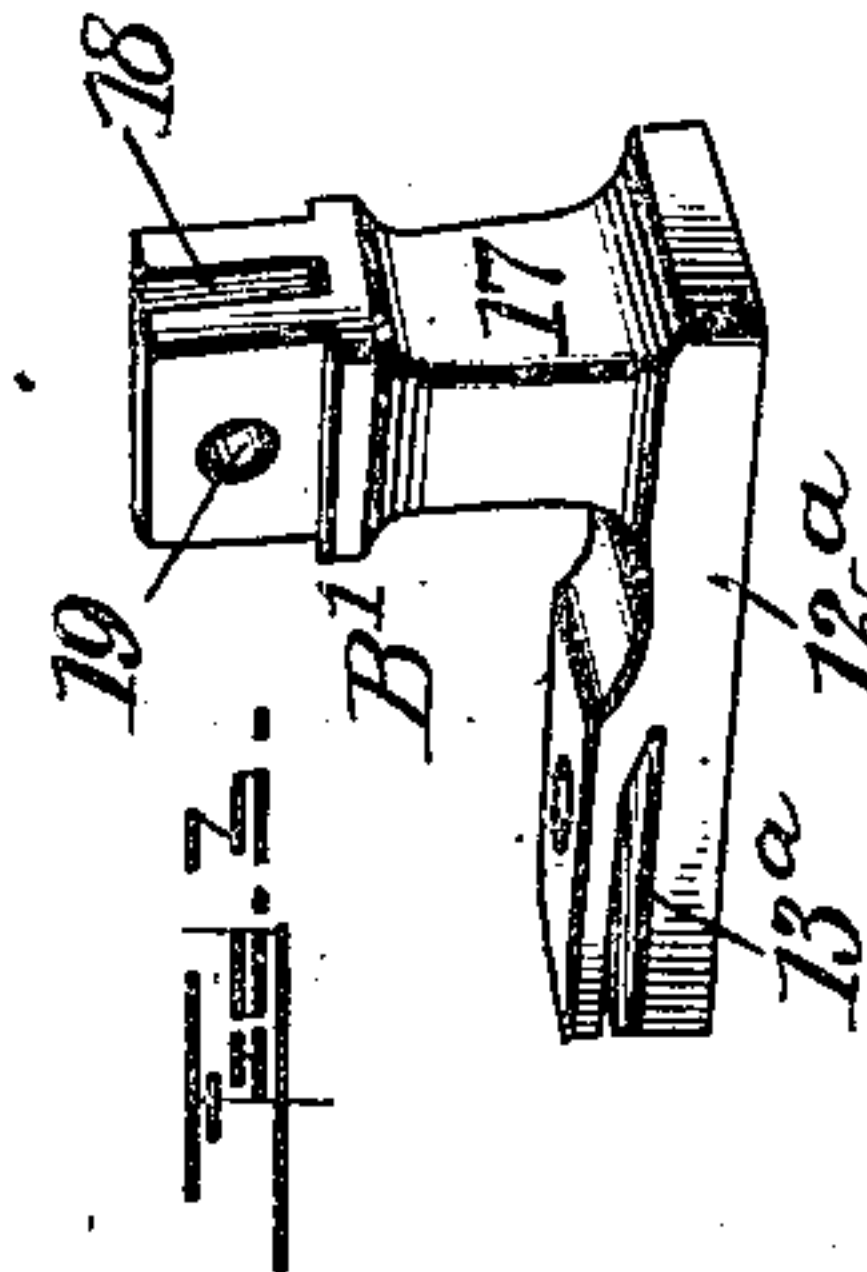
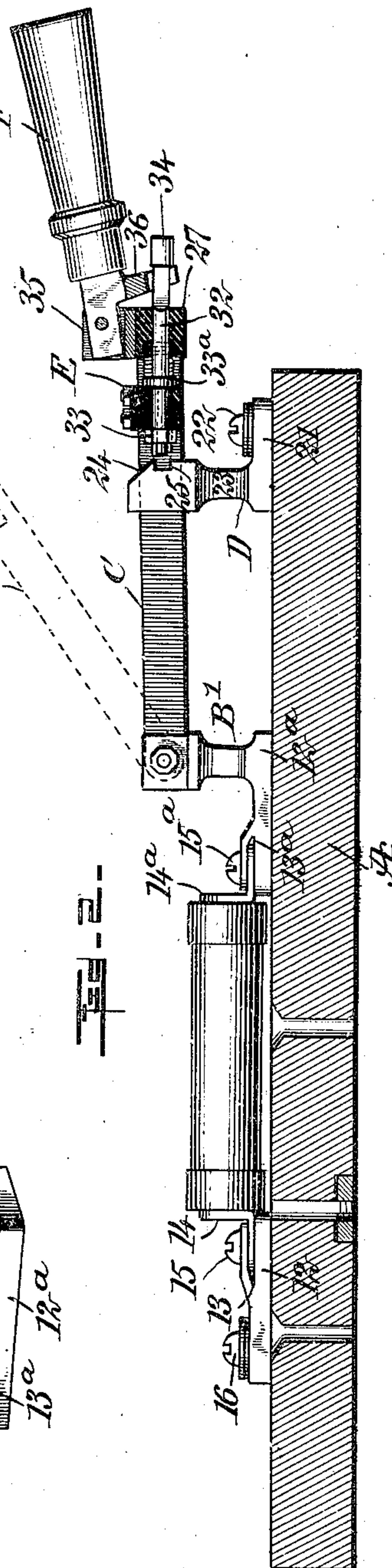
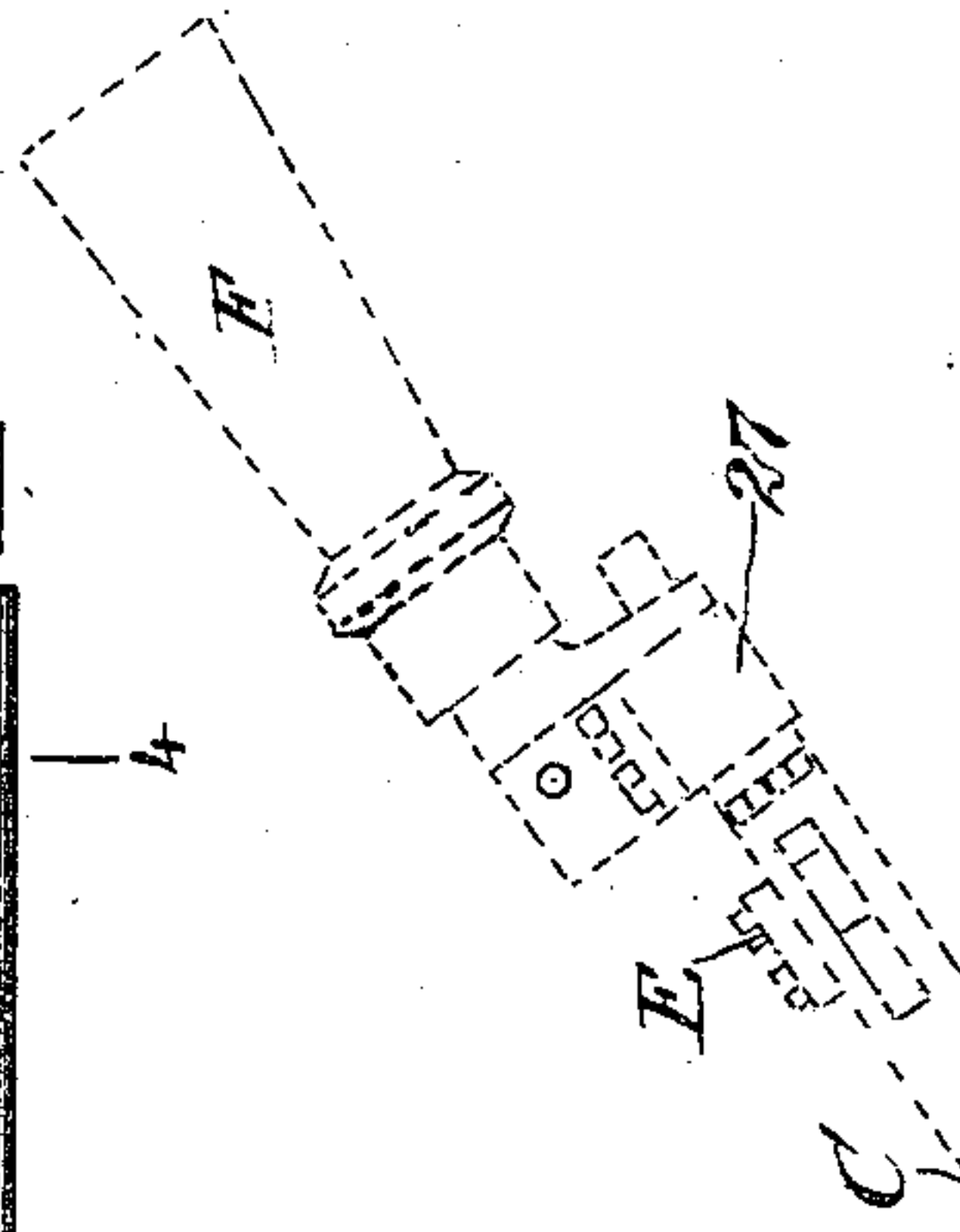
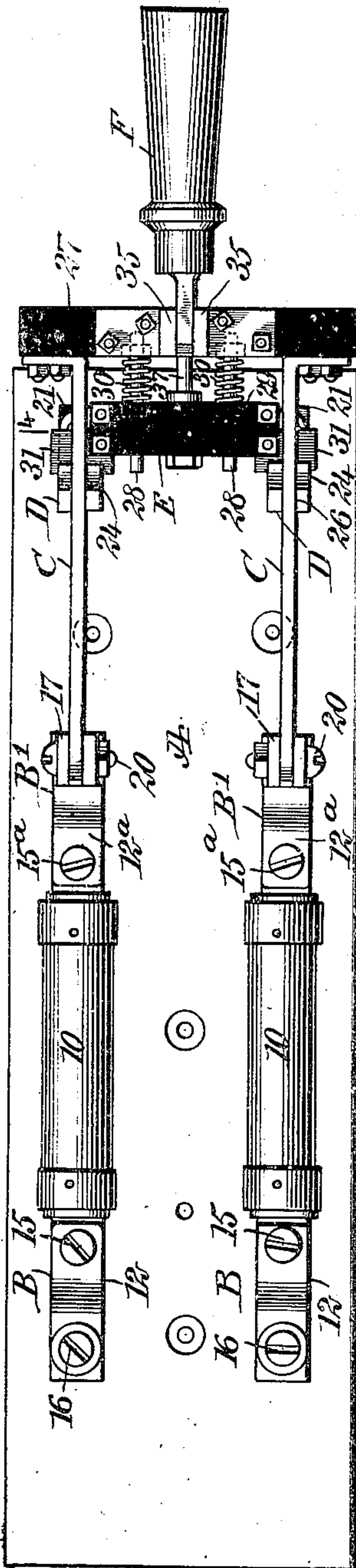


No. 847,087.

PATENTED MAR. 12, 1907.

G. W. LIDEN.  
ELECTRIC SWITCH.  
APPLICATION FILED NOV. 23, 1905.

2 SHEETS—SHEET 1.



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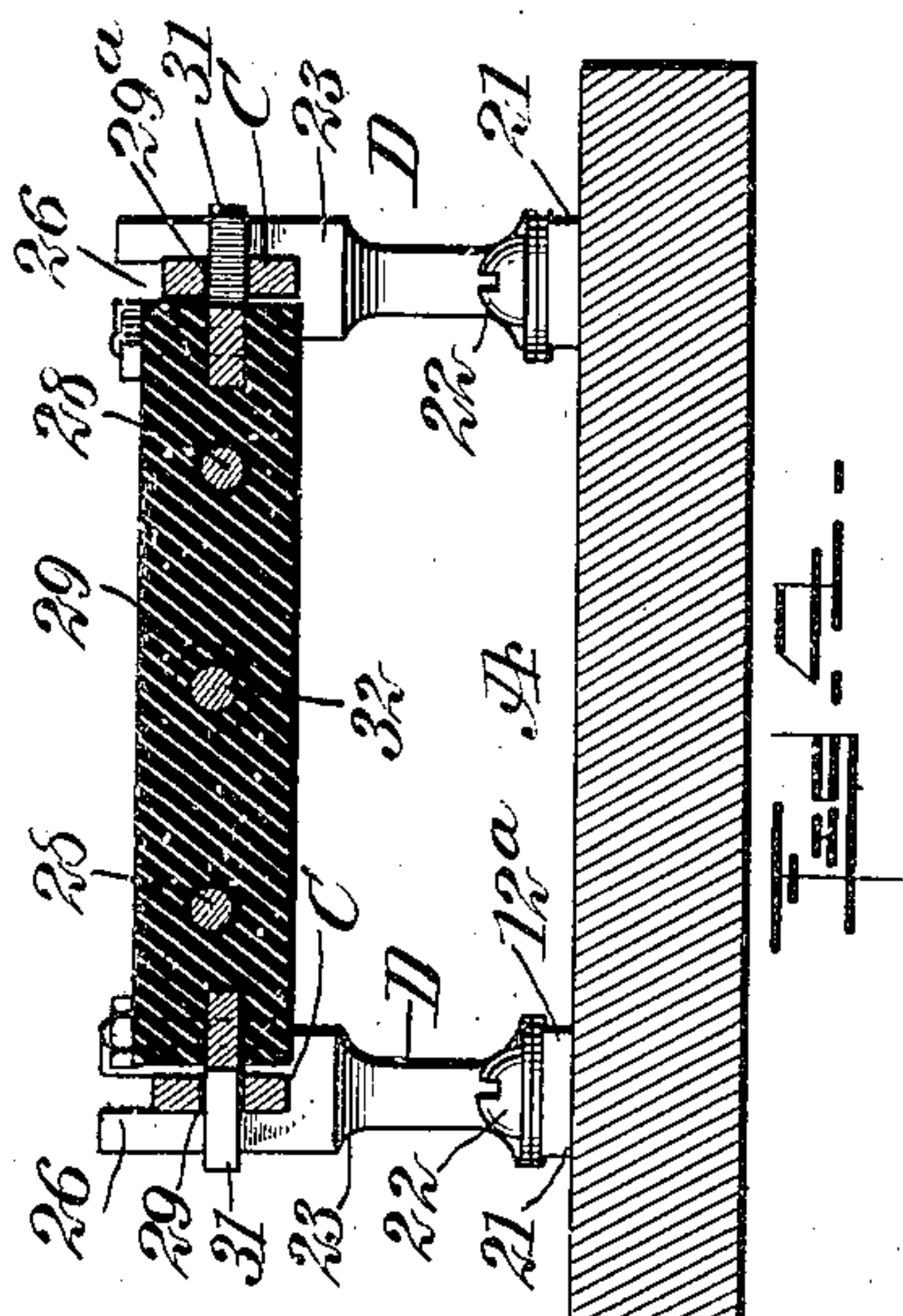
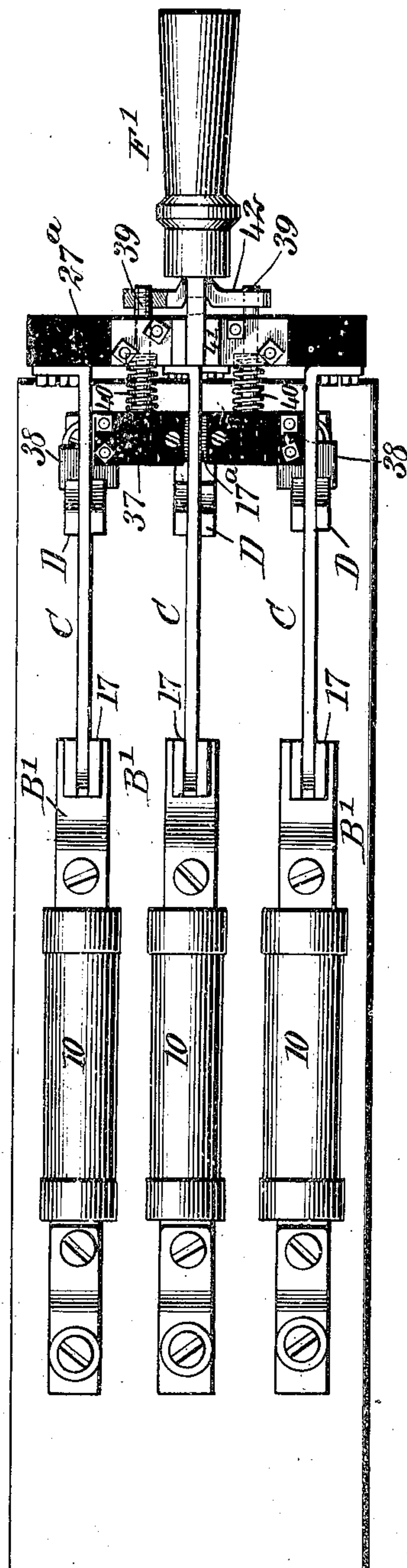


Fig. 5.



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# UNITED STATES PATENT OFFICE.

GUSTAV W. LIDEN, OF NEW YORK, N. Y.

## ELECTRIC SWITCH.

No. 847,087.

Specification of Letters Patent.

Patented March 12, 1907.

Application filed November 23, 1905. Serial No. 288,717.

*To all whom it may concern:*

Be it known that I, GUSTAV W. LIDEN, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Electric Switch, of which the following is a full, clear, and exact description.

My invention relates particularly to what is known as "knife-blade" switches, and has for its object to provide a simple, economic, and readily-applied latch which will automatically lock the switch as the switch is closed and automatically unlock the switch as it is opened.

A further purpose of the invention is to provide a very simple, positive, and strong connection between the fuses and their binding-posts, necessitating the use of but a single screw.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improved switch. Fig. 2 is a longitudinal central section through the same. Fig. 3 is a perspective view of one of the combined binding and knife-hinge posts. Fig. 4 is a transverse vertical section taken practically on the line 4 4 of Fig. 1, and Fig. 5 is a plan view of a slightly-modified form of the switch.

A represents the base or support for the switch, which base or support is preferably made of slate, and under the form of construction shown in Figs. 1 and 2 two fuses 10 are mounted parallel with each other longitudinally of the said base, and each fuse is provided with a binding-post B at its outer end and a combined binding and knife-hinge post B' at its inner end. Each of the binding-posts B consists of a substantially flat body 12, the inner end of which body is more or less enlarged and is provided with a horizontal slot 13. The said slots 13 receive the horizontal members of angular connecting-plates 14, the vertical members of the said plates being attached to the outer ends of the said fuses, as is best shown in Fig. 2. These connecting-plates are held in firm engagement with the body portions of the binding-posts

B by means of single tap-screws 15, which pass through the slotted portions of the said binding-posts and into the said base, if desired. The binding-posts B are provided at their outer ends with binding-screws 16 of any approved type. Each of the combined binding and knife-hinge posts B' are of the same construction and each consists of a substantially flat base 12<sup>a</sup>, thickened somewhat at its inner end and provided at said end with a longitudinal slot 13<sup>a</sup>, and the slots 13<sup>a</sup> of the said posts B' receive the horizontal members of angular connecting-plates 14<sup>a</sup>, whose vertical members are secured to the inner ends of the fuses. These plates are secured to the body portions 12<sup>a</sup> of the posts B' by single tap-screws 15<sup>a</sup>.

At the outer end portion of the body of each combined binding and knife-hinge posts an upwardly-extending pillar 17 is made integral with the base, and the said pillars at their upper ends are provided each with a vertical slot 18 and with apertures 19, extending through the slotted portions from side to side, as is shown best in Fig. 3. A knife-blade C is provided for each of the binding-posts B', the inner ends of the said blades being made to enter the slots 18 in the pillars 17 of the said posts B' and have hinge connection therewith by passing suitable bolts or pins 20 through the apertures 19 in the pillars 17 and corresponding apertures in the knife-blades.

The outer end portions of the knife-blades C are adapted to engage with contact-posts D, which latter posts are located near the end portion of the base, as is shown in both Figs. 1 and 2, and each of the said contact-posts consists of a substantially flat body 21, secured to the base by a binding-screw 22 and a pillar 23, which extends up preferably from the inner end of the body, the upper outer edge of which pillar 23 is given a downward bevel, as is shown at 24, and below this bevel-surface 24 of the pillar in the same or outer side a recess 25 is produced. Furthermore, the upper end portion of each pillar 23 is provided with a vertical slot 26, adapted to receive the outer end portion of a knife-blade when the switch is closed.

The outer ends of the knife-blades C are secured to a cross-bar 27, made of insulating material, and inwardly-extending rods 28 are secured at their outer ends to the said cross-bar 27, and said rods pass loosely through apertures made in the body 29 of a



latch E, located between the cross-bar and the contact-posts D. The body 29 of the latch E is made of insulating material, and said body at each end is provided with a metal latch-plate 31, the said latch-plates extending out beyond the ends of the body and beyond their inner sides, and the outer portions of the said latch-plates are made to enter and have movement in slots 29<sup>a</sup>, produced in the knife-blades C near their outer ends. In the further construction of the latch springs 30 are coiled around the rods 28, which springs are located between the outer side face of the latch-body and the inner side face of the cross-bar 27, as is shown in Fig. 1.

It will be observed that when the knife-blades are carried down to close the switch the latch-plates will engage with the inclined surfaces 24 of the contact-posts D and will slide down said inclined surfaces to the recesses 25 in said contact-post D, into which recesses the latch-plates will be forced by the springs 30, thus securely locking the switch closed. It is obvious that should an imperfect contact occur between the posts D and the knife-blades the latch-plates by their engagement with the inclined surfaces 24 of the contact-posts would make a good contact, said plates thus serving as conductors.

A release-rod 32 is secured in the central body portion of the latch E by means of a nut 33, for example, and a collar 33<sup>a</sup>, and this release-bar extends out loosely through an opening in the central portion of the cross-bar 27, as is shown in Fig. 2, and is provided with a head 34 at its outer end. A handle F is provided to operate the latch and to raise and to lower the said knife-blades, and the said handle is pivoted in ears 35, produced upon the upper face of the cross-bar 27, and said handle F near its pivot-point is provided with a downwardly-extending forked finger 36, the forked portion whereof receives a release-rod 32 at the rear of its head 34. Thus in operation, the switch being locked and it being desirable to open the same, as the handle F is elevated the latch E is released from locking engagement with the contact-posts D and the connected knife-blades are carried up out of engagement with said contact-posts and can be readily drawn over upon the fuses. When the switch is to be closed, the handle is also utilized to carry the knife-blades over and force them down into the slots 26 of the contact-posts D, and in so doing the latch-plates of the latch E are compelled to engage with said contact-posts and to enter the recesses 25 when the knife-blades have been seated in such posts.

In Fig. 5 I have illustrated a slight modification of the switch, in which three fuses are employed. The binding-posts for all of the fuses are the same as shown in Fig. 1 and are similarly designated. All of the knife-blades C are attached to a cross-bar 27<sup>a</sup>, cor-

responding to the cross-bar 27 and made also of insulating material, and between the two outer knife-blades C a latch E' is mounted to slide, corresponding to the latch E, the latch E' comprising a body 37<sup>a</sup>, of non-conducting material, made in two sections connected by a metal plate 17<sup>a</sup> and metal latch-plates 38 at the ends of the body, adapted to slide in the outer knife-blades C, as in the construction shown in Fig. 1, and said latch-plates 38 are adapted to engage contact-posts D for the outer knife-blades in the same manner as has been described with reference to Fig. 1; but an ordinary slotted contact-post D is placed to receive the outer portion of the intermediate knife-blade C when the switch is closed, and the intermediate knife-blade is provided with a slot through which the connecting-plate 17<sup>a</sup> loosely passes.

Rods 39 are secured to the body of the latch-bar E', one at each side of its center, and these rods pass outwardly and loosely through the cross-bar 27<sup>a</sup>. Each rod is surrounded by a spring 40, located between the latch E' and the cross-bar 27<sup>a</sup>. Ears 41 are secured upon the upper central portion of the cross-bar 27<sup>a</sup>, and in these ears the inner end of a handle F' is pivoted, corresponding to the handle F, and an inverted-T projection 42 is carried down from the handle near its pivot end, and the outer ends of the rods 39 are secured to the horizontal section of said projection, so that a switch constructed as shown in Fig. 5 is operated identically with the switch illustrated in Fig. 1.

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

1. In an electrical switch, binding-posts, knife-blades pivotally connected with the binding-posts, contact-posts adapted to receive free portions of the said knife-blades, said contact-posts being provided with keeper-heads, a latch operating between the knife-blades to and from the keeper-sections of the said keeper-posts to lock the said knife-blades to said contact-posts or to unlock them therefrom.

2. In an electric switch, binding-posts, knife-blades pivoted to the said posts, a connecting medium between the outer ends of the said knife-blades, contact-posts having slotted and beveled upper ends and recesses below the beveled surfaces, and a spring-controlled latch operative between the knife-blades in front of the contact-posts, for locking engagement with the keeper-sections of said posts.

3. In an electric switch, binding-posts, knife-blades pivoted to the said posts, a connecting medium between the outer ends of the said knife-blades, contact-posts having slotted and beveled upper ends and recesses below the beveled surfaces, and a spring-controlled latch operative between the knife



blades-in front of the contact-posts for locking engagement with the keeper-sections of said posts, the said latch consisting of a body of insulating material and metal latch-plates which engage with the contact-posts, whereby the said latch acts as a locking device and a conductor.

4. In electric knife-blade switches, a combined latch and conducting device carried by the knife-blades and adapted for engagement with the contact-posts of said blades.

5. In an electric switch, binding-posts, contact-posts, the contact-posts being provided with recesses in their outer faces and with slots in their upper ends, knife-blades pivoted to the binding-posts, being adapted to enter the slots in the contact-posts, a spring-controlled combined lock-latch and conductor operatively placed between the said knife-blades and opposite the recessed

portions of the contact-posts for locking engagement therewith, a handle for operating the said knife-blades, and an operative connection between the handle and the latch.

6. In electric switches, the combination with a knife-blade switch, contact-posts for the switch, a combined latch and conducting device connected with the switch, a handle for the switch and an operative connection between the handle and the latch, whereby the movement of the handle for opening and closing the switch will move the latch out of and into engagement with the contact-posts.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GUSTAV W. LIDEN.

Witnesses:

J. FRED. ACKER,  
JNO. M. RITTER.