

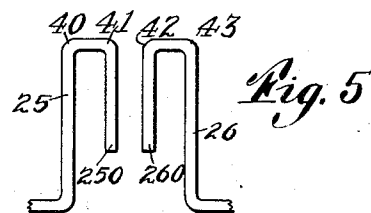
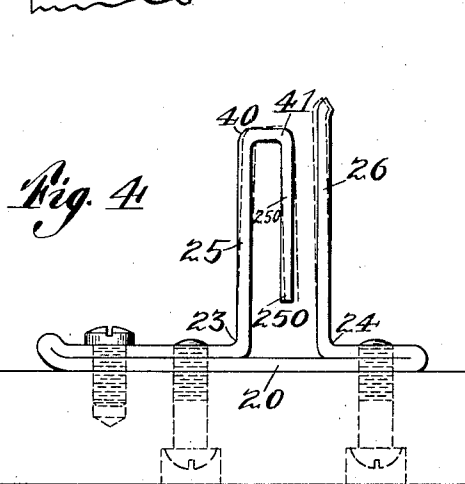
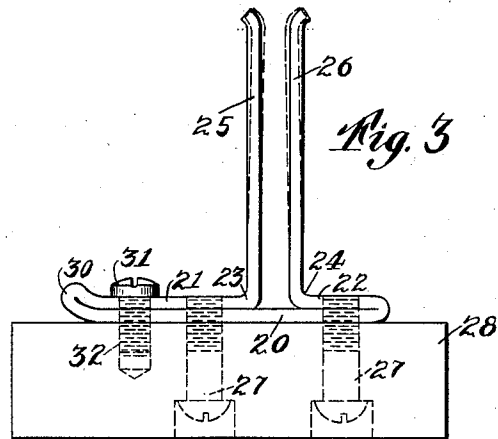
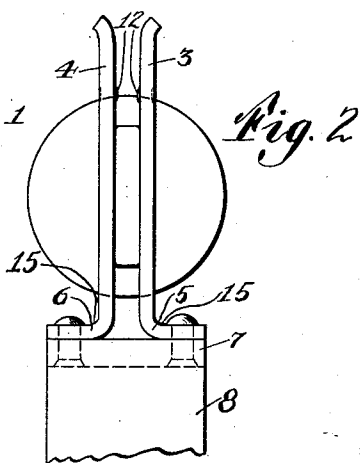
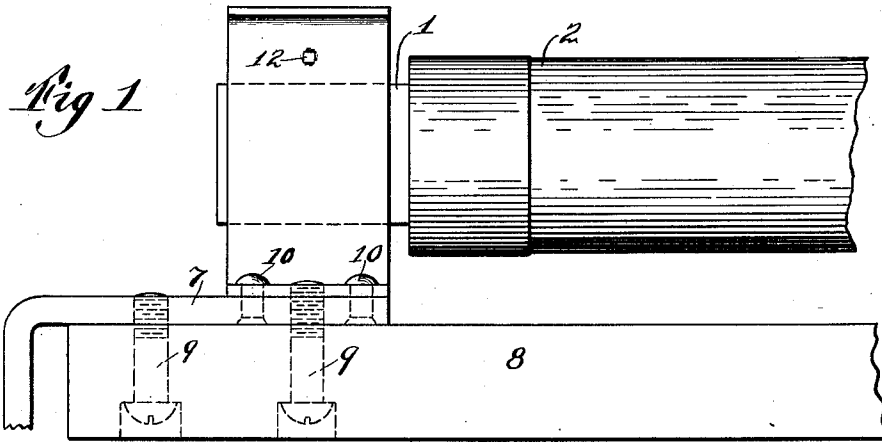
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E. G. JOHNSON

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ELECTRICAL CONTACT JAW

Filed Aug. 13, 1924



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UNITED STATES PATENT OFFICE

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ELECTRICAL CONTACT JAW

Application filed August 13, 1924. Serial No. 731,777.

Switch and fuse jaws and the like have heretofore been formed up of bent sheet or bar stock, the bends being so disposed that a tendency to straighten them such as may be occasioned by the heating effects of the current passing therethrough, tends to separate the prongs or contact elements so that the switch or other blade which passes therebetween and is the mating contact member becomes less firmly gripped. This increases the contact resistance between the members and the consequent heating effect, which in turn tends to further separate the contacts. For this reason it has often been found necessary to spring the jaws together to such an extent when the blade is removed that it is very difficult to insert the blade, a heavy pressure on the blades when the parts are cold being necessary in order that sufficient pressure to maintain the firm contact necessary to properly carry the desired current may be obtained after the parts have been heated by the passage of that current.

In my application Serial No. 709,651 filed June 12, 1924, for Switch jaws and method of manufacture, a type of switch jaws is disclosed and claimed in which heating causes them to grip the mating contact blades or contacting member more instead of less tightly than when the parts are cold. In the form there disclosed heating causes both the jaws to tend to bend in the same direction relative to their supporting bases, the contact portion of one, however, to a greater extent than the other so that the resultant effect is to urge these contact portions closer together as they become more highly heated.

In the present invention the jaws are so formed that under heating effects the contact portions tend to bend in opposite directions relative to their bases and toward each other. There is thus no tendency for the jaws to change the angular position of the blade or other contact therebetween relative to the supporting base when the parts become heated as there is in the construction of my prior application hereinbefore referred to, and the gripping effect due to the heating in the case of the present invention is materially greater. Of course as the gripping effort

becomes greater the contact resistance between the parts is decreased which acts to decrease further heating.

For a more complete understanding of this invention, reference may be had to the accompanying drawings in which

Figure 1 is a fragmentary side elevation of a fuse mounting showing the clip or contact jaws at one end thereof constructed according to this invention.

Figure 2 is an end elevation thereof.

Figure 3 is a side elevation of jaws particularly designed for a switch.

Figure 4 is a similar view of a modified form of switch jaw.

Figure 5 illustrates a further modification of the jaw contacting elements.

Referring first to Figures 1 and 2, the clip or jaws for receiving the conductor blade 1 of the fuse 2 comprises a pair of spaced bars or strips 3 and 4, these bars being spaced apart sufficiently to permit the conductor 1 to be gripped tightly therebetween. At their lower ends they are turned outwardly away from each other as shown at 5 and 6 to form base portions which are attached as by means of rivets 10 to a conductor bar 7 shown as fixed to the panel 8 as by means of the screws 9. Above the normal position of the conductor 1 when placed between the bars 3 and 4 they may have struck inwardly therefrom projections 12 which act in addition to the pressure exerted by the resiliency of the bars against the conductor 1 to hold the conductor in position.

Any heating of the bars 3 and 4 causes the bends at 15 between their upstanding and base portions to tend to straighten, thus tending to bend their upper ends toward each other and increasing the pressure with which the parts 3 and 4 engage the conductor, thus decreasing the contact resistance between these parts and reducing the tendency to further heating.

In Figure 3 a construction particularly applicable to knife switches is shown. This comprises a piece of bar stock having a portion intermediate its ends as at 20 substantially flat, portions at either end thereof being bent toward each other and overlying

the upper face of the portion 20 as shown at 21 and 22. The ends of these portions are then bent upwardly as at 23 and 24 to form upstanding spaced contact members 25 and 26. Screws as 27 threaded through the portion 20 and the portions 21 and 22 on opposite sides of the upstanding contacts 25 and 26 may be employed to fix the jaw to a supporting panel or block 28. As shown one end portion of double thickness as that formed by the intermediate portion 20 and the overlying portion 21 is bent upwardly as at 30 either at the corners only or entirely across the width of the material to retain the conductor wire in position beneath the head 31 of a binding screw 32 threaded through the portions 21 and 20 adjacent thereto. The intermediate portion 20 in this construction serves as a conductor joining the two contact members. Here also it will be seen that if the jaws are heated the contacting portions 25 and 26 will tend to move toward each other as shown by dotted lines, the bends at 23 and 24 being straightened by the heating action. The bends at the ends of the intermediate portion are held against unbending by the screws 27. If a switch blade is placed between these jaws preventing them from actually moving together to an appreciable extent the pressure on the switch blade is correspondingly increased.

In Figure 4 a slight modification is shown in which one of the contacts is formed double, as shown the contact 25 being extended and its end bent downwardly as at 250 toward the portion 20 and facing the contact member 26. Where this construction is employed the heating not only tends to straighten the bends at 23 and 24 but also tends to straighten the bends at 40 and 41 where the end 250 is bent to extend downwardly toward the intermediate portion 20. There is thus the cumulative effect of the partially straightening of all of these bends tending to further increase the pressure exerted on the switch blade which is passed between the members 250 and 260. It is of course evident that if desired one of the contact elements may be extended and bent back parallel to itself to form a double prong for the fuse clip otherwise formed as is illustrated in Figures 1 and 2.

In place of forming only one contact element double, both may be formed double if desired as shown in Figure 5, the free ends of both of the contact strip being bent downwardly facing the opposite strip as shown, so that the ends 250 and 260 of the portions 25 and 26 are in opposed spaced relation in position to receive the switch blade or fuse conductor therebetween. With this form the gripping effort due to heating is still further increased since the bends 42 and 43 of the member 26 also tend to straighten thus moving the end 260 toward the end 250.

In all the constructions shown it will be noted that the base portion of the jaws is formed by initial bends of the stock from the switch blade receiving portion in directions away from each other so that any heating of the contacts extending to these initial bends tending to straighten them results in the contacts bending toward each other. Where other bends in the stock are also made at the base of the jaw, as in the form shown in Figures 3 and 4, these bends are more remote from the heated portions so that the unbending tendency is less and such unbending is prevented from actually occurring except in inconsequential amount by the fixing of the superposed layers of stock together as by the screws 27 and 32 indicated in Figure 3.

Having thus described certain embodiments of this invention it should be evident that various changes and modifications might be made therein without departing from its spirit or scope as defined by the appended claims.

I claim:

1. Electrical contact jaws comprising a pair of electrically connected strip contact members spaced apart to receive a conductor member therebetween, each of said contact members having an integral fixed base portion at its lower end extending initially away from the other contact member, and at least one of said contact members having its free end bent downwardly and facing the other contact member to form a double prong.

2. A switch jaw comprising a piece of bar stock having a substantially flat portion intermediate its ends, the portions beyond said intermediate portion being bent toward each other to overlie said intermediate portion and being fixed thereto and then bent directly away therefrom and from each other to form a pair of contact members spaced to receive a conducting member therebetween.

3. A switch jaw comprising a piece of bar stock having a substantially flat portion intermediate its ends, the portions beyond said intermediate portions being bent toward each other to overlie said intermediate portion and being fixed thereto and then bent directly away therefrom and from each other to form a pair of contact members spaced to receive a conducting member therebetween, at least one of the ends of said strip being turned back against said intermediate portion and facing the opposite end to form a double prong.

4. A switch jaw comprising a piece of bar stock having a substantially flat portion intermediate its ends, the portions beyond said intermediate portion being bent toward each other to overlie said intermediate portion and being fixed thereto and form a base portion and then bent directly away therefrom and from each other to form a pair of contact members spaced to receive a conducting member

therebetween, and one end of said base portion having a part bent up to form a wire retaining element.

5 5. A switch jaw comprising a piece of bar stock having a substantially flat portion intermediate its ends, the portions beyond said intermediate portion being bent toward each other to overlie said intermediate portion and being fixed thereto and form a base portion
10 and then bent directly away therefrom and from each other to form a pair of contact members spaced to receive a conducting member therebetween, at least one of the ends of said strip being turned back toward said in-
15 termediate portion and facing the opposite end to form a double prong, one end of said base portion having a part bent up to form a wire retaining element.

20 In testimony whereof I have affixed my signature.

ERNEST G. JOHNSON.

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