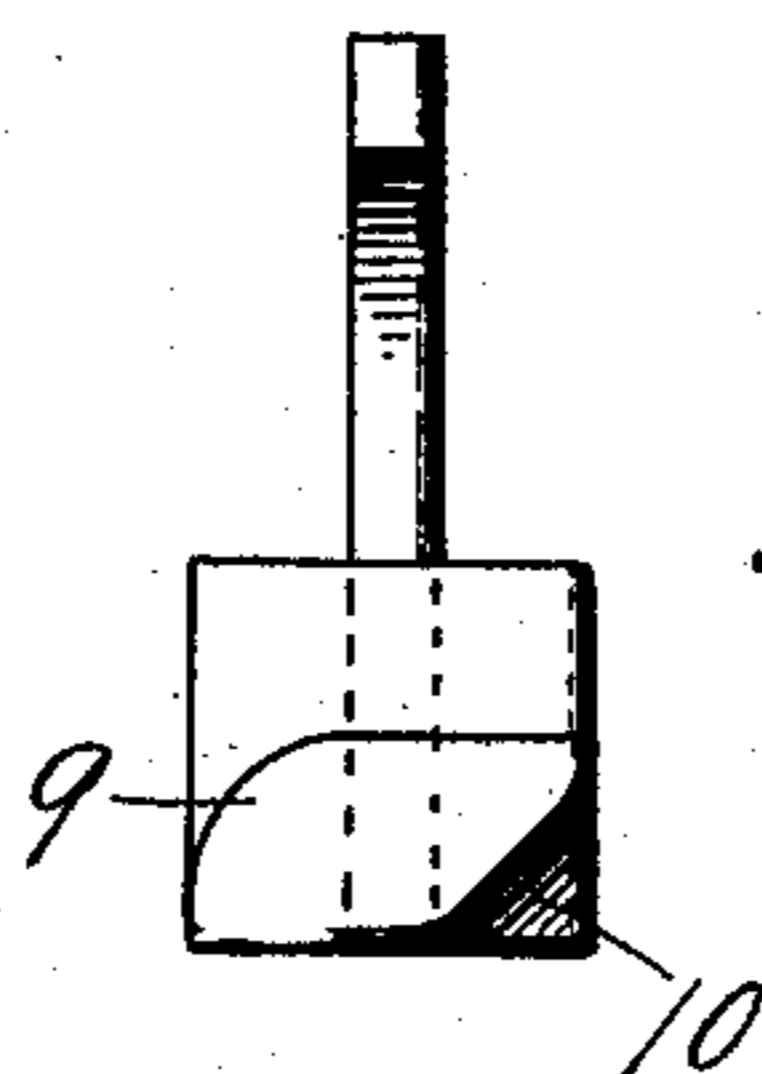


Fig. 5.

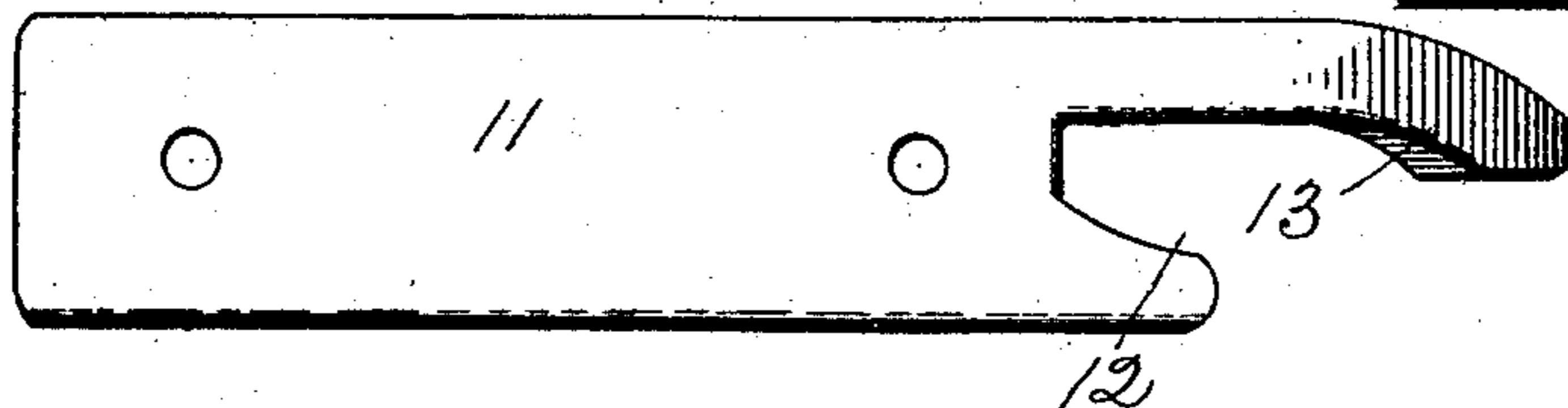
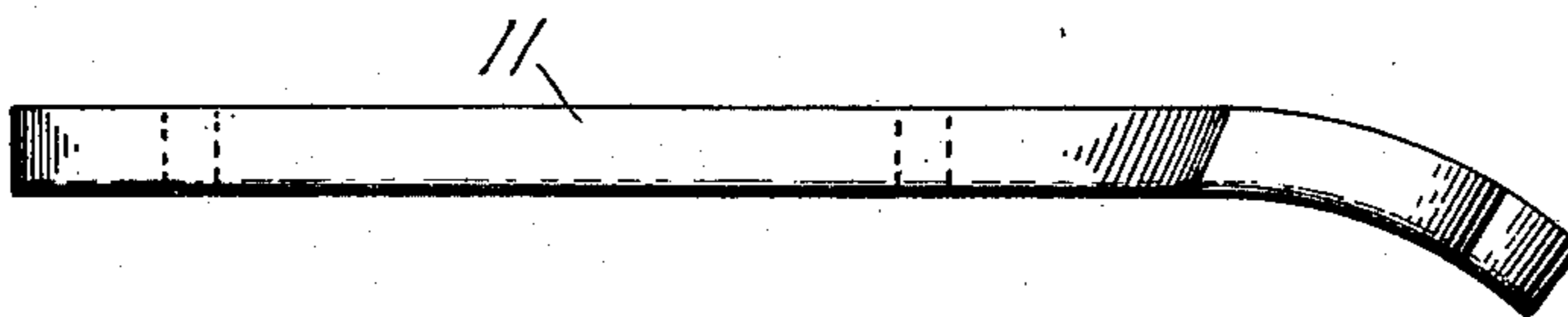


Fig. 6.



Witnesses

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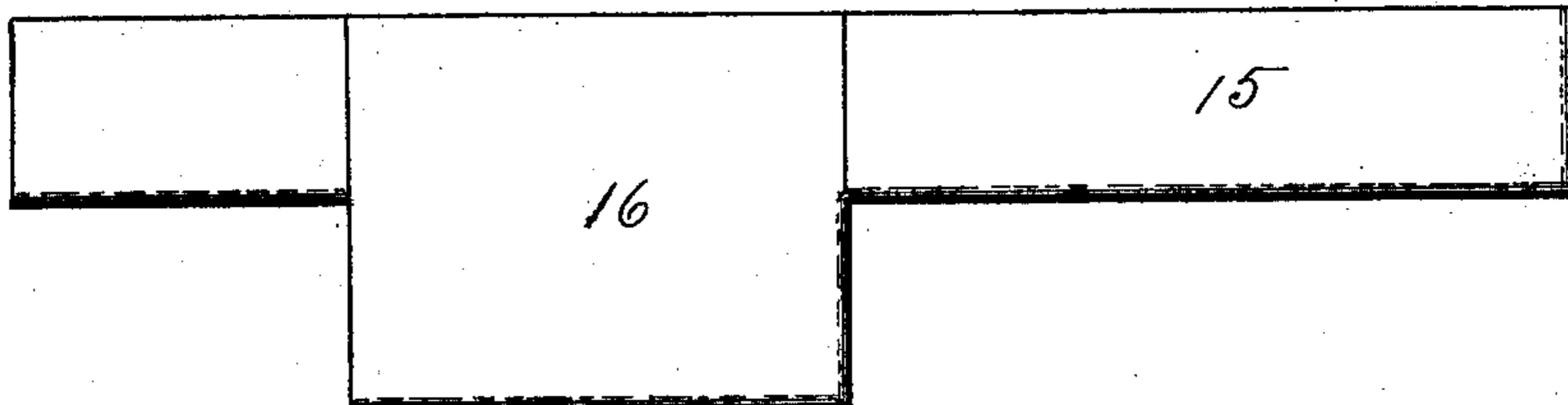
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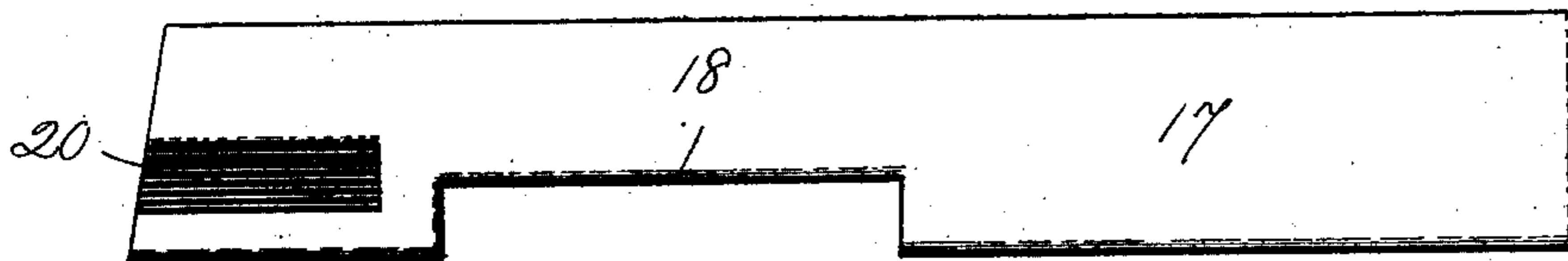
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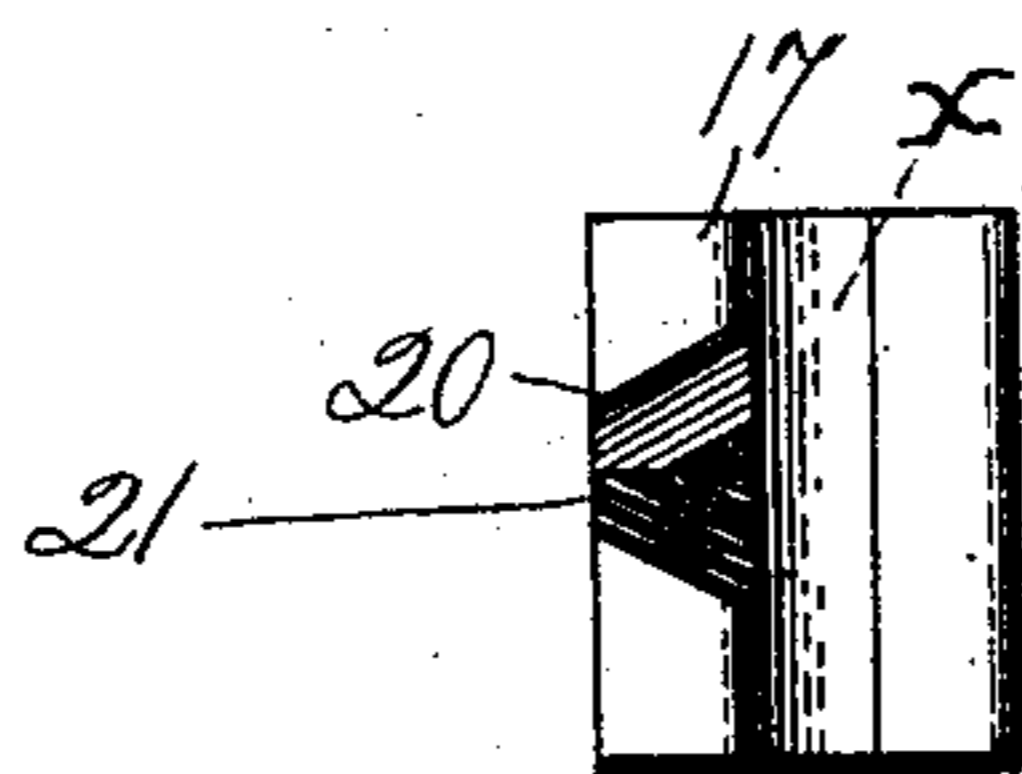
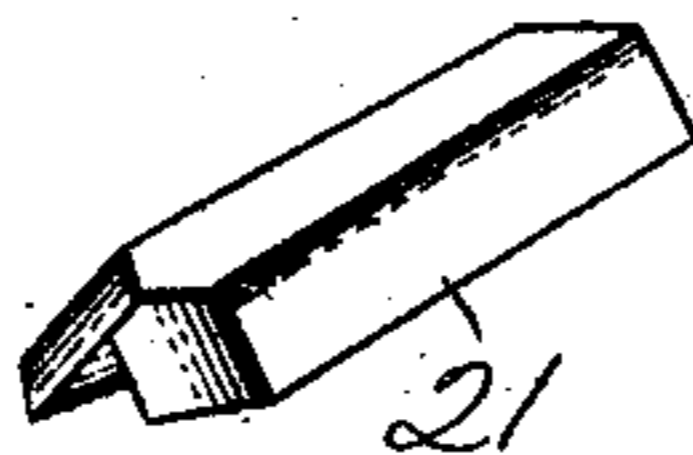
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F F - 10 -

Witnesses

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(No Model.)

4 Sheets—Sheet 4.

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Fig. 11.

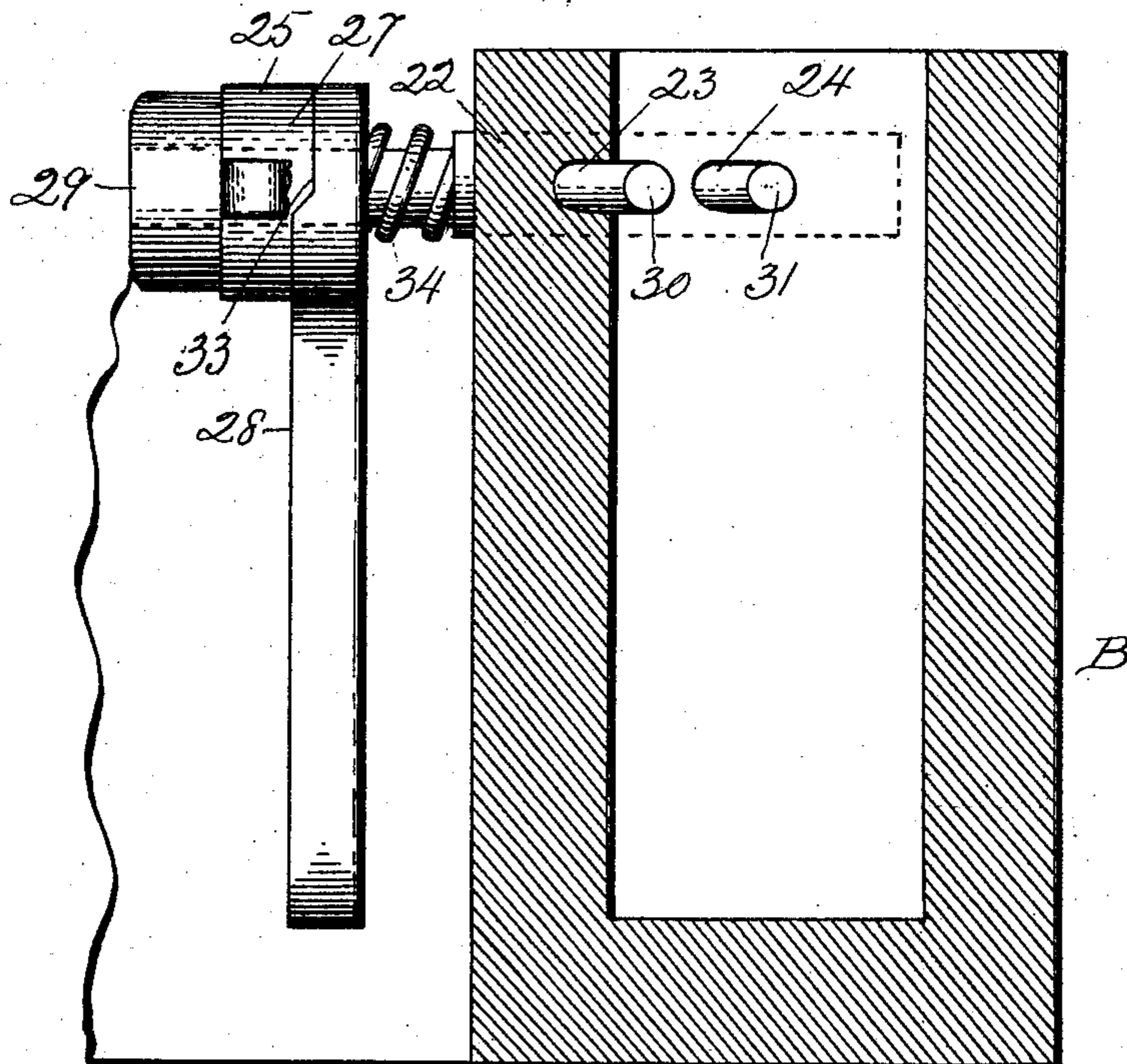
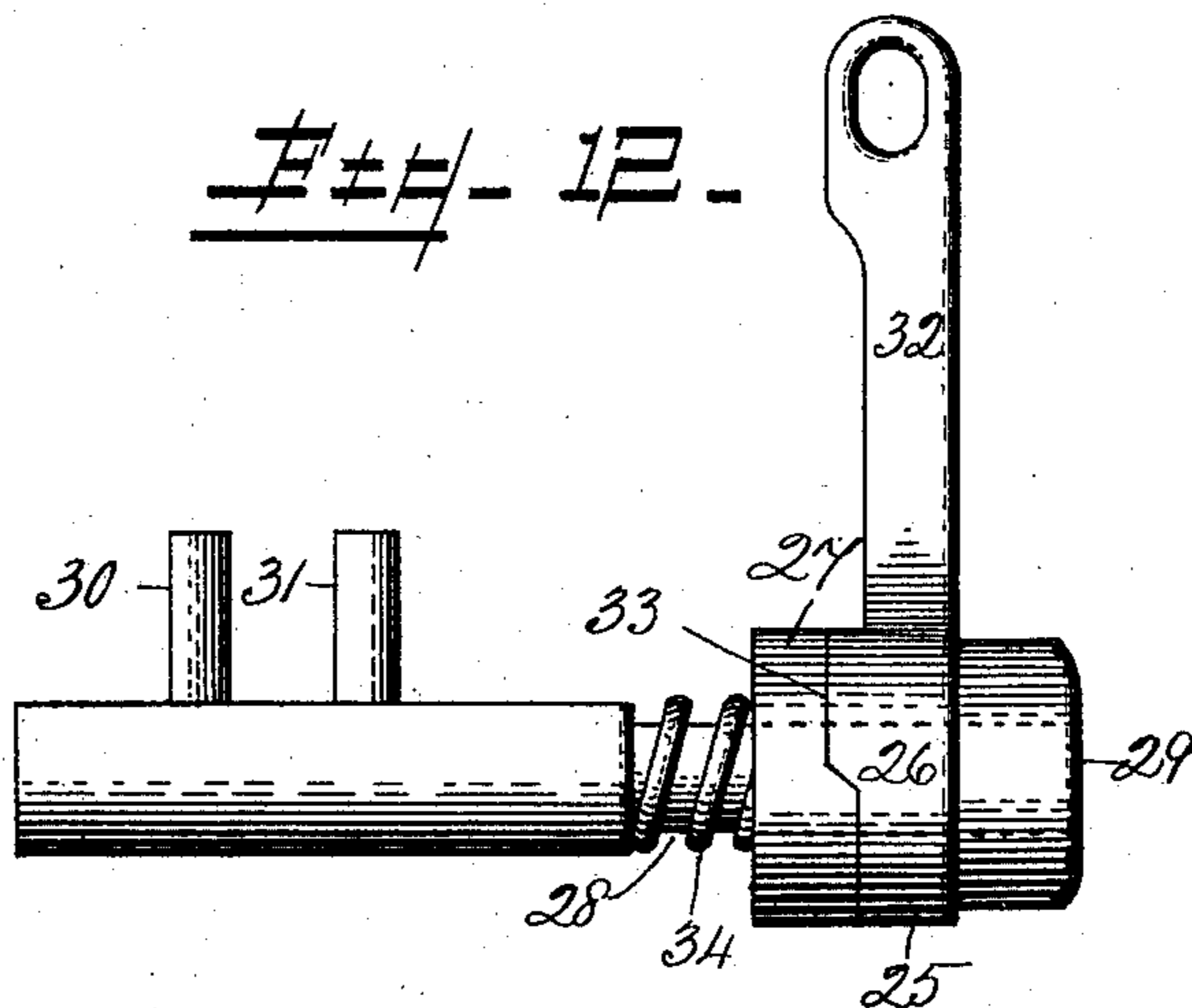


Fig. 12.



Witnesses

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# UNITED STATES PATENT OFFICE.

CHARLES E. HOUGHTON, OF NORTHUMBERLAND, PENNSYLVANIA, ASSIGNOR  
OF ONE-HALF TO HORACE RUFUS JOHNSON, OF SAME PLACE.

## NAIL-MACHINE.

SPECIFICATION forming part of Letters Patent No. 472,604, dated April 12, 1892.

Application filed December 1, 1891. Serial No. 413,660. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES E. HOUGHTON, a citizen of the United States of America, residing at Northumberland, in the county of Northumberland and State of Pennsylvania, have invented certain new and useful Improvements in Nail-Machines, of which the following is a specification.

My invention has relation to improved means for operating the laterally-movable point-cutting dies in a nail-machine; and the object is to provide efficient, reliable, and improved mechanism whereby the point-cutting dies will be given the requisite lateral movement; and my invention therefore consists in a lever arranged adjacent to and exterior of the bed-piece containing the bed-knife and bed-dies of the machine and engaging with the point-cutting bed-die, as will be herein-  
after more fully specified.

I accomplish the object and purpose of my invention by the mechanism illustrated in the accompanying drawings, wherein—

Figure 1 is a plan view of a nail-machine having my invention applied, certain parts being broken off, sectionized, or removed to better illustrate the arrangement of the parts retained and more intimately associated with my invention. Fig. 2 is a detail of the bracket on which the lever is fulcrumed. Fig. 3 is a detail of the lever. Fig. 4 is an end view of the lever. Fig. 5 is a detail of the cam-piece for moving the lever. Fig. 6 is a side view of the same. Fig. 7 is a view of the liner for the bed-dies. Fig. 8 is a view of the point-cutting bed-die, showing the groove for receiving the detachable point-cutting piece. Fig. 9 is a view of the detachable point-cutting piece. Fig. 10 is a view of the die and point-cutting piece united. Fig. 11 is a view of a modified form of lever connected to the point-cutting bed-die, and Fig. 12 is a detail of the modified form of lever.

A designates the gripping-lever of the machine; B, the bed-knife and bed-die piece or portion of the machine-bed, and C the cutting-jaw. These elements are of the usual construction, the die and knife-bed being changed only in the required respects to receive my improvements. In the side wall of the knife-bed are formed an aperture 1 and a recess 2 to take loosely the arms of the lever. At a

point exterior of the knife-bed on the frame of the machine is secured a bracket 3, having a vertical pin 4, on which the lever is fulcrumed, substantially as shown.

5 designates the lever which operates the laterally-movable dies. This lever consists of a substantial piece of metal fulcrumed on the pin 4 and having at the one end an arm 6, pivotally connected thereto and adapted to rest in and project through the aperture 1 in the side wall of the knife-bed to engage with its end the side face of the point-cutting bed-die near the inner end and move the end of that die inward, and consequently move the other end outward. At the other end of this lever is fixed an arm 7, which engages in and projects through the recess 2 and engages with its end the outer end of the point-cutting bed-die and serves to push that end of the die inward at the proper moment after it has been moved outward by the arm at the other end of the lever. The end of the arm 7 is made wide enough to engage against both the point-cutting dies and push them inward after movement outward.

The inner end of the lever 5 is extended, as at 8, and is formed with an inclined upper outer portion 9 and an inclined or rounded lower inner part 10, as shown in Fig. 4 of the drawings, these respective parts being adapted to engage the slot in the plate on the cutting-jaw of the machine.

11 designates a plate secured to the cutting-jaw of the machine and constituting a means for operating the lever 5. The lower end of this plate is forked or slotted, as shown, the outer extension of the forks being inclined in the inner edge, as at 12, from the lower end upward and inward, and the other part being lengthened and curved and inclined, as at 13, the respective parts engaging opposite sides of the extended end of the lever to move it in opposite directions when the cutting-jaw reciprocates.

14 designates the bed-gripping die, which may be of the usual construction, and 15 designates the liner formed with a laterally-projecting piece 16, which sets over and in a recess in the point-cutting bed-die, as shown, and serves the double purpose of an abutting piece for the liner and a stay for the point-cutting die. The point-cutting bed-die 17 is formed

with a recess 18 to take the laterally-projecting piece of the liner, and is also formed with its inner side 19 slightly inclined or curved in the direction of its length from about the middle of the die rearward, as shown, to afford a slight rocking or oscillating function to enable the desired lateral movements to be accomplished. In the side of the point-cutting die is a dovetail groove 20, opening out at the end and extending rearward a portion of the length of the die-body, as shown, and in the groove is detachably fitted the point-cutting piece 21, which has its face formed with a point-cutting die-surface, as usual. In the face of the body-piece 17 is a vertically-arranged groove  $x$  to serve as a chip-escape of the clippings of the points. The point-cutting moving die and the moving gripping-die are duplicates in general construction to the opposing dies in the bed of the machine and are secured on the gripping-lever by the usual well-known clamps. The moving point-cutting die is arranged in its bed or seat to have the same lateral movement as that of the point-cutting bed-die.

In Figs. 10 and 11 I have illustrated a modified form of the lever, and referring to those illustrations it will be seen that I form a transversely-arranged hole 22 in the knife-bed and extend it under the floor of the bed, and form communicating slots 23 24 in the floor of the knife-bed. On the bed of the machine is secured a bracket 25, having a bearing 26 through its inner end, and on the face of the bracket form a cam-surface 27. A bar 28 is loosely disposed in the bearing of the bracket and provided with a head 29, the bar extending in the hole in the knife-bed, and is provided with vertical lugs or pins 30 31, projecting up through the slots in the floor of the knife-bed, as shown. Between the bracket and the head of the bar is mounted a lever 32, having an opposing cam-surface 33 engaging with the cam-surface on the bracket, and a spring 34 serves to return the bar endwise after being drawn in the opposite direction.

It will be perceived that by moving the lever 32 the bar is drawn outward and with it the point-cutting die lodged between the pins on the bar, the whole operation being an adaptation of another form of lever to effect the purpose. The upper end of the lever 32 may be connected to any moving portion of the machine.

The operation is as follows: As the blank is cut and pushed down by the cutting-jaw it is gripped by the dies and held until the header comes up. When the jaw begins its upward movement, the lever is operated to pull the point-cutting die outward at the proper time, and on the return the dies are moved into normal relation.

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

1. In a nail-machine, the combination of a laterally-movable point-cutting bed-die, a lever fulcrumed exterior of and adjacent to the knife-bed and provided with arms projected through the wall of the bed to engage the said die at the respective ends thereof, and a lug on the cutting-jaw of the machine to operate the lever, substantially as described.

2. In a nail-machine, the combination of a laterally-movable point-cutting bed-die, a lever fulcrumed on the bed of the machine exterior to the knife-bed, arms on the ends of the lever, projected through the wall of the knife-bed and engaging the said die, and a lug on the cutting-jaw, having a double cam-slot in the end to engage the end of the lever and move the die outward and inward, substantially as described.

3. In a nail-machine, the combination of a point-cutting bed-die having a lateral play in the die-bed, a lever projected transversely through the side wall of the knife-bed and engaging the said die, and means to connect the lever to some moving part of the machine, substantially as described.

4. In a nail-machine, the combination of the point-cutting bed and moving dies having lateral play in their seats, a lever fulcrumed on the bed of the machine to bear with its end on the outer face of said dies, and a lug on the cutting-jaw to push the lever against the dies, substantially as described.

5. A point-cutting die for a nail-machine, consisting of a body-piece formed with a dovetail groove in its side face, opening out in its end face and extending rearward for a portion of the length of the die-body, and a detachable point-cutting piece arranged in the groove, substantially as described, and for the purpose specified.

6. A point-cutting die for a nail-machine, consisting of a body-piece having a slightly-curved side face in the direction of its length extending from the middle rearward, substantially as and for the purposes specified.

7. A point-cutting die for a nail-machine, consisting of a body-piece having a vertically-arranged chip-escape groove  $x$  in its face and a groove in its side face to receive a point-cutting die-piece and a point-cutting die-piece in the side groove, substantially as described.

In witness whereof I have hereto set my hand in the presence of two attesting witnesses.

CHARLES E. M'UGHTON.

Attest:

A. G. HEYLMUN,  
REUBEN JOHNSON.