

July 1, 1930.

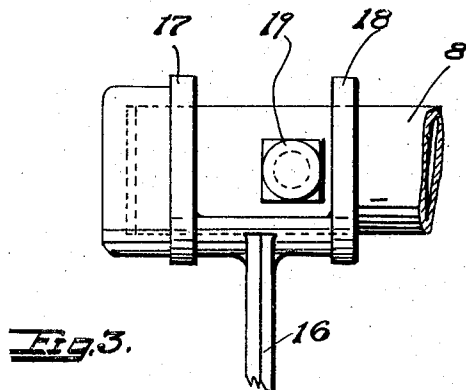
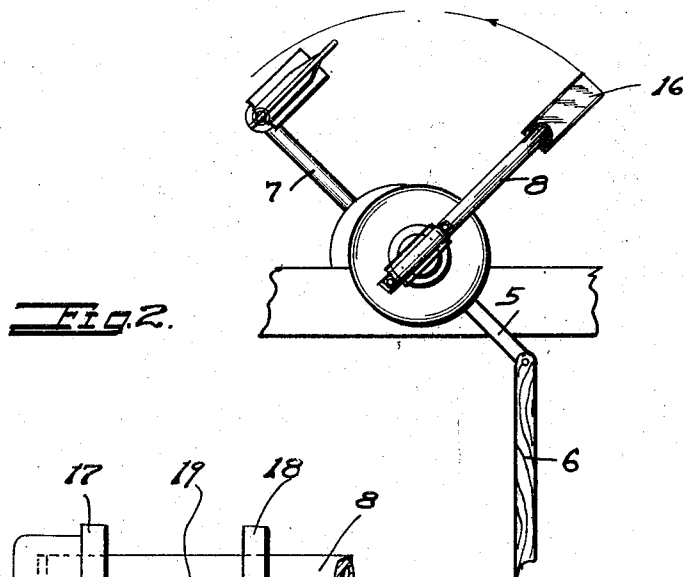
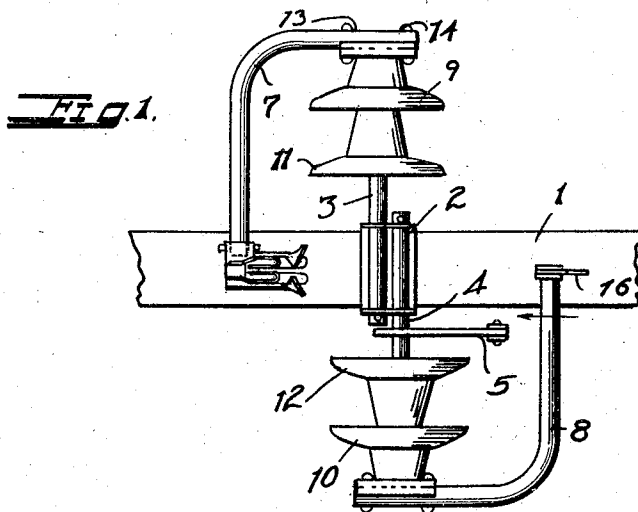
A. J. PAHL

1,769,600

ELECTRIC SWITCH

Filed May 22, 1928

2 Sheets-Sheet 1



Inventor
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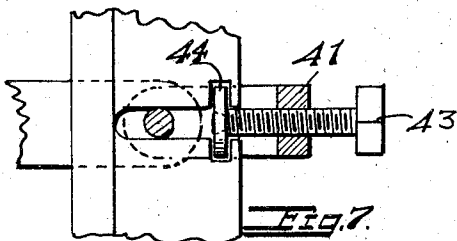
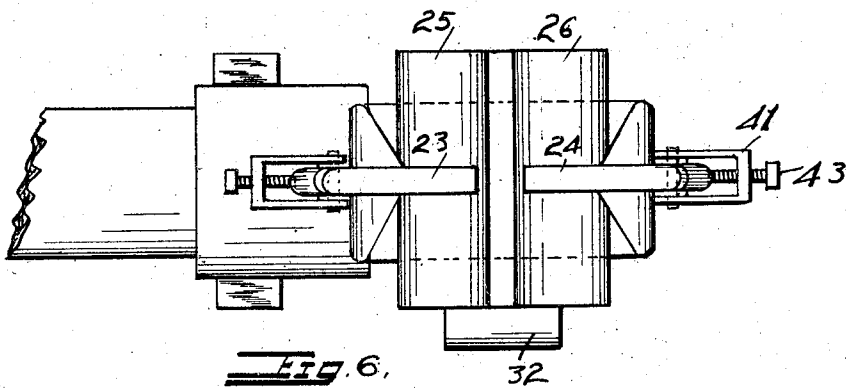
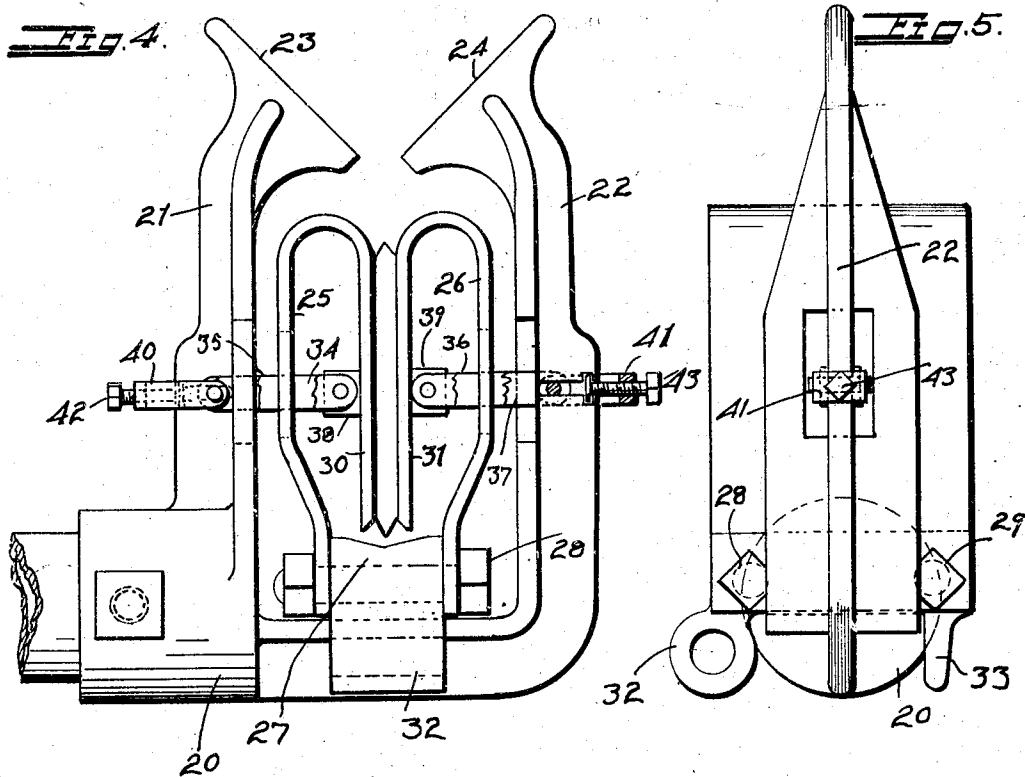
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1,769,600

ELECTRIC SWITCH

Filed May 22, 1928

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

AUGUST J. PAHL, OF SAN FRANCISCO, CALIFORNIA

ELECTRIC SWITCH

Application filed May 22, 1928. Serial No. 279,648.

This invention relates to a switch especially intended for heavy duty work where it is necessary to supply means to increase the pressure of the contacts upon one of the contact blades, and to, at the same time provide means whereby the pressure of contacts may be released when an attempt is made to remove the blade from the spring contacts.

It will be understood by those skilled in the art that where high tensioned switches are exposed to the atmosphere for a long period, and where other heavy duty switches are permitted to remain engaged with the spring contacts for a long time, that the tendency is for the switch blade to become somewhat corroded with the contact with the spring contact point, and it is necessary to provide a very heavy mechanism to pull the blade apart from the contact.

In the present instance means is provided to increase the pressure of the spring contact upon the blade at the time of engagement of the blade with the spring contact, and to, at the same time provide means whereby the spring contact blade will be pulled slightly apart with the attempt to disengage the knife switch from the spring contact, a special joint being used for this particular purpose.

While this toggle joint effect has been shown in connection with a special high tension form of switch, it will be understood that the toggle joint blade releasing mechanism may be applied to any form of heavy duty switch, and this description is not intended to be limited to the particular form of high tension switch illustrated in the drawings herewith.

Other objects of the invention will be apparent as the description proceeds.

An embodiment of the invention is shown in the accompanying drawings in which the same reference numeral is applied to the same portion throughout the several figures of the drawings and of which there may be modifications.

Figure 1 is a plan view of one of these high tensioned switches as it applies to the cross arm showing the contact separated.

Figure 2 is an end view of the switch with the contact separated,

Figure 3 is a plan view of a portion of one of the switch arms at the place where it joins one of the knife contacts showing the slight movement allowed therein.

Figure 4 is a side elevation of the spring contact, only a portion of the supporting arm being illustrated,

Figure 5 is an edge elevation of one of the spring contact holders looking at right angles to Figure 4,

Figure 6 is a plan view of the spring contact holder shown in Figure 4, and

Figure 7 is a detail illustrating the yoke for adjusting the throw of the toggle joint link.

The numeral 1 indicates the cross arm on which the U shaped steel yoke 2 is mounted which carries the two rods 3 and 4 which turn to permit the switch blade to engage the spring contact.

In actual practice the rod 4 is rotated by means of the arm 5 which is connected to a long wooden pole 6. The rod 3 is ordinarily fixed substantially in the position indicated.

The contact carrying arms 7 and 8 are connected to the outer insulators 9 and 10, said insulators being also connected to another insulator 11 and 12 in a manner well known in the art. The arms 7 and 8 are L shaped with each leg of about the same length as the other one, and they are connected to the outer insulators by means of suitable bolts, 13 and 14 at each end.

The arm 8 carries the knife switch blade 16 which has the yoke 17 and ring 18 secured thereto, which yoke and ring pass around the end of the rod 8, and a bolt 19 passes through the rod and permits a slight radial and endwise movement of the knife switch 16 so that there is a slight play as the knife blade 16 is brought into contact with the spring contact.

The rod 7 carries a casting 20, with two arms 21, 22 projecting upwardly therefrom, which arms have sloping faces 23, 24 to insure the direction of the switch blade 16 into the space between them, and to guide the switch blade into the space between the two spring contacts 25, 26. The spring contacts are connected to a movable block 27 by means of two bolts 28, 29 and said spring contacts have

their ends bent over so that their inner ends will lie parallel with each other as indicated at 30, 31, and provide the necessary area of contact with the knife blade 16. The block 27 has a lug 32 with an opening therein to which the contact making cable is connected, and on the opposite side of the block there is a flange 33, so that the block 27 is free to move up and down slightly save where the attachment thereto of four links 34.

The links 34, 35 are pivotally connected to a lug 38 on the spring contact 30, while the links 36, 37 are pivotally connected to a lug 39 on the spring contact 31. These links extend through holes in the back of the spring contact, and are pivotally connected to two yokes 40, 41, said yokes being held in a fixed position by reason of the bolts 42, 43 which bolts have a washer 44, 45 riveted thereto in each instance, said bolt and washers holding the yokes 40, 41 fixed in any desired adjustment so as to insure the proper pressure being applied by the spring contact 30, 31 to the knife switch, and at the same time they insure the separation of the spring contacts whenever an attempt is made to pull the knife blade away from the spring contact.

It will be observed that if the knife blade is but very slightly thicker than the actual space between the two spring contacts 30, 31 when the links are each in alignment that the tendency will be for those links to cause the spring contacts to bear upon the blade with very great force when the blade is forced between the spring contacts, and similarly when an attempt is made to release the blade whatever lifting may be due to friction or the fact that the blade is corroded in contact with the spring contact will cause the links to separate the spring contacts sufficiently so as to insure the immediate release of the blade.

It will be apparent that this method of separating the spring contacts from each other as shown in connection with an ordinary type of high tensioned switch, that it may be applied to any heavy duty switch where the spring contacts are to be forced into engagement with the knife blade heavily, and where it is necessary to provide positive means for disengaging the spring contact from the knife blade at the moment of opening the switch.

Having thus described my invention, what I desire to secure by Letters Patent of the United States is as follows, but modifications may be made in carrying out the invention as shown in the drawings and in the above particularly described form thereof, within the purview of the annexed claim.

I claim:

A terminal block, contact clips secured upon said terminal block adapted to engage a switch blade said contacts being formed by bending the clips back upon themselves and having their ends forming oppositely dis-

posed contact surfaces, a switch blade adapted to engage said surfaces, and links secured at the extending ends of said clips adapted to pull them apart as the switch blade is withdrawn therefrom to thereby permit an easy withdrawal of said switch blade.

In testimony whereof I have hereunto set my hand this 9th day of May, A. D. 1928.

AUGUST J. PAHL.