

**No. 672,588.**

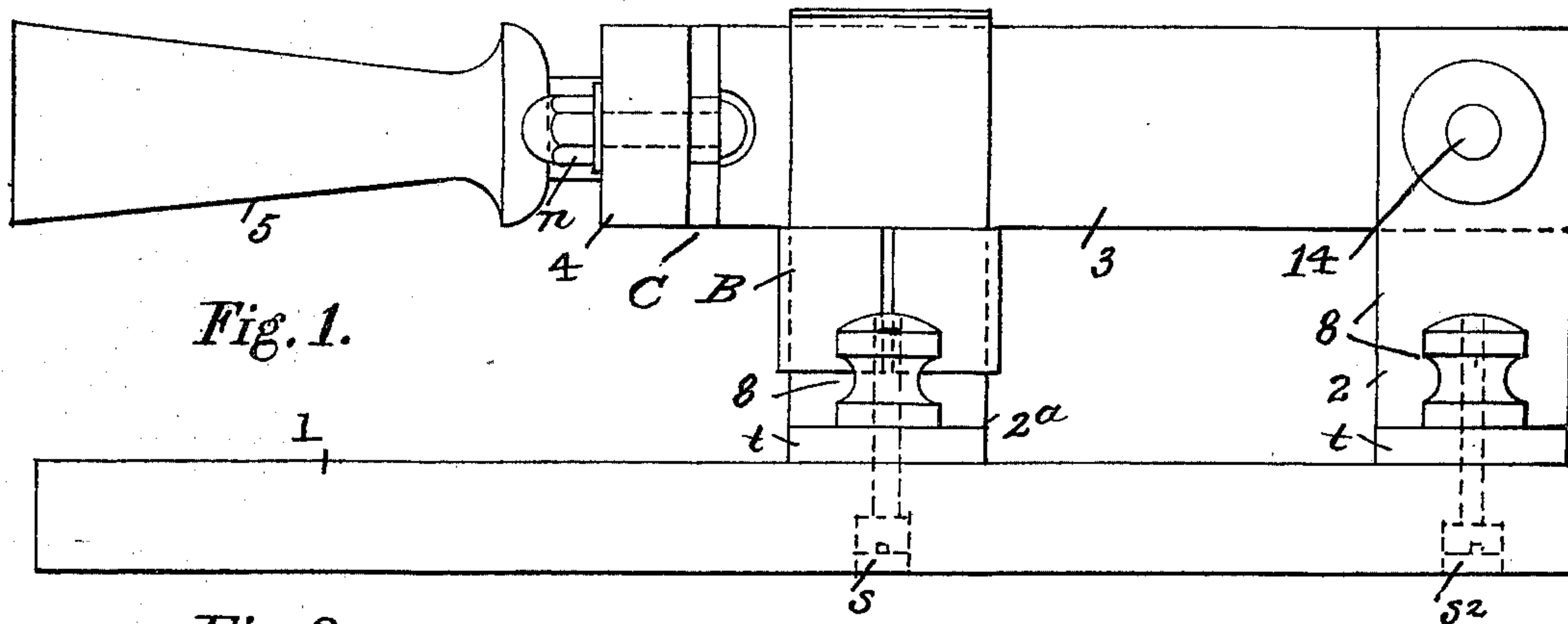
**Patented Apr. 23, 1901.**

**W. F. BOSSERT.**  
**ELECTRICAL SWITCH.**

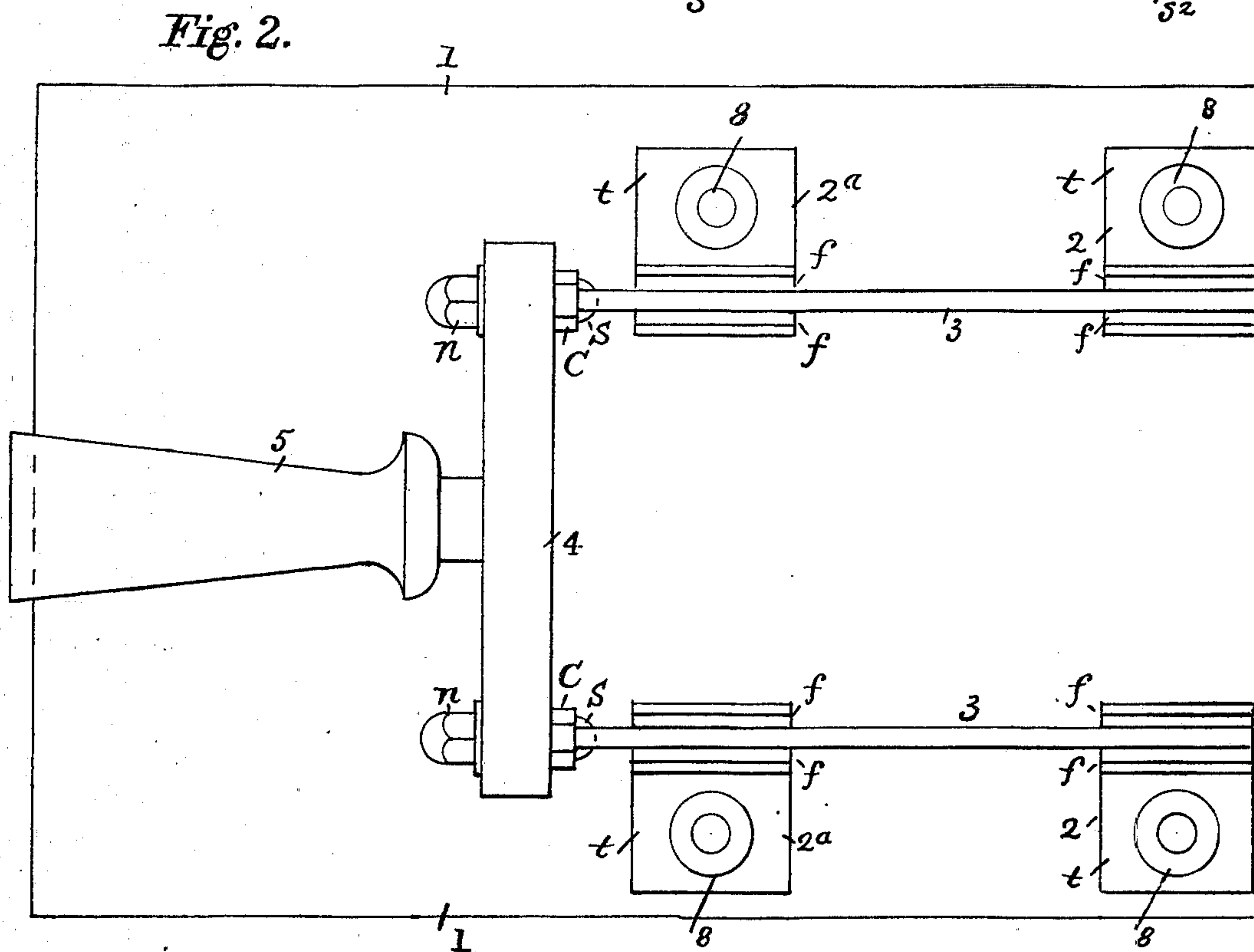
(No Model.)

(Application filed Dec. 4, 1900.)

**2 Sheets—Sheet 1.**



*Fig. 1.*



*Fig. 2.*

**WITNESSES:**

WITNESSES:  
 Katharine Surprenant  
 Joseph A. Isately

*INVENTOR.*

INVENTOR.  
William F. Bossert  
BY  
Lewis Willis Pierce  
ATTORNEY.

No. 672,588.

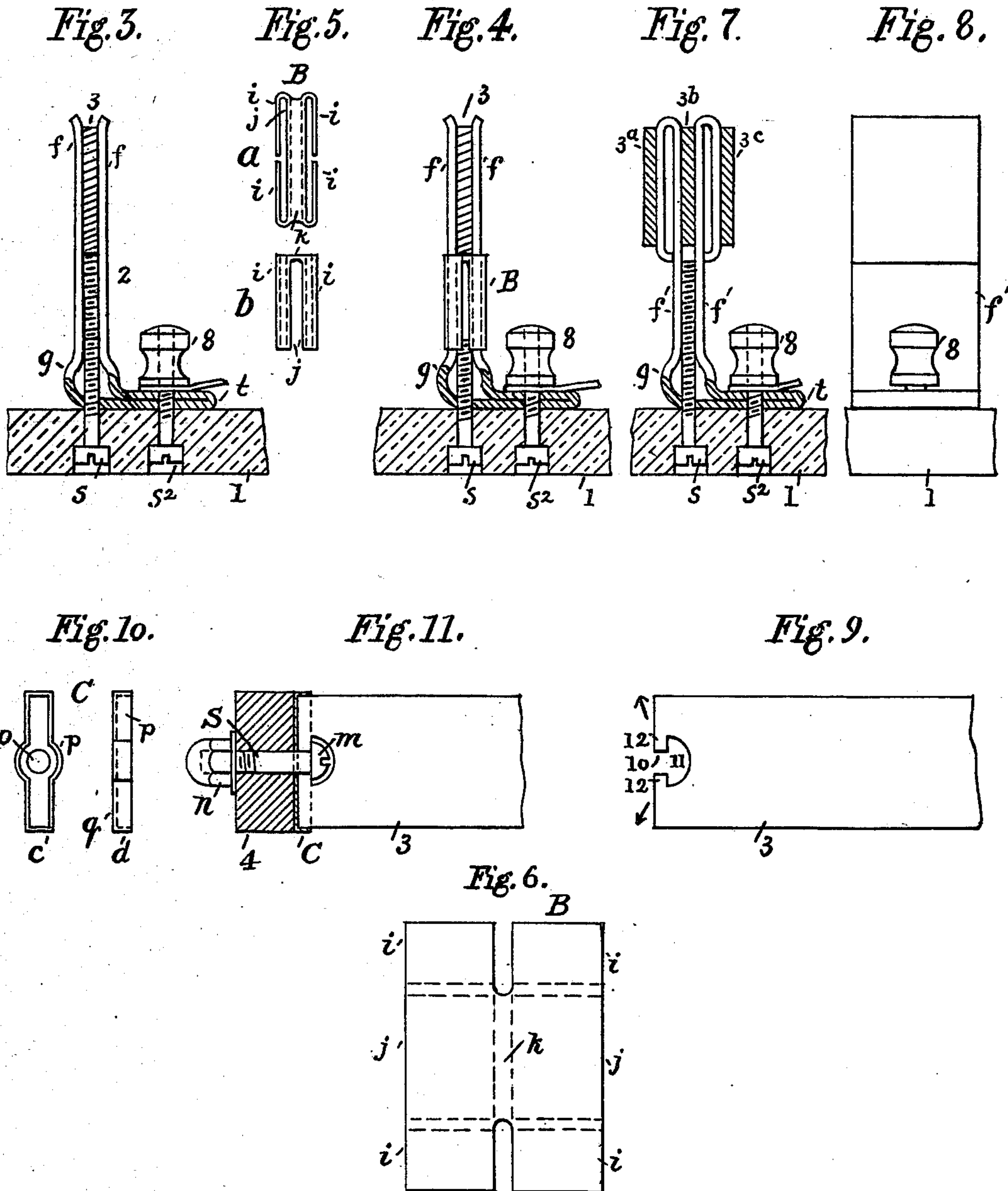
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2 Sheets—Sheet 2.



WITNESSES  
Mathew D. Surfer.  
Joseph A. Gately.

INVENTOR.  
William F. Bossert  
BY  
Geo. Willis Purce  
ATTORNEY.



# UNITED STATES PATENT OFFICE.

WILLIAM F. BOSSERT, OF UTICA, NEW YORK, ASSIGNOR TO THE BOSSERT  
ELECTRIC CONSTRUCTION COMPANY, OF SAME PLACE.

## ELECTRICAL SWITCH.

SPECIFICATION forming part of Letters Patent No. 672,588, dated April 23, 1901.

Application filed December 4, 1900. Serial No. 38,673. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM F. BOSSERT, residing at Utica, in the county of Oneida and State of New York, have invented certain Improvements in Electrical Switches, of which the following is a specification.

The present invention relates to knife-switches by means of which electric power-currents are switched to and from electric conductors, and has especial reference to a switch light in construction, comparatively cheap, and which possesses all of the essential characteristics of heavier and more expensive switches. Such a switch is desirable in many places where heavy and costly ones are not necessary.

The invention has especial reference to the clip-supports to which the switch-blades are pivoted and to the clips to which said blades are closed and also to improved means for securing the blades to their handle, all of which I will now proceed to describe, and point out in the appended claims.

Of the drawings which illustrate the invention, Figures 1 and 2 are respectively a side elevation and a plan view of a knife-switch embodying the invention. Figs. 3, 4, 5, 6, and 7 are shown in partial section and, with Fig. 8, are views of the clips to which the knife-blades are attached or pivoted and also of the clips to and upon which the said blades are closed and with which they make electrical contact and also of the details of the parts relating thereto; and Figs. 9, 10, and 11 embody improvements in the connection of the knife-blades to the cross-bar to which the handle is attached.

In the drawings, 1 represents the insulating-base, to which the parts of the knife-switch are secured, and 2 2 are the clips, secured to said base, to which the ends of the blades 3 3 are pivoted, and 2<sup>a</sup> 2<sup>a</sup> are the clips to which the said blades are closed to complete an electric circuit. The blades 3 3 are united by the insulating-bar 4, to the center of which the handle 5 is attached. Ordinarily the blades 3 are notched at the end by which they are attached to the bar 4, as shown at 10 in Fig. 9, the entrance being narrow and the inner portion being wider and of a semicircular shape, so as to leave a shoulder 12 on each

side, and a hole is made through the cross-bar 4, through which is passed a screw S, having a round cup-shaped head, and the blade is then drawn tightly to the face of the bar by a nut *n*. By use the pressure put upon the handle wrenches or distorts the end of the blade in the direction of the arrows and the blade becomes loosened from the handle. To obviate this defect, I have provided the strengthening device C, (shown in Figs. 10 and 11, of which *c* and *d* are face and edge views,) which consists of an oblong piece *q*, having a hole *o* in its center of the diameter of the shank of the screw S, with an enlarged central portion of the diameter of the head of the screw. The plate has a rim *p* around it, and the interior or the inclosed area is adapted to fit closely upon the end of the blade and inclose the same and also the screw, and when the screw is inserted into bar 4 and the nut *n* firmly screwed down the end of the blade is prevented from expanding or being distorted, as has been demonstrated by practical use. If desired, more than one notch may be made in the end of a blade and the device C made to correspond thereto.

Fig. 3 illustrates the preferable form of construction, devised to serve as a clip both to pivot the blade to and also to close upon to connect a circuit. It consists of two parallel spring-plates made of one piece of metal, separated from each other by the thickness of the knife-blade. The plates are swelled out at the bottom *g* for the sake of stability and are then bent at a right angle to form a foot-piece or base *t*, at the end of which they are continuous. In other words, a sheet of metal of the width shown in Fig. 8 is doubled at its center and bent at right angles into the shape described, the effect being an open cross-section. This is a convenient way to construct the clip; but it could be cast into the open or skeleton shape shown, with the base-piece *t* solid. The clip is secured to the base 1 by the screws *s* and *s*<sup>2</sup>, which extend upward through the base. In Fig. 3 the screw *s* is threaded through the lower part of the foot *t* and extends up between the plates *ff* a sufficient distance to serve as a stop to the blade 3, which is shown between the said plates. The screw *s*<sup>2</sup> is threaded through the foot *t* and



is provided with the thumb-nut 8, under which may be secured a conductor.

In order to reinforce the plates *ff* in large switches, for instance, I provide the stiffening device B. This is made from a flat piece of metal cut in the shape shown in Fig. 6, the ends *i* being bent inward on the horizontal dotted lines and the side *j* then bent downward on the vertical dotted lines, so as to present the appearance shown at *a* and *b* of Fig. 5, which are top and edge views, respectively. The device is adapted to be forced down and upon the plates *ff*, as shown in Fig. 4, so that its lower end reaches the swelled part *g*, and when the clip is used as the one to make and break contact with its upper surface *k* forms the stop for the blade 3.

In Fig. 7 the plates *f' f'* are bent over at their tops and returned downward in order that suitable spring contact-surfaces may be secured with the center and outer faces of the clip—as, for example, in quick-break switches employing three blades 3<sup>a</sup>, 3<sup>b</sup>, and 3<sup>c</sup>, one of which—say the central one 3<sup>b</sup>—may be arranged to break contact last.

In all of the figures the same open skeleton construction is shown in the clips, and by means thereof a very light and comparatively cheap and most desirable style of knife-switch is obtained.

The spring-clips described herein are adapted for use with a variety of electrical apparatus in which a movable connecting-piece to close a circuit analogous to the knife-blade is employed—such, for example, as the two clips into which the metal ends of a fusible wire are inserted and held.

I claim as my invention—

1. A spring-clip made from a single piece of metal doubled upon itself the loop forming a footpiece of double thickness from which the ends of the piece are bent at right angles, and extended parallel with each other and separated, having two perforations through the footpiece one in the doubled part and the other in the single part between the separated ends, as set forth.

2. A spring-clip made from a single piece of metal doubled upon itself the loop forming a footpiece of double thickness from which the ends of the piece are bent at right angles and extended parallel with each other and separated; attached to an insulating-base by screws and nuts one screw passing through the base and the loop of the footpiece and another screw passing through the footpiece between the parallel extensions, as set forth.

3. A spring-clip made from a single piece of metal doubled upon itself the loop forming a footpiece of double thickness from which the ends of the piece are curved outward and then contracted and extended at right angles from the footpiece parallel and separated, as set forth.

4. A spring-clip made from a single piece of metal doubled upon itself the loop forming a footpiece of double thickness from which the ends of the piece are bent at right angles and extended parallel with each other and separated; with a reinforcing device made from a single piece of metal consisting of two integral sleeves adapted to inclose the said parallel extensions on all sides, as set forth.

5. A spring-clip consisting of a footpiece from which extend at right angles two parallel spring-plates provided with an inclosing reinforcing device adapted to serve as a stop; with means for attaching the same to a base, as set forth.

6. In a knife-switch a plurality of knife-blades each pivoted at one end to a supporting-clip and provided with a circuit-closing clip, both clips secured to an insulating-base, the blades joined to an insulating cross-bar provided with a handle, by screws and nuts, with metallic reinforcing metal plates interposed between the bar and each blade adapted to inclose the end and sides thereof, as set forth.

7. In a knife-switch, an insulating-base, a plurality of knife-blades, supporting-clips and circuit-closing clips, each clip made from a single piece of metal doubled upon itself the loop forming a footpiece of double thickness from which the ends of the piece are bent at right angles and extended parallel with each other and separated; the blades pivoted between the parallel extensions of the supporting-clips and adapted to press between the parallel extensions of the circuit-closing clips, and joined to an insulating cross-bar provided with a handle, by screws and nuts; with metallic reinforcing metal plates interposed between the bar and each blade, adapted to inclose the end and sides thereof, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 26th day of November, 1900.

WILLIAM F. BOSSERT.

Witnesses:

ED. J. CANTWELL,  
W. H. GRAY.