Sept. 1, 1925. 1,551,568

E. G. JOHNSON

ELECTRICAL CONTACT JAWS

Filed June 30, 1923

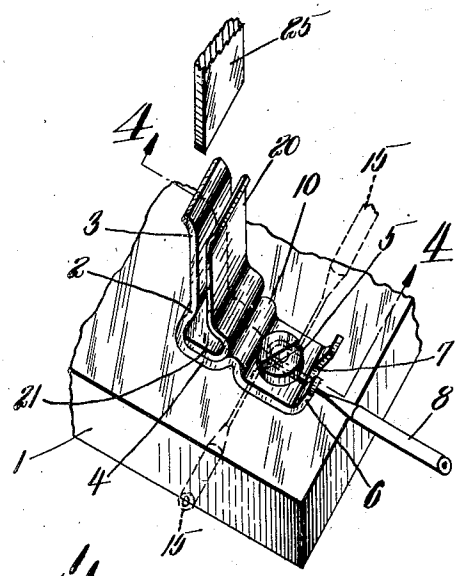


Fig. 1.

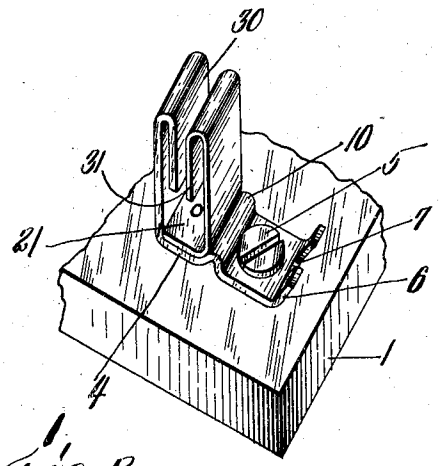


Fig. 2.

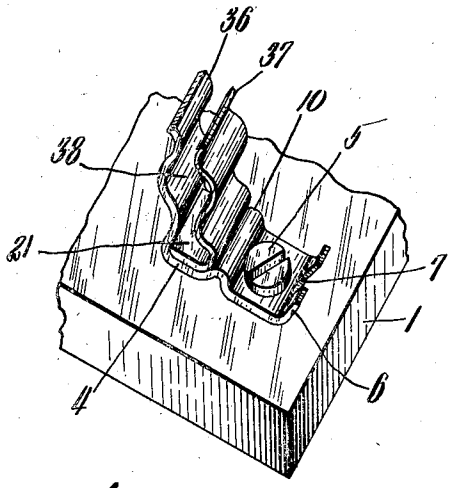


Fig. 3.

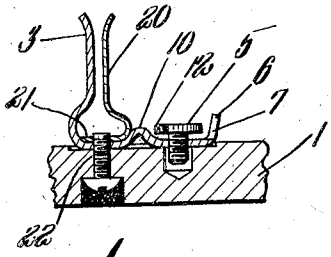


Fig. 4.

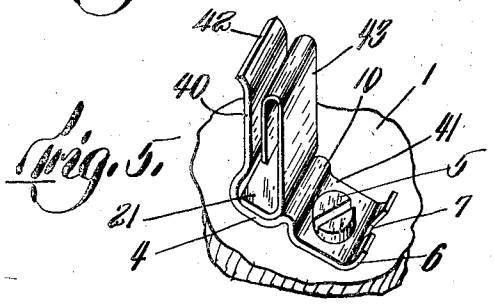


Fig. 5.

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UNITED STATES PATENT OFFICE.

ERNEST G. JOHNSON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO GRANVILLE E. PALMER, OF BROOKLINE, MASSACHUSETTS.

ELECTRICAL CONTACT JAWS.

Application filed June 30, 1923. Serial No. 648,713.

To all whom it may concern:

Be it known that I, ERNEST G. JOHNSON, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Electrical Contact Jaws, of which the following is a specification.

As commonly constructed electrical contact jaws, such as switch jaws or fuse clips, are composed of a U-shaped piece having its ends brought into sufficiently close relation to receive the mating contact of the switch, fuse, or the like therebetween, a screw or bolt being employed to fasten the base of the U-shaped piece to a separate piece on which is carried a wire-binding screw. These attaching screws or bolts some times become loose causing a poor contact to be made between the jaws and the binding screw piece and occasioning troublesome heating.

The wire binding piece is usually provided with a pair of upturned ears at either side of the binding screw to prevent the loop of wire from being squeezed out from beneath its head as it is being brought down thereon. This construction permits the wire to be brought in lengthwise of the binding piece only and necessitates bending the end of this wire into this direction in case it approaches from any other direction which is some times awkward or inconvenient.

This invention provides a construction in which the possibility of heating due to loose or faulty connection between the jaws and the binding screw piece is much reduced and wherein the wire may be brought to the binding screw either longitudinally or laterally from either side of the binding screw piece, and yet provide against the wire being crowded out from under the head of the screw as the latter is brought down thereon. The possibility of heating is reduced by forming one of the jaws integral with the binding screw piece and attaching the other jaw thereto. If this latter jaw becomes loose the first jaw is still operative to conduct the current directly to the binding screw so that at least half the carrying capacity of the jaws is always effective.

A further and important feature of the invention relates to a construction by which the resilience of a double jaw piece may be obtained while protecting it from the deleterious effects of arcing at the bend.

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

Figure 1 is an isometric view of a pair of contact jaws constructed according to this invention and shown as attached to a base of insulating material, the mating contact being shown detached.

Figure 2 is a similar view showing a modified construction.

Figure 3 is an isometric view showing a further modification.

Figure 4 is a section on line 4—4 of Figure 1.

Figure 5 is an isometric view showing a preferred form of jaws.

Referring first to the form shown in Figures 1 and 4, at 1 is indicated a piece of insulating material for supporting the jaws. 2 indicates a metallic strip bent angularly, one arm 3 of this strip being formed as one of a pair of contact jaws and the other arm 4, supported on the base 1, being arranged to receive the wire binding screw 5. The arm 4 has its free end upwardly turned as shown at 6 and the central portion of this upturned end is cut away as shown at 7, this providing an opening through which the wire shown at 8 may enter into position to be passed under the head of the screw 5. Between the arm 3 and its upturned end the arm 4 is formed with a transverse bead 10 which may, if desired, be formed by bending the arm 4 to form a single corrugation extending thereacross. This rib 10 and the bent up end 6 extend on opposite sides of the wire binding screw 5 and sufficiently close to the head 12 of the screw as to prevent the squeezing out of the loop of wire from beneath it when the head 12 is brought down on this loop. It will be noted that the wire may approach the binding screw either through the cutout 7, as shown in full lines in Figure 1, or it may approach laterally from either side as shown in dotted lines at 15 in the same figure. In all cases the rib and the upturned end 6 prevent the wire from squeezing out from beneath the head of the screw.

Seated between the rib 10 and the upwardly extending jaw arm 3 is a supplemental jaw piece 20 which has it lower end

bent angularly to form a foot 21 arranged to fit the upper face of the arm 4 between the rib 10 and the arm 3 and to be made fast thereto as by means of a screw 22 passing upwardly through the insulating base 1 and threaded through the arm 4 and the foot 21. Should this screw become loose, thus establishing a faulty contact between the jaw piece 20 and the foot 4 and preventing proper electrical connection with the wire engaged by the screw 5, the jaw 3 still remains in proper conducting relation so that at least one half of the current-carrying capacity of the jaws is maintained. Further to insure proper action, the jaw piece 20 may be of considerably thinner material than the strip 2 so that when a mating contact element, as shown at 25 in Figure 1, passes between the jaws, the jaw 20 being more flexible than the jaws 3 yields sufficiently to permit the contact 25 to enter, the jaw 3 remaining substantially always in the same position so that even if the jaw piece 20 should fail to function properly to conduct the current, contact between the jaw 3 and its cooperating contact 25 is in no way interfered with.

In Figure 2 a slight modification of the jaws is shown in which the upper ends of the jaws are turned inwardly toward each other and then downwardly in opposed substantially parallel relation as shown at 30 and 31, this construction otherwise being the same as that shown in Figures 1 and 4.

In Figure 3 a further modification is shown in which the jaws 36 and 37 are bent so as to form a substantially cylindrical socket 38 therebetween below their upper ends for the reception of the round terminal end of a fuse of the cartridge type, fuses of comparatively small capacity being ordinarily formed with round terminal ends while large capacity fuses have flat terminal ends such as shown at 25 in Figure 1. Contact jaws such as shown may be employed in connection with switches, fuses, or other terminals as may be desired. The jaws may be formed in other ways, if desired, the forms shown being merely representative of the various uses to which such jaws may be put.

A preferred form is disclosed in Figure 5 in which one of the jaws 40, herein shown as that integral with the terminal screw arm 41, is single, having its upper end 42 bent away from the cooperating jaw piece 43 and extended above the same. The jaw piece 43 is double, being formed similarly to the jaws 30 and 31 shown in Figure 2. Single jaws have the advantage that any arcing which may take place on removing the mating contact from between the jaws follows the upper flaring ends without effecting the working contact faces of the jaws and their upper ends may become badly burnt without in any degree impairing the effectiveness of the mechanism.

The double construction shown in Figure 2 is of superior resilience since the resilience of the portion on either side of the top bend is available. Where both jaws are so formed, however, arcing takes place at the bend, impairing the resiliency of the metal and causing liability of breakage of the jaws at this point thus rendering them useless. By the construction shown in Figure 3 the superior resilience of the double form is utilized on one side, while the presence of the flaring upper end of the single jaw piece projecting above the bend of the double jaw causes all the arcing to take place at this point where it does little harm and saves the double jaw from injury.

It is also evident that many other changes and modifications coming within the spirit and scope of this invention as defined by the appended claims will suggest themselves to those skilled in the art.

I claim:

1. A device of the class described comprising a metallic strip bent angularly, one of the arms of said angle being formed as a contact jaw, and the other having a transverse bead spaced from said jaw and having a wire binding screw threaded therein outwardly of said bead, and a jaw piece having a foot seated on said strip between said bead and contact jaw and made fast thereto.

2. A device of the class described comprising a metallic strip bent angularly, one of the arms of said angle being formed as a contact jaw, and the other arm having its free end bent upwardly and having an upwardly extending transverse bead between said bent end and said jaw arm, a wire binding screw passing through said strip between said bead and bent end which are so positioned relatively thereto as to prevent a wire passed under the head of said screw from being squeezed out laterally therefrom as the screw is tightened, and a jaw piece having one end laterally bent to form a foot fitting between said bead and jaw arm and made fast thereto.

3. A device of the class described comprising a metallic strip bent angularly, one of the arms of said angle being formed as a contact jaw, and the other arm having its free end bent upwardly and having an upwardly extending transverse bead between said bent end and said jaw arm, a wire binding screw passing through said strip between said bead and bent end which are so positioned relatively thereto as to prevent a wire passed under the head of said screw from being squeezed out laterally therefrom as the screw is tightened, and a jaw piece having one end laterally bent to form a foot fitting between said bead and jaw arm and

made fast thereto, said bent end being cut away centrally to permit a wire to be led to said screw lengthwise of said strip.

4. A device of the class described comprising a metallic strip having a transversely extending bead and an upwardly bent end, a wire binding screw engaging said strip between said bead and end, the head of said screw being closely adjacent thereto, said end being cut away centrally to permit a wire to be brought to said screw lengthwise of said strip.

In testimony whereof I have affixed my signature.

ERNEST G. JOHNSON.