

(No Model.)

G. A. MOSHER & A. W. HAM.

3 Sheets—Sheet 1.

BUTTON SETTING MACHINE.

No. 323,717.

Patented Aug. 4, 1885.

Fig. 1.

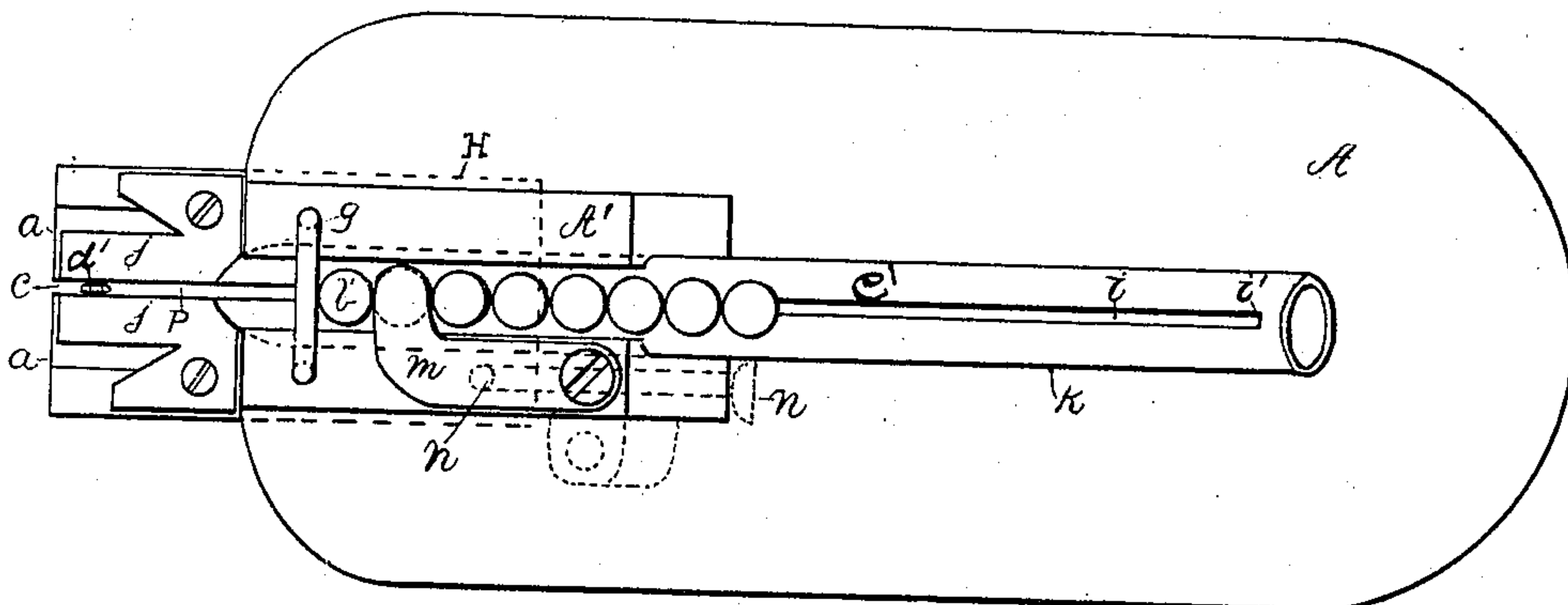
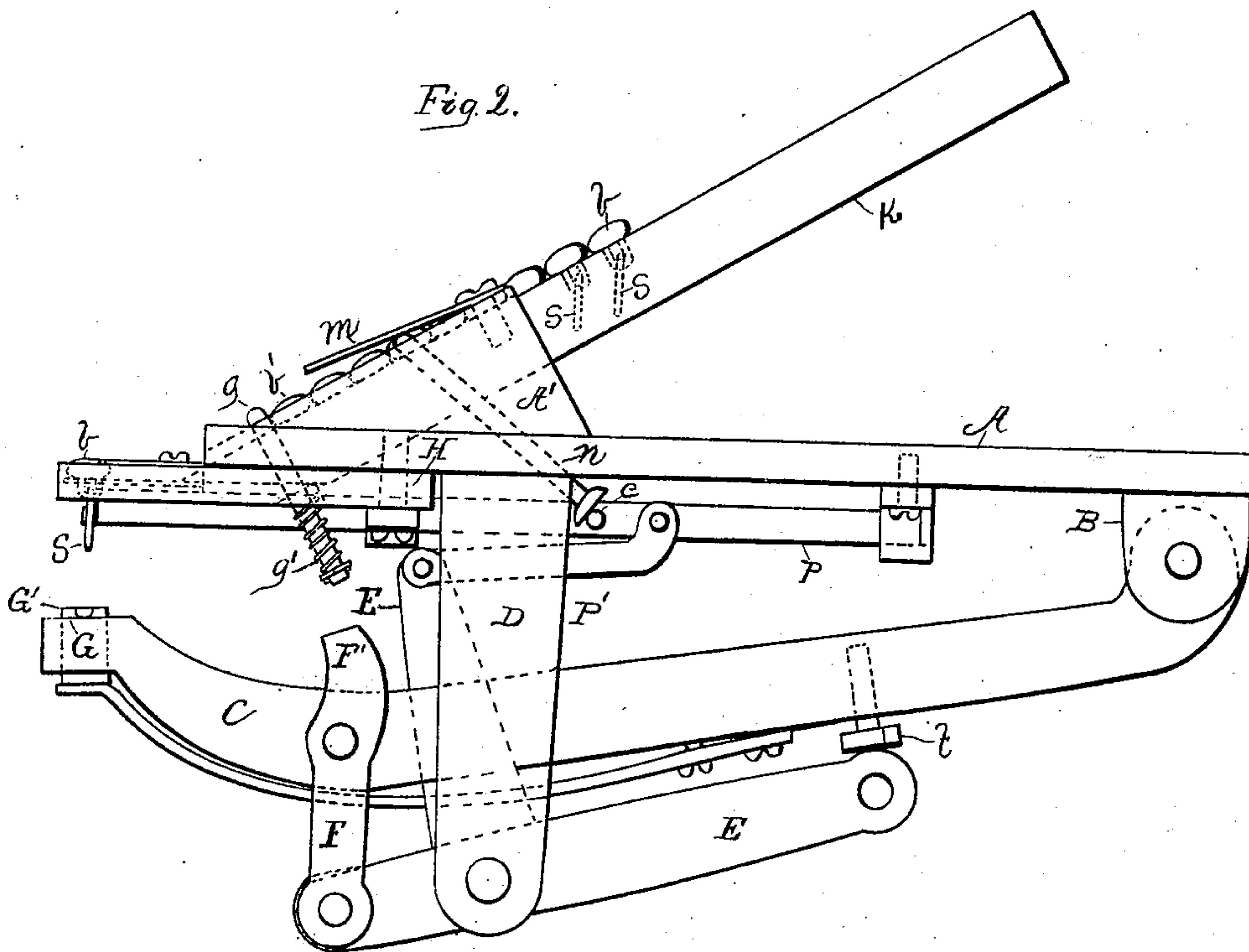


Fig. 2.



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(No Model.)

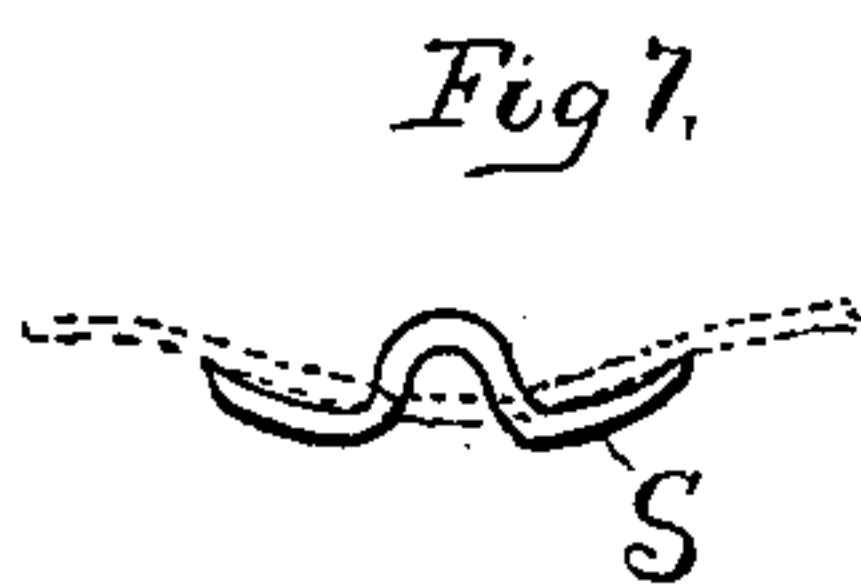
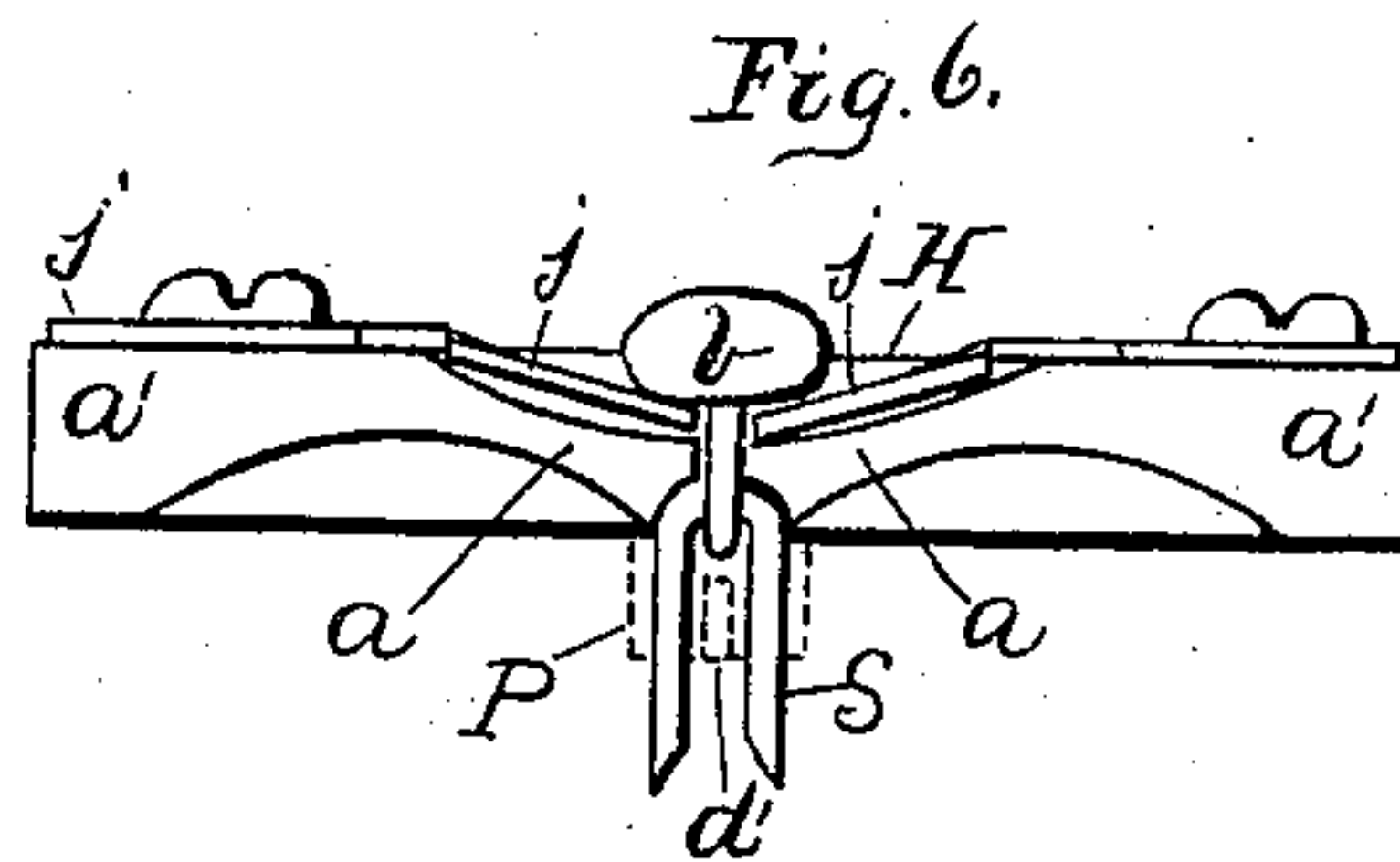
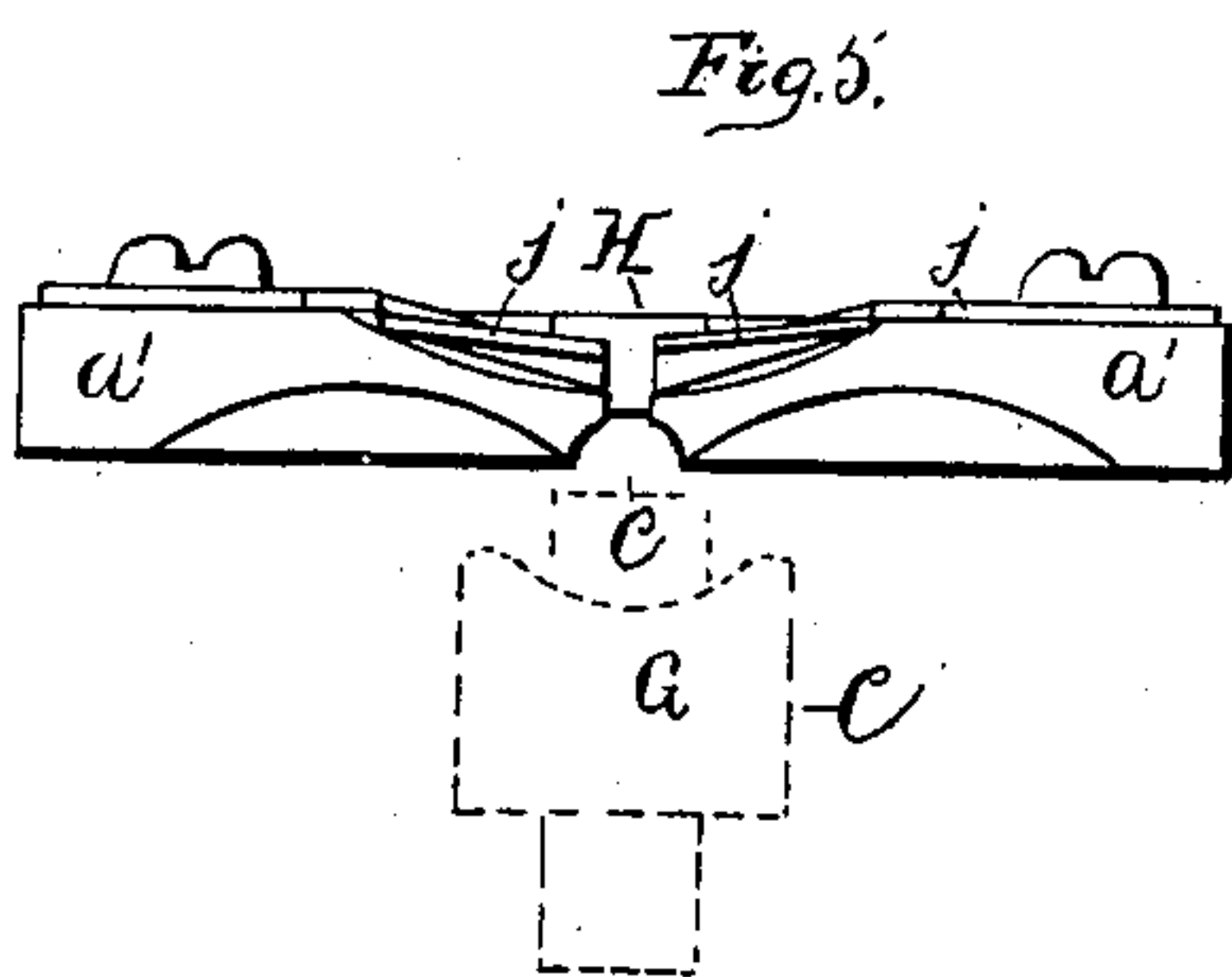
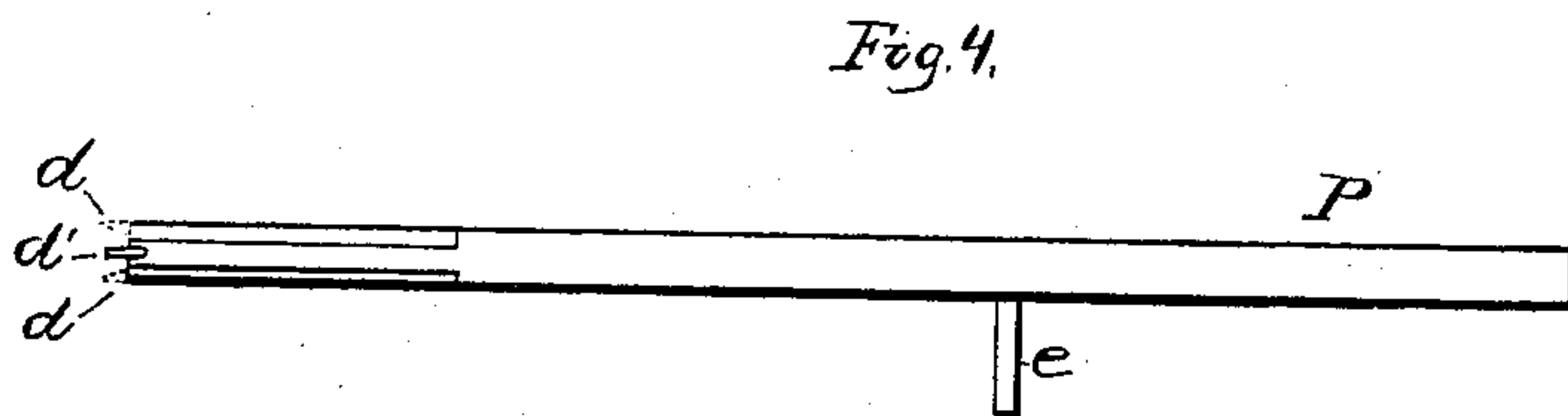
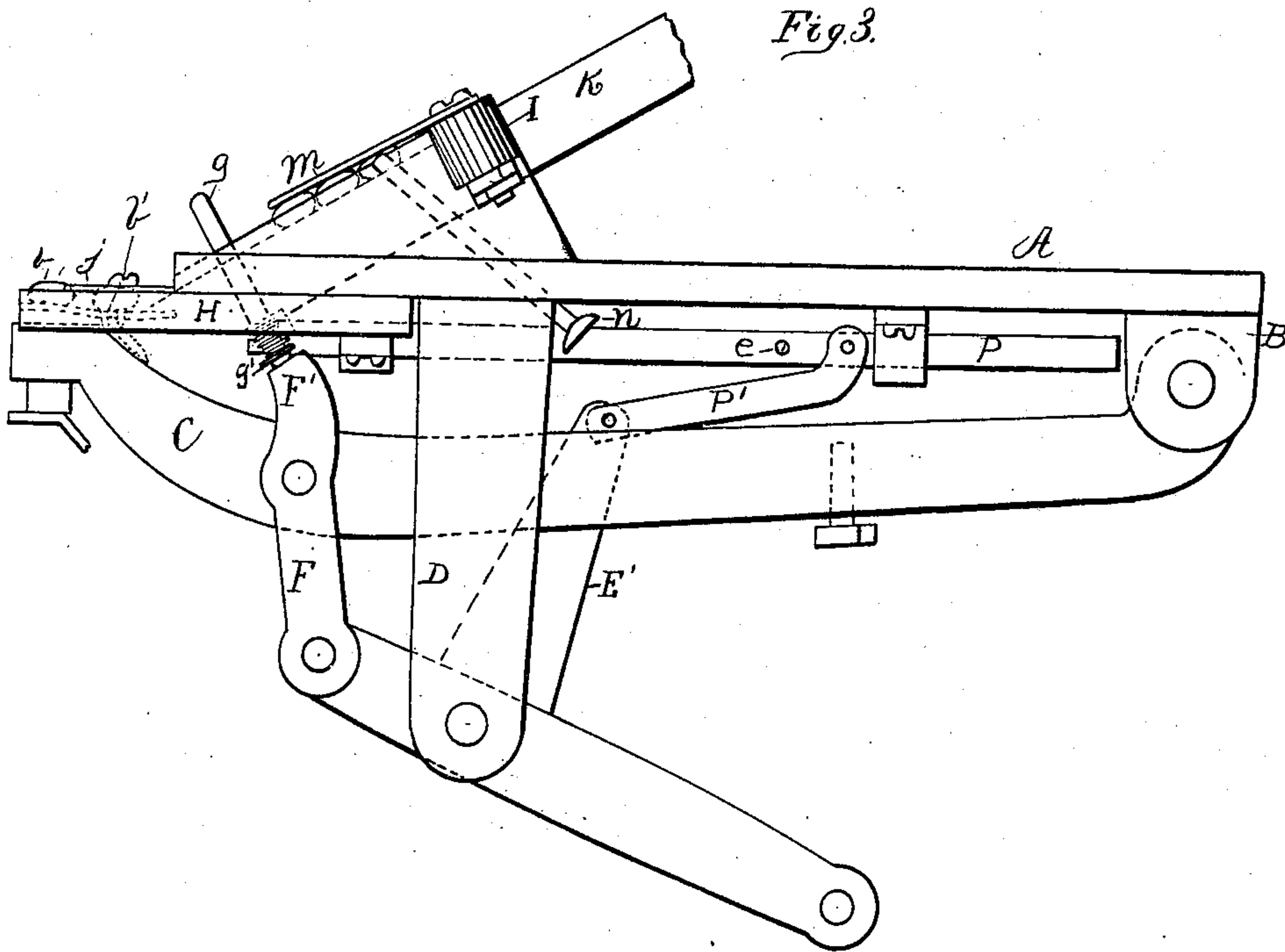
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3 Sheets—Sheet 3.

BUTTON SETTING MACHINE.

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Fig. 8

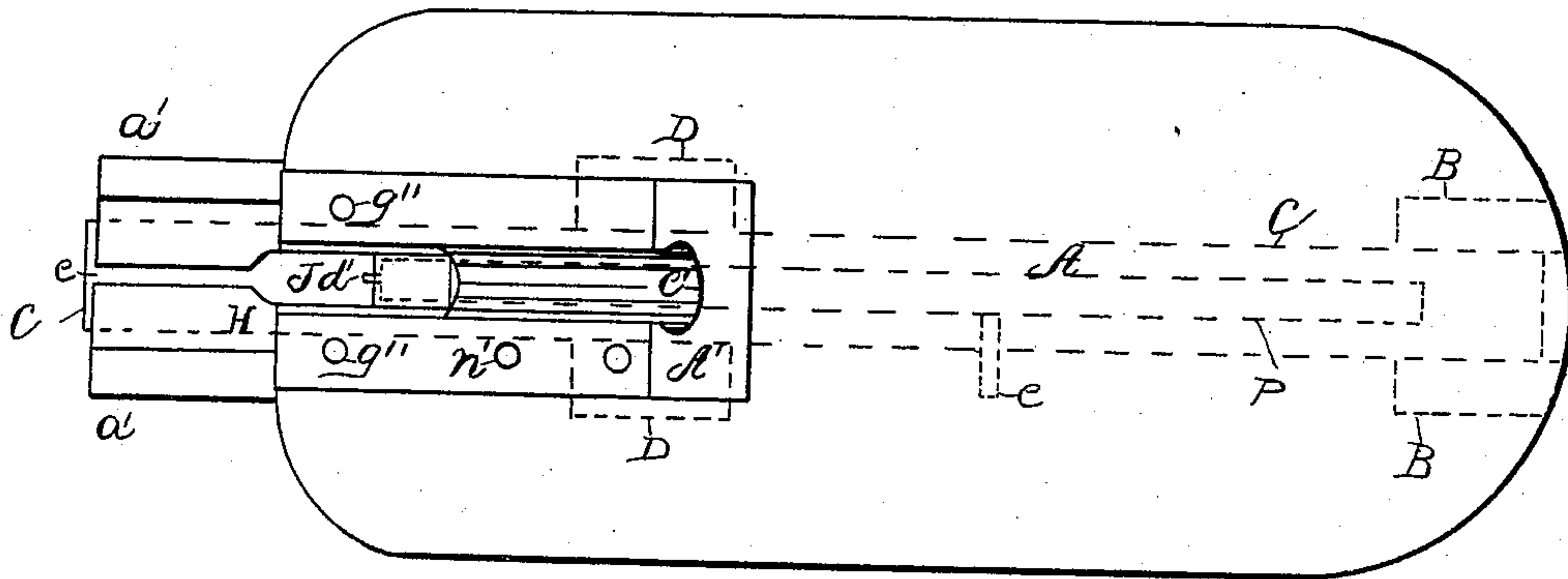


Fig. 9.

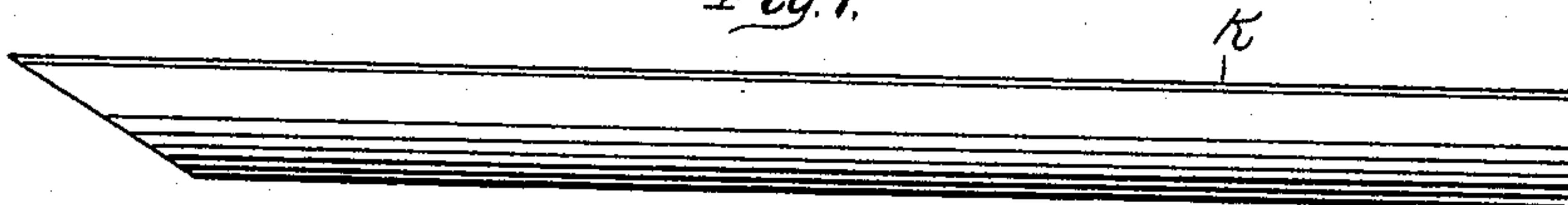


Fig. 10.

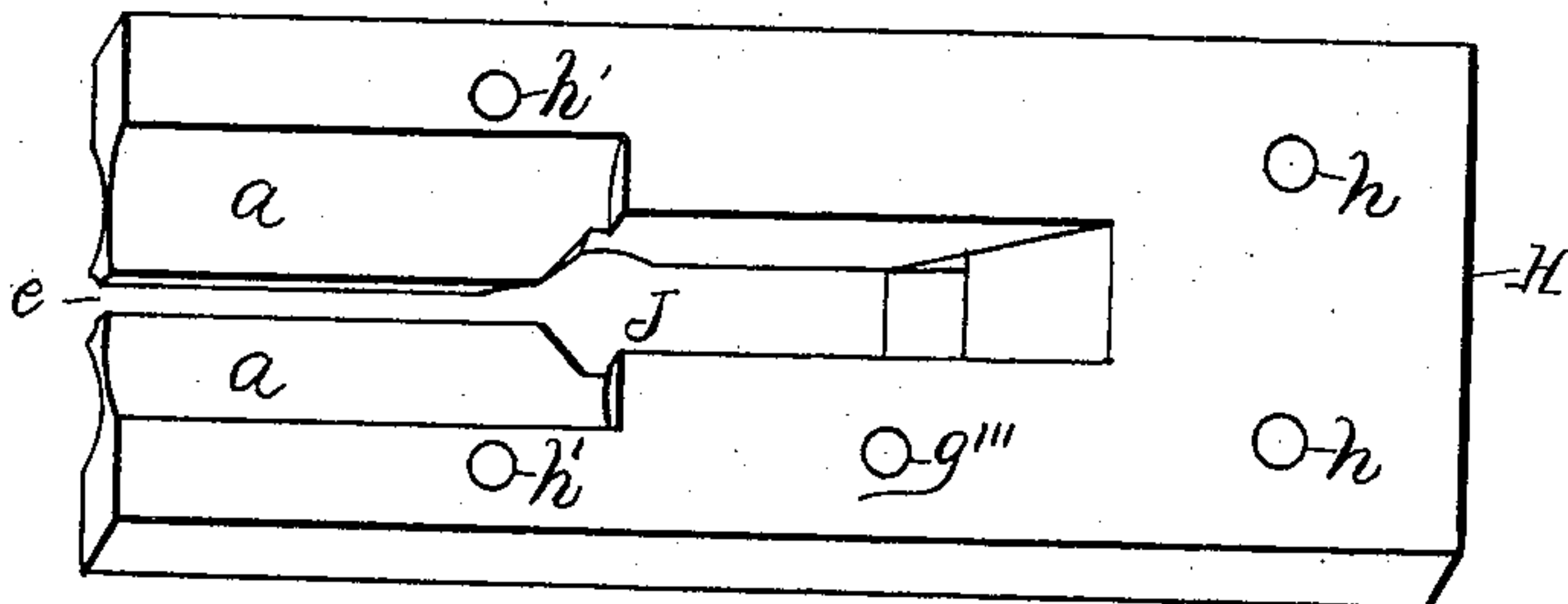
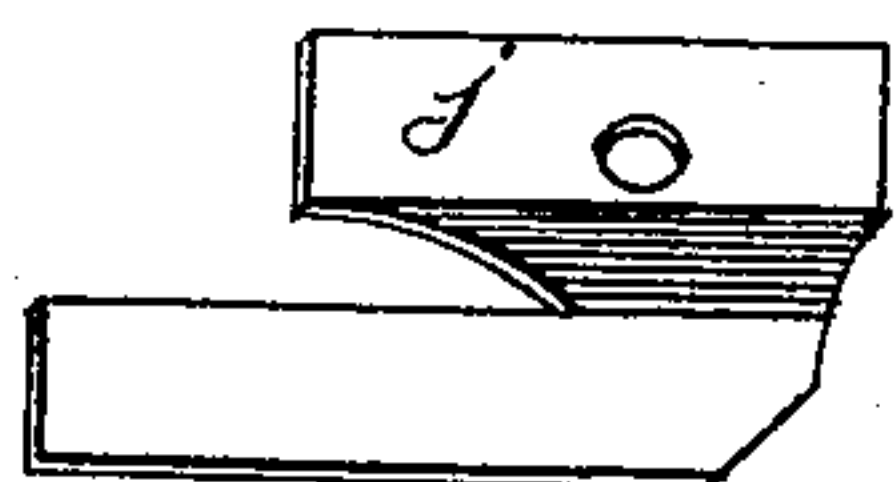


Fig. 11.



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# UNITED STATES PATENT OFFICE.

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## BUTTON-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 323,717, dated August 4, 1885.

Application filed January 19, 1885. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE A. MOSHER and ALBERT W. HAM, residents of the city of Troy, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Button-Setting Machines; and we do hereby declare that the following is a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings and letters of reference marked thereon.

Similar letters refer to similar parts in the several figures therein.

Our invention relates to improvements in button-setting machines in which the buttons and fasteners are held by one member or slotted jaw while the fastener is forced through the fabric or leather and clinched or set thereon by a suitable die in the other member or jaw.

The objects of our invention are, first, as an improvement upon the construction shown and described in United States Letters Patent No. 309,080, issued to George A. Mosher, December 9, 1884, for improvements in button-setting machines, to provide means for automatically and positively forcing the buttons, with thin pendent staples, along the slot of the slotted member, to the proper position therein opposite the setting-dies in the other member, to be forced through and set upon fabric inserted between said members; second, to compel the pendent staples to hang vertically in said position; third, to provide means for automatically delivering buttons and thin pendent staples from a supply-chute to the slotted member singly, and preventing the accumulation of too many buttons in said member.

Our invention consists, first, in providing a reciprocating rod or plunger adapted to travel toward and from the open end of said slotted member, the upper portion of the head of the plunger traveling along the lower edge of the slot in said member; second, in providing said supply-chute with a spring-controlled stop operated by a trip upon said plunger; third, in providing said supply-chute with a spring-controlled button-stop operated by the lower jaw or member; fourth, in provid-

ing said plunger with a face projection or projections adapted to force the pendent staples into a vertical position.

Figure 1 of the drawings is a top plan view of the machine. Fig. 2 is a side elevation of same, showing a button and pendent fastener inserted in the slotted member, ready to be attached and set upon a shoe or other article. Fig. 3 is a side elevation of same, showing the relative position of the parts just as the operation of attaching the button and setting the staple is completed. Fig. 4 is a plan view of the plunger. Fig. 5 is an end elevation of the steel plate with button-holding springs attached and in position to receive a button and fastener. Fig. 6 is an end elevation of same with button and pendent fastener inserted. Fig. 7 is a side elevation, showing the shape of a fastener after it is set upon fabric or leather. Fig. 8 is a top plan view of the base-plate with all attachments except slotted plate removed. Fig. 9 is a side elevation of a supply-chute for buttons and pendent fasteners. Fig. 10 is a view in perspective of a steel plate which is attached to the bed-plate of the machine to form the upper slotted or button-holding member. Fig. 11 is a view in perspective of one of the button-holding springs. Figs. 5, 6, 7, 10, and 11 are shown upon an enlarged scale.

A is a bed-plate adapted to rest in a suitable case or be fixed upon a bench or other support, and is provided with a slotted steel plate, H, secured thereto, to form the slotted button-holding member. The plate is also provided with the ears B, upon which is fulcrumed one end of the lower member or jaw, C, while the other end is provided with the staple-setting dies G and G'. The member C works between and is guided by the downwardly-projecting arms D, upon the lower ends of which is pivoted the operating-lever E. The lever is connected at one end with member C by links F, one on each side, and adapted to be connected, at the other end with a treadle or other motor.

The plate A is also provided with a block, A', which may be cast integral with the plate. The block is provided with an aperture, C', extending from the bottom of the plate at its end contiguous to plate H, and in line with its slot c backward and upward, as shown by



dotted lines in Fig. 2, of a shape and size adapted to receive one end of chute K, which is supported thereby in the position shown in Figs. 1 and 2. The chute is provided with a longitudinal slot, *i*, adapted to hold buttons and thin pendent staples, as shown, the eyes of the buttons resting in the slot *i*. The chute, which is provided with stop *i'* at one end, is first filled as full as desired with buttons and staples by inserting them at the open end of the slot, and then the chute is inserted in the opening C' to the position shown in Figs. 1 and 2, the slots *i* and *c* being coincident and forming a continuation the one of the other. The buttons and staples are prevented from gravitating from the chute into slot *c* by the stops *g* and *m*.

The slotted member H is provided with an aperture, J, opening into slot *c*, through which the staples descend to the lower side of the prongs *a a* of the slotted member, when the buttons released by stop *g* descend by gravity upon the prongs, the eyes of the buttons traveling in the slots *i* and *c*, by which the buttons and pendent staples are prevented from escaping or rotating.

The method of introducing the buttons and pendent staples thus far employed is very similar to that described in the Patent No. 309,080, before referred to; but if gravity alone is relied upon to force the buttons and pendent staples to their proper position in the slotted member a very careful adjustment of the several parts is required, and with the best possible mechanism some button-eyes are encountered of such shape and size as to prevent the button and staple from traveling far enough to reach the desired position, and without any guide other than the slot *c* the staples will not always assume a vertical position when secured in the slotted member ready to be attached to the fabric.

We have wholly remedied these difficulties by introducing a reciprocating rod or plunger, P, which travels in suitable bearings fixed to the lower side of the base-plate A or plate H, or both. The plunger is operated by the arm E', projecting upward from the lever E through a slot in C, and between the arms D. The arm E' is connected with the plunger by links P'. The forward end of the plunger is shaped on the upper side to fit the arched slot *c*, and travels therein to come in contact with the crown of the fastener or staple, the latter also fitting and riding in such arched slot, whereby the fastener is caused to maintain a vertical position while forced along the slot by the plunger. Before a button is released from chute K and permitted to slide down upon the prongs of the slotted member the plunger is drawn back of the chute-opening to the position shown in Figs. 3 and 8. After the button descends the plunger is advanced to the position shown in Fig. 2 and drives the button and staple to their proper position in slot *c* for setting upon the fabric.

The forward end or face of the plunger is provided with a central projection, *d'*, which enters the space between the prongs of the staple and prevents them from tipping or swinging laterally from a vertical line.

Instead of a central face projection, there may be a projection, *d*, from each side of the face, which will inclose the prongs of the staple with the same effect in causing them to assume and retain a vertical position.

The staples are prevented from swinging longitudinally of the slot by the vertical shape of the face of the plunger which comes in contact with the staple, the face of the plunger extending up into the slot so as to come in contact with the staple at or near its upper end or crown.

The button and pendent staple are held in the position in which they are left by the receding plunger by means of the springs *j j*, secured to plate H, one on each side of slot *c*. The contiguous sides of the springs are very thin, and at their ends contiguous to the open end of chute K rest upon the prongs of the slotted member, so that the buttons easily mount them at this point by gravity as they slide from the chute; but the other ends of the springs contiguous to the open end of the slotted member when unconstrained are sufficiently elevated to draw the crown of the staple pendent from a button resting thereon up firmly against the lower surface of the arched slot, as shown in Figs. 5 and 6.

To operate the plunger successfully, it is necessary to regulate the time of descent of the buttons and staples from the chute into slot *c* and permit only one button and staple to descend at a time. We do this by means of the stops *m* and *g*. The slot *g* is in the form of a staple, the prongs of which are free to slide vertically, or nearly so, in apertures *g''* in the plate A or block A', one of the prongs being longer than the other and extending down through plate H, to be operated by contact with the lower member, C, or the prolonged end F' of link F. The link in its upward movement strikes the stop and throws it up, so that a button will pass freely under the yoke of the stop which crosses the slot in the chute. The downwardly-projecting end *g'* of the stop is provided with a spring, as shown, which acts to close the stop again when relieved from the link or trip F'.

To prevent the descent of more than one button when stop *g* is thus opened, we provide another stop, *m*, just back of stop *g*, consisting of a spring secured at one end to block A' in such a manner that the other end extends across slot *i* just over the space occupied by the button second from stop *g*, as shown. The tension of the spring is such that its downward pressure upon an underlying button is sufficient to hold it and all the following buttons and prevent them from advancing in the chute when stop *g* is opened. After stop *g* has been opened to discharge its con-



tiguous button and staple, and closed again, stop *m* is opened by means of the pin *n*, which is adapted to slide freely in a suitable aperture in block *A'*, the upper end resting just  
 5 beneath the spring-stop at a point between its free and fixed ends, and the lower end projecting down below the plate in position to come in contact with a trip, *e*, on the plunger.

The operation of the machine is as follows:

10 Starting with the parts in position as shown in Fig. 2, the fabric or leather to which it is desired to attach the buttons is inserted between the members in such a position that the point to which it is desired to attach a  
 15 button is directly beneath the pendent staple. The member *C* is then forced upward until the prongs of the staple, piercing the fabric, are separated by the wedge-shaped yielding die *G*, and afterward set upon the fabric by the  
 20 die *G'*, which bends the ends of the staple up firmly against the fabric to the form shown in Fig. 7, the fabric being shown by dotted lines. The parts are now in the position shown in Fig. 3. The lower member, with its attach-  
 25 ment *F'*, has raised the stop *g* and permitted the button *b'* to descend upon the prongs of the upper member; but it should be noticed that stop *g* was not moved until *F'* had traveled from the position shown in Fig. 2 up to  
 30 contact with the prong *g'*, which cannot be accomplished until the plunger has traveled backward about the same distance, which is more than sufficient to release the pin *n* from trip *e* and permit the spring-stop *m* to de-  
 35 scend upon its underlying button to hold the same in the chute, forcing the released pin *n* down before it. The plunger meanwhile has continued its journey backward to the position shown in Fig. 3, which permits the but-  
 40 ton *b'* to slide down onto the slotted member and the staple to pass beneath in front of the plunger. Then as the members are opened the plunger begins to advance again, forcing the button and staple before it until they  
 45 reach the position shown in Fig. 2, forcing the button and staple previously attached to the fabric from the slotted member, thereby automatically releasing it from the retaining-springs *j j*; but during the journey of the  
 50 lower member the stop *g* was released therefrom and closed before trip *e* on the plunger came in contact with pin *n* to open stop *m* and permit the buttons in the chute to slide until restrained by stop *g*.

55 It sometimes happens that an operator, after setting the staple, will inadvertently partly open the members and repeat the operation upon the same button and staple. It is necessary, therefore, to provide against the possi-  
 60 bility of thus opening the stops and letting two buttons instead of one upon the slotted member. This is effectually accomplished by the arrangement of the stops above described, for the reason that the stops operate independ-  
 65 ently of each other and the trip *e* does not come in contact with pin *n* to open stop *m* un-

til the plunger has advanced far enough to partly expel the button already attached from the machine, after which no attempt would be made to reset the staple.

70 As buttons and button eyes or shanks vary considerably in size, it is obvious that the fasteners pendent therefrom would be forced by the plunger to correspondingly varying posi-  
 75 tions in the slot of the slotted member if the plunger were permitted to come in contact with either the button or its eye, and especially with the button. In order to properly clinch the fasteners upon the fabric, it is necessary that they should be exactly located in the slotted mem-  
 80 ber to meet the grooves of the die in the other member, and we have ascertained by experiment that the only certain method of automatically locating the fasteners in the proper position in the slotted member is by direct  
 85 action upon the fasteners themselves, and not through the buttons. We therefore adapt the head and face of the plunger, as shown, to travel in the slot and come in direct contact with the fasteners, which forces every fastener,  
 90 independently of the size of the button or button-eye, to the proper position in the slotted member to be set by the die in the other member.

We are aware that the employment of vi-  
 95 brating fingers for feeding buttons with pendent fasteners from a stop in an inclined chute to a button-setting machine is not new, and we do not broadly claim such a form of construc-  
 100 tion.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a button-setting machine provided with a slotted member for holding a button and fastener, having the lower portion of its  
 105 slot arched to receive the crown of the fastener, and another member for setting said fasteners upon fabric, the combination, with said slotted member, of a reciprocating rod or plunger, a portion of the head of which is crowned  
 110 to enter and fit the arched slot of said member and travel longitudinally therein, and actuating-lever, all operating substantially as and for the purposes set forth.

2. In combination with a chute for supply-  
 115 ing buttons and fasteners to a button-setting machine, a spring-stop, *m*, sliding pin *n*, and reciprocating trip *e*, for controlling the discharge of buttons from said chute, substan-  
 120 tially as described.

3. In combination with a chute for supply-  
 125 ing buttons and fasteners to a button-setting machine, provided with a pivoted setting member, a spring-controlled stop, a trip upon said pivoted member, and means, substantially as described, for actuating said trip, whereby it is adapted to act upon said stop to release a  
 130 button and fastener from the chute, while said member acts to set upon the fabric the fastener of the button previously released, sub-

4. In a button-setting machine provided



with a slotted member for holding a button and fastener, and another member for setting said fastener upon fabric, the combination, with said members, of a slotted chute for supplying buttons and pendent fasteners to said holding member, and a reciprocating plunger for imparting the initial motion in expelling from the holding member a button and fastener after the latter has been set upon the fabric and forcing another button and fastener to the place thus made vacant in the holding member, said chute being provided with two stops acting independently of each other and in harmony with said plunger and setting-machine, whereby one button and its fastener is discharged from the chute into the slotted holding member by one stop, while the other stop retains the remaining buttons and fasteners until the preceding button and its fastener last set upon the fabric has been partly expelled from the slotted holding member to automatically supply the buttons and fasteners to said

holding member one at a time, and prevent the entrance therein of another button and fastener while the operation of setting is repeated upon the same fastener therein, substantially as described. 25

5. In a button-setting machine provided with a slotted member for holding a button and fastener, and another member for setting said fastener upon fabric, a reciprocating rod or plunger provided with one or more face projections adapted to assist in regulating the position of a button and fastener in said holding member, in combination with an actuating-lever, all operating substantially as and for the purposes set forth. 35

In testimony whereof we have hereunto set our hands this 13th day of January, 1885.

GEORGE A. MOSHER.

ALBERT W. HAM.

Witnesses:

CHAS. L. ALDEN,  
N. DAVENPORT.