Jan. 31, 1939. A. B. RYPINSKI 2,145,556

SOLDERLESS CONNECTER

Filed Feb. 3, 1937

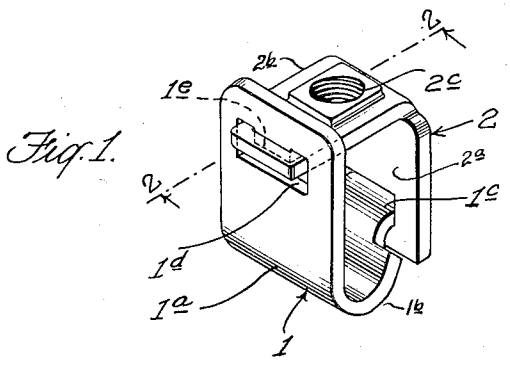


Fig. 1.

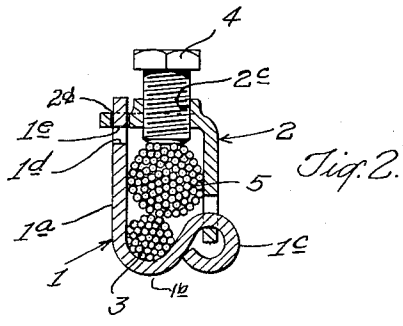


Fig. 2.

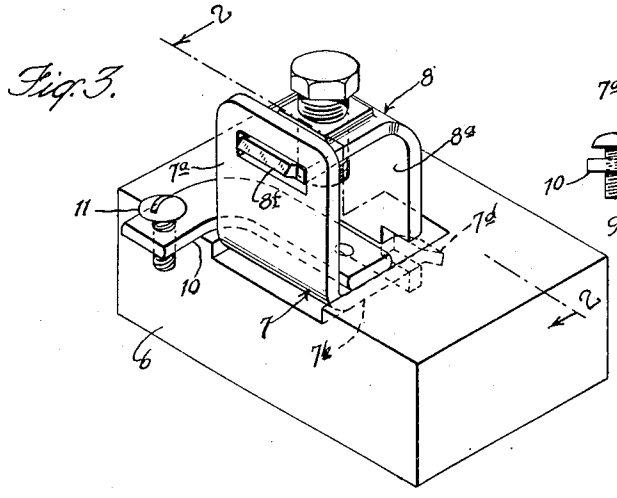


Fig. 3.

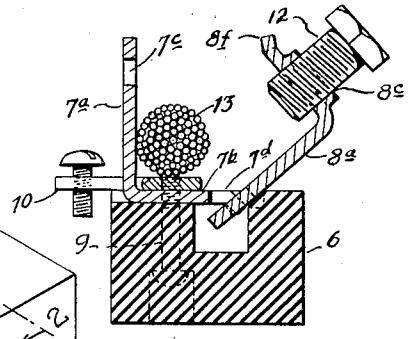


Fig. 4.

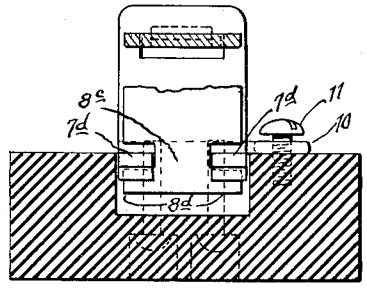


Fig. 5.

INVENTOR
ALBERT B. RYPINSKI
BY
George T. Gill
ATTORNEY

Patented Jan. 31, 1939 2,145,556

UNITED STATES PATENT OFFICE

2,145,556

SOLDERLESS CONNECTER

Albert B. Rypinski, Laurelton, N. Y., assignor to Metropolitan Device Corporation, a corporation of New York

Application February 3, 1937, Serial No. 123,835

3 Claims. (Cl. 173—263)

The invention herein disclosed relates to a solderless connecter for effecting an electrical connection between two electrical conductors. More particularly, the invention relates to a connecter that is suitable for making electrical connection between a relatively heavy cable and another conductor.

In making connections between electrical conductors, it is necessary that the two conductors between which the electrical connection is made be brought together, and maintained, in intimate contact. For this reason it is a common practice in the art to solder two conductors together for the purpose of effecting a good electrical connection between the conductors. The preparation of conductors for soldering and the soldering of conductors requires time and labor which makes this method of connection somewhat expensive, and in many instances it is extremely difficult to effectively solder two conductors together. Because of this, various types of solderless connecters have been devised which mechanically press and maintain electrical conductors in intimate contact to effect a satisfactory electrical connection. But heretofore there has not been a suitable mechanical connecter for effecting an electrical connection between a heavy cable, for example, and another conductor, and it is an object of this invention to provide such a connecter.

In accordance with this invention, there is provided a connecter that essentially comprises two parts. These parts are hinged together so that they may be separated to receive a heavy cable, a cable of a size that can only be bent with great difficulty. When brought together the parts interlock and means are provided for pressing the cable and another conductor into intimate contact. The arrangement is such that the greater the pressure between the conductors in the connecter, the more securely the parts of the connecter are locked together.

Two forms of such a connecter, each embodying the invention, are disclosed in the accompanying drawing in which:

Fig. 1 is an isometric of one of the connecters;

Fig. 2 is a section of the same taken on the line 2—2 of Fig. 1;

Fig. 3 is an isometric of another form of connecter;

Fig. 4 is a section of the same taken on the line 4—4 of Fig. 3; and

Fig. 5 is a side elevation with part of the base broken away.

The connecter illustrated in Figs. 1 and 2 of the drawing essentially consists of two metal elements hingedly connected together. One of these elements 1 is of substantially L shape in end elevation, and the other element 2 is substantially the shape of an inverted L. The element 1 is made from a single piece of metal and includes a straight side or leg 1*a* and a base 1*b* extending substantially laterally of the side 1*a*. The base 1*b* has a curved depression running longitudinally thereof to accommodate a circular cable such as the cable 3. The end of the base 1*b* is reduced in width to form an extension 1*c* of less width than the base. Adjacent the end of the side 1*a* there is provided a slot 1*d* having a lateral projection or tongue 1*e* extending transversely of the slot.

The element 2 is also a metal element and made from a single piece of heavy sheet or plate metal. This element includes a side wall 2*a* and a lateral extension 2*b* extending from the end of the side wall. Adjacent the opposite end of the side wall 2*a* there is provided a slot through which the extension 1*c* of the base 1*b* extends. The base 1*b* is bent around the end of the side wall 2*a* and the two elements are thus loosely hinged together, the slot in the wall 2*a* being such that there is permitted a limited amount of relative movement between the elements radially of the axis of the hinge.

The lateral extension 2*b* is of less width than the side wall 2*a*. Through the extension 2*b*, there is formed an opening 2*c*. In forming this opening the metal is extruded to substantially increase the thickness of the metal around the opening. The sides of the opening are threaded and engage the threads of a set screw or bolt 4. The extension 2*b* is of such width that the end thereof is received, in the closed position of the connecter, in the slot 1*d* formed in the side 1*b* of the element 1. A slot 2*d* adjacent the end of the lateral extension 2*b* is positioned to receive the tongue 1*e* and effect an interlocking engagement between the elements 1 and 2.

In use, the connecter is opened by disengaging the tongue 1*e* from the slot 2*d* and swinging the elements about their hinged connection. A wire or cable 3 is laid in the depression in the base 1*b* of the element 1, as shown in Fig. 2, the insulation being first removed from that portion of the wire 3 that lies within the connecter. The connecter is then positioned to receive the heavy cable 5 to which the wire 3 is to be electrically connected, the insulation on the cable 5 having been first removed therefrom at the point at which the connection is to be made.

The elements 1 and 2 are then swung about the hinge connection and the connecter closed, the tongue 1e being received in the slot 2d. It will be seen from Fig. 1 that in the closed position the elements form a substantially rectangular strap enclosing the cable 5 and the wire 3, the axes of which are parallel and the connecter thus forming what is commonly called a bussing connecter. When the connecter is closed about the conductors, the screw 4 is used to press the cable and wire into intimate contact with each other and with the metal of the connecter thus forming a good, tight mechanical and electrical connection between the cable and the wire. It should be noted that the direction of the reactive force on the screw 4 and the element 1 is such that it effects and maintains securely the interlocking relation between the tongue 1e and the slot 2b.

The form of connecter illustrated in Figs. 3 and 4 and 5 is essentially the same as that disclosed in Figs. 1 and 2 but differs from that of Figs. 1 and 2 in certain details of construction. The connecter of Figs. 3 and 4 is mounted upon a block 6. The connecter proper includes two elements 7 and 8, one of which 7 is substantially of L shape in end elevation and the other of which 8 is of substantially the shape of an inverted L in end elevation. The block 6 has formed therein a depression of the shape indicated and the base of the L shaped element 7 rests upon the block.

The element 7 consists of a side wall 7a and a base or end wall 7b extending laterally from one end of the side wall. Adjacent the other end of the side wall there is formed a slot 7c through the side wall. The base 7b has spaced integral extensions 7d that are turned down at the ends. The base 7b fits in the shallow depression of the block and the depth of this portion of the depression is such that the exposed surface of the base 7b of the element 7 is flush with the surface of the block. The spaced extensions 7d extend out over the deep depression in the block. The element 7 is held on the block by screws 9, which extend through the block and openings provided therefor in the section 7b of the element 7. The screws 9 are engaged by a bus 10 that lies along the surface of the section 7b. The bus is of electrically conductive metal such as copper and may be bent as shown and provided with a connecting screw 11 adjacent the end thereof. This connecter is particularly adapted for making a mechanical and electrical connection between a heavy cable and the bus 10.

The element 8 includes a side wall 8a and a lateral extension 8b. The side wall 8a has a section cut out laterally of each edge adjacent the end thereof. These cut-outs form a section of reduced width 8c and extensions 8d. The section 8c is received between the spaced extensions 7d of the element 7 and the extensions 8d engage the curved under side of the extensions 7d. The cut-outs in the element 8 are such that there is provided limited movement between the elements 7 and 8 parallel to the planes of the sides 7a and 8a thereof and the depression in the block 6 is of such width that the element 7 cannot be disengaged when assembled on the block, but a limited amount of pivotal movement is permitted in the member 8 as shown in Fig. 4.

The section 8b of the element 8 is provided with an opening 8c, the metal being extruded to increase the thickness thereof about the opening. A bolt 12 is received in the opening 8e in threaded engagement with the side walls of the opening. The section 8b is of lesser width than the side wall 8a and the end thereof, which is bent slightly, forms a tongue 8f that, in the closed position of the connecter, is received in and engages the edge of the slot 7c in the element 7.

When the connecter is closed about a cable 13 it forms a substantially rectangular strap enclosing the cable. The bolt 12 when tightened presses the cable into intimate and pressure contact with the bus 10 thereby effecting a firm mechanical and electrical connection between the cable and the bus. It will be noted that the curve on the tongue 8f is in a direction such that the force exerted by the screw increases and maintains the interlocking engagement of the tongue and groove.

It will be obvious that various changes may be made by those skilled in the art in the details of the embodiments illustrated and described within the principle and scope of the invention as expressed in the appended claims.

I claim:

1. As an article of manufacture, a solderless connecter for effecting a mechanical and electrical connection between two electrical conductors comprising an insulator block, a substantially L-shaped element secured to the block at the base thereof, a tap conductor secured to the L-shaped element at the base thereof, another element of substantially the shape of an inverted L hingedly connected to said L-shaped element whereby the two elements when brought together in the closed position form a substantially rectangular strap adapted to confine an electrical cable, a tongue on one of said elements and a groove in the other element positioned to receive the tongue, the element of inverted L-shape having a threaded opening in the portion thereof forming an end wall of the strap, and a set screw within the opening adapted to press a cable in the strap against the tap conductor.

2. As an article of manufacture, a solderless connecter for effecting a mechanical and electrical connection between two electrical conductors comprising in combination an element of substantially L shape, the shorter leg of the element forming a wire seat, another element of substantially the shape of an inverted L, the longer leg of the inverted L-shaped element being hingedly secured at the end thereof to the end of the shorter leg of the L shaped element in a loose hinge construction whereby the two elements in closed position form a substantially rectangular strap and have limited relative movement longitudinally of the longer legs thereof, a tongue on the shorter leg of the inverted L-shaped element, and a groove closed at both ends in the adjacent end of the longer leg of the L-shaped element, the tongue being positioned to enter the groove, a set screw extending through the shorter leg of the inverted L-shaped element in threaded engagement therewith, the tongue and groove being related to effect an interlocking relation of the tongue in the groove upon tightening the set screw to clamp a conductor in the connecter, whereby the inverted L-shaped element is secured against movement about the hinge.

3. As an article of manufacture, a solderless connecter for effecting a mechanical and electrical connection between two electrical conductors comprising in combination an element of substantially L shape, the shorter leg of the element forming a wire seat and having a bend

tongue at the end thereof, another element of substantially the shape of an inverted L, the longer leg of the inverted L-shaped element having a groove therein adjacent the end thereof through which the bent tongue extends, the tongue and groove forming a loose hinge construction whereby the two elements in the closed position form a substantially rectangular strap and have limited relative movement longitudinally of the longer legs thereof, a tongue on the shorter leg of the inverted L-shaped element and a groove closed at both ends in the adjacent end on the longer leg of the L-shaped element, the tongue being positioned to enter the groove, a set screw extending through the shorter leg of the inverted L-shaped element in threaded engagement therewith, the tongue and groove being related to effect an interlocking relation of the tongue in the groove upon tightening the set screw upon a conductor in the connecter.

ALBERT B. RYPINSKI.