

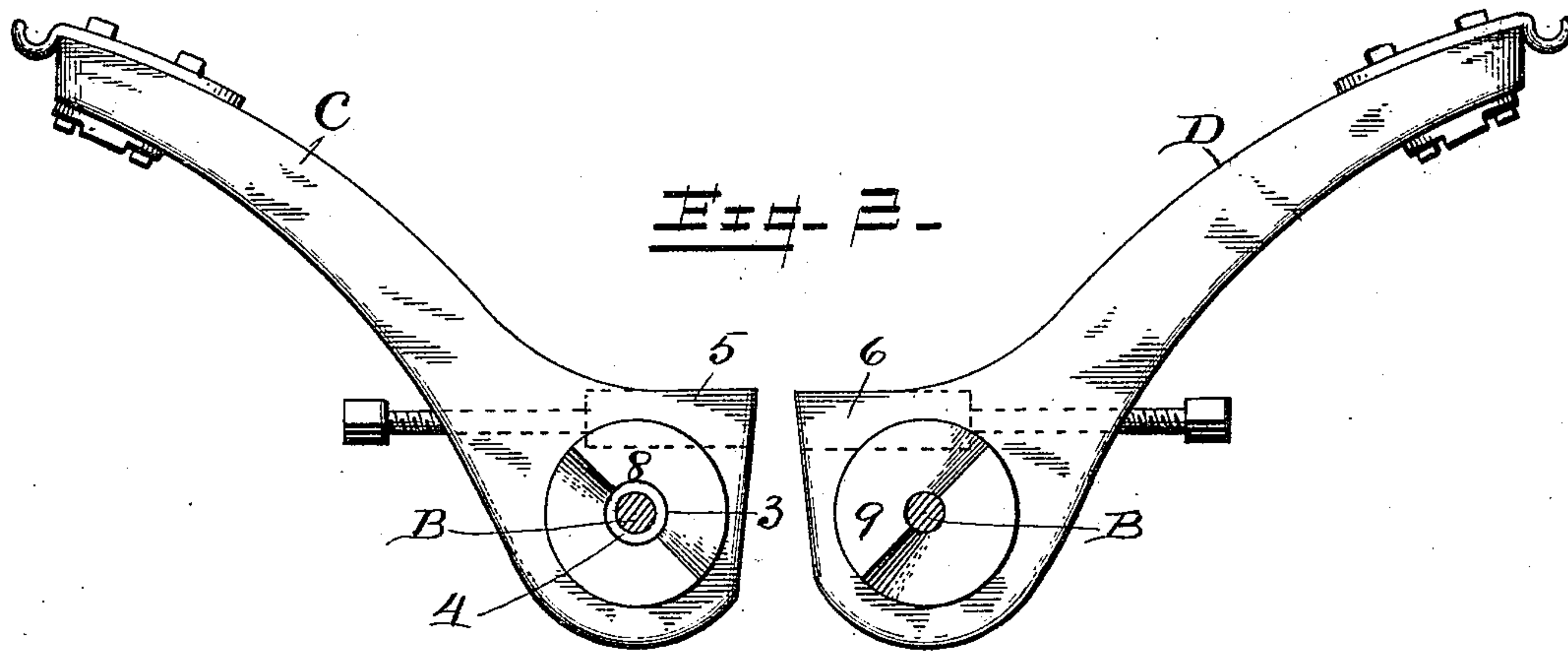
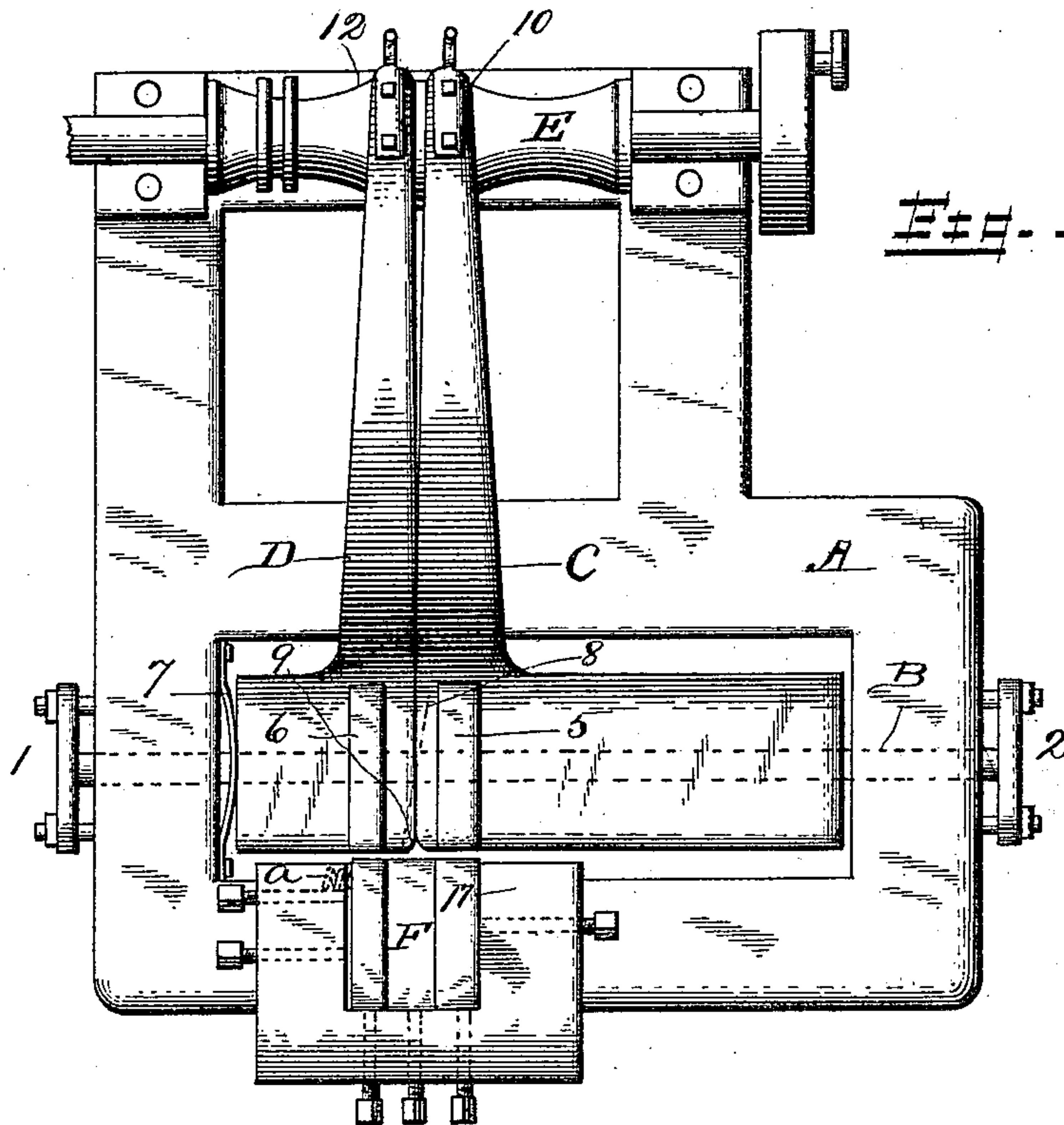
(No Model.)

2 Sheets—Sheet 1.

C. E. HOUGHTON.  
NAIL MACHINE.

No. 463,364.

Patented Nov. 17, 1891.



WITNESSES:

Albert B. Blackwood  
P. M. C. C. C.

INVENTOR

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A. G. Heylman  
ATTORNEY.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

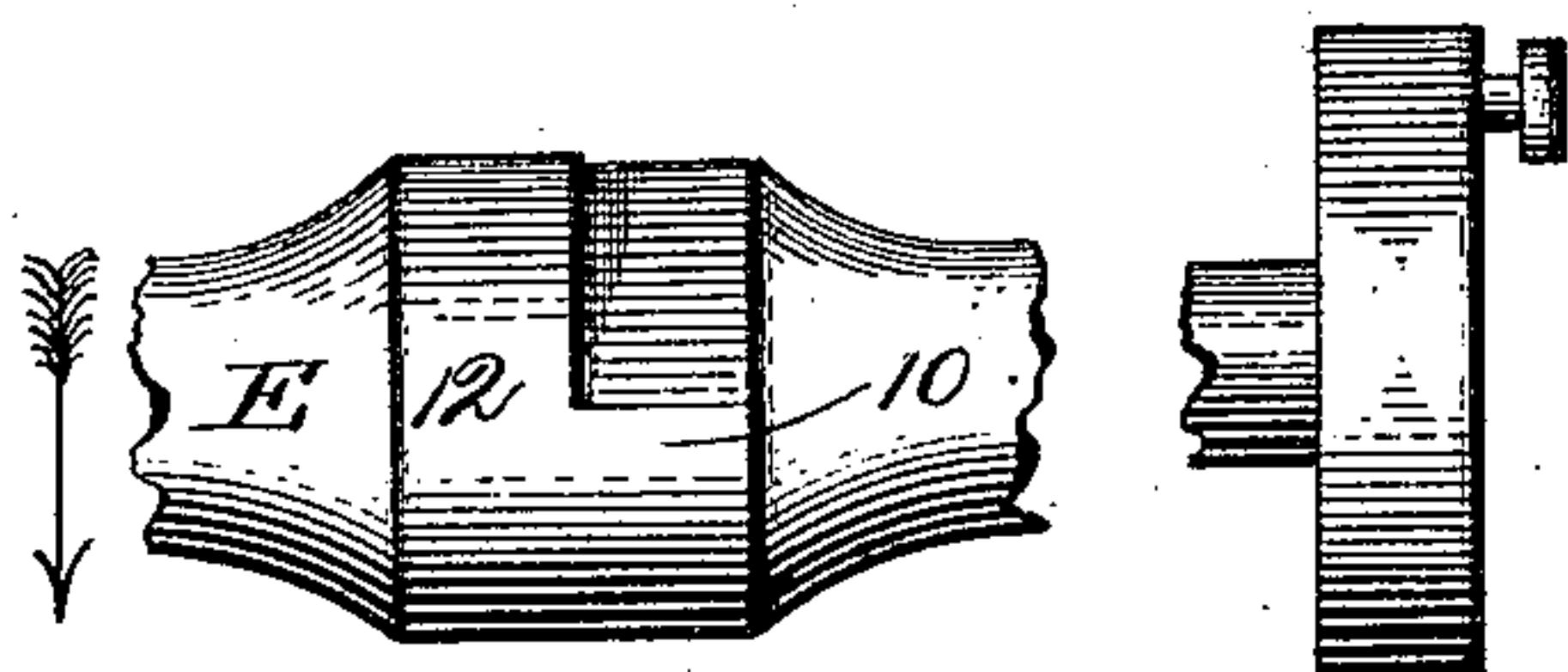


Fig. 5.

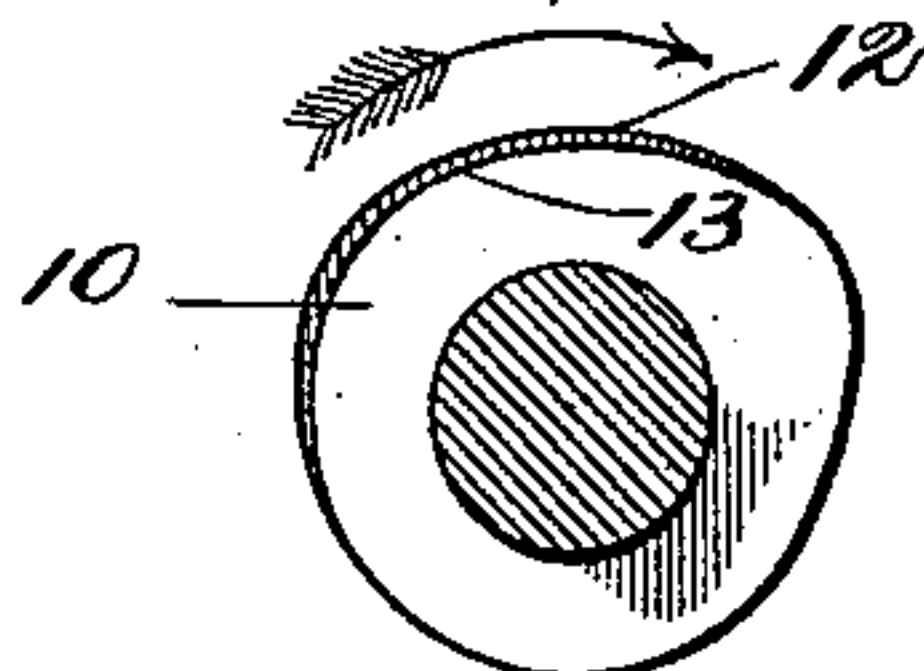


Fig. 6.

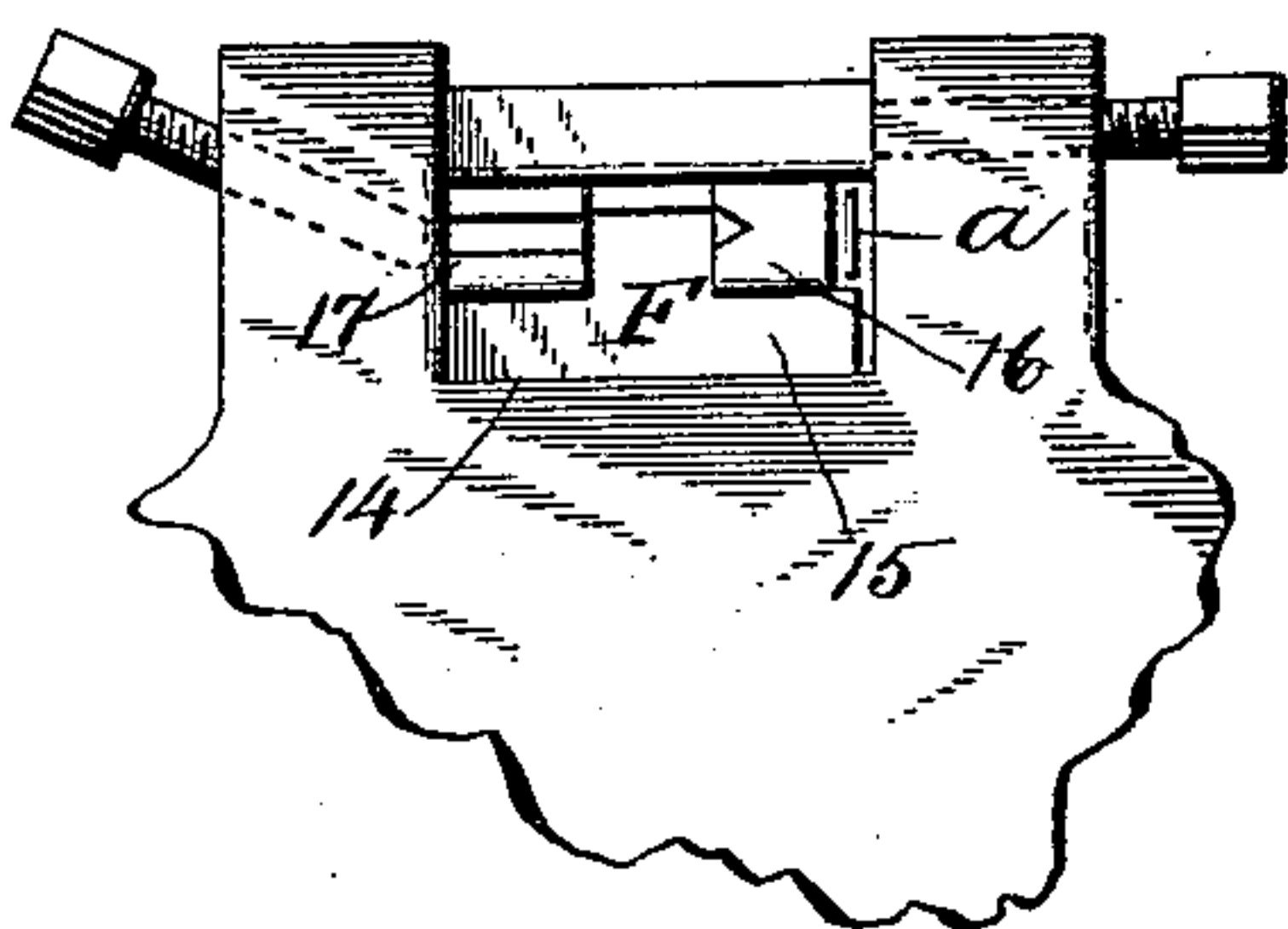


Fig. 7.

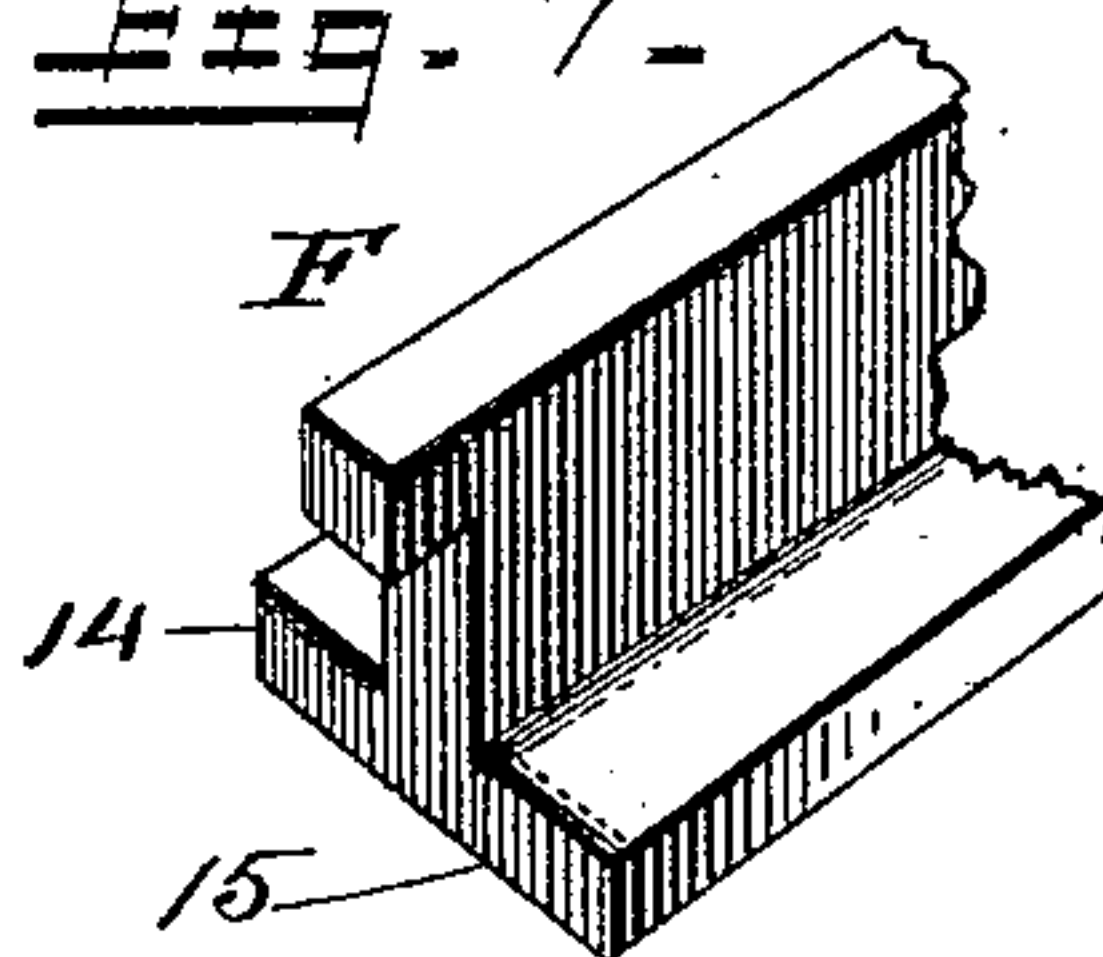


Fig. 8.

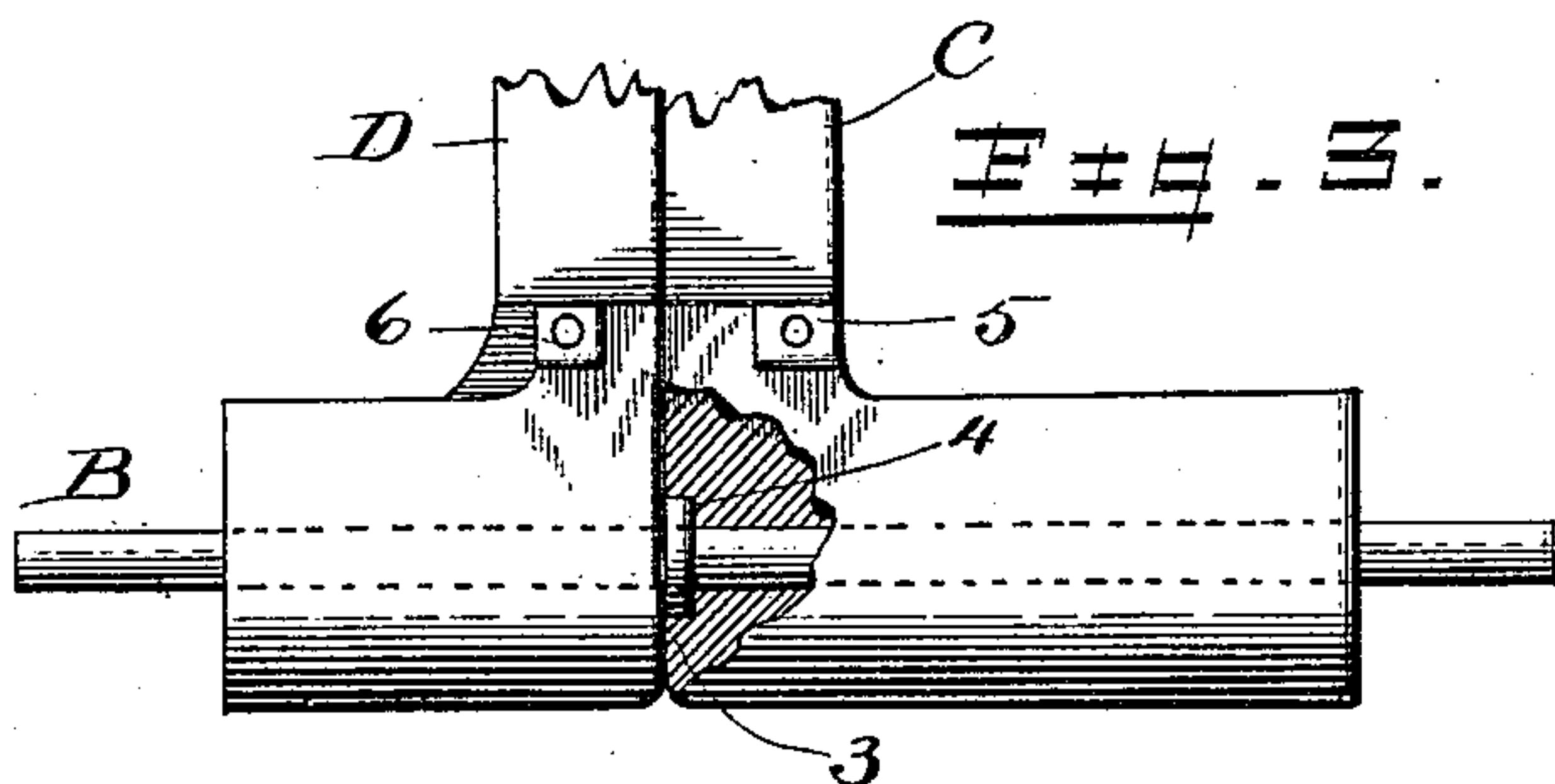
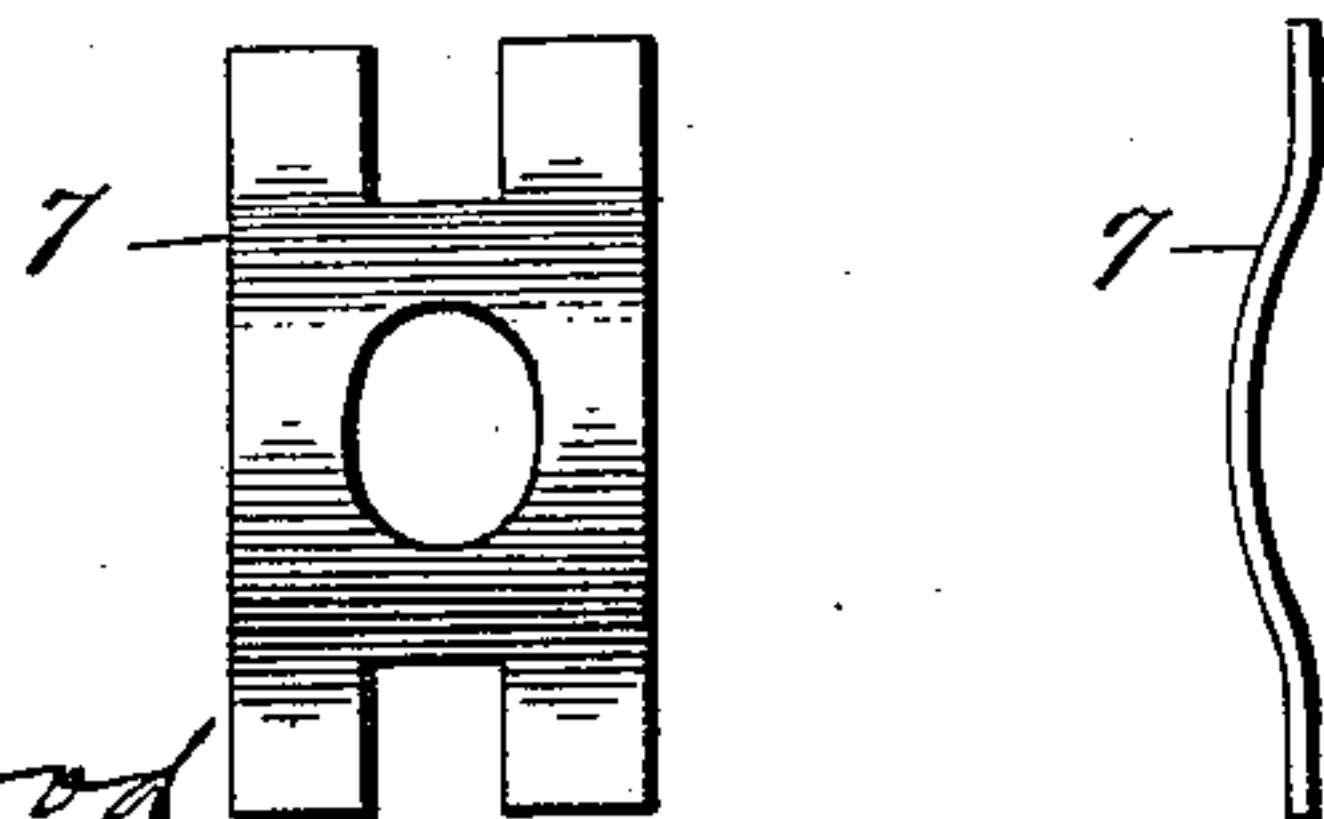


Fig. 9.



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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. 463,364, dated November 17, 1891.

Application filed February 27, 1891. Renewed October 22, 1891. Serial No. 409,492. (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 improvements in nail-machines for cutting pointed nails from a common rolled plate; and the object is to perfect a machine of this character for pointing cut-nails, wherein the moving dies for gripping and pointing the nail are rigidly clamped to independently-moving gripping-levers operated by a single shaft formed with cams for lifting the levers.

I am aware that nail-machines have been made having double gripping-levers; but I believe that I am the first to construct a nail-machine having two gripping-levers, one of which is mounted in its bearings to have a limited lateral movement, for the purposes hereinafter set forth.

I have fully and clearly illustrated my invention in the accompanying drawings, wherein—

Figure 1 is a plan view of a nail-machine bed having my improved gripping-levers mounted on a shaft arranged in bearings usually occupied by the center bearings. Fig. 2 is views of the opposing cam-surfaces on the levers for moving the point-cutting lever laterally. Fig. 3 is a face end view of the gripping-levers, showing the die-beds thereon and showing the one lever partly broken away to illustrate the recess and fastening-collar. Fig. 4 is a top view of the cams which lift the levers, the direction of movement being indicated by the arrow. Fig. 5 is a side view of the cams, taken from the crank end of the driving-shaft, showing the tread of the cams, the one on the main gripping-lever being slightly cut away. Fig. 6 is a face end view of the stationary die-bed, showing the bed-knife, back piece having side flanges, bed-die, and point-cutting die all in place. Fig. 7 is a perspective of the back piece and die-bed with the side flanges. Fig. 8 is a view of the spring which forces the

laterally-movable lever back to its normal position.

Referring to the drawings, A designates the bed-frame of a nail-machine of the usual construction. I have not shown certain of the elements of the machine, because they are not essential to a complete and legal understanding of the present invention, the object of which is, as already stated, directed to improvements in the gripping-levers, and these with the associated dies are fully and clearly shown.

B designates a shaft supported in proper bearings at the front portion of the machine-frame and held against lateral movement in its bearings by stay-pieces 1 2, adjustably held against the ends of the shaft by screws let into the bed of the machine, substantially as shown. In the present instance I have shown the shaft as mounted in the holes used for the center pins of the common gripping-lever.

C designates the main gripping-lever, supported on the shaft B and formed with a recess 3 in its end, which takes in a collar 4 on the shaft, whereby the lever is held against lateral movement on the shaft, the outer end bearing against the inner face of the bed or frame of the machine. On the upper face of this lever is formed a die-bed 5, which takes the moving gripping-die. (Not shown.) The arm of the lever is extended upward, as usual, and rests on a cam on the driving-shaft.

D designates the second gripping-lever, mounted on the shaft B so as to have a limited lateral movement on its support. This lever is formed with a die-bed 6 to take and hold the point-cutting die, and the arm of the lever is carried upward and rests on a cam on the driving-shaft. A spring 7, arranged between the end of the body of this lever and the bed of the machine, serves to force the lever back to its normal position when carried outward by the cams on the inner faces of the levers.

On the inner and opposing faces of the gripping-levers are formed cam-surfaces 8 9, arranged so that when the point of the nail is being cut by the point-cutting dies the lever carrying the point-cutting die will be carried on its shaft outward by the action of the



cams and the operation of forming the point be accomplished by a shearing and lateral movement of the parts, this being insured by the action of the cams.

5 E designates the driving-shaft of the machine, on which a cam 10 is formed to throw or lift the main gripping-lever, and of course pushing any die secured thereon forward into  
10 contact with the counterpart bed-die 17 in the bed or chamber of the frame. Another cam 12 is also on the driving-shaft, which operates the lever carrying the point-cutting die. These cams are identical in their tread for the greatest part of their face, but the cam  
15 10 at the point of its greatest elevation is slightly cut away, as at 13, so that the main gripping-lever will drop just in advance of the point-cutting lever and bring the cam-surfaces in operative relation and push the  
20 point-cutting lever outward while still in the act of making the point.

F designates the back piece and bed-die holder, formed with laterally-extended side flanges 14 15, on which the point-cutting bed-  
25 die 16 and the gripping bed-die 17 are arranged, as shown in the drawings. The side flange 15 is made wider than the point-cutting die in order that the die may have a limited lateral movement in the bed or seat to act in  
30 conjunction with the lateral movement of the gripping-lever of the moving point-cutting die. A spring *a*, interposed between the point-cutting bed-die and the face of the recess or chamber in which located, moves the die back  
35 to original position after the point has been made and the nail released. I have made no generic claim to these laterally-moving point-cutting dies in this application, because they form the subject-matter of other applications  
40 for patent heretofore filed by me under date of January 24, 1891, serially numbered, respectively, 378,958 and 378,959.

I have not illustrated the cutting portions of the machine because these are so well  
45 known to the craft and art that their relation and operation are thoroughly and generally known and understood, and their mention in the statement of operation will be intelligently perceived. The nail-blank being severed  
50 from the plate is carried down and engaged and lodged by the nipper, which may be of any construction, in the scores of the gripping-dies, and the two gripping-levers are being moved up to bring the dies in contact,  
55 and after the arms of the levers have been carried to their highest point the main gripping-lever begins to recede while the point-cutting lever is maintained at its upper limit, owing to the difference or depression of its  
60 cam. This advance movement of the main gripping-lever throws the opposing-cam surfaces in operation and makes a lateral movement of the point-cutting lever, thereby removing all excess metal from the point of the  
65 nail. As the cams on the driving-shaft reach their lowest limit the nail is dropped from the dies. The spring *a* in the die-bed returns

the point-cutting bed-die to its normal position, and the point-cutting lever is returned to its inner and normal position by means of  
70 the spring interposed between the end of the bearing and the machine-bed.

Having thus described my invention, what I claim is—

1. In a nail-machine for pointing cut nails, 75 the combination of two gripping-levers provided with cam-surfaces between them, means for reciprocating one of said levers while the other is given a lateral motion on its bearings, substantially as and for the purpose specified. 80

2. In a nail-machine, the combination of two gripping-levers on a single shaft, having cam-surfaces on their inner faces and a driving-shaft formed with cams, one of which has a tread formed to depress its lever slightly in  
85 advance of the other lever, substantially as described, and for the purposes set forth.

3. In a nail-machine, the combination of a gripping-lever fixed against lateral movement, a second gripping-lever mounted on its  
90 bearings and means for giving it a limited lateral movement, and a driving-shaft formed with cams to reciprocate said levers independently of each other, substantially as described.

4. In a nail-machine, the combination of a 95 shaft mounted across the bed of the machine, a gripping-lever formed with a cam-surface on its inner face, said shaft secured against lateral movement, a second gripping-lever having a cam-surface on its inner face on  
100 the shaft, arranged to have a limited lateral movement on said shaft, a driving-shaft formed with cams to reciprocate the levers, and a spring to return the second lever to its normal position laterally, substantially as  
105 described.

5. In a nail-machine, the combination, with a main gripping-lever, of a point-cutting gripping-lever and means for giving it a lateral  
110 movement on its bearings, substantially as and for the purpose specified.

6. The combination, in a nail-machine, of a gripping-lever and means for giving it a limited lateral movement on its bearings, a point-  
115 cutting die secured on the lever, and a point-cutting bed-die having a limited lateral movement in its seat, substantially as described.

7. In a nail-machine, the combination, with a main gripping-lever having a gripping-die secured thereon and a bed gripping-die, of a  
120 gripping-lever and means for giving it a limited lateral movement on its bearings, a point-cutting die on the laterally-movable lever, and a point-cutting bed-die having a limited lateral movement in its seat, substantially as  
125 described.

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

CHARLES E. HOUGHTON.

Attest:

HORACE RUFUS JOHNSON,  
EML. WILVERT.