

(No Model.)

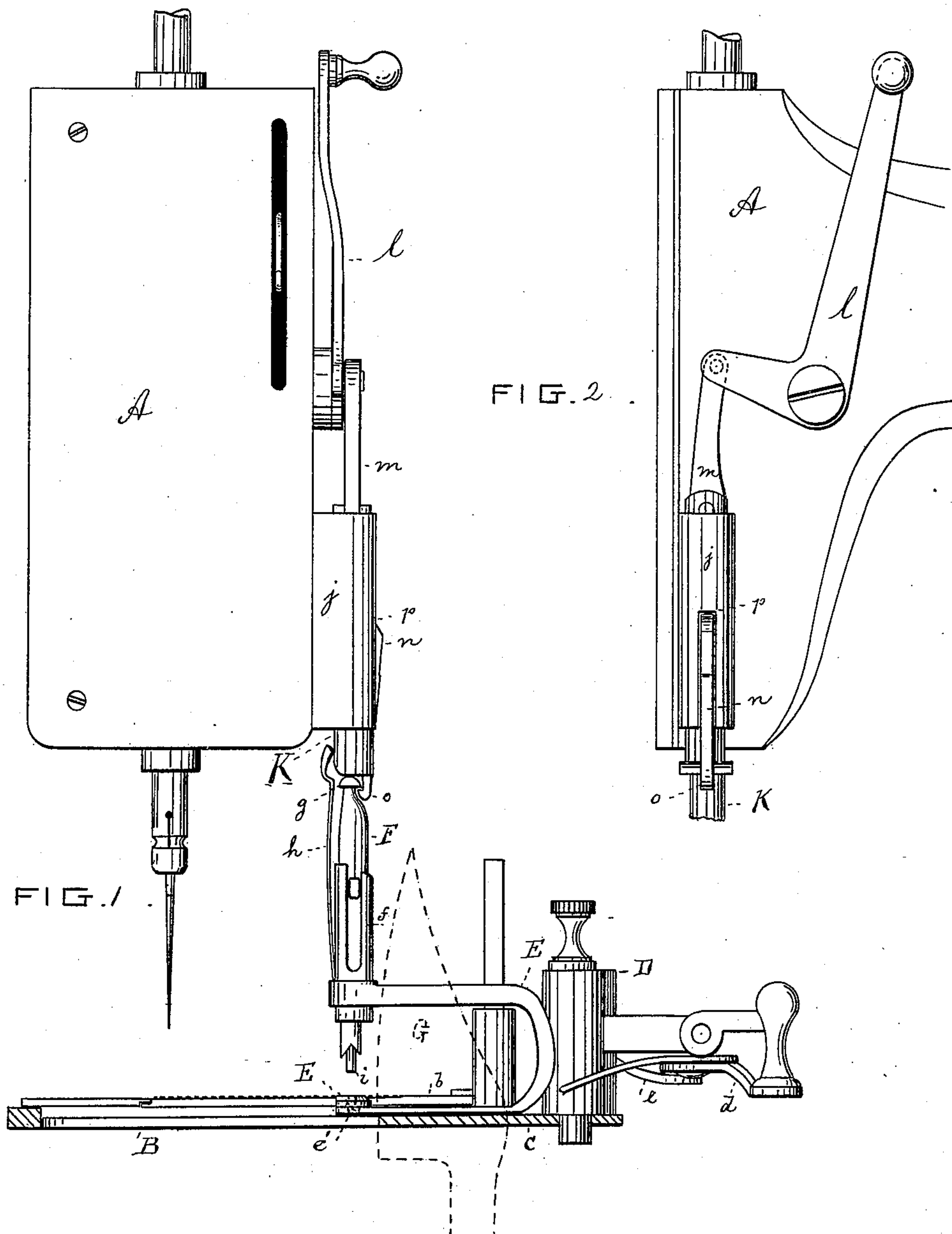
3 Sheets—Sheet 1.

F. E. SCHMIDT.

CUTTING ATTACHMENT FOR BUTTON HOLE SEWING MACHINES.

No. 332,950.

Patented Dec. 22, 1885.



WITNESSES

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Robt Roy

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by his attorneys  
Roeder & Bieren

(No Model.)

3 Sheets—Sheet 2.

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FIG. 3.

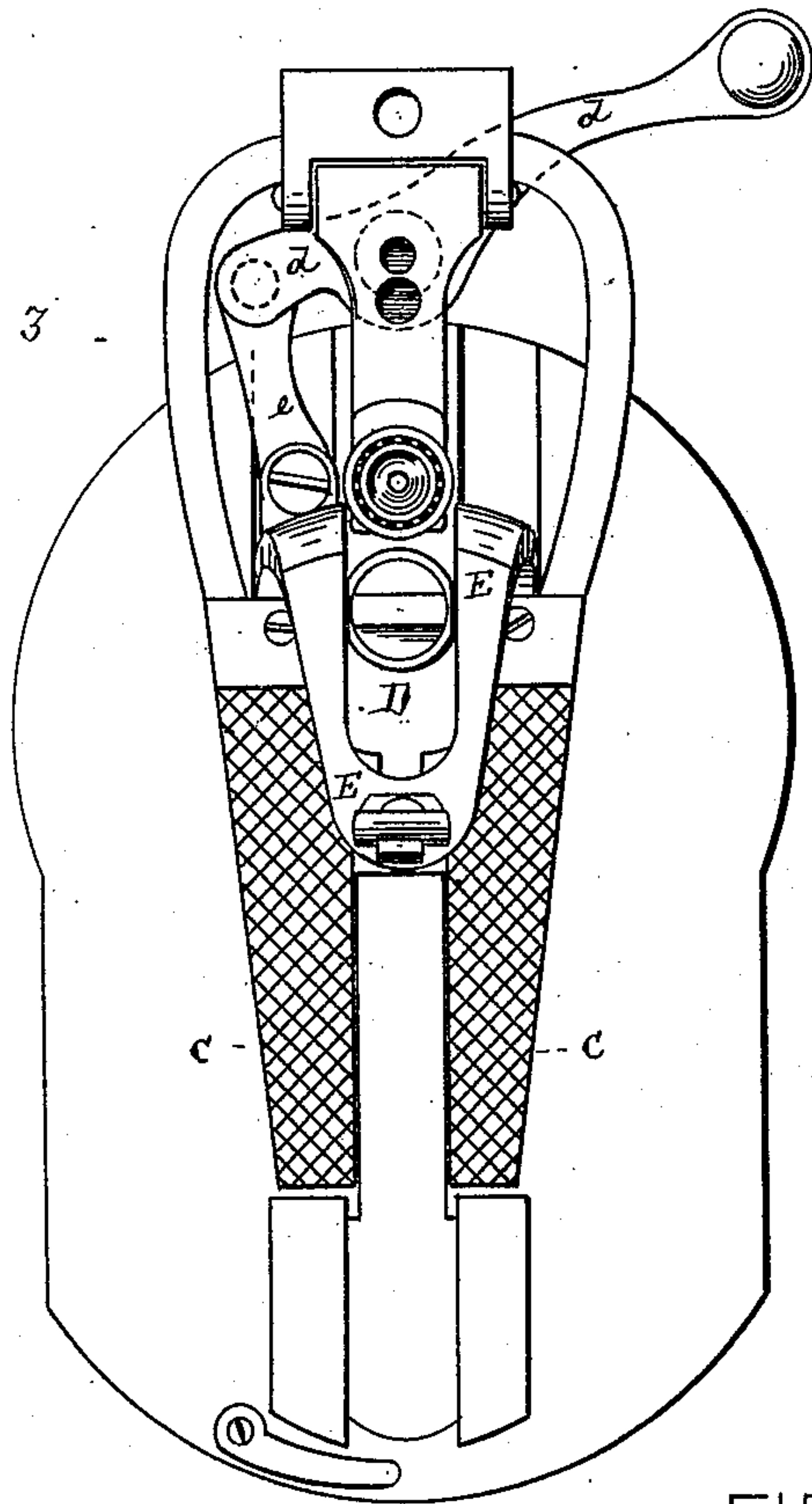


FIG. 4.

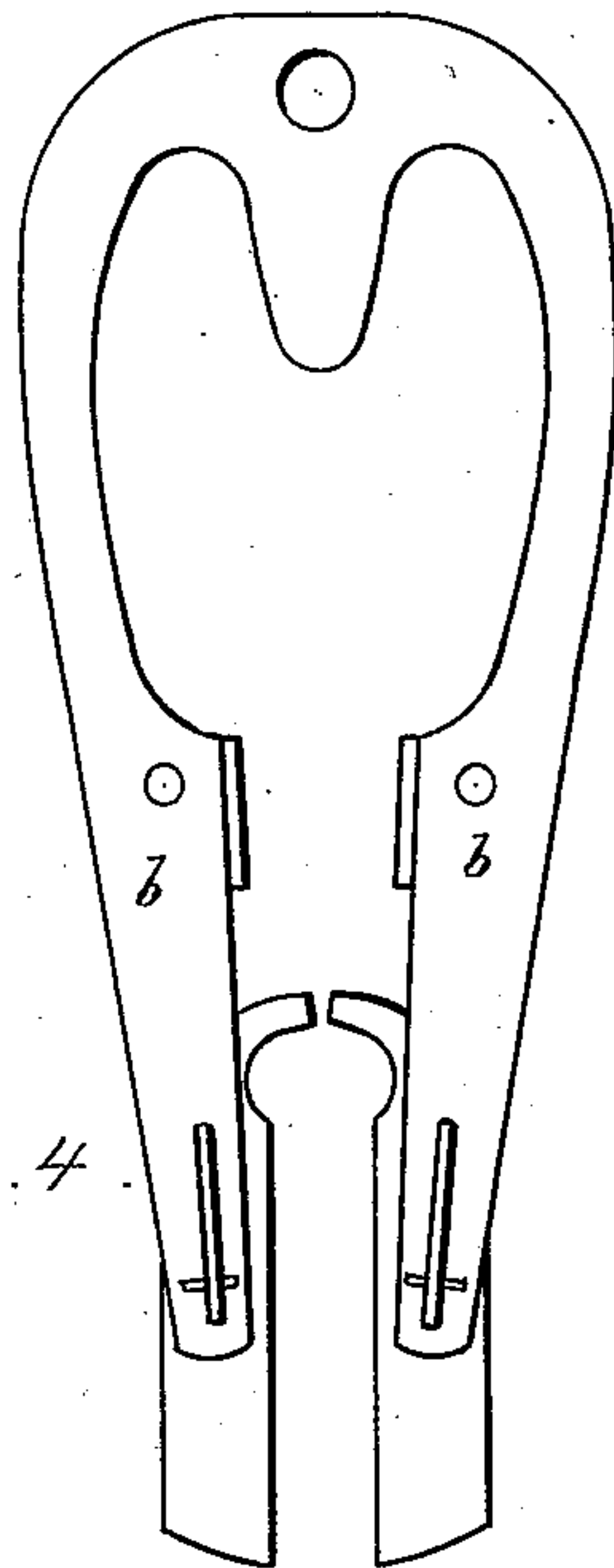


FIG. 6.

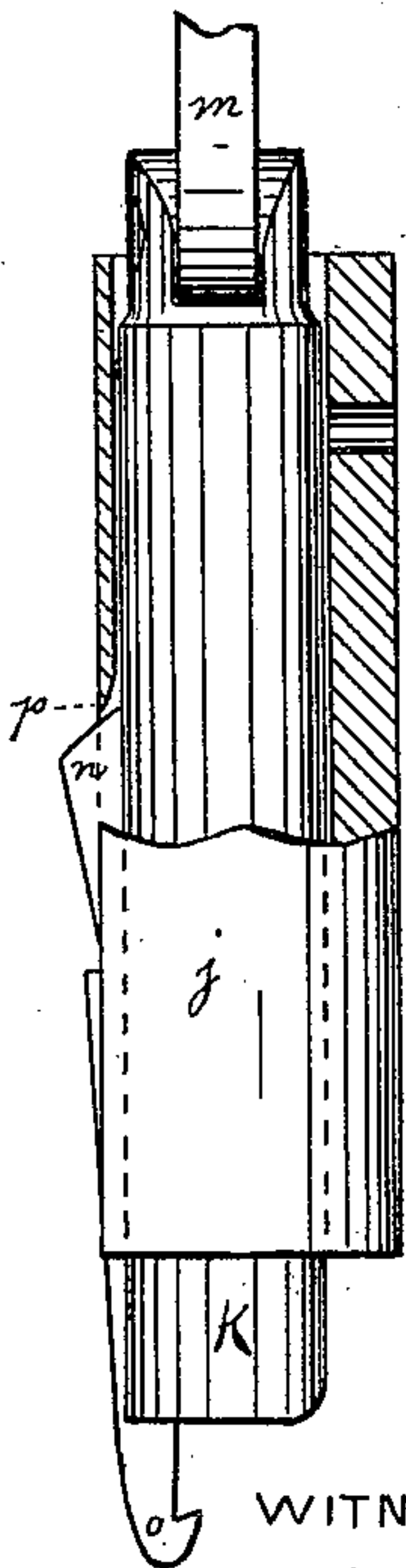


FIG. 7.

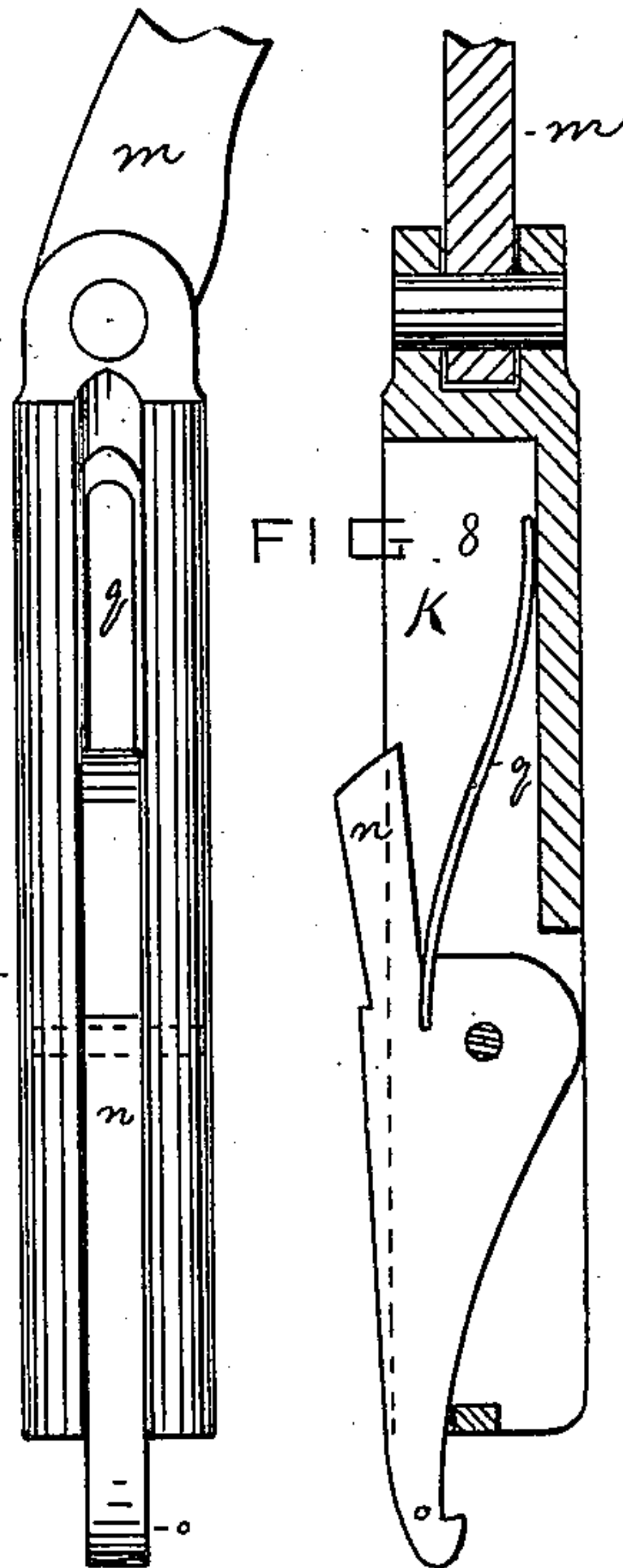


FIG. 8.

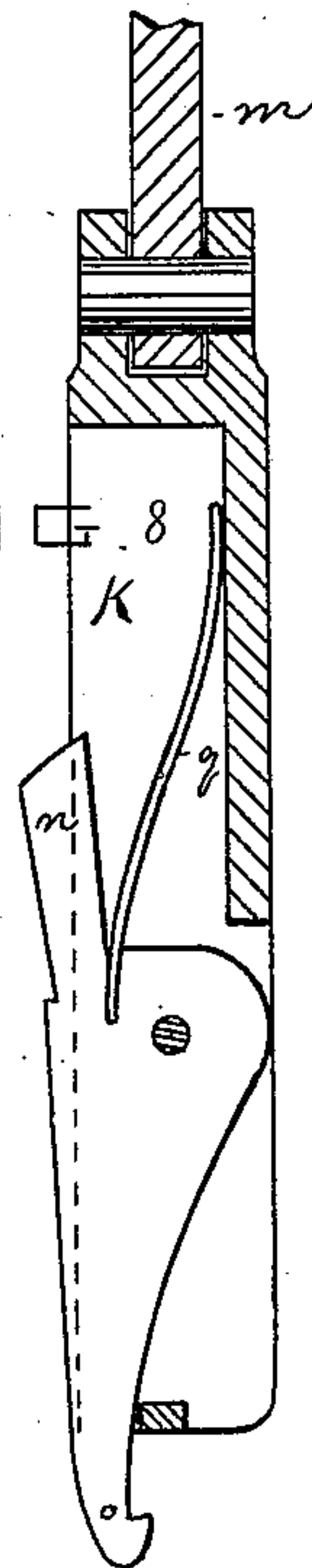
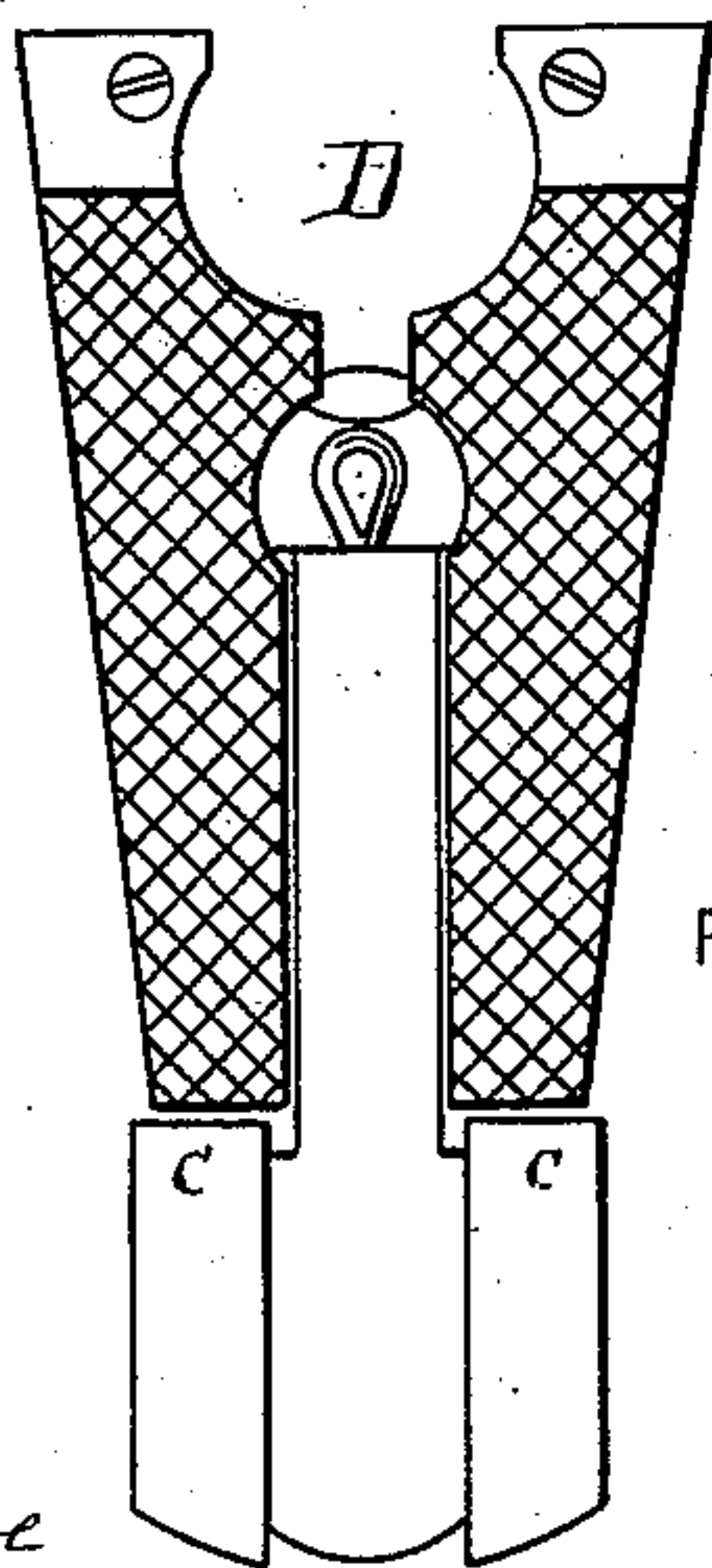


FIG. 5.



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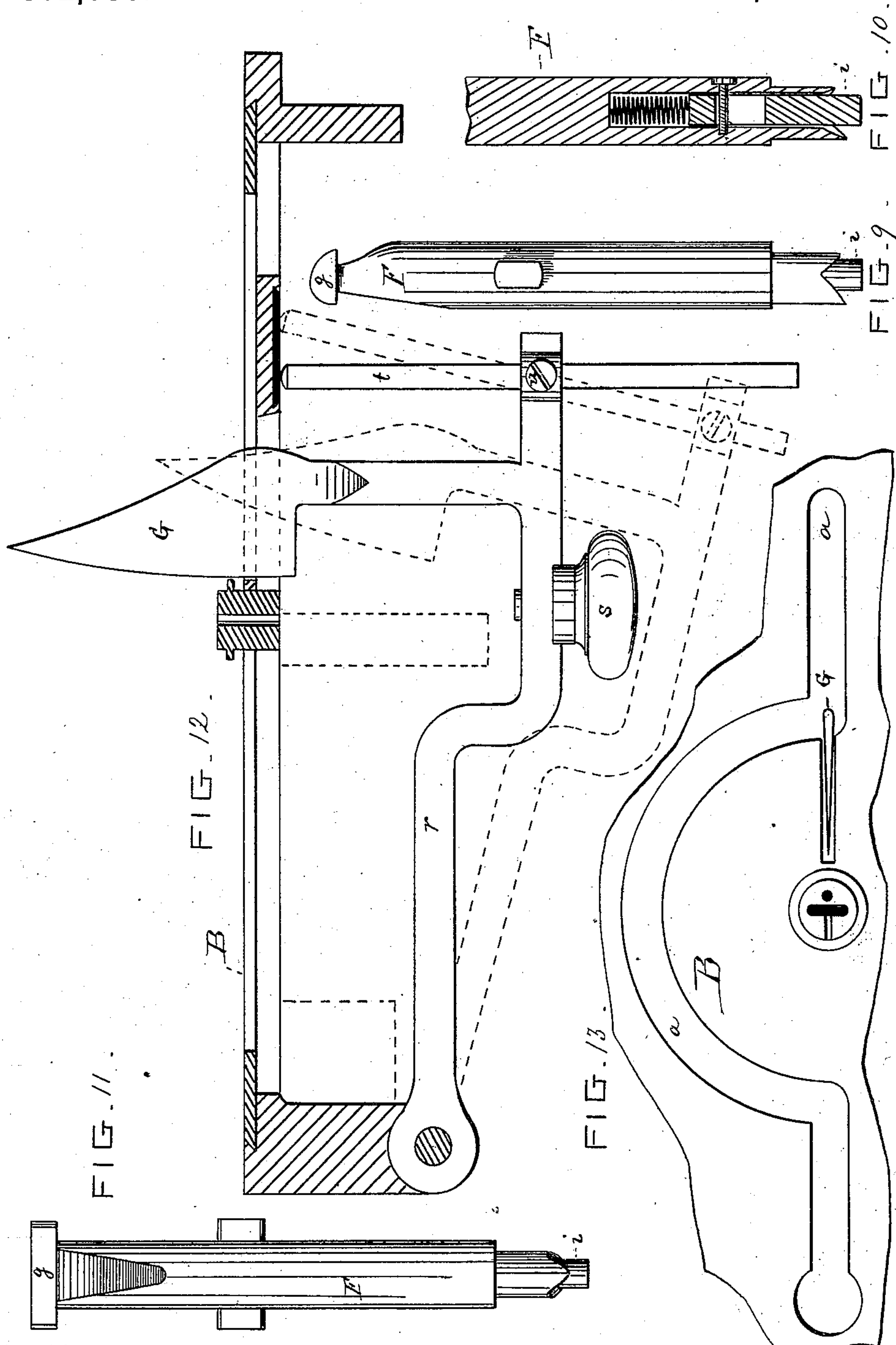
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# UNITED STATES PATENT OFFICE.

FRIEDRICH E. SCHMIDT, OF BROOKLYN, NEW YORK.

## CUTTING ATTACHMENT FOR BUTTON-HOLE SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 332,950, dated December 22, 1885.

Application filed March 31, 1885. Serial No. 160,751. (No model.)

*To all whom it may concern:*

Be it known that I, FRIEDRICH E. SCHMIDT, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Cutting Attachment for Button-Hole Sewing-Machines, of which the following specification is a full, clear, and exact description.

This invention relates to an improved cutting attachment for button-hole sewing-machines. The object of the cutter is to punch the eye and cut the slit, which together go to make the complete button-hole. After the button-hole has been cut out it is finished by the needle in the usual way.

The invention consists, principally, in the combination of a cloth-clamp with a slide adapted to reciprocate within the cloth-clamp and carrying a punch, and with a plunger adapted to force down the punch.

The invention also consists in the elements of improvement hereinafter more fully pointed out.

In the accompanying sheets of drawings, Figure 1 is a side view of my improved cutting attachment. Fig. 2 is a front view of the machine-head, showing that part of the attachment which forces the punch down. Fig. 3 is a top view of the cloth-clamp with the upper jaw removed. Fig. 4 is a top view of such upper jaw. Fig. 5 is a partial top view of the cloth-clamp with parts broken away. Figs. 6, 7, and 8 are detail views of the punch-operating mechanism illustrated in Fig. 2. Fig. 9 is an elevation of the punch, and Fig. 10 a longitudinal section through its lower portion; Fig. 11, a side view of the punch. Fig. 12 is a longitudinal section through the work-plate, showing the knife; and Fig. 13 a partial top view of the work-plate to show the feed-groove.

This sewing-machine has the customary head, A, above the work-plate B. This work-plate is provided with a feed-groove, *a*, Fig. 13, as usual to guide the cloth-clamp D. This cloth-clamp first travels toward the needle, then makes a half-turn, and then recedes from the needle to expose its shanks and eye to the needle. All this is of the construction well known in this class of machines.

The cloth clamp D is composed of two upper jaws, *b b*, and two lower jaws, *c c*, between which the cloth is held. The upper jaws are removed in Figs. 3 and 5, and are separately shown in Fig. 4. These parts are also of the ordinary construction, and are illustrated only for the sake of completeness.

To the cloth-clamp D is attached the punch, and to the head A is attached the mechanism for driving the punch. These parts will now be described.

E is a U-shaped slide (see Figs. 1 and 3) to which reciprocating motion may be imparted by a hand-lever, *d*. The hand-lever is pivoted to the cloth-clamp D, and is connected to a link, *e*, which in turn is connected to slide E. The upper arm of slide E is provided with a longitudinally-slotted tubular extension, *f*, in which slides the punch F. A plug on this punch, entering the groove of the tubular extension, serves to guide the punch. The punch F is provided with a head, *g*, upon which the mechanism bears which forces it down. Beneath the head engages a hook for drawing it up, all of which will be later described.

*h* is a spring bearing against punch F, to hold it in position vertically by frictional contact. I prefer to provide the lower edge of punch F with a double-V-shaped cutting-edge, Figs. 9 and 10, so that in punching the hole the cutting-edge enters the cloth gradually. The punch is hollowed out at the bottom to receive a pin, *i*, which pushes out the small piece of cloth after it has been severed. This pin is forced down by a superposed coiled spring, and is prevented from falling out by means of a cross-pin sliding in a groove of pin *i*, all as in Fig. 10. The lower arm of slide E is perforated, as at *e'*, Fig. 1, to permit the passage of punch F. This arm slides in suitable ways formed in the cloth-clamp, and serves to properly guide the slide E. When the cloth-clamp is first placed upon the work-plate, the slide E is moved forward to bring punch F under head A. Then by mechanism attached to said head the punch is forced down and drawn up, whereupon the slide is moved back. Finally, the knife forms the slit, and then the hole is ready to be stitched.



I will now describe the mechanism attached to head A for forcing down and drawing up the punch. This mechanism is illustrated in Figs. 1, 2, 6, 7, and 8.

5 *j* is a casing open on top and bottom and attached to head A. In this casing slides a plunger, K, to which reciprocating motion is imparted by hand-lever *l* and intermediate link, *m*. The lower portion of casing *j* is  
20 slotted longitudinally, the slot being open at its lower end, and through this slot projects outward the front edge of the shank *n* of a hook, *o*. The upper edge of this shank is beveled, and the roof *p* of the slot in casing *j* is  
15 correspondingly beveled, Figs. 6 and 8. The shank *n* is pivoted to plunger K, and a spring, *q*, has a tendency to force the hook *o* inward—to wit, beneath plunger K.

The operation of the parts as thus far described is as follows: After the slide E has  
20 been pushed forward and the punch F has arrived under the plunger the hand-lever *l* is operated so as to cause the descent of plunger K. The plunger bearing upon the punch  
25 forces the same down through the cloth. During the descent of the plunger the hook *o* and its shank *n* of course also descend. After the plunger has descended so far that the uppermost portion of shank *n* has entered the slot  
30 of casing *j* the spring *q* is free to vibrate the shank *n* on its pivot, and the hook *o* is thus forced inward and beneath the head *g* of punch F. In this position the hook remains during the rest of the descent of plunger K. During  
35 the ascent of plunger K the hook *o* will draw the punch F up until the upper beveled edge of shank *n* strikes the beveled roof *p* of slot in casing *j*. By means of this double bevel the shank *n* will be crowded back into casing  
40 *j*, the spring *q* will be compressed, the hook *o* will be swung outward, and the plunger will be released. The parts are now in position for the next descent of the plunger.

I will now describe the mechanism for cutting out the slit. This mechanism is illustrated in Fig. 12. It consists of a blade, G,  
45 having a beveled back and attached to a suitable pivoted shank, *r*. *s* is a button secured to the shank, which is struck by the hand to  
50 vibrate the shank and force the blade up. The point of the blade enters the eye formed by the punch, and the blade then cuts out a long slit to complete the button-hole.

In order to limit the length of the slit, a

suitable stop is employed by which the extent 55 of motion of blade G may be adjusted. This stop is shown to consist of a rod, *t*, which passes through a perforated extension of shank *r*. A small clamp-screw, *w*, serves to fasten the rod *t* to the shank *r*. By loosening the  
60 clamp-screw the rod *t* may be adjusted. The end of rod *t* strikes a suitable stop beneath work-plate B, and thereby limits the extent of motion of blade G.

I do not broadly claim in this application 65 the combination of a movable plate carrying the cloth-clamp of a button-hole-sewing device with a button-hole cutter mounted upon the said plate and moving therewith, as such matter has been claimed in a previous appli- 70 cation for a patent filed by me December 8, 1883, under Serial No. 113,918; but

I do claim—

1. The combination of a cloth-clamp with a slide adapted to reciprocate within the cloth- 75 clamp and carrying a punch, and with a plunger adapted to force down the punch, substantially as specified.

2. The combination of cloth-clamp D, having perforated slide E, with punch F, having 80 head *g*, and with head A, having a plunger for forcing down the punch and a hook for raising it, substantially as specified.

3. The combination of a cloth-clamp, D, with perforated slide E, having punch F, and 85 with plunger K, the punch having a double-V-shaped cutting-edge, substantially as specified.

4. The combination of cloth-clamp D, having perforated slide E, with punch F, having 90 recessed top, and with head A, casing *j*, plunger K, hook *o*, and spring *q*, substantially as specified.

5. The combination of cloth-clamp D with perforated slide E, cutting-blade G, pivoted 95 shank *r*, button *s*, and stop *t*, and with an abutment for stop *t*, substantially as specified.

6. The combination of clamp D and perforated slide E with punch F, for forming the eye 100 of a button-hole, and operated by plunger K, and with blade G, for cutting the slit of a button-hole, and operated by shank *r*, substantially as specified.

FRIEDRICH E. SCHMIDT.

Witnesses:

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ROBT. ROY.