No. 817,222. PATENTED APR. 10, 1906.

H. E. CASE.

ELECTRIC SWITCH.

APPLICATION FILED MAR. 24, 1904.

Fig. 1.

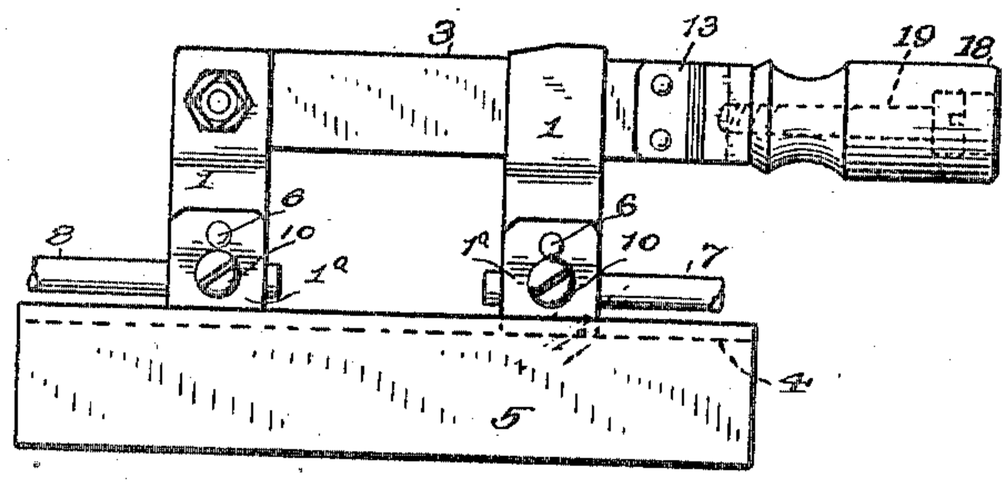


Fig. 2.

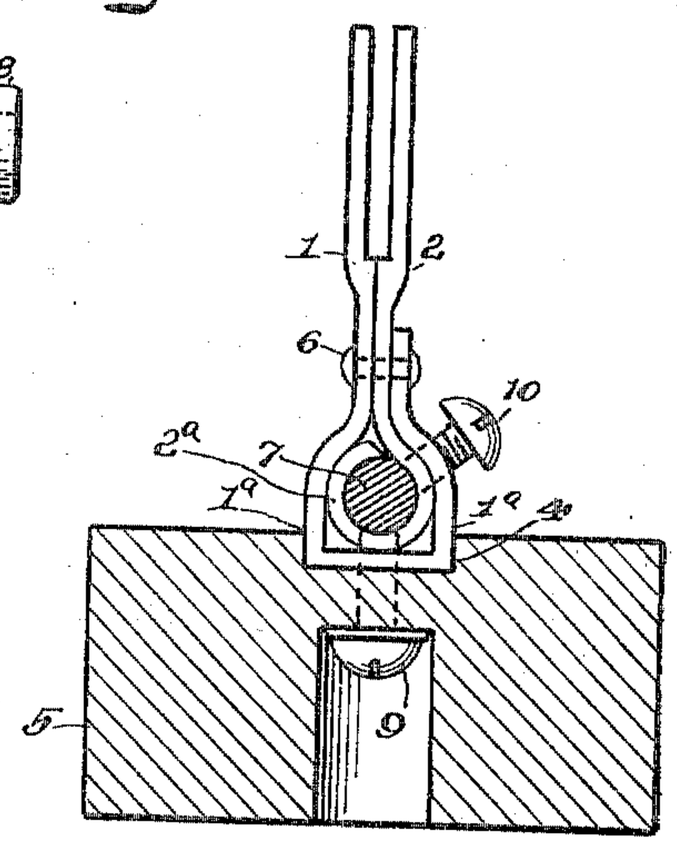


Fig. 3.

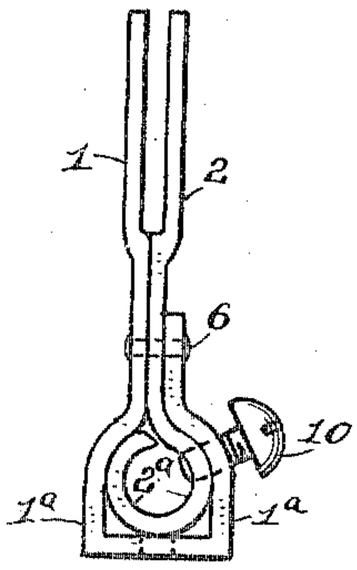


Fig. 4.

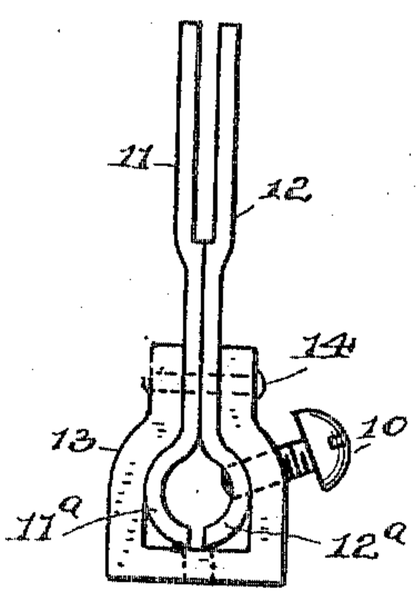


Fig. 5.

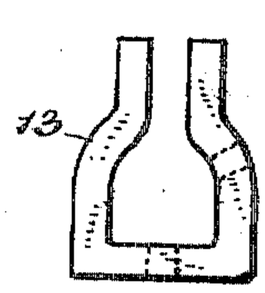
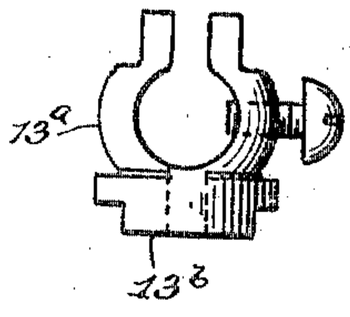
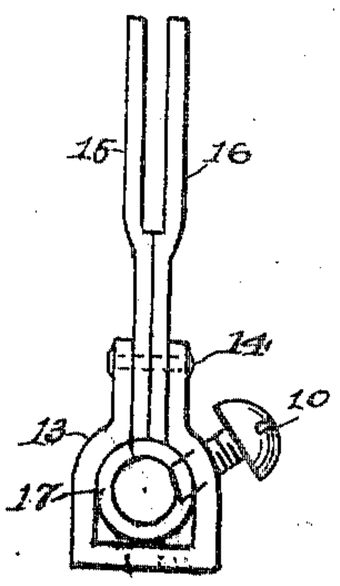


Fig. 6.

Fig. 7.





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HAROLD E. CASE, OF BRIDGEPORT, CONNECTICUT.

ELECTRIC SWITCH.

No. 817,222. Specification of Letters Patent. Patented April 10, 1906.

Application filed March 24, 1904. Serial No. 199,738.

To all whom it may concern:

Be it known that I, HAROLD E. CASE, a citizen of the United States, and a resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

My invention relates to improvements in electric switches, and particularly to that class known as "knife-switches."

The object of my invention is to increase the conductivity by all copper contact without increasing the cost of construction. Copper being the best conducting material, it is always used to form the direct contact of the knife and blades of a switch; but owing to the cost of copper other baser materials, like brass, are used for other parts of the blades. Therefore it is customary to insert brass bushings in the lower part of the blades to hold the contact-wires. This construction is objected to by the underwriters as not transmitting sufficient amount of current. To make this bushing of copper would entail an additional expense both for the copper and drilling the hole therein for the contact-wire. Another important feature required by underwriters is that the metal must be thick enough to form a sufficient number of threads for the binding and retaining screws to hold.

My invention consists in forming a chair for the support of the copper blades either by making this chair of one of the blades, while the other blade has a tubular end to receive the contact-wire, which tubular end is located in the chair, or by making a separate chair of brass, iron, or any other cheap material of sufficient thickness to contain the necessary threads for the binding and retaining screws and to secure an all-copper contact by means of thin copper blades inserted and fastened in said chair.

For a full and clear understanding of my invention reference is had to the accompanying drawings, in which—

Figure 1 is a side elevation of a knife-switch, showing my improved contacts and broken view of contact-wires therein. Fig. 2 is an enlarged sectional view of the insulated base and front elevation of one of the contacts with a sectional view of a contact-wire therein. Fig. 3 is an enlarged detail front elevation of the contact shown at Figs. 1 and 2. Fig. 4 is an enlarged modified construction showing a detachable chair with copper blades secured therein. Fig. 5 is an enlarged detail view of the chair shown at Fig. 4. Fig. 6 is an enlarged detail modified construction of the detachable chair. Fig. 7 is a modified construction of the blades shortened and attached to a chair, a section of a tube located in the chair and in contact with the blades.

Its construction and operation are as follows:

Referring to Figs. 1, 2, and 3, 1 and 2 are the leaves or blades arranged in parallel relation to admit the knife 3. The blade 1 is made long enough to form the chair portion 1^a, having a straight base or seat and partially straight sides adapted to be seated in the square groove or channel-way 4 of the base 5. This square chair formation and square groove or channel-way will effectually prevent the contact swiveling on the base 5. The lower end of the blade 1 is carried around to form the other side of the chair and is brought against the blade 2, extending far enough up to give a good firm support to both blades and is secured thereto and to the blade 1 by means of the rivet 6. The blade 2 extends within this chair formation of the blade 1 and is provided with the tubular portion 2^a to admit either of the contact-wires 7 or 8. A threaded hole extends through the base of this chair formation of the blade 1 and through the tubular portion 2^a of the blade 2 for the retaining-screw 9, Fig. 2, and through the sides for the binding-screw 10.

From the above description it will readily be seen that a strong construction and an all-copper contact is secured of comparatively thin metal. The copper blades need be of no thicker material than is required to convey the current and stand the fatigue incidental to the engagement of the knife therewith, while the combined thickness of the two copper blades will furnish ample threading capacity for both the binding and retaining screws.

The same results are obtained, as above described, in the construction shown at Fig. 4, wherein to avoid confusion the numerals 11 and 12 will designate the blades. The lower ends of these blades are each provided with the semicircular formation 11^a and 12^a, which combined make a tubular receptacle for the contact-wire. 13 (see also Fig. 5) is a chair adapted to be seated in the square groove 4 of the insulated base 5, in which the two

blades 11 and 12 are firmly secured by means of the rivet 14. The chair 13 can be made of brass, iron, or any cheap metal of sufficient thickness to give the necessary support to the blades and holding capacity for the screws. In this construction it is not necessary for the retaining-screw 9 to project through the bottom of the chair into the tubular formation of the blades, as the chair will be thick enough to furnish sufficient number of threads for the screws. While the end of the binding-screw 10 will project through a hole in one of the semicircular formations of the blades, it is not necessary that this hole be threaded, as the only purpose of this screw is to bind the contact-wire. The chair 13 is made of thick sheet metal bent into the proper form to receive the ends of the blades, while the modified construction 13ª of this chair (shown at Fig. 6) is either cast or machined out of solid stock. In this construction the seat 13ᵇ is adapted to enter the square groove or channel-way 4 of the insulated base 5. In the modification shown at Fig. 7 the blades 15 and 16 are shortened and rest against the top of the copper tube-section 17, inserted in the chair 13. This construction, like the others, insures an all-copper contact.

From the foregoing description it will readily be seen that the dominating feature of my invention is to secure an all-copper contact with little or no additional expense of manufacture. To accomplish this, the chair formation is an indispensable feature whether the chair is a part of one of the blades or is a separate piece into which the blades are secured. This chair feature in one case, as before mentioned, is formed by doubling up one of the thin copper blades to give the necessary chair-support, and in the other case the thin copper blades are inserted in a chair of baser and cheaper material, so that in either case an all-copper contact is secured.

The detachable chair can be used without any change to form a connection between the knife 3 and the wooden handle 18, as shown at Fig. 1, the screw 19 extending through the handle 18 and into a threaded hole in the bottom of the chair.

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

1. A knife-switch having an insulating-base provided with an alining groove or channel-way, a contact comprising blades of different lengths, the lower end of one blade enveloping the lower end of the other blade with a chair-like formation adapted to be seated in said channel-way and be secured therein, means on the lower end of the other blade to embrace the contact-wire, means for securing said blades together at a point above said contact-wire, for the purpose set forth.

2. In a knife-switch, the combination with an insulating-base having a channel-way, of a contact comprising blades of unequal lengths, and having the upper ends in parallel relation to receive the knife and form the contact, a chair formed of the lower end of the longest blade adapted to be secured in said channel-way, means for securing the end of said long blade to the vertical body portion of both blades and above said chair, the lower end of the shortest blade adapted to embrace a contact-wire and within said chair, for the purpose set forth.

3. A contact for a knife-switch comprising brush-blades of unequal lengths, the lower end of the shorter blade having a seat for a contact-wire, a chair formed of the longer blade adapted to embrace said seat, means for securing the extreme lower end of the longest blade to the vertical body portion of both blades, for the purpose set forth.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 15th day of March, A. D. 1904.

HAROLD E. CASE.

Witnesses:
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George W. Finn.