March 24, 1931. G. B. DUSINBERRE 1,797,467

CLIP

Filed April 4, 1922

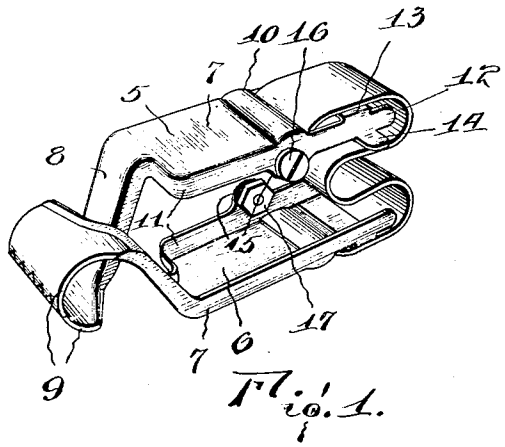
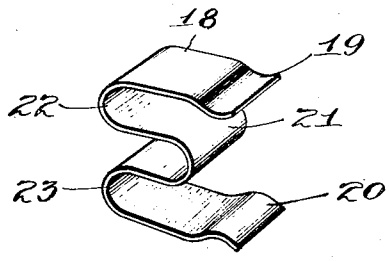


Fig. 1.

Fig. 2.



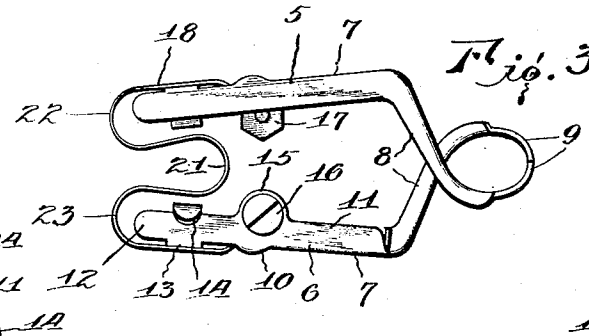


Fig. 3.

Fig. 5.

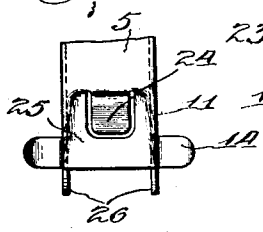


Fig. 6.

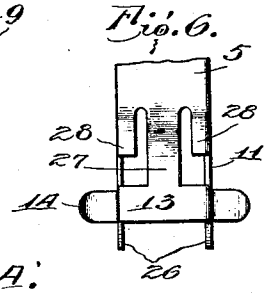
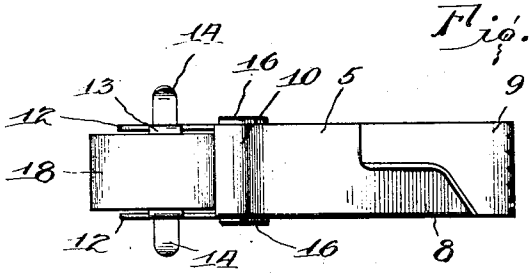


Fig. 4.



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UNITED STATES PATENT OFFICE

GEORGE BROWN DUSINBERRE, OF ELMIRA, NEW YORK

CLIP

Application filed April 4, 1922. Serial No. 549,628.

The invention seeks to provide an improved form of clip advantageously serviceable in forming an electrical connection between two conductors.

Where it is desired to establish a temporary contact between two conductors, as for example between the terminals of a storage battery and the lead wires from a charging circuit, it is a matter of considerable moment to secure a firm contact with immobility in the connecting clip. It is also a prime requisite that the parts of the clip be so arranged and constructed as to give long life and to avoid deterioration by the action of the electric current or other detrimental agents.

It has been found that clips of this nature are apt to be impaired by reason of the current passing through the spring members and causing loss of resilience in the latter through heating. It is an object of this invention to provide a spring of such character that it will resist deterioration of this kind. Moreover, the form of the spring is such that increased resilience is attained. It is also to be noted that by reason of the special form of spring used the jaws of the clip are given a movement more approximating a straight line perpendicular to the surface engaged than is possible with springs of the usual type.

A further advantage of this improvement resides in providing a binding post consisting of a screw passing through an ear of the clip member and cooperating with a nut thus permitting the wire of the conductor to be firmly held against the clip between the latter and the nut and likewise avoiding the possibility of cutting or spreading the wire under the screw head.

The advantages resulting from a structure made in accordance with my invention will be found from the following description and claims. While it will be obvious that considerable latitude may be exercised in the making of the devices according to my invention, however one form has been illustrated by way of example in the accompanying drawings in which

Fig. 1 is a perspective view of the clip assembled;

Fig. 2 is a perspective view of the spring;

Fig. 3 is a side elevation, and

Fig. 4 is a top plan view of the clip.

Figs. 5 and 6 are fragmentary plan views of modified forms of clip members.

In constructing a clip of the character described, I make use of a stamping of acid resisting metal. The upper stamping or jaw member 5 and the lower jaw member 6 are duplicates. Each member consists of a handle portion 7 and a laterally bent arm 8 having an inversely turned jaw 9. The face of the handle portion is bent up to form transverse rib 10. This forms a cove on the inner surface of the handle member. Both the handle member 7 and the arm 8 are inwardly flanged or ribbed as at 11. The extension 8 has one side coincident with the side flange of the handle portion 7 while its opposite side is substantially in the longitudinal axis of the member. The flange 11 is continuous along the edge of both the handle portion 7 and the extension 8.

The flange 11 is carried beyond the arm 8 well into the jaw portions 9 for the purpose of preventing distortion of the latter out of their co-acting relationship. It will be evident from the drawings that the extensions 8 when assembled are in crossed relationship.

The rear ends of the handle portions 7 carry parallel extensions 12 of the flanges 11. These extensions are connected by a transverse integral bar 13 for a purpose to be later described. One flange 11 carries on its corresponding end 12 a tang 14 opposite from the bar 13. The same flange also has a semicircular enlargement 15 opposite the rib 10. This enlargement is transversely punched to receive a screw 16, the inner end of which carries a nut 17 of hexagonal or analogous form.

As above stated, the members 5 and 6 are made resistant to acid. While this result may be obtained in a variety of ways, I prefer to form the parts from sheet iron stamped into shape. The stampings are then heavily coated with lead or other substance not easily affected by acid or oxidation.

The duplicate jaw members 5 and 6 are connected at their rear ends by means of a spring 18 of particular form. This spring

is sinuous or serpentine in form and is constructed of spring steel. As illustrated in Fig. 2, the ends of the spring are bent outwardly as at 19 and 20 to conform to the internal cove of the rib 10 of each jaw member. The spring consists of a central bend 21 with adjacent bends 22 and 23 connecting the central bend 21 with each of the ends 19 and 20 respectively. The bends 22 and 23 are reversely turned with respect to the central bend 21. The latter lies between the handle members 5 and 6. The bends 22 and 23 are substantially in the planes of the handle members 5 and 6 respectively. The spring 18 is relatively wide and flat and extends the full distance between the ends 12. The ends of the spring are passed over the cross bar 13 and underneath the rib 10 in the manner indicated in the drawings.

In Fig. 5, there has been shown a further modification in which the rear end of one of the jaw members has been cut with a U-shaped slot leaving a tongue 24. This tongue is bent up or displaced out of the plane of the member 5. Preferably the free end of the tongue is also bent back toward the member 5 to better engage the end of the spring. The portion of the member 5 lying immediately around the slot is shown to have been displaced from the plane of the member downwardly or in a direction opposite to the direction of bending the tongue 5. This forms a depressed surface 25 in the member 5 between the side flanges 11. The latter flanges carry the previously mentioned tangs 14 and have ears 26. Ears 26 project upwardly and form guards confining the spring and preventing it from slipping out of engagement with the tongue and corresponding parts of member 5. It is, of course, not obligatory to form the depression 25 and it is to be understood that the engagement of the spring with the member 5 can be accomplished by the tongue 24 and ears 26 alone.

A similar form of member 5 for accomplishing its engagement with the spring, is found in Fig. 6. The member is punched out to provide a cross-bar 13 opposite the tangs 14. Similarly there is left a bridge portion 27 connecting the cross-bar with the forward part of member 5. The portion 27 is bent down out of the plane of member 5 in the manner indicated. On each side of 27 and spaced therefrom by a slot, is a projection 28 which is bent upwardly so as to permit the end of the spring to rest on bridge 27 with its corners beneath the projections 28. It will be clear that either the bridge 27 or the projections 28 may be displaced sufficiently out of the plane of the member 5 to receive the spring without the necessity of displacing from said plane, the other holding means, be it the projections or the bridge.

A clip assembled in the manner above disclosed permits the use of a leaf spring of heavier material than is ordinarily possible in a device of this character. By reason of the plurality of bends in the spring whereby it is given a sinuous or serpentine form, the spring is unusually responsive to the hand of the operator in spreading the jaws 9. This is due to the fact that in pressing the handle members 5 and 7 together there are three resilient bends in the spring which give individually with the pressure of the hand on the handle members. At the same time it will be noted that the handle members are permitted in this manner to approach in straight lines rather than pivotally. That is to say, the bends 22 and 23 which normally would be fixed pivotal points are permitted to approach each other by reason of the resilience of bend 21. It follows that the jaws 9 have a substantial right line movement perpendicular to the battery terminal or other fixture to which they are attached.

By providing the tang 14, the screw 16 and nut 17, it is possible for the conductor for example, an insulated wire, to be firmly held by the tang 14 against the flange end 12 while the end of the wire is carried to the binding post where it is held between the enlargement 15 of the flange and nut 17. It is obvious that the position of the screw 16 and the nut 17 may be reversed from the positions shown in the drawings so long as provision is retained for holding the end of the wire between the flange and the nut on the side opposite from the screw head. In this way, there is no liability of the conductor being distorted or loosened from engagement in the act of tightening the screw 16.

From the above description, the nature of my invention will be evident to those skilled in the art to which it relates and it will also be apparent that while one preferred form has been disclosed, yet numerous changes may be made without departing from the spirit of the invention or its scope as defined in the appended claims.

What I claim is:

1. A three part electrical connecting clip including two members having crossed arms with interengaging jaws, and an unrestrained sinuous spring connecting said members.

2. A three part electrical connecting clip including two members having crossed arms with interengaging jaws, and a spring connecting said members, said spring being formed with a plurality of reversely directed freely movable folds.

3. A three part electrical connecting clip including two members having crossed arms with interengaging jaws, and a leaf spring, said leaf spring having end portions attached to the members and inner portions of the spring bent back along the direction of the end portions and meeting in a freely movable pivotal bend between said members.

4. A clip member having a jaw at one end and having the opposite end substantially flat, said flat end being slotted medially to provide a reentrant tongue out of the plane of said end.

5. A clip member having a jaw at one end having the opposite end substantially flat, said flat end being slotted to provide a tongue out of the plane of said end, and ears on said end.

6. A clip member having a jaw at one end and having the opposite end substantially flat, said flat end being slotted, the portions adjacent the slot being displaced in opposite directions from the plane of the member.

7. A clip comprising two members connected by a spring each member having a jaw at one end and having the opposite end substantially flat, said flat end being slotted, the portions adjacent the slot being displaced in opposite directions from the plane of the member to receive an end of the spring.

8. A battery clip including in combination a middle portion bent at its center and intermediate portions to form a plurality of substantially side-by-side bends and connected to opposite similar side members, the opposite portions of the clip being bent inwardly to form opposite legs, said legs crossing each other; the portions of the clip being further bent at the outer ends of said legs to form opposed clamping jaws; said jaws being at the end of the clip opposite the plurality of bends, and the said bends constituting a spring adapted to spread the side members apart and close the jaws.

9. A battery clip comprising in combination a strip of suitable metal bent at its center to form a central inwardly extending loop and at the outer ends of said loop being bent outwardly, and opposite similar side members connected thereto and extending beyond the central loop, the loop and bend constituting an approximately W-shaped spring adapted to spread the side members apart; the opposite portions of the clip beyond the said side members being bent inwardly toward each other at a point beyond the loop to form opposite legs, said legs crossing each other; and extremities of the clip being bent at the outer end of each leg to form opposed clamping jaws; said jaws being at the end of the clip opposite the W-shaped spring portion.

In testimony whereof, I have hereunto affixed my signature.

GEORGE BROWN DUSINBERRE.