

No. 646,063.

Patented Mar. 27, 1900.

F. R. WHITE.
BUTTON SETTING MACHINE.

(Application filed May 25, 1899.)

(No Model.)

3 Sheets—Sheet 1.

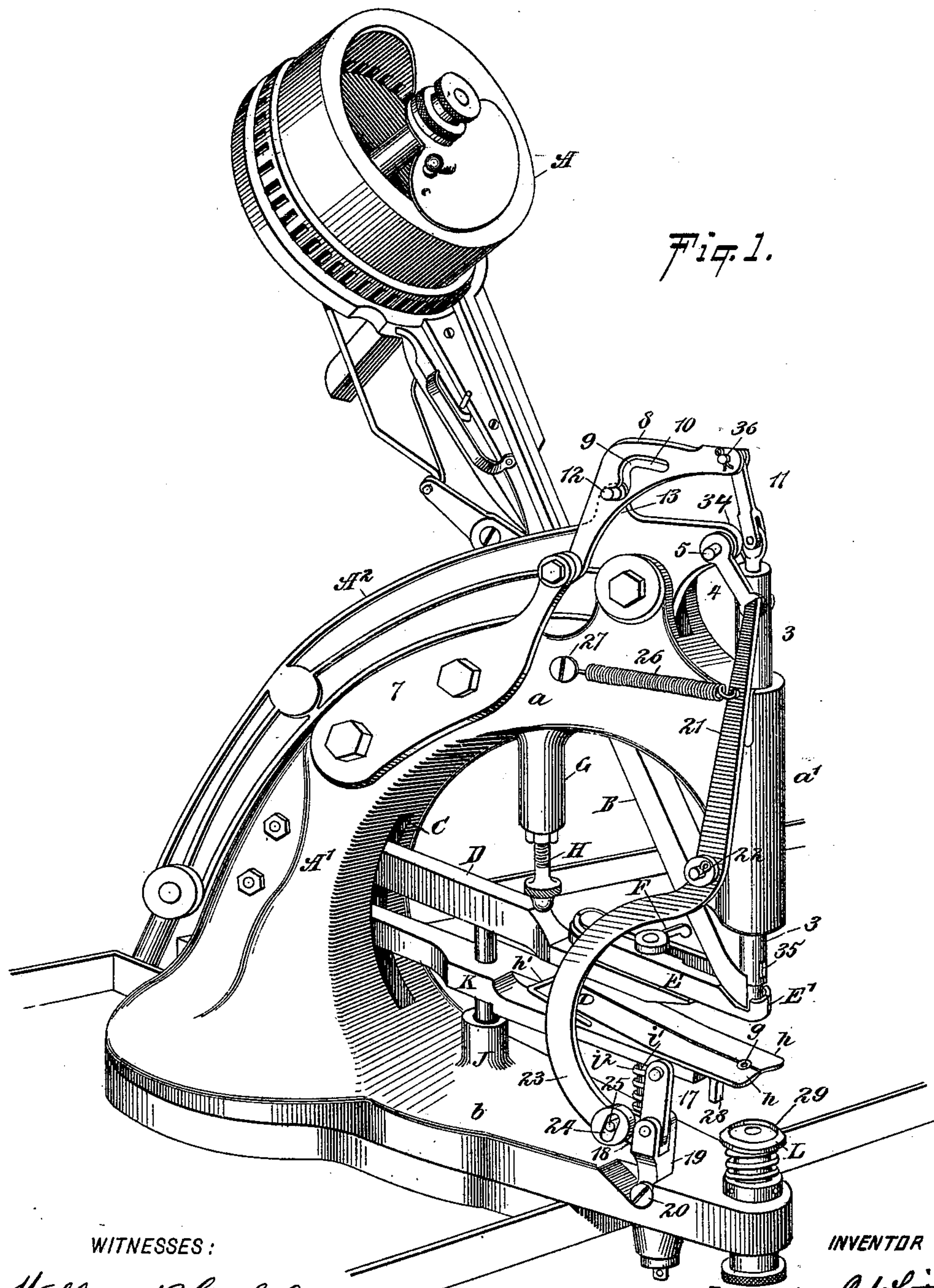


Fig. 1.

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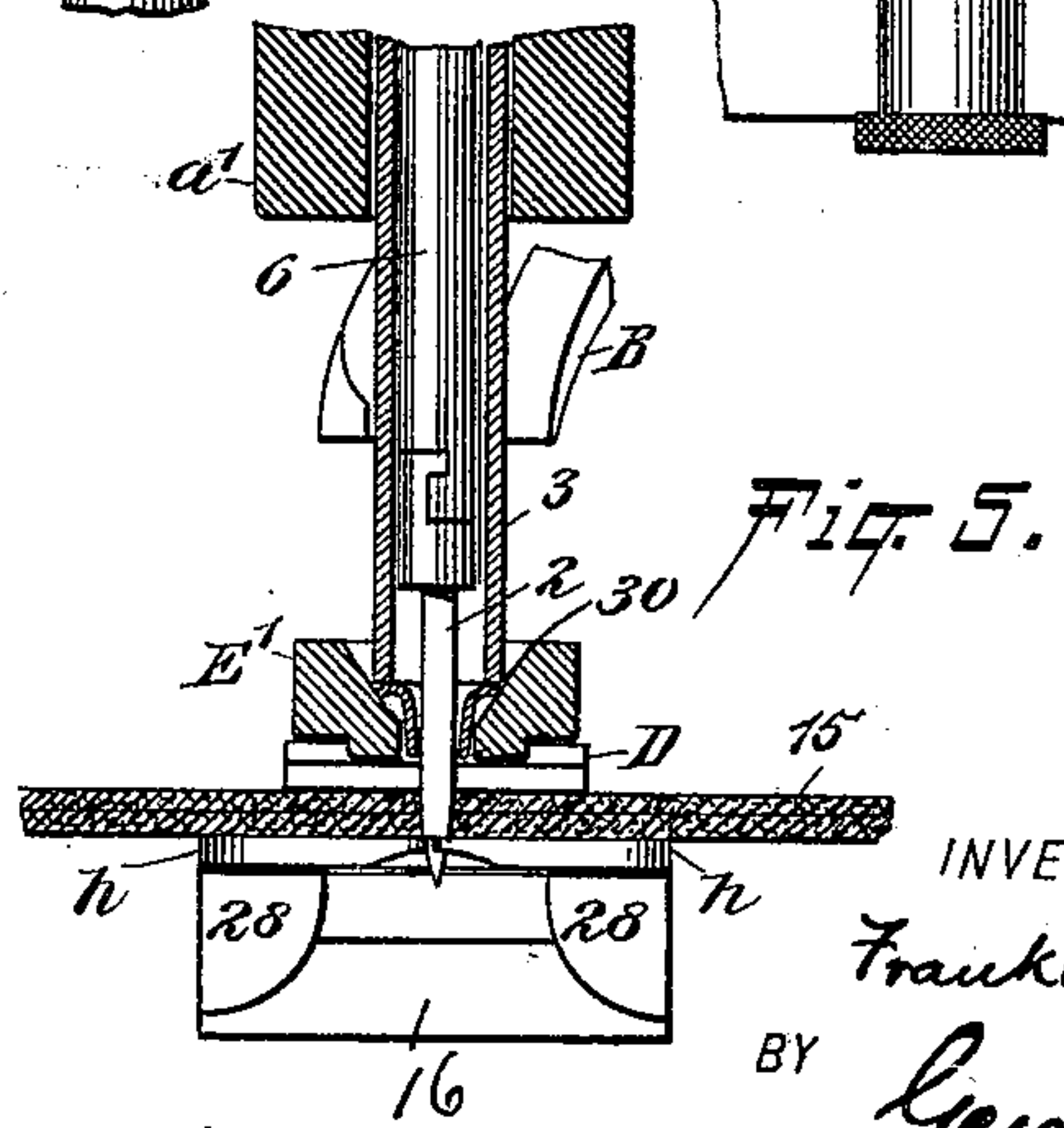
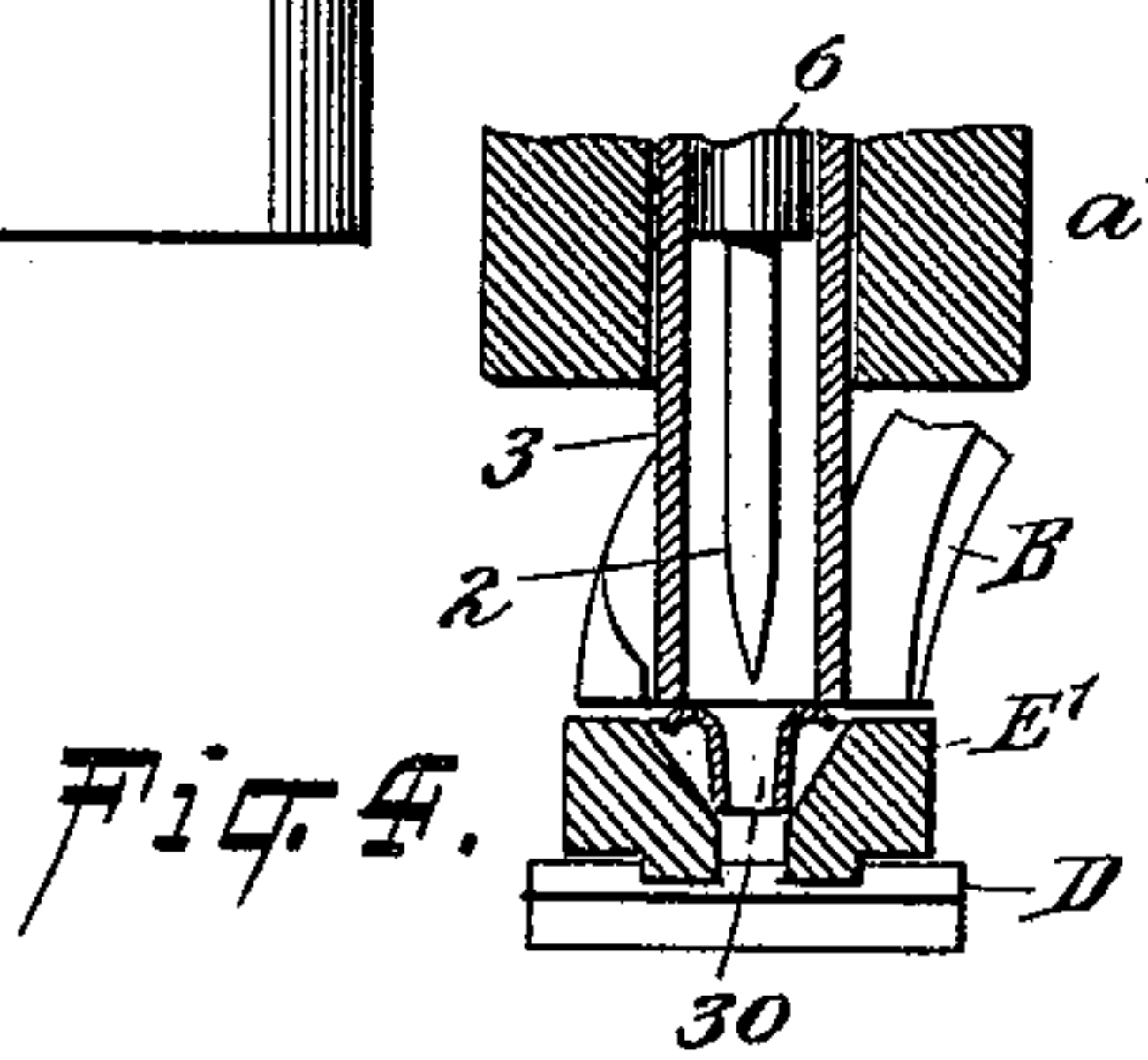
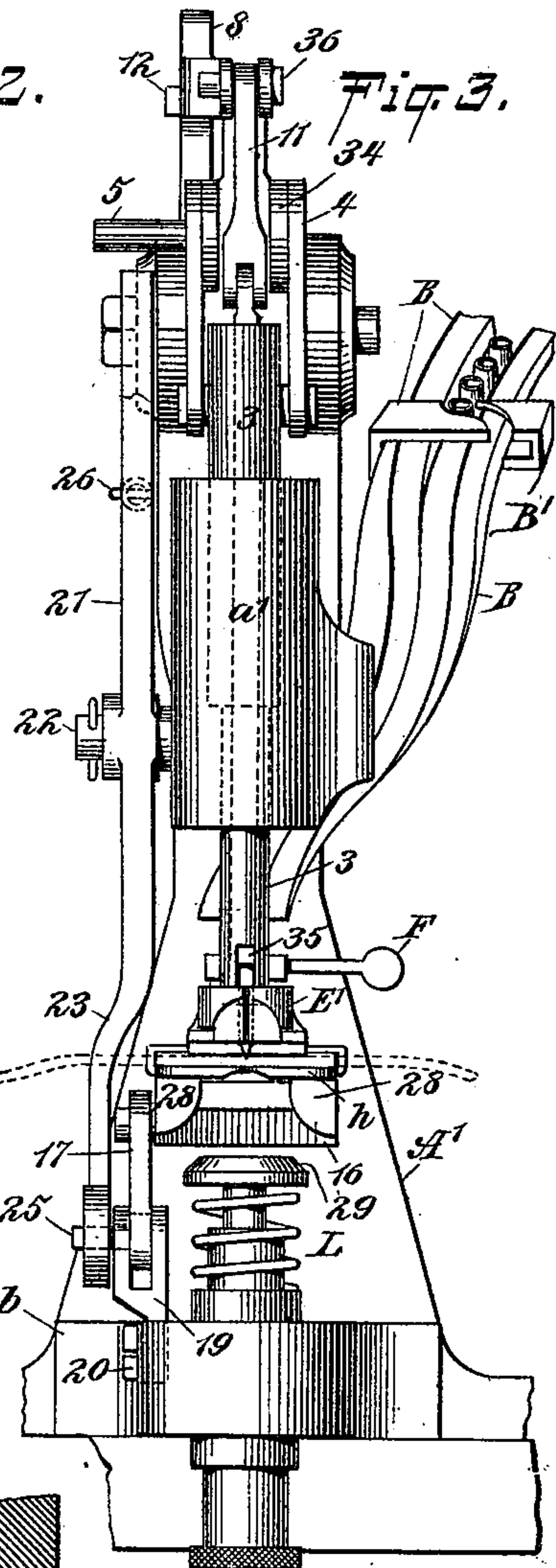
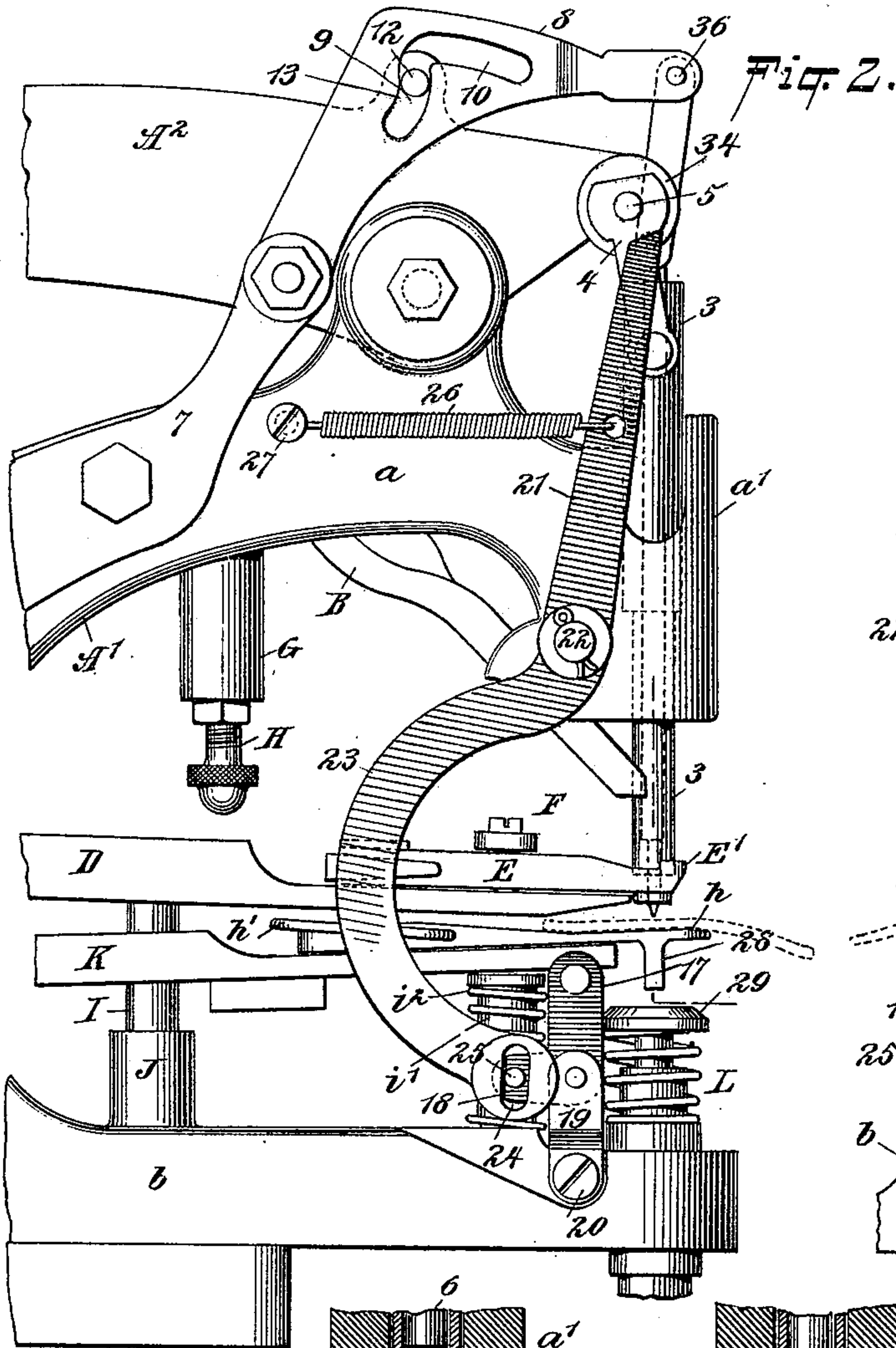
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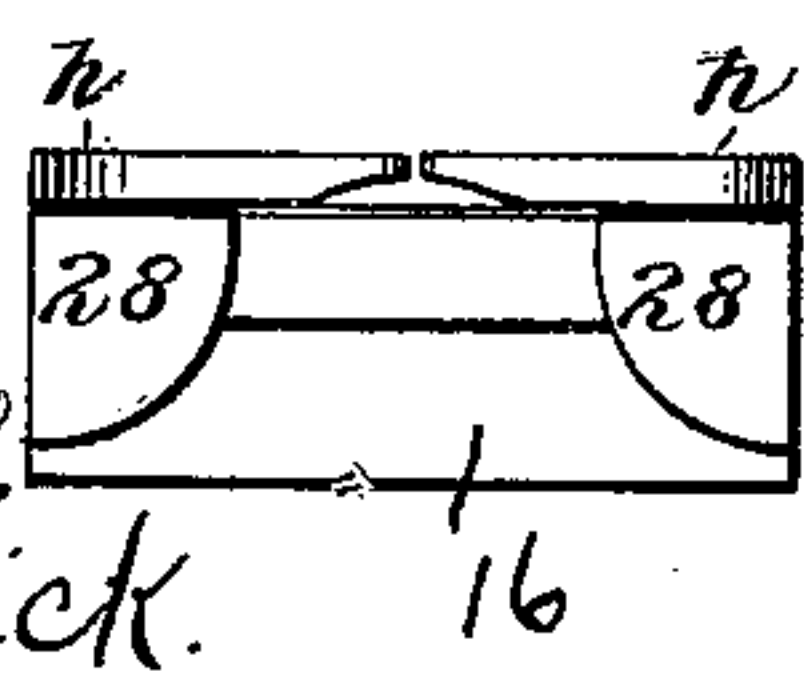
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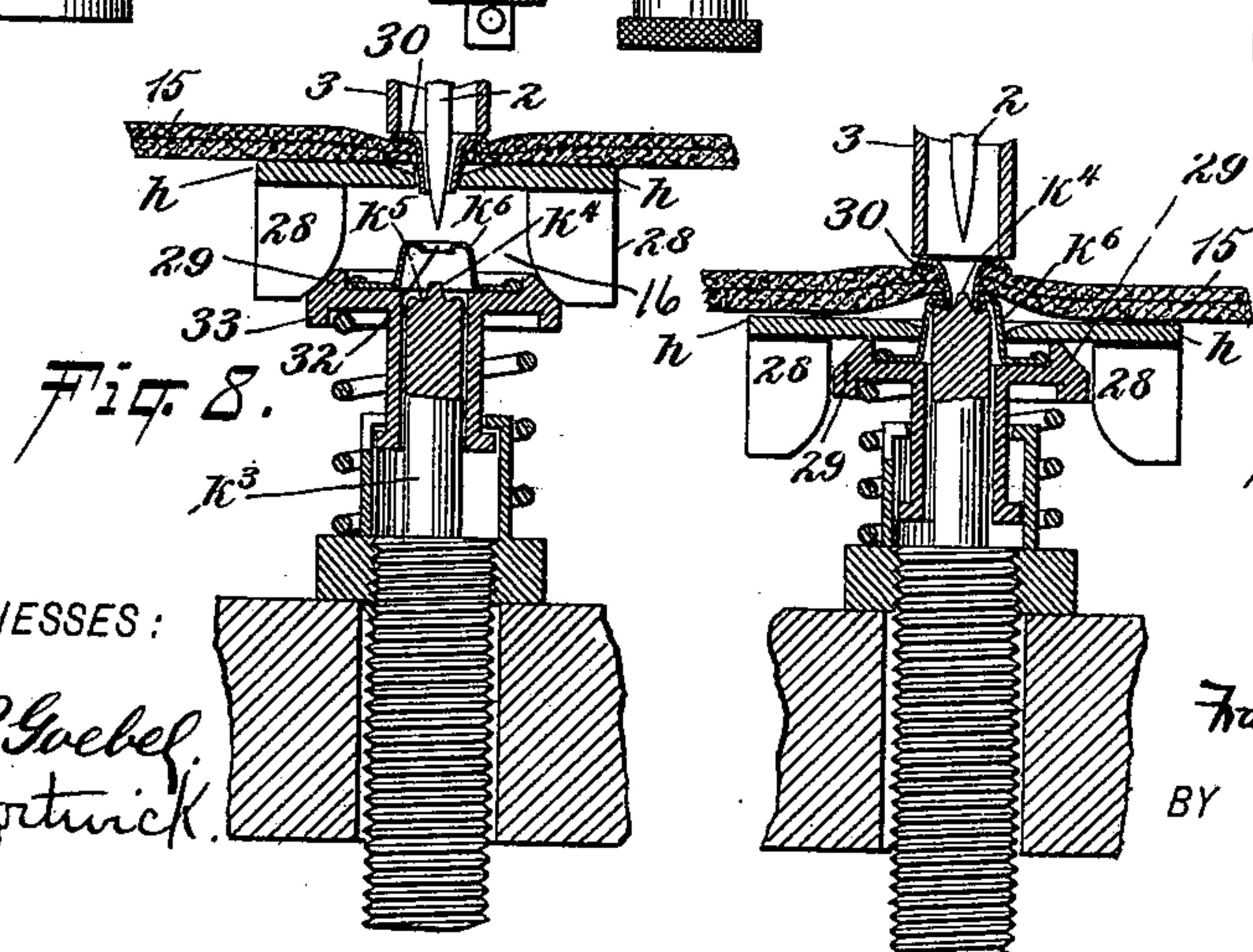
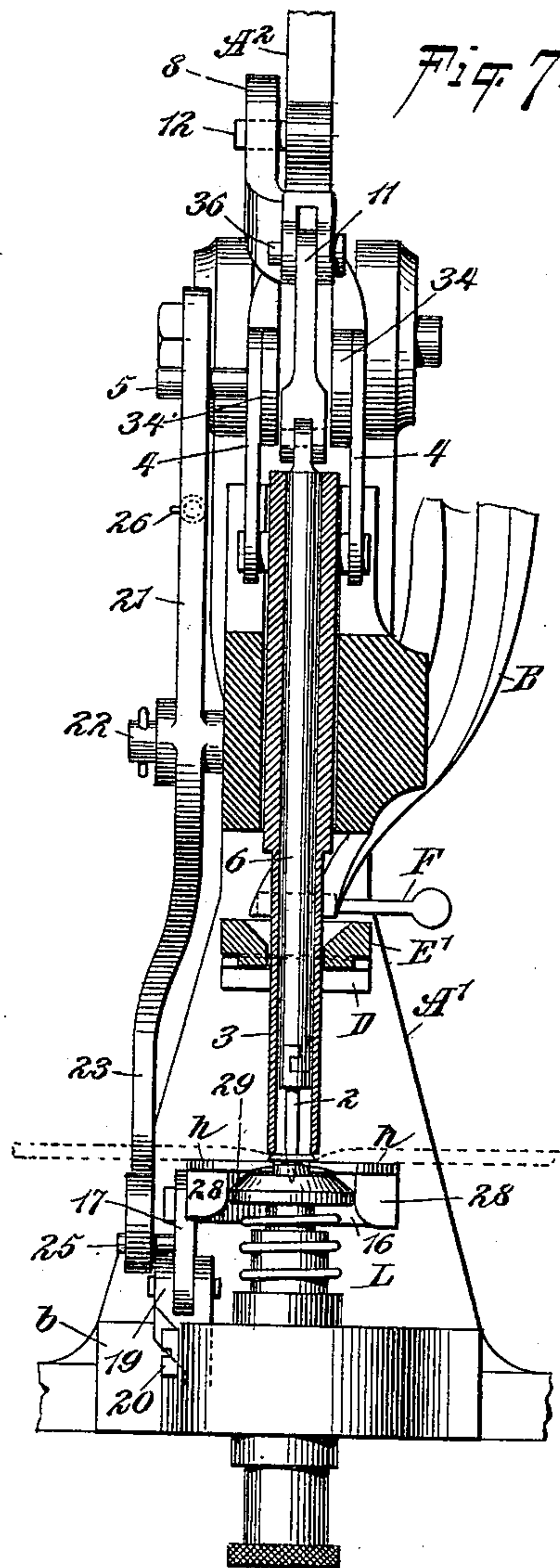
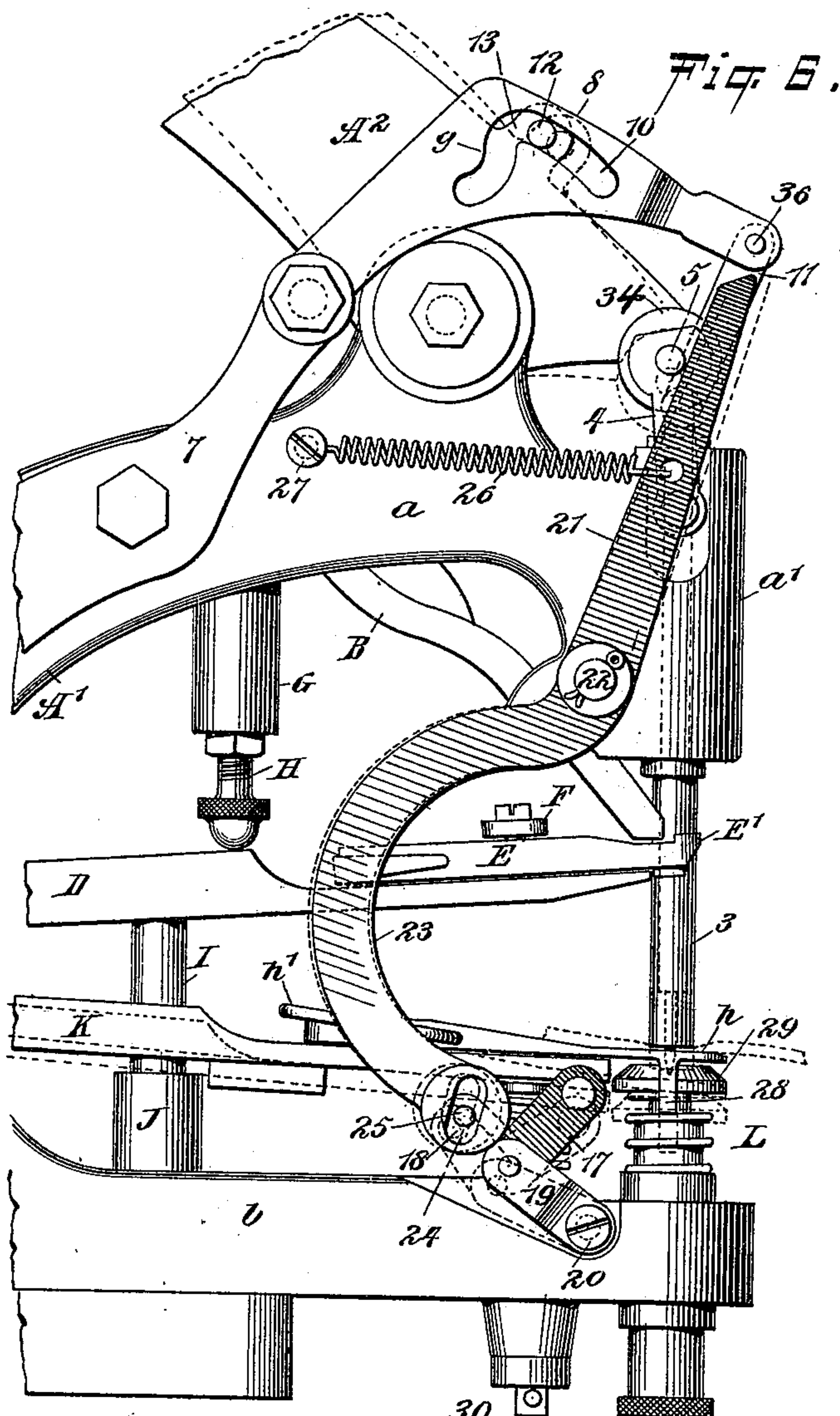
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

FRANKLIN R. WHITE, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE
PATENT BUTTON COMPANY, OF SAME PLACE.

BUTTON-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 646,063, dated March 27, 1900.

Application filed May 25, 1899. Serial No. 718,245. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN R. WHITE, a citizen of the United States, and a resident of Waterbury, in the county of New Haven and State of Connecticut, have made and invented certain new and useful Improvements in Button-Attaching Machines, of which the following is a specification.

My invention relates to an improvement in button-attaching machines, and more particularly to improvements upon machines like that shown in Letters Patent No. 450,828, dated April 21, 1891, and granted to myself and I. G. Platt, and Patent No. 495,753, dated April 18, 1893, granted to I. G. Platt, the former illustrating and describing a machine wherein a button is attached to the cloth or fabric by means of a single-pointed tack or rivet and the latter illustrating and describing a machine for attaching buttons to fabric by means of an open eyelet. In the present instance my improved machine contemplates the use of the disappearing needle of the latter patent, combined with the operating mechanism shown in the former patent, for the purpose of attaching the button to the cloth or fabric by means of an open eyelet, the gist of the invention lying in the mechanism for operating the needle and also in the construction and operation of the devices for holding or locking the support for the cloth while the needle is piercing the same and during the operation of forcing the eyelet through the cloth prior to upsetting or riveting said eyelet to the button, the support after having the eyelet forced through it being then carried down for the purpose of allowing said eyelet and button to be locked together.

A further object of my invention is to so construct and arrange the several parts of the machine that any style of button may be employed—that is, either a closed-face button, wherein the eyelet will be spread within the same, or an open-face button, wherein the eyelet will be flanged or turned over upon the depressed center or hub of the button.

With these and other ends in view my invention further consists in certain novel features of construction and combinations of parts, as will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective of my improved machine, the several parts being in their normal positions or adjustments. Fig. 2 is a side view of the riveting or upsetting mechanism, the several parts being shown in the relative positions occupied by them after the needle or bodkin has been partially lowered and passed through the eyelet. Fig. 3 is a front view of the mechanism shown in Fig. 2. Fig. 4 is a detached sectional view showing the hollow plunger and needle when lowered onto the eyelet located in the receiving-jaws. Fig. 5 is a similar view showing the hollow plunger and needle after said plunger has carried down said jaws and eyelet, the needle having passed through the eyelet and through the cloth or fabric. Fig. 6 is a side view of the upsetting or riveting mechanism, the several parts being shown in their relative positions after progressing one step farther in their operations than that illustrated in Fig. 5. Fig. 7 is a front view, partly in section, of the mechanism shown in Fig. 6, the several parts occupying the same positions. Fig. 8 is a detached front sectional view of a part of the mechanism shown in Fig. 6, this view showing the eyelet forced through the cloth or fabric and prior to being upset within the button. Fig. 9 is a similar view of the same mechanism, showing the button and eyelet locked together and the parts in their positions just prior to returning to their normal positions illustrated in Fig. 1.

As in the patents before referred to, my present machine is constructed with a rotating hopper A, into which the open eyelets are fed and from which they are led to the attaching mechanism by means of a twisted chute B, said eyelets escaping from the hopper into the chute, with the head or flanged end down, and from which chute they are fed into the receiving-jaws, with the flanged end up, suitable mechanism being employed for revolving the hopper and for operating the ordinary form or construction of cut-off B'. The machine is constructed, as in the former instances mentioned, with a main frame A', consisting of a curved supporting arm a and the base or bed plate b, the supporting arm or bracket a having pivoted or

attached thereto the operating-lever A^2 , said supporting-arm having formed on its outer end the barrel a' , the purpose and function of which will be hereinafter explained.

5 In the frame A' is formed a slot C, in which is pivoted the lever D, provided on its outer end with the spring-actuated receiving-jaws E, the forward ends of which are shaped to receive and contain an eyelet, the usual means
10 F being employed for separating the jaws E for the purpose of releasing the eyelet when desired. The frame is also provided with a depending lug or projection G, in which is threaded a screw H for the purpose of limiting
15 the upward movement of the lever D, which latter is retained in its normal position by means of the post I, operated by a spring (not shown) located within the receptacle J, formed on the bed-plate b of the machine. In the
20 slot C is also pivoted a lower or second horizontal arm K, widened and flattened at its forward end to form a support or base for the plates h h , each pivoted at its rear end to said arm K and held in its proper relative position
25 by means of a spring h' , the forward ends of said plates being arranged to separate and being extended out beyond the forward end of the arm K and below the cup E' , formed on the forward ends of the jaws E.
30 The spring-actuated plates h are provided with an opening g in their forward ends to permit of the entrance of the eyelet, as hereinafter described, this opening being formed in the same vertical line with the opening in the cup E' . The arm K is held in its normal
35 or substantially horizontal position by means of the sliding rod or bolt i' , on the upper end of which said arm rests and around which a spring i^2 is coiled, the lower end of the spring
40 impinging against the bed-plate of the machine and the upper end against a flange formed on the upper end of the post i' , the tendency of this spring being to keep the post raised and the arm K in its elevated position.
45 The construction and arrangement of the above-mentioned parts are fully shown and described in the said Letters Patent No. 450,828, many of which machines have been built and are now in actual operation and are
50 therefore familiar to those skilled in the art. Further detail description of the above is unnecessary.

In my present machine I have also employed the same mechanism L for upsetting the button-fastener within the button, excepting that
55 in the former case—that is, in Patent No. 450,828—the upper end of the anvil is provided with a recess or depression for overturning the point of a tack, whereas the anvil
60 k^3 in the present instance is provided with an extension k^4 and a groove k^5 , as illustrated in Fig. 8, for overturning or flanging an eyelet within the depressed center of the button
65 k^6 , as illustrated in Fig. 9. It is also true of the present device that the same levers or devices are used for operating the machine by foot or by power, as described in the afore-

said patent. For the purpose of operating the needle or bodkin 2 I provide a hollow plunger 3, the lower portion of which is somewhat reduced in diameter, the upper portion thereof reciprocating within the barrel a' , formed on the forward end of the bracket a . The upper end of the plunger 3 is coupled to the lever A^2 by means of the links 4 4, the
75 pin or bolt securing one of the links to the lever having a pin or lug 5 projecting therefrom, the purpose or function of which will be hereinafter described. When the parts are in their normal positions, as illustrated
80 in Fig. 1, the upper end of the hollow plunger 3 projects through and extends above the barrel a' , the lower end projecting through and beyond the lower end of said barrel and above the cup E' , formed on the jaws E.
85 Within the hollow plunger 3 is located a bar or rod 6, to the lower end of which is removably secured the needle or bodkin 2, said needle-rod 6 practically forming an extended
90 body of said needle when connected with or to the latter, said needle, however, being made detachable or removable for the purpose of allowing a new one to be substituted in case of injury thereto without the necessity of inserting an entire new rod 6, as would
95 necessarily be the case should the rod 6 and needle 2 be made integral.

To the curved arm or bracket of the machine is bolted or otherwise secured an arm or bracket 7, to the upper reduced end of
100 which is pivotally connected the cam-lever 8, provided with a cam-slot consisting practically of a vertical portion 9 and horizontal portion 10, the opposite end of said cam-lever being pivotally secured to one end of the link
105 11, the latter in its turn being pivoted at its opposite end to the upper end of the rod 6. Through the cam-slot in the lever 8 projects a pin 12, formed on or secured to a small projection or extension 13 on the lever A^2 , the
110 movements of said lever, by means of the pin 12 operating in the cam-slot, controlling the movements of the cam-lever 8 and needle and needle-rod—that is, when the forward end of the lever A^2 is partially lowered, as illustrated in Fig. 2, the hollow plunger will also be
115 lowered into the cup E' and upon the flanged end of the eyelet which has been received in said cup from the twisted chute B, as illustrated in Fig. 4. At the same time the pin 12,
120 secured to said lever A^2 , rides up the portion 9 of the cam-slot, slightly lowering the cam-lever 8, and thereby forcing downwardly the needle and needle-rod through the hollow plunger 3, the movements of the needle and needle-rod,
125 however, being very slight until the plunger 3 rests upon the eyelet within the cup E' , the relative movements of the hollow plunger and needle being such that when the lower end of the plunger descends upon the eyelet
130 the point of the needle will start through the eyelet, as illustrated in Fig. 4. Upon further lowering the forward end of the operating-lever A^2 the cam-lever 8 is further depressed,

the needle being thereupon projected through the lower end of the hollow plunger and into the eyelet. Upon continuing downwardly, the plunger carries the eyelet and jaws E with it until the arm D strikes the plates *h*, whereupon the jaws will be opened by the descending hollow plunger 3 and be forced up by spring-post I to their position, as illustrated in Fig. 6. When the plunger 3 and jaws E have arrived at these positions, the needle, by reason of the cam-lever, has passed through the eyelet and penetrated the cloth 15, as illustrated in Fig. 5, the point of the needle having passed through the opening *g*, formed in the plate *h*. Upon further descending, the plunger resting upon the eyelet will force the latter through the opening in the cloth made by the needle or bodkin 2, the positions of the plunger, needle, eyelet, and cloth being illustrated in Fig. 8.

In the case of a machine constructed to attach a button by means of a pointed tack or rivet—as, for example, like that described and illustrated in said Letters Patent numbered 450,828—such tack or pointed rivet is easily forced through the cloth or fabric without further support for the plates *h* than the spring-actuated post *i* during the operation of piercing said fabric; but in the case of machines operating upon eyelets which cannot pierce their own way I have found it necessary to hold said plates rigid until the cloth resting thereon is pierced and the eyelet forced through the opening. To accomplish this end, I have provided a support below the arm K, which carries the plates *h*, which support after the eyelet has been forced through the cloth is tripped by the operating-lever in order that said plates, the fabric, and inserted eyelet may be carried down to the button-die employed for locking said eyelet to the button. This mechanism consists of a bar or plate 16, secured to the under side of the arm K, and to one end of which bar is pivotally secured a bell-crank lever consisting of the upright arm 17 and the horizontal arm 18, said bell-crank being pivoted at its angle to one end of the link 19, the opposite end of the latter being pivoted to the bed-plate, as shown at 20, the normal positions of these parts being illustrated in Figs. 1 and 2, the arm 17 and link 19 being in vertical alinement. So long as the bell-crank and link 19 are thus held it will be understood that the arm K, with the plates *h*, which support the fabric, are locked in their substantially-horizontal position and prevented from being lowered when any downward pressure is exerted thereon. In order to retain the parts in these positions, a lever 21 is pivoted to the forward end of the bracket or arm A', as shown at 22, the lower end of the lever 23 being curved or bowed in order to allow the cloth or fabric to be laid upon the plates *h* in such a way that the buttons may be secured thereto at a distance from the edge. The extreme lower end of this lever 21 is provided with a

slot 24, in which moves a pin or lug 25, formed upon the end of the horizontal arm 18 of the bell-crank, a spring 26 being provided for the purpose of retaining the lever in its normal position, as shown in Fig. 1, and for retaining the lever 17 and link 19 in their upright position, one end of said spring being secured to the lever 21 and the opposite end to a screw or lug 27 on the bracket or arm A'. After the hollow plunger 3 has been lowered and the needle or bodkin 2 has pierced the cloth or fabric, as hereinbefore described and as illustrated in Fig. 5, said hollow plunger forces the eyelet through the opening in the fabric made by said bodkin, during which time the arm K, with its supporting-plates *h*, has been locked or held stationary. Upon the further descent of the forward end of the operating-lever A² the pin 12 travels in the portion 10 of the cam-slot, as illustrated in Fig. 6, the consequence being that the needle or bodkin remains stationary. During this operation the hollow plunger is lowered, carrying with it the arm K and plates *h*, upon which rests the fabric, having the eyelet inserted therein, said arm K and plates *h* being permitted to be lowered by the plunger by reason of the pin 5 striking the upper beveled end of the lever 21 and forcing the upper end thereof outwardly, as illustrated in Fig. 6, and the lower end inwardly, the effect of this tripping being to force backwardly the pivoted ends of the lever 17 and link 19, which, as will be understood, practically forms a knuckle-joint. This action continues until the lugs 28, formed on the under sides of the plates *h*, strike the beveled edge 29 of the button-die L, which, as will be understood by those skilled in the art, cause the said plates *h* to open or separate, as illustrated in Fig. 9, thereby allowing the hollow plunger 3 to force the eyelet 30 through the opening in the bottom of the button 32 previously placed upon the button-die 33. Upon the further descent of the plunger 3 the button-die 33, as is well understood, recedes until the eyelet comes in contact with the anvil *k*³, which upsets the edge of the eyelet over and upon the hub of the button, as illustrated in Fig. 9, during which time, by reason of the pin 12 traveling in the portion 10 of the cam-slot, the needle or bodkin remains stationary to prevent the point of said bodkin from coming in contact with the anvil and injuring one or the other. After the upsetting operation the forward end of the lever A² rises, drawing upwardly the hollow plunger 3 and the needle and needle-bar until they again assume the positions as shown in Fig. 1, the arm K and its plates *h* returning to the horizontal position, the spring 26 at the same time returning the lever 21 to its normal position and locking said arm K in place until the next operation of the machine.

In order to permit the needle-bar 6 and the link 11 to occupy the positions as illustrated in Figs. 2 and 3, I fork or bifurcate the forward end of the lever A², the link 11 when in

its vertical position and during its vertical movement operating between the ends 34 of said lever A², as illustrated in Figs. 3 and 7.

Those operating with machines of this kind or character have found it necessary to frequently clean the hollow plunger of lint which accumulates therein and to some extent interferes with the perfect working of the needle-bar 6. It will be seen that in my machine it is only necessary to remove the pin 36, which connects the link 11 with the cam-lever 8, in order to remove the needle-bar, with its attached bodkin, whereupon access can be secured to the hollow plunger for the purpose of cleaning the same of any foreign substances which may find their way into said plunger. In order also to prevent the accumulation of lint in said hollow plunger, I form in the lower end thereof one or more slots 35, through which the lint or other substance is forced out of the hollow plunger by the descent of the needle-bar 6.

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

1. In a machine for attaching buttons, the combination with a main frame or casting, of an operating-lever pivoted thereto, a hollow plunger linked to the forward end of said lever, a needle-bar reciprocating within said hollow plunger and having a needle or bodkin formed on or secured to the lower end thereof, a second lever provided with a cam-slot and pivoted at one end to said frame or casting and at its opposite end linked to said needle-bar, said second lever being operated by said operating-lever and controlling the movement of said needle, substantially as described.

2. In a machine for attaching buttons, the combination with a main frame or casting, of an operating-lever pivoted to said frame, a hollow plunger reciprocating within the forward end of said frame, and connected with the forward end of said operating-lever, a needle-bar and needle reciprocating within said hollow plunger, a second lever provided with a cam-slot and pivoted at one end to said main frame and at its opposite end linked to said needle-bar, said second lever being operated by said operating-lever and controlling the movement of said needle, and suitable mechanism for supporting the cloth during the upsetting of the fastener, substantially as described.

3. The combination with a main frame, of an operating-lever pivoted thereto, a hollow plunger reciprocating in said frame and connected with said lever, a needle-bar having a

needle secured to one end thereof and reciprocating within said hollow plunger, a second lever provided with a cam-slot and pivoted to said frame and to said needle-bar, and a pin or lug on said operating-lever and traveling in the cam-slot in said lever for controlling the movement of the needle, substantially as described.

4. In a button-attaching machine, the combination with a frame and operating-lever pivoted thereto, of a support for the cloth, levers pivoted to said support and frame and to each other for locking said support in its horizontal position, and the lever 21 connected with said former levers and adapted to engage with and be tripped by said operating-lever, whereby said locking-levers are lowered and said support permitted also to be lowered after the cloth thereon has been punctured, substantially as described.

5. In a button-attaching machine, the combination with a frame and operating-lever pivoted thereto, of a movable support for the cloth or fabric pivoted to said frame, the links 17, 18 and 19 connected with said frame and support and arranged substantially as described for locking said support in its horizontal position, and the lever 21 pivoted to said frame and having its lower end connected with said links, and its upper end free, said upper end engaging with said operating-lever, and tripped thereby for the purpose of unlocking said support and permitting the same to be lowered, substantially as described.

6. In a machine of the character described, the combination with a main frame and an operating-lever pivoted thereto, of a hollow plunger pivoted to said operating-lever and reciprocating within said main frame, a needle or bodkin reciprocating within said hollow plunger, a lever pivoted to said main frame and connected with said needle or bodkin for operating the latter, a movable support for the cloth or fabric pivoted to said main frame, links connected with said frame and support for locking the latter in a horizontal position during the puncturing of said cloth by said needle or bodkin, and a lever connected with said links and with said frame, and adapted to be tripped by said operating-lever, whereby said links are lowered, and the support released, substantially as described.

Signed at Waterbury, in the county of New Haven and State of Connecticut, this 20th day of May, A. D. 1899.

FRANKLIN R. WHITE.

Witnesses:

JAY H. HART,
C. M. PLATT.