

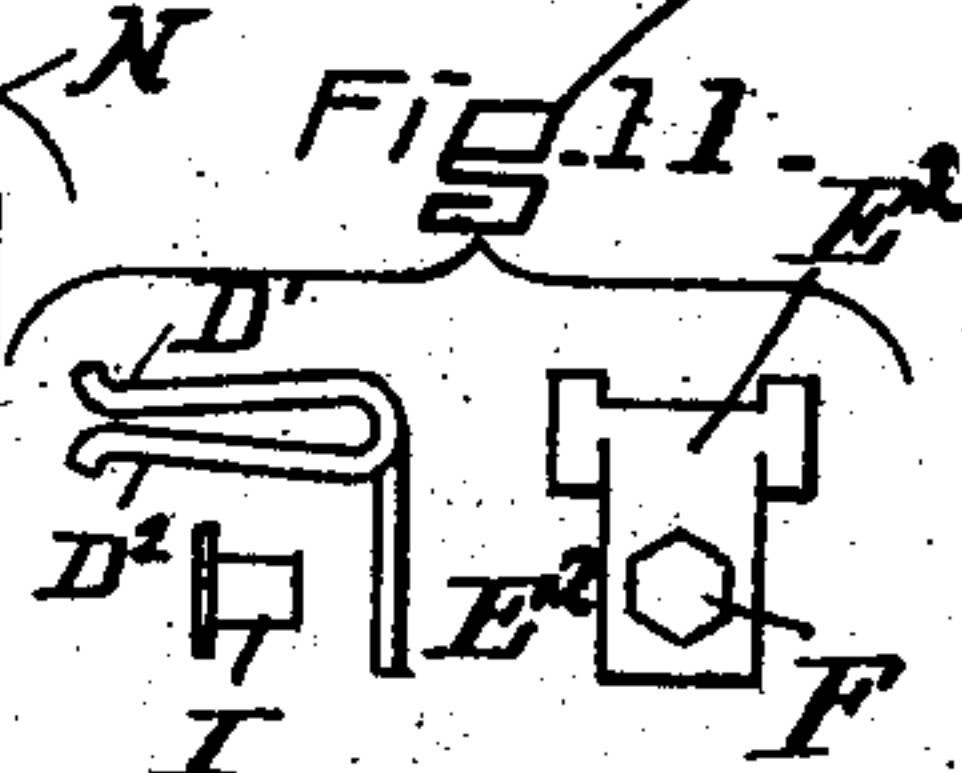
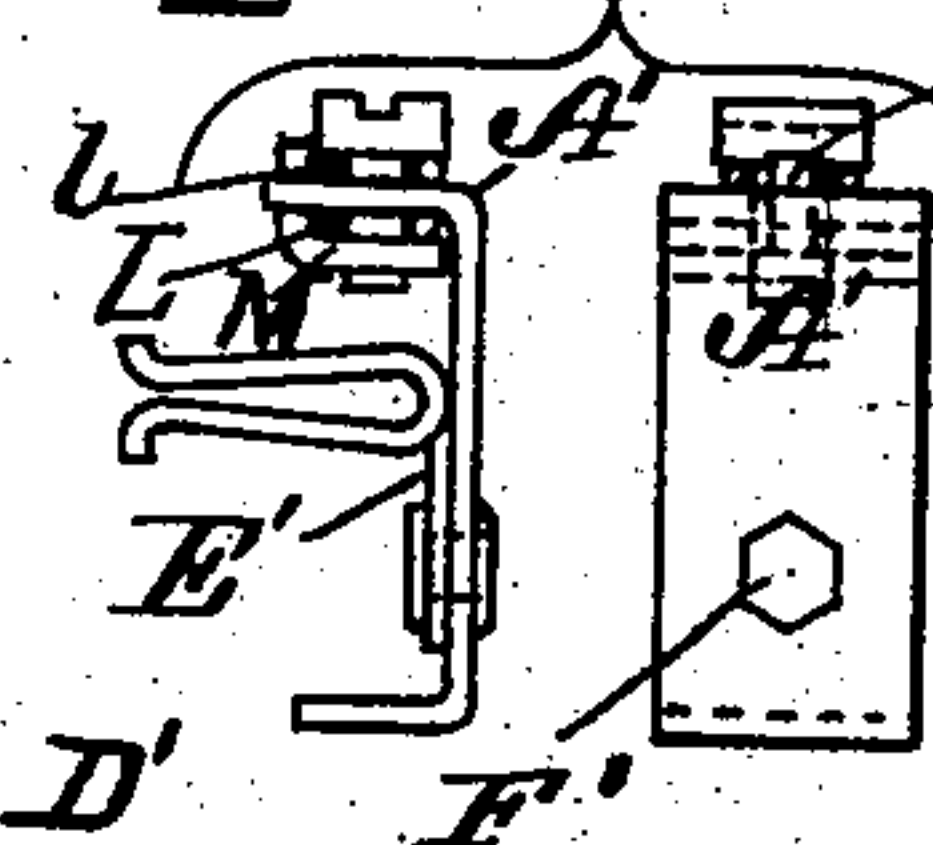
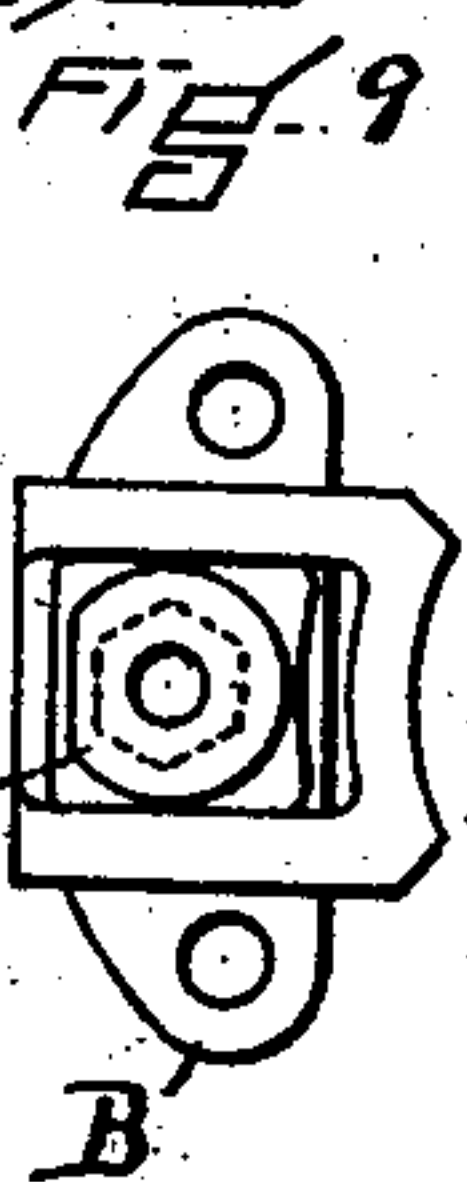
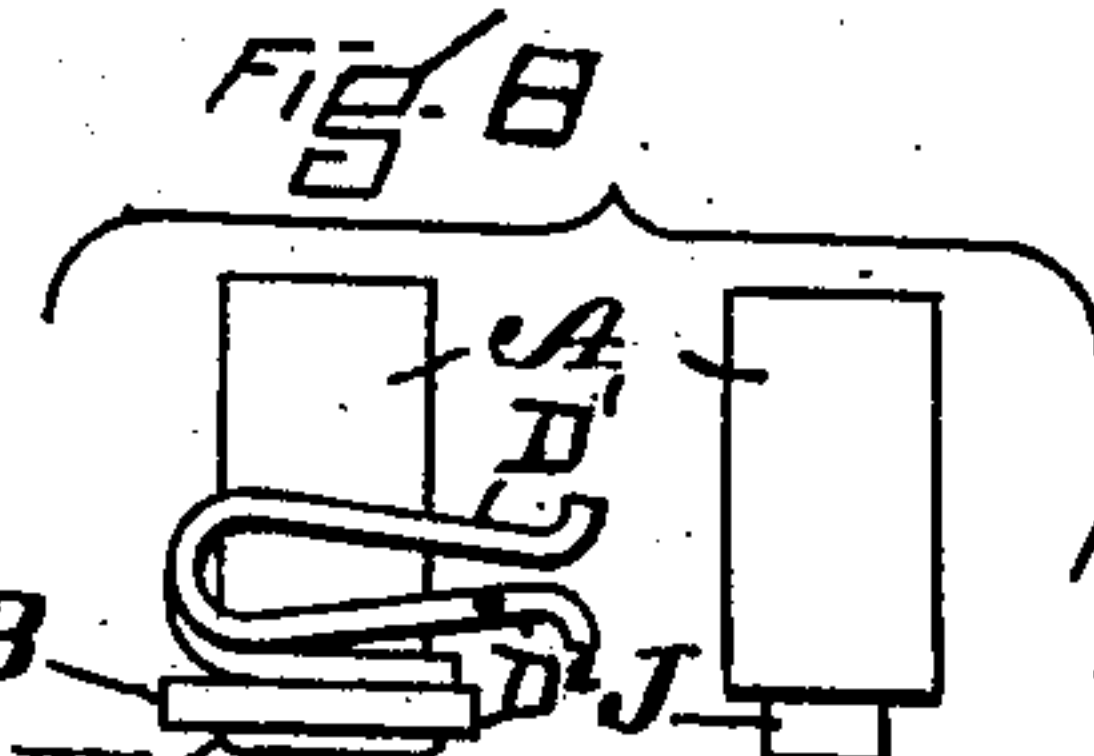
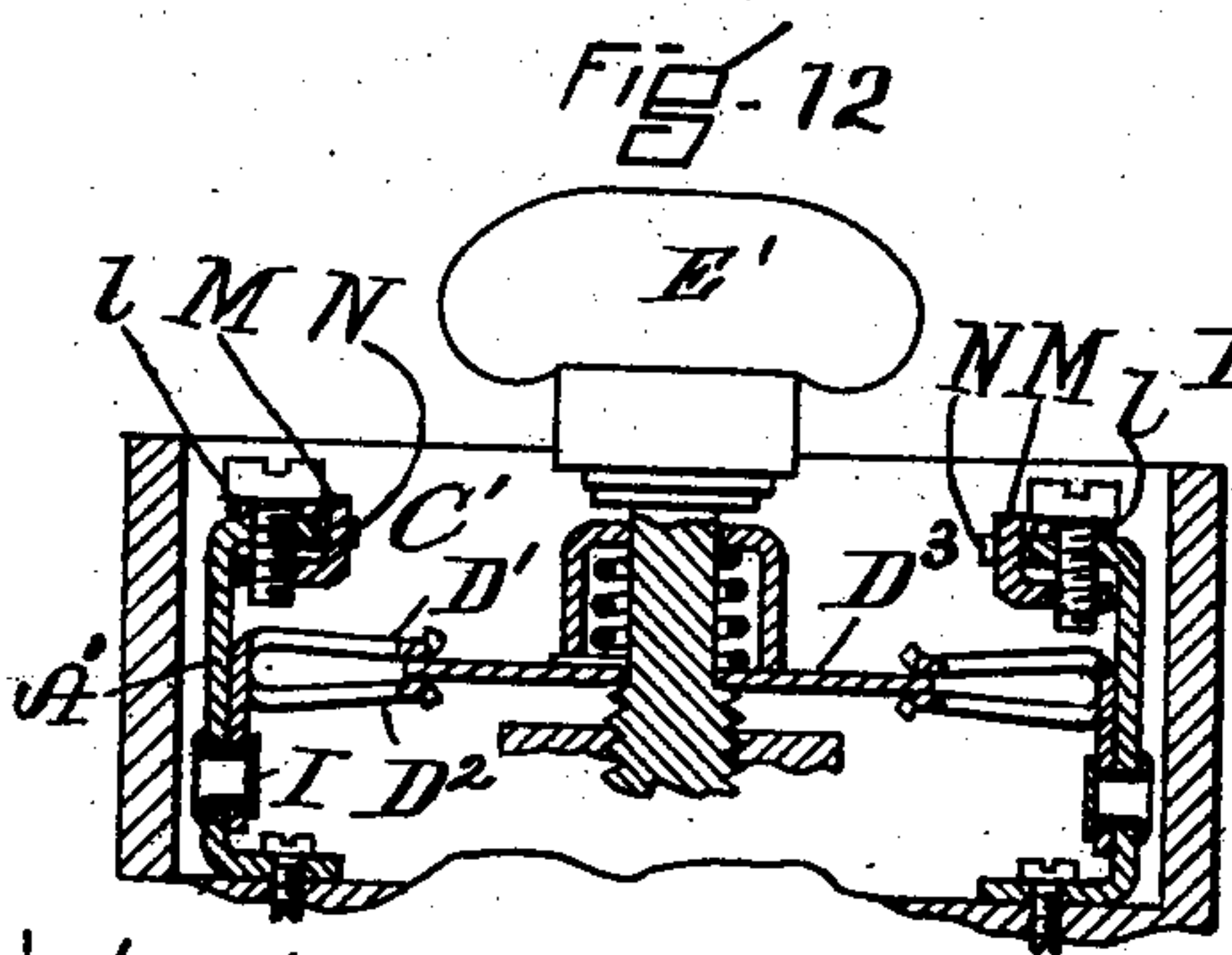
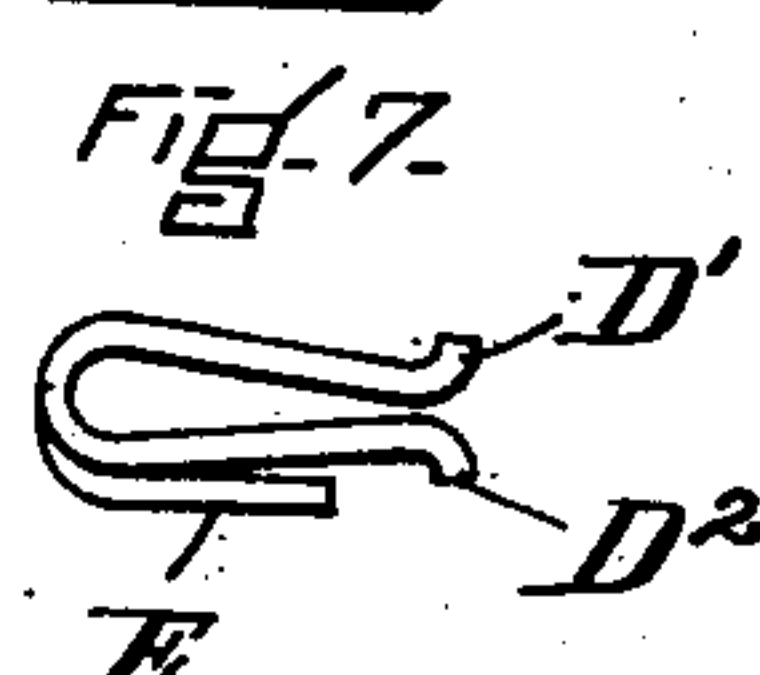
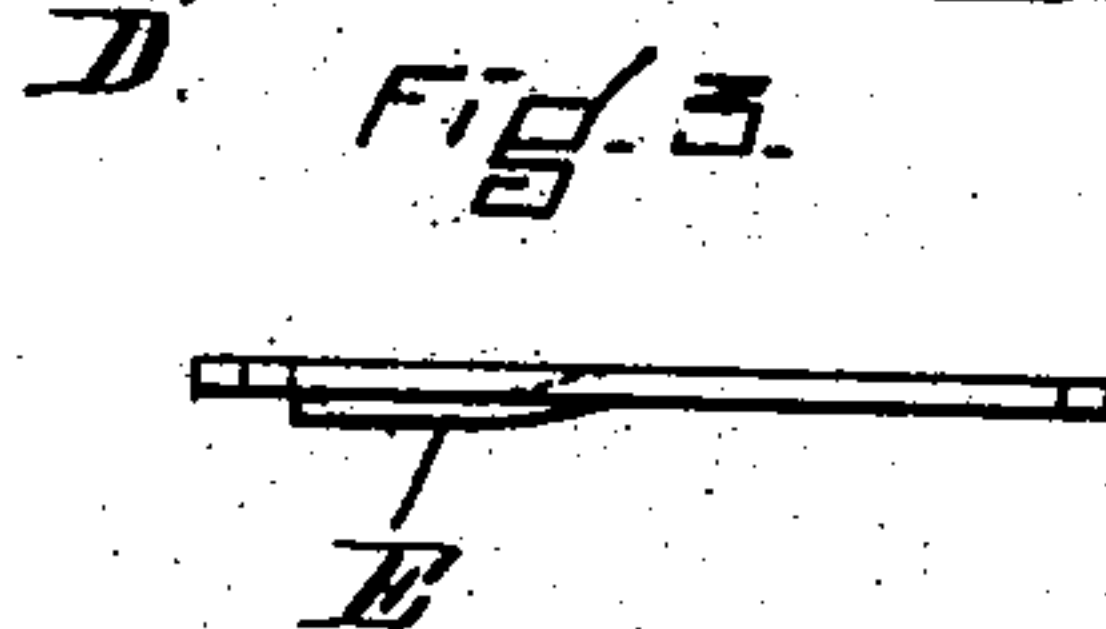
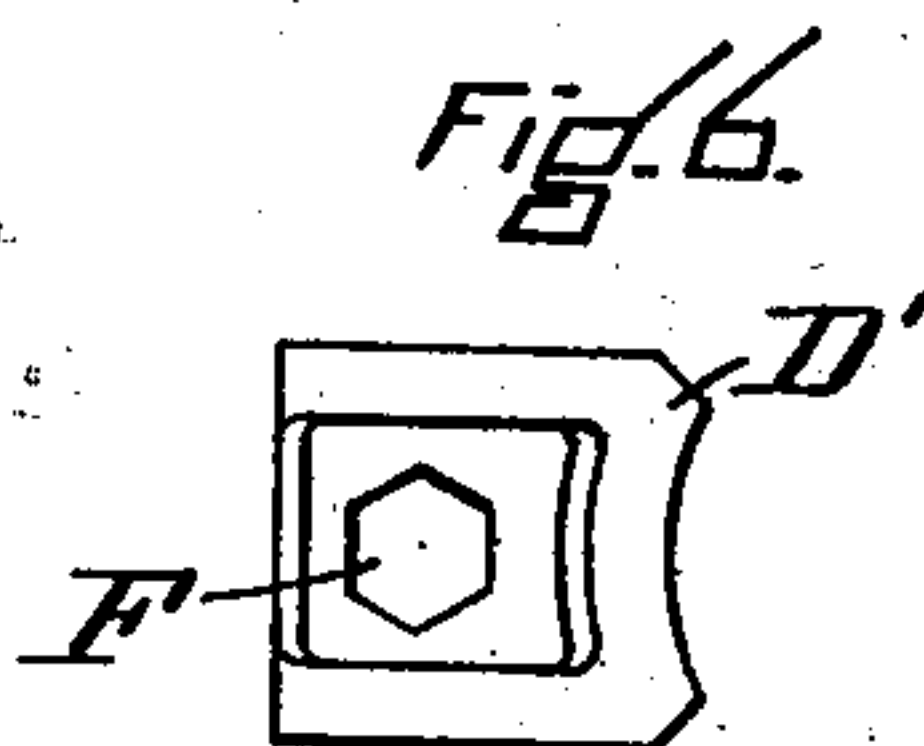
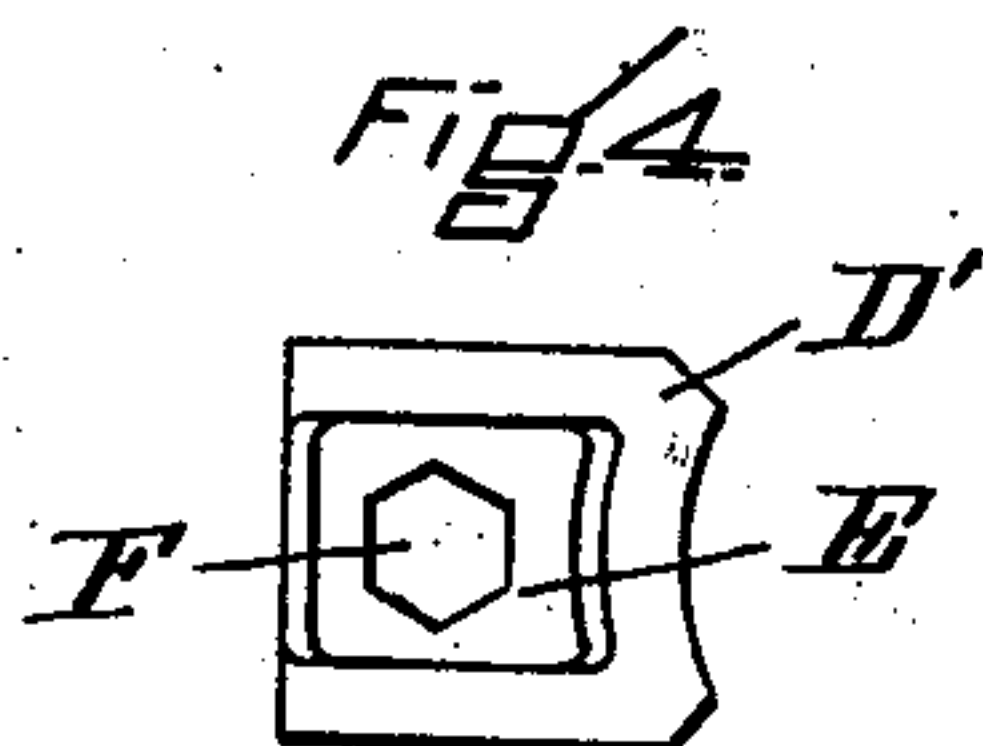
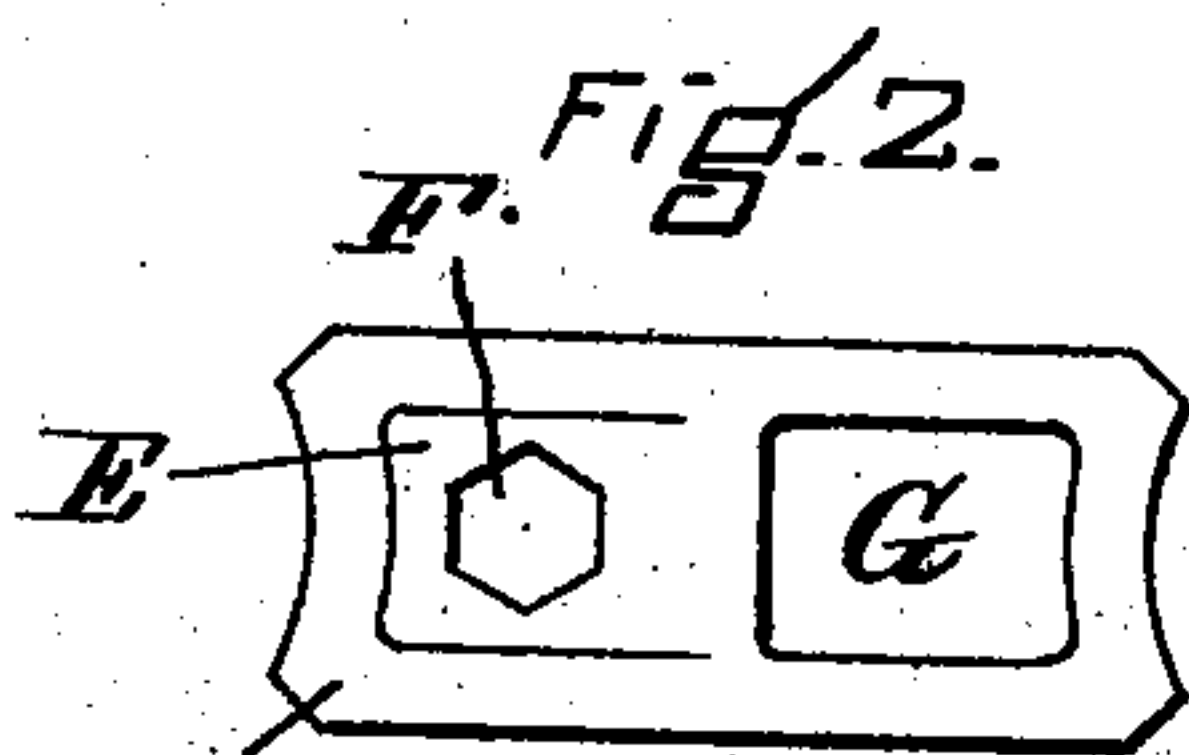
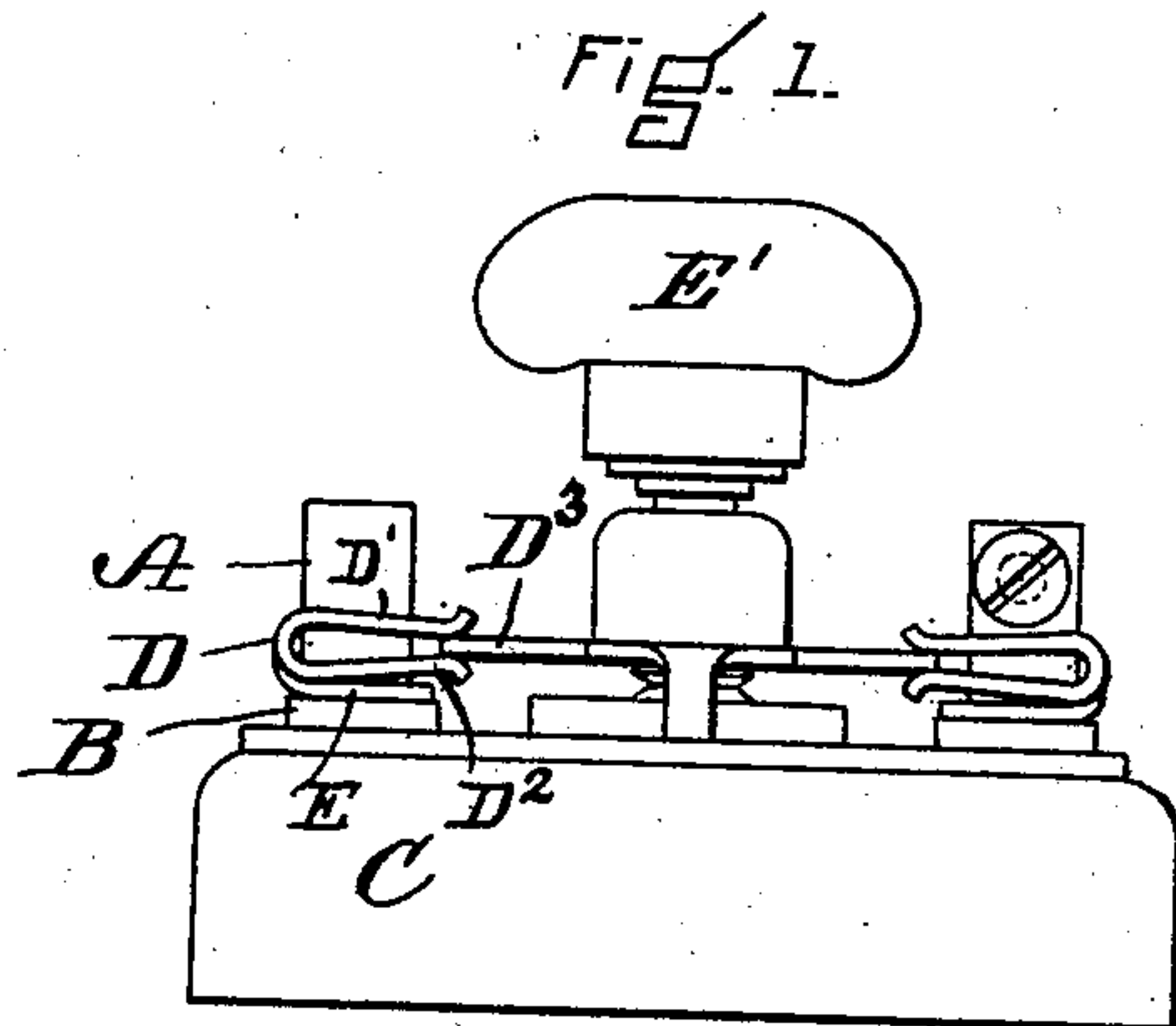
No. 696,179.

Patented Mar. 25, 1902

N. MARSHALL.
ELECTRIC SWITCH.

(Application filed Mar. 7, 1901.)

(No Model.)



WITNESSES.

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NORMAN MARSHALL, OF NEWTON, MASSACHUSETTS, ASSIGNOR TO MARSHALL-SANDERS COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 696,179, dated March 25, 1902.

Application filed March 7, 1901. Serial No. 50,212. (No model.)

To all whom it may concern:

Be it known that I, NORMAN MARSHALL, of Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

My invention relates to electric switches, certain features relating more especially to the construction of the contact-brushes, whereby a simple and efficient contact is provided and one which is well adapted to be formed by machinery, and certain other features relating more especially to the construction of binding-posts for connecting the wires to the contact-brushes of electric switches. Contact-brushes and binding-posts embodying the features of the present invention may be employed with special advantage in that class of switches known as "snap-switches," and in the drawings I have shown two forms of such switches provided with contacts and binding-posts embodying the features of my invention.

In these drawings, Figure 1 is an elevation of a snap-switch with the cover removed provided with contacts and binding-posts embodying certain features of invention. Figs. 2 to 7 show the contact at various stages of its manufacture. Fig. 8 is an elevation of the binding-post and said post assembled with the contact and the plate for securing the post and contact to the base of the switch. Fig. 9 is a plan view of Fig. 8. Fig. 10 is a side and end view of a modified form of contact and binding-post. Fig. 11 is a side and end view of the contact shown in Fig. 10; and Fig. 12 is a sectional view of a flush switch in which all the mechanism is inclosed in the porcelain base, the switch being provided with the form of contact and binding-post shown in Figs. 10 and 11.

The switch shown in Fig. 1 is provided with the usual insulating-base C for supporting the parts of the switch, the operating button or handle E', and the rotary contact-bar D³, arranged to cooperate with the brushes of the stationary contacts.

The stationary contacts which embody features of my invention are formed of a single piece of sheet metal bent to form the two blades of the brush portion and having the attaching portion formed by shearing through the metal on three sides of the attaching portion and offsetting or bending said portion out of the plane of the brush portion. A contact of this character may be conveniently and cheaply manufactured and forms a simple and efficient contact in which the blades of the brush portion may act to make a spring connection on the moving contact of a switch and in which the attaching portion serves to support the brush portion without interfering with the resiliency of either of the blades of said portion. Each of the contacts shown in Fig. 1 comprises two blades D' D², forming the brush portion of the contact, arranged to make spring connection with the bar D³, and an attaching portion E, offset or bent out of the plane of the brush portion. The sheet metal may be cut and bent to form the contact in any suitable manner, and in Figs. 2 to 7 I have indicated a convenient and simple mode of procedure, involving three operations, by which a contact like that shown in Fig. 1 may be made. As illustrated in these views, the blank D is cut from sheet metal, the opening G and the hole F being cut in the same operation and the portion E being sheared through on three sides and bent out of the plane of the blank, Figs. 2 and 3. The blank is then bent into the form shown in Figs. 4 and 5, thus bringing the ends of the blank opposite and adjacent to each other to form blades D' D² of the brush portion of the contact. The blank is then given the shape shown in Figs. 6 and 7, the blades D' and D² being brought nearer each other and the attaching portion E being bent into its final position relative to the brush portion. This contact is simple and efficient and may be readily and cheaply made by machinery.

The contact may be employed in various forms of switches and may be secured in place by passing a screw or other securing means through the hole F in the attaching portion

or plate E. I prefer, however, to unite the contact with a binding-post to form a combined contact and binding-post which may readily be secured in position in a switch. In
 5 securing the binding-post and contact together I prefer to make the hole F of an irregular or polygonal shape and to expand a connecting-stud within said hole, so that the parts will be firmly united and held from
 10 turning with relation to each other, as by this method the parts may be readily and cheaply secured together.

In the form of combined contact and binding-post shown in Fig. 1 the stud for securing
 15 the parts together is formed on the end of the binding-post, being indicated at J in Fig. 8, and when the parts are assembled the post extends through the opening G in the blade D' and through the opening formed in blade
 20 D² by offsetting or bending outward the portion E. In securing the parts together the stud J is passed through the hole F and the end of the stud is turned over, as at H, the stud at the same time being expanded into
 25 the corners or irregular parts of the hole F. In case the means for securing the binding-post to the porcelain base of the switch is a plate, as plate B in the form shown, the stud J is also passed through a hole in this plate
 30 and its end is turned over and the stud expanded to hold the three parts included in the combined binding-post and contact together.

In Fig. 11 I have shown a form of contact
 35 in which the attaching portion is at approximately a right angle to the brush portion, and in Fig. 10 I have shown this form of contact united with a novel form of binding-post to form a combined binding-post and contact.
 40 In this construction the binding-post consists of a plate A', bent over at its ends and provided at one end with a clip M, connected with the plate A' by a screw which passes through the plate and is threaded into the clip, the clip
 45 being provided with a projection or ear N, arranged to engage a notch in the plate A' to prevent the clip from turning. With this construction of binding-post the wires may be clamped between the clip and post, as at L,
 50 or may be connected with the post by twisting the wire directly under the head of the screw, as at 1, the binding-post providing equally for either style of connection. In securing the contact shown in Fig. 11 to this
 55 form of binding-post I prefer to employ the form of securing device already referred to. The stud in this case, however, is separate from the binding-post, as shown at I, and is passed through a hole F' in the plate A', which
 60 corresponds in size and shape to the hole F in the attaching portion E² of the contact, the end of the stud being turned over to bind the parts together and the stud being expanded to prevent turning of the parts.

65 In Fig. 12 the combined contact and binding-post is shown in connection with other

parts of a flush switch, the posts being held in position by screws passing through the laterally-projecting lower end of the plate A'.

By constructing the contact with the attaching
 70 portion bent out of the plane of the brush portion the contact may be used under various conditions without interfering with the proper yielding of the contact-arms where the contact would otherwise be rendered im-
 75 practical or its efficiency impaired. Thus with the attaching portion E bent as indicated in Fig. 7 the contact may be used under the conditions indicated in Fig. 8, and the brushes
 80 will be yieldingly supported out of contact with the plate B by the resilient connection formed by the curved part of attaching portion. The yielding of both of the brushes D' and D² is not interfered with, as would be the
 85 case were the attaching portion not out of the plane of the brushes, and the brush portion is also yieldingly supported by the connecting-spring between the attaching portion and the brush portion formed by bending the at-
 90 taching portion out of the plane of the brush portion.

In the form of contact shown in Fig. 11 the brushes are also yieldingly supported by the resilient connection between the attaching
 95 portion and the brush portion, which connection is the part of the attaching portion adjacent the brush portion. This part of the attaching portion may spring to allow the brush portion to yield.

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

1. A contact for electric switches formed of a single piece of sheet metal bent to form the blades of the brush portion, and having an attaching portion out of the plane of the brush
 105 portion and connected with the brush portion by a resilient connection which is a longitudinal extension of the attaching portion and is formed by shearing through the sheet metal at the sides and front of the attaching por-
 110 tion and bending the rear end of the attaching portion to bring said portion out of the plane of the brush portion.

2. A combined contact and binding-post for electric switches, comprising a contact having
 115 two adjacent blades and an attaching portion having an irregular recess therethrough, a binding-post and a stud expanded within said recess and having its end turned over to secure said post and contact together. 120

3. A combined contact and binding-post for electric switches, comprising a contact having
 125 two adjacent blades and an attaching portion arranged at approximately a right angle to said blades, and a binding-post secured to said attaching portion.

4. A combined contact and binding-post for electric switches comprising a plate bent at
 130 either end, a screw passing through one end of said plate, a clip threaded for engagement with said screw, and arranged to cooperate with the end of the plate in clamping the

wire; and a contact-brush secured to said plate.

5 5. A combined contact and binding-post for electric switches, comprising a binding-post, a contact-brush secured thereto, a clip M and a screw passing through the binding-post and threaded into the clip.

In testimony whereof I have affixed my signature in presence of two witnesses.

NORMAN MARSHALL.

Witnesses:

E. M. BAKER,
IRA L. FISH.