March 23, 1937. W. G. FOTSCH 2,074,898

CONNECTION TERMINAL

Filed Nov. 13, 1933

Fig. 1

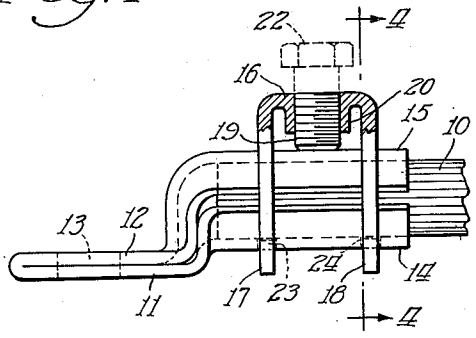


Fig. 3

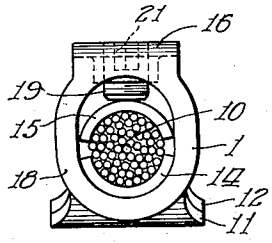


Fig. 2

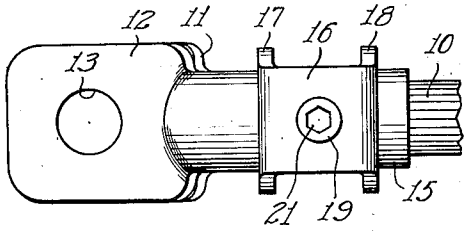


Fig. 4

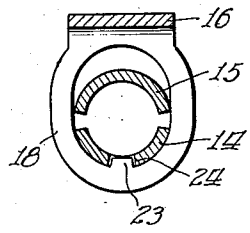


Fig. 5

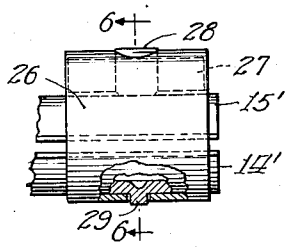


Fig. 6

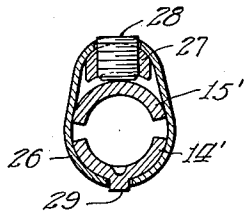


Fig. 7

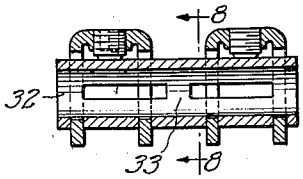
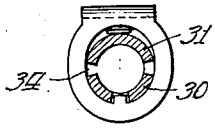


Fig. 8



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CONNECTION TERMINAL

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Application November 13, 1933, Serial No. 697,750

4 Claims. (Cl. 173—269)

My invention relates to connectors and in its preferred form more particularly to connection terminals of the type which are used for making connections with electrical conductors.

In connection terminals of this type, it is frequently desirable to avoid soldering, more especially where large conducting units are concerned. One of the difficulties met with in soldering is due to the fact that the soldered joint may not be so constructed as to withstand the rise in temperature which may be occasioned by the traverse of the current through the connection.

My invention concerns itself primarily with the provision of a connector of such type that soldering need not be restorted to. To this end I provide a connector in which the area of contact is large so that the conductivity at the point of union of the various conducting elements is adequate for the purpose of conducting the current without causing any undue rise in temperature. When utilizing a connector of this type, it is of course essential that corrosion be prevented, at least to such a degree that it will not harmfully influence the connection, and in order to bring this about I utilize clamping elements of such character that the maximum effort toward clamping action may be brought about without there being any tendency to destroy the parts of the terminal.

In the preferred form of the invention I use a pair of jaws which are arched so as to partially circumferentially surround the conductor, together with clamping mechanism as just described for clamping such jaws tightly into place against a conductor. The clamping mechanism which I prefer to employ consists of a screwthreaded bolt impinging directly against one of the jaws so that the full effort for turning said bolt may be utilized for compression action. I thus avoid the frictional loss which is inherent in a device in which clamping jaws are screwthreaded and forced together radially by means of a surrounding screwthreaded bolt.

In one specific form of the invention herein shown, I have so arranged the jaw portion that the two jaws are formed out of a single piece of metal bent back upon itself, the portion where it is bent back being substantially flat and forming the terminal portion of the device.

I will describe my invention more in detail by referring to the accompanying drawing in which—

Fig. 1 is a side view partially in section of my improved device as mounted upon a conductor;

Fig. 2 is a top view thereof;

Fig. 3 is an end view thereof;

Fig. 4 is a section viewed on lines 4—4 of Fig. 1;

Fig. 5 is a side view partly in section of a modification;

Fig. 6 is a sectional view on lines 6—6 of Fig. 5; and

Figs. 7 and 8 are sectional views of another form of the invention.

Referring more particularly to Figs. 1 to 4, I show a conductor 10, which in this instance is stranded, to which my improved connection terminal is adapted for attachment. Such connection terminal is made of a single piece of metal bent back upon itself forming the two legs 11 and 12. The left-hand portion of these legs (Figs. 1 and 2) is substantially flat and forms the terminal of the device, being provided with an opening 13 to which any suitable binding post or other instrumentality may be connected. The free ends of the legs form the jaws 14 and 15, respectively. These jaws are arched so that they may partially circumferentially enclose the conductor 10. It will be noted that they have a very substantial area in contact with the conductor so that the conductivity of the joint is amply taken care of.

The material of the jaws and of the clamping element, presently to be described, is also of sufficient volume so as to avoid undue heating and also to permit conduction of the heat toward the terminal portion of the device.

In order effectively to clamp these jaws about the conductor 10, I provide a yoke having a base portion 16 and two leg portions 17 and 18, respectively. These leg portions have suitable openings so that they may surround the jaws as shown more clearly in Figs. 3 and 4. The leg portion cooperates with a bolt 19, which bolt has screwthreaded engagement with this base portion. In order to provide a sufficient number of screwthreads so that the yoke has a substantial engagement with the bolt, I press the metal of the base portion inwardly to form a skirt 20 as more clearly shown in Fig. 1. This strengthens the base portion and gives it the required stability. If the bolt is to be countersunk as shown in Figs. 2 and 3, then a suitable socket 21 is provided therein so that it may receive a corresponding tool. I show in Fig. 1 a head 22 with which the bolt may alternately be provided should

the desirability in the particular case for a countersunk bolt not be apparent.

It will be noted that the structure of the yoke with its bolt is inherently self-locking in that when the bolt is rotated so as to exert pressure against the jaws there is a slight tendency for the clamping element to spring, and thus more thoroughly bind the bolt in its actuated position. By means of this device I thus secure adequate area, adequate clamping action, adequate contact between the parts to minimize corrosion and an adequate amount of material to conduct the current.

In order to prevent rotational motion of the elements and in order to maintain them in their proper relationship before attachment, I provide interlocking instrumentalities, which in the device shown in Figs. 1 to 4 includes a finger 23 provided upon each of the legs 17 and 18 which is adapted to enter a correspondingly placed hole 24 provided in its cooperating jaw, the jaw 14, for instance, as shown in Fig. 4.

In Figs. 5 and 6 I show a modified form of the device in which a piece of tubing forms an encircling band 26. A reinforcing nut 27 cooperating with the bolt 28 furnishes the required clamping action on the jaws 14' and 15' and a reentrant finger 29 provided upon the jaw portion 14' insures against displacement of the device.

In Figs. 7 and 8 I have shown the invention as applied to a connector for joining the ends of a plurality of conductors. In this form the yokes are like those in Figs. 1–4 but the jaws 30, 31 are connected at the one side by webs such as 32, 33 and are separated along the other side as indicated at 34 to permit spreading to receive the conductors therebetween. Thus a plurality of conductors may be joined by this connector. It will be noted that at least one yoke is used for each conductor to insure gripping the conductor properly. By forming the jaws 30, 31 with a third branch, three conductors may be connected.

From what has been thus described, the nature of my invention will be readily clear to those skilled in the art, and what I claim as new and desire to secure by Letters Patent is set forth in the following claims.

1. A connector of the character described adapted for association with a rounded conductor comprising an arched jaw of substantial area, a yoke member having a pair of spaced apart leg portions having aligned openings therein through which said conductor extends and through which said jaw extends, cooperating means on said leg portions and said jaw comprising stops thereon limiting rotational movement of the jaw relative to said leg portions when said jaw is positioned in said leg portions, and screw threaded clamping means extending through the base of said yoke clamping said jaw to the conductor.

2. A connector of the character described adapted for association with a rounded conductor comprising an arched jaw of substantial area, a yoke member having a pair of spaced apart leg portions having aligned openings therein through which said conductor extends and through which said jaw extends, cooperating means on said leg portions and said jaw comprising stops thereon limiting rotational movement of the jaw relative to said leg portions when said jaw is positioned in said leg portions, and screw threaded clamping means extending through the base of said yoke clamping said jaw to the conductor, said jaw having a terminal portion offset with respect to said jaw and extending endwise therefrom.

3. A terminal connector for electrical conductors comprising in combination, a terminal member having a flattened portion apertured to receive a binding post and having a conductor receiving portion comprising a pair of spaced arched jaws, a substantially U-shaped yoke having aligned openings in the legs through which said spaced jaws extend, the yoke having its base portion provided with a screw threaded aperture, and a clamping screw passing through said aperture and engaging one of said jaws to press the jaws together about a conductor inserted therebetween.

4. A terminal connector for electrical conductors comprising in combination, a terminal member having a flattened portion apertured to receive a binding post and having a conductor receiving portion comprising a pair of spaced arched jaws, a substantially U-shaped yoke having aligned openings in the legs through which said spaced jaws extend, the yoke having its base portion provided with a screw threaded aperture, and a clamping screw passing through said aperture and engaging one of said jaws to press the jaws together about a conductor inserted therebetween, the other of said jaws and one of said legs having cooperating projection and recess means to hold the jaws in position in said legs before they are clamped by said screw.

WILLIAM G. FOTSCH.