

(Model.)

J. BOOTHMAN.

CUTTER FOR NAIL MAKING AND DRIVING MACHINES.

No. 546,577.

Patented Sept. 17, 1895.

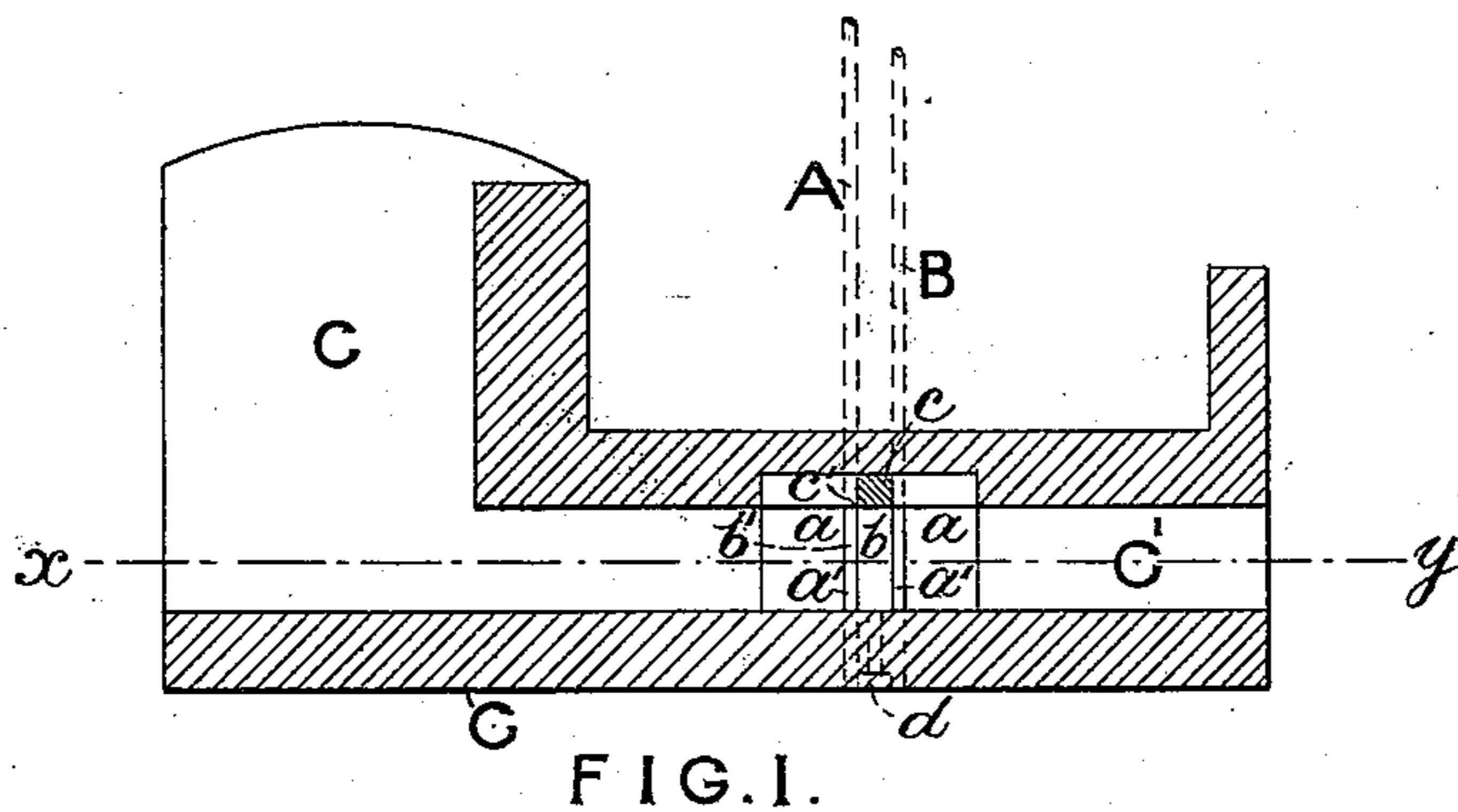


FIG. 1.

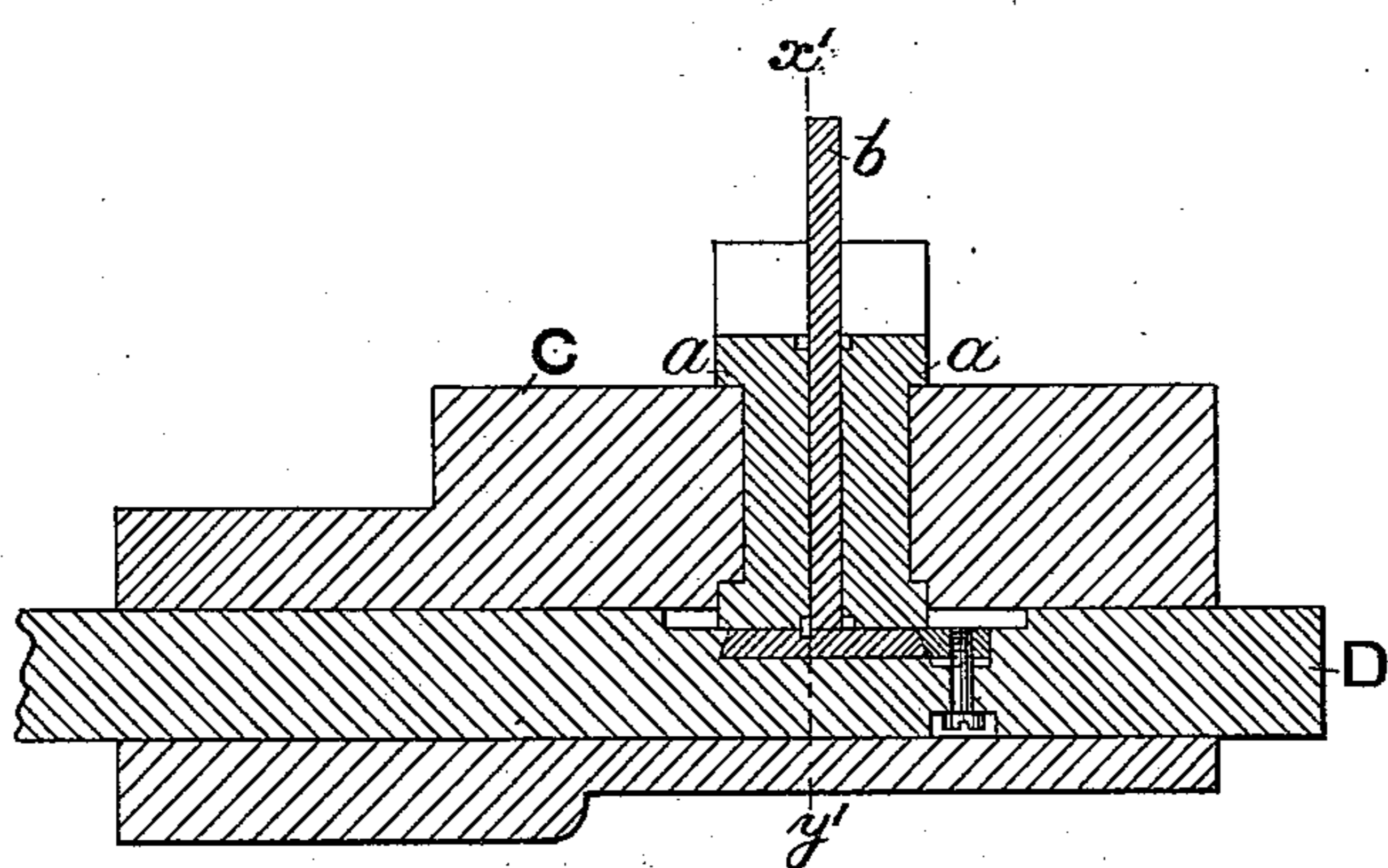


FIG. 2.

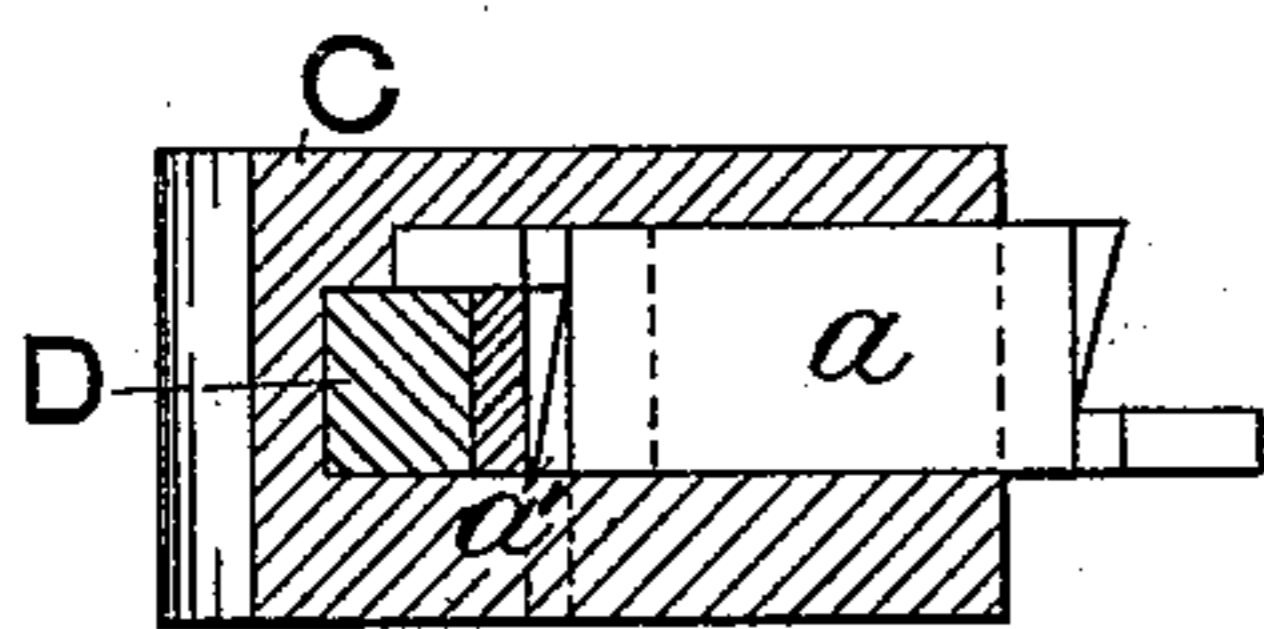


FIG. 3.

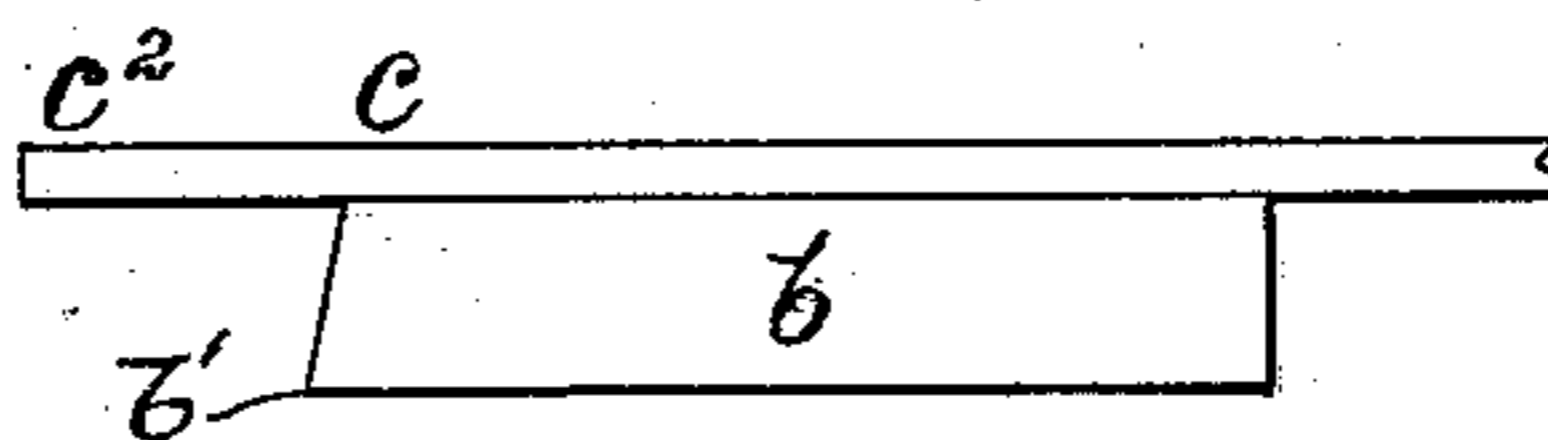


FIG. 4.

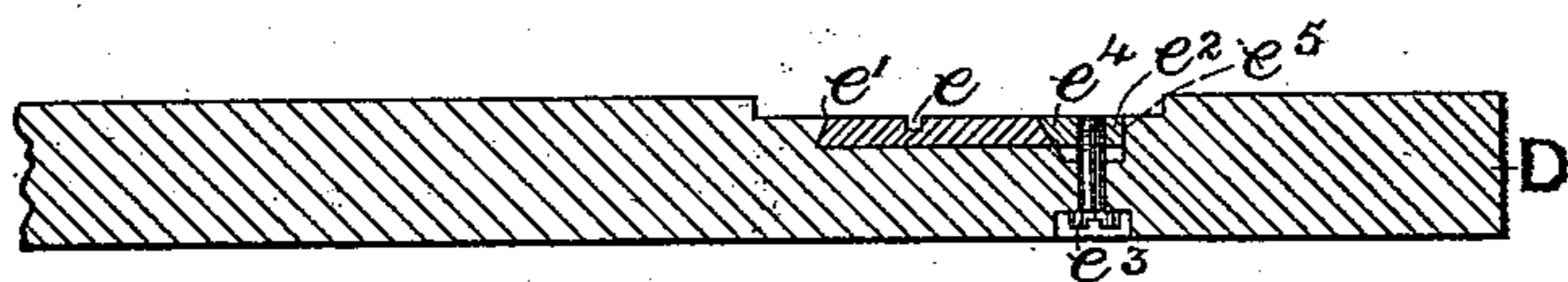


FIG. 5.

Witnesses

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# UNITED STATES PATENT OFFICE.

JONATHAN BOOTHMAN, OF MANCHESTER, ENGLAND.

## CUTTER FOR NAIL MAKING AND DRIVING MACHINES.

SPECIFICATION forming part of Letters Patent No. 546,577, dated September 17, 1895.

Application filed May 11, 1894. Serial No. 510,926. (Model.)

*To all whom it may concern:*

Be it known that I, JONATHAN BOOTHMAN, a subject of the Queen of Great Britain and Ireland, and a resident of 3 Oak Villa, Pride-oak Street, Cheetham, Manchester, in the county of Lancaster, England, have invented certain Improvements in Cutters for Nail Making and Driving Machines, of which the following is a specification.

10 This invention relates to improvements in the cutters of those shoe-nailing machines in which the nails are formed by being severed from a continuous length of wire and pointed by the action of cutters, the adjacent faces of  
15 which are set at such an angle to each other that a portion of the parallel wire is severed slantwise, so as to leave the nail pointed. In such a machine there is a fixed cutter having two grooves, and opposite thereto is a recip-  
20 rocatating cutter having a single groove. The stroke of the reciprocating cutter (which is operated by a cam) is such that its groove is in juxtaposition first with one groove and then with the other groove of the fixed cutter.  
25 In one position the groove in the fixed cutter and that in the reciprocating cutter together form a passage for the reception of the end of the continuous length of wire. Part of the wire is held by the groove in the fixed  
30 cutter and part by the groove in the sliding cutter. When the latter slides past the former, it takes with it the short length destined to form the nail (which is severed and pointed by the cutting-edges of the fixed cut-  
35 ter) and brings it to the second groove of the fixed cutter, through which works the driver to drive the shaped nail into the work held underneath. The reciprocating cutter thus  
40 acts simply as a holder and conveyer of the nail. The fixed cutter of such a machine has consisted heretofore of a single plate or block of steel, dovetailed or otherwise secured in the cutter-box or cutter-holder. The said fixed cutter is formed with grooves or chan-  
45 nels to receive the wire to allow the waste to escape and to enable the nail to be driven, and when made in a single piece it presents considerable difficulties to the ready renewal of the cutting-edge and soon becomes com-  
50 pletely worn out and has to be discarded.

In the drawings, Figure 1 is a sectional front elevation through the cutter-box, showing the acting end of the fixed cutter as seen when the reciprocating or carrying cutter is removed. A represents the continuous length 55 of wire. B represents the driver. Fig. 2 is a sectional plan through  $xy$  of Fig. 1 with the reciprocating cutter in the position in which it receives the wire from which the nail is to be cut. Fig. 3 is a transverse sec- 60 tion through line  $x'y'$  of Fig. 2. Fig. 4 shows side elevation of the middle sections of the fixed cutter. Fig. 5 is a plan showing the mode I adopt of securing the tool or cutter in the reciprocating cutter-box. 65

In all the figures the same letters of reference refer to the same parts.

C is the cutter-box, which holds the fixed cutters and which is provided with a through passage  $C'$ , in which the reciprocating cutter- 70 box D slides to and fro.

Referring first to the fixed cutter, the side sections  $a a$  are cut away at  $a' a'$  on their inner faces adjacent to the center section  $b$ , in order to form the two sides of the grooves 75 to receive the wire. The third side of each groove is formed by the center section  $b$ , which is so set that its front face lies in the same plane as the faces of the side sections. One edge  $b'$  of the end face of the center sec- 80 tion forms the cutting-edge, which points the nail as it is carried past the said cutting-edge by the travel of the reciprocating or carrying cutter. The center section  $b$  is simply a prismatic bar, and to sharpen the cut- 85 ting-edge  $b'$  it is merely necessary to withdraw it and grind the front edge or face.

The upper section  $c$  is a square bar, the under edge  $c'$  of which acts as a cutting-edge to sever the length of wire destined to form the 90 nail from the continuous length of wire while the nail is being borne forward to the driving-groove by the stroke of the reciprocating or carrying cutter. To sharpen the cutting-edge of the section  $c$ , it is merely necessary to dis- 95 place it longitudinally by pushing it forward, when a fresh length of the cutting-edge comes into action. When all of one edge is worn off, the bar is turned over a quarter-turn, presenting a fresh square edge. The bar being 100

square has four such edges, which last a long time before the bar need be replaced or re-ground.

The side sections *a* are preferably made 5 double-ended or reversible. The grooves in the opposite ends are made of different sizes, so that one set of side sections may be used for two sizes of wire.

As may be seen in plan in Fig. 2, the side 10 sections *a* are recessed into the cutter-box C. The center section is made a good driving fit, so that when driven up it keys the side sections and prevents longitudinal or transverse displacement. The fore end *c*<sup>2</sup> of the upper 15 section *c* projects through a square hole in the front of the cutter-box. A pinching-screw *d*, passing through the bottom of the cutter-box and taking against the under side of the middle section *b*, prevents the sections 20 *b* and *c* from shifting.

The present method of securing the grooved tool in the reciprocating cutter-bar is by fitting it accurately into a dovetailed groove. This, however, presents obstacles to ready re- 25 newal.

I secure the grooved tool *e* in a recess undercut at *e'* by means of a nut *e*<sup>2</sup> and clamping-screw *e*<sup>3</sup>. The nut is undercut at *e*<sup>4</sup>, and as it bears with a square edge at *e*<sup>5</sup> against

the cutter-holder the tightening of the screw 30 *e*<sup>3</sup> causes the nut *e*<sup>2</sup> to securely clamp the tool in the bar.

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

1. In a fixed cutter for a nail cutting and 35 driving machine the combination of the two side sections *a a* each notched to form a groove for receiving the nail with a removable center section *b* substantially as and for the purpose set forth. 40

2. The combination of the side sections *a* 40 the center section *b* and the top section *c* the whole forming a fixed cutter for a wire nail cutting and driving machine substantially as set forth. 45

3. A combination cutter for a nail cutting and driving machine having reversible side 50 sections provided with grooves at both ends for receiving two sizes of wire substantially as set forth.

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

JONATHAN BOOTHMAN.

Witnesses:

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