Jan. 19, 1943. M. LEE 2,308,698

HINGED CONNECTOR

Filed July 31, 1940

Fig. 1

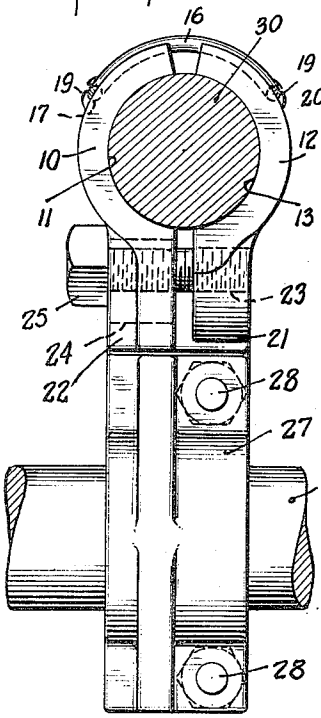


Fig. 2

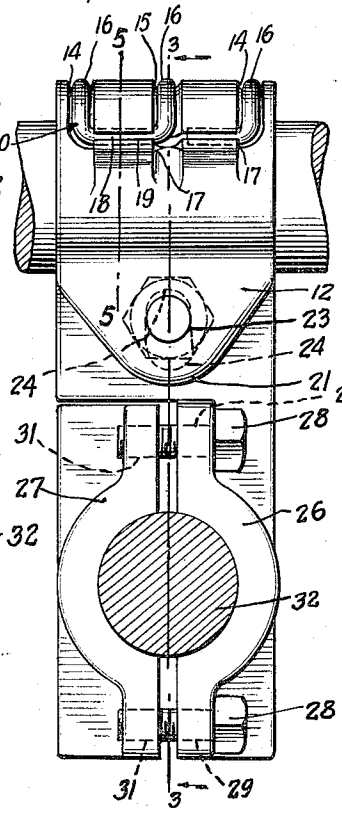


Fig. 3

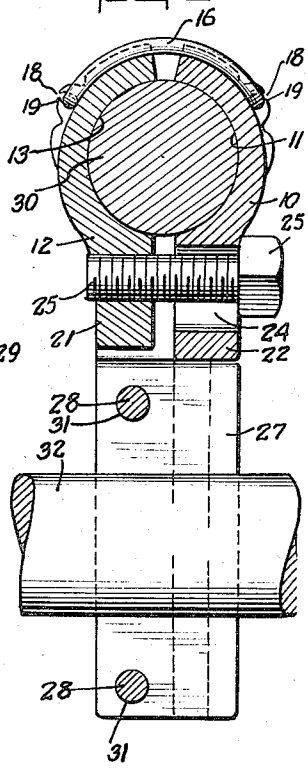


Fig. 4

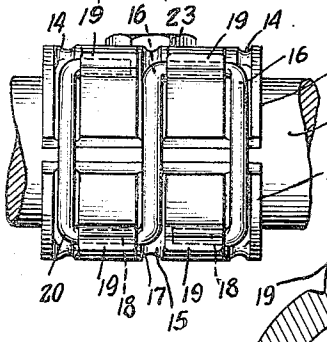
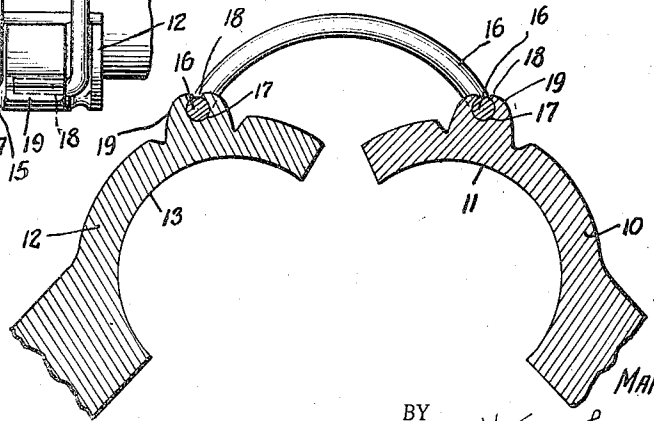


Fig. 5



INVENTOR.
MARVIN LEE

BY Harry Ernest Rubens
ATTORNEY.

Patented Jan. 19, 1943 2,308,698

UNITED STATES PATENT OFFICE

2,308,698

HINGED CONNECTOR

Marvin Lee, Rye, N. Y., assignor to Burndy Engineering Company, Inc., a corporation of New York

Application July 31, 1940, Serial No. 349,029

5 Claims. (Cl. 173—273)

This invention relates to conductor clamps which are used to clamp some portion of a continuous length of conductor.

Where electrical connectors are to be installed on insulated cables they are almost invariably taped. Sometimes these connectors are difficult to tape. This is especially true of T-connectors which are installed on a continuous length of cable. Such connectors very often have a bulky clamping arrangement with a good portion of the bulk opposite the tap conductor at a point where it is particularly difficult to tape. My connector is especially notable for the fact that it follows the contour of the clamp and is concentric with the cable, thereby eliminating any projections which might interfere with taping.

One object, therefore, of my invention is to clamp the conductor with a clamp of minimum amount of bulk in order to make the clamp as easy as possible to tape.

It is well known that soft copper or aluminum cables have a tendency to "relax" or flow under pressure. Such "relaxation" may, in time, proceed to such an extent that the pressure between connector and conductor will be reduced to a point where the contact resistance may become excessively great. Since heating of the metal parts in an electrical system depends on resistance, the increase in contact resistance increases the heating of the joint. The hotter the joint becomes, the more rapidly does the metal in the cable "relax." This process can continue to such an extent that the joint will actually "burn out." My connector eliminates this tendency to "burn out," by maintaining the pressure of the clamp on the cable. As the cable "relaxes" the connector compensates for any change in diameter and thereby keeps pressure applied to the conductor.

Consequently, another object of my invention is to provide a clamping element which will maintain pressure on the conductor even if there is a tendency of the conductor to "relax" or flow under the applied pressure.

My hinged connector is so devised that it is free to hinge at two points. This permits the cap to shift with transverse motion as well as with a simple rotation. As a result it is not necessary in manufacture to align the hinge with great care to make sure that the two grooves line up directly opposite each other in the closed position. There is sufficient transverse motion available to permit ample manufacturing tolerances with consequent reduction in cost of manufacture. In addition, even though the two grooves may originally have been perfectly aligned, very often the cable or conductor to be connected is irregular or ovalized in shape. As a result, with an ordinary hinge, the clamp cannot conform to the mis-shaped conductor and poor contact between the connector and conductor results. With my hinged connector, the cap is free to shift transversely and thereby it can locate itself in such a manner as to apply most effective pressure on the conductor.

A further object, therefore, of my invention is to provide a clamping element which will center itself on the conductor and compensate for any irregularities in the conductor.

Still another object of my invention is to provide a clamping element which is easy to open and close and one in which the clamping screw is placed for convenient tightening and for least interference with taping.

I accomplish these and other objects and obtain my new results as will be apparent from the device described in the following specification, particularly pointed out in the attached claims, and illustrated in the accompanying drawing, in which:

Fig. 1 is an end elevation of my connector with additional clamping means attached thereto.

Fig. 2 is a front elevation.

Fig. 3 is a sectional view along line 3—3 of Fig. 2.

Fig. 4 is a top view.

Fig. 5 is a partial sectional view of connector with hinge open.

My invention consists of a body portion 10 with socket 11 and a cap section 12 with corresponding socket 13. These two parts are held together by a specially designed spring hinge 20, which in my preferred modification, is made in preferably a substantially S shape and possessed of sufficient strength to hold the body and cap together. The spring hinge itself is curved to conform to the general contour of the clamp which is substantially concentric to the cable 30.

Body portion 10 and cap section 12 are preferably provided with concentrically shaped end recessed sections 14, and central recess 15, three in number, to accommodate each leg 16 of the S shaped spring 20. The recesses lower the level of the exposed spring to substantially the surface of the connector body and cap. Two lateral grooves 17 are provided on each side of the body portion 10 and cap section 11, to accommodate the straight leg sections 18 of the spring 20, which connect with spring sections 16. The metal 19, adjacent each side of grooves 17, is

peened over to prevent displacement of the spring 20, from the body and cap section and permit the cap and body sections to rotate about spring sections 18, and open, as shown in Fig. 5.

Any satisfactory method of holding in closed position, the two opposite ends 21 and 22 of the body and cap sections may be used. In the drawing, the ends are transversely extended, and provided with a tapped aperture 23 and elongated slot 24, respectively. A bolt 25 holds the two ends 21 and 22 securely together about the cable 30.

The aforementioned clamping elements may be used to support a continuous cable or to transmit current therefrom. In transmitting current any well known additional connection may be used, such as a terminal, or other clamping elements.

In the drawing, I have shown a cross connection, which is created by extending the body member 10, to form the socket 26 in an axis normal to the axis of the main cable 30. A corresponding socket element 27, is attached thereto by bolt members 28 entering through apertures 29 and threadedly engaging tapped apertures 31 in socket member 27, to clamp the two socket members about the branch cable 32.

Instead of the socket members 26 and 27, members similar to body portion 10 and cap section 12 may be used to clamp a branch or tap cable at any desired angle to and distant from the main cable.

The spring itself may be S shaped, C shaped, composed of one piece, or two pieces provided sufficient strength is maintained. It should be noted that both the cap and body may rotate about the hinge as shown in Fig. 5. The clamp is installed on the cable by opening the spring hinge 20, as shown in Fig. 5, placing the cable 30 in the groove in the body 10 and swinging the cap 12 closed so that the cable seats itself in the body and cap grooves. The cap and body are then clamped tightly on the cable by tightening a cap screw 25 which passes through the hole 24 in the body section 10 and is threaded into a tapped hole 23 in the cap section 12.

I have thus described my invention, but I desire it understood that it is not confined to the particular forms, or uses shown and described, the same being merely illustrative, and that the invention may be carried out in other ways without departing from the spirit of my invention, and, therefore, I claim broadly the right to employ all equivalent instrumentalities coming within the scope of the appended claims, and by means of which, objects of my invention are attained and new results accomplished. As it is obvious that the particular embodiments herein shown and described are only some of the many that can be employed to attain these objects and accomplish these results.

What I claim and desire to secure by Letters Patent, is as follows:

1. A connector for an electrical conductor comprising a body portion provided with a conductor engaging socket, a cap section similarly provided with a conductor engaging socket; means positioned at one end of said cap section and body portion for locking the cap section and body portion about a conductor therein; and a spring hinge pivoted to each of the cap section and body portion at the opposite end, and being under tension when the ends of the cap section and body portion opposite the spring hinge are locked to the conductor therein.

2. A connector for an electrical conductor comprising a body portion provided with a conductor engaging socket, a cap section similarly provided with a conductor engaging socket; means positioned at one end of said cap section and body portion for locking the cap section and body portion about a conductor therein; and a wire spring hinge pivoted to each of the cap section and body portion at the opposite end, and being under tension when the ends of the cap section and body portion opposite the wire spring hinge are locked to the conductor therein.

3. A connector for an electrical conductor comprising a body portion provided with a conductor engaging socket, a cap section similarly provided with a conductor engaging socket; means positioned at one end of said cap section and body portion for locking the cap section and body portion about a conductor therein; and an S-shaped wire spring hinge pivoted to each of the cap section and body portion at the opposite end, and being under tension when the ends of the cap section and body portion opposite the S-shaped wire spring hinge are locked to the conductor therein.

4. A connector for an electrical conductor comprising a body portion provided with a conductor engaging socket; a cap section similarly provided with a conductor engaging socket, said cap and body provided with partially extending circumferential recesses; a wire hinge attached to one end of both cap and body having a profile substantially concentric with the conductor in the socket, and inserted in the circumferential recesses; and means for clamping the remaining ends of the cap and body about the electrical conductor.

5. A connector for an electrical conductor comprising a body portion provided with a conductor engaging socket; a cap section similarly provided with a conductor engaging socket; a wire hinge attached to one end of both cap and body having a profile substantially concentric with the conductor in the socket; and means for clamping the remaining ends of the cap and body about the electrical conductor, said wire hinge having lateral sections for rotational engagement with said cap and body, and curved sections, connecting said lateral sections.

MARVIN LEE.