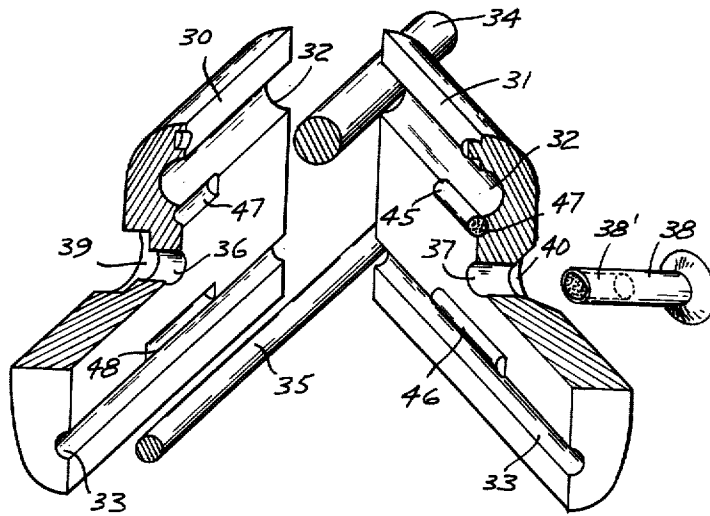


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ELECTRIC WIRING TERMINAL
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ELECTRIC WIRING TERMINAL

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6 Claims. (Cl. 174-94)

The present invention relates to electric wiring terminals of the kind known as splice links or service taps for overhead wiring.

More particularly, the invention relates to hollow terminals containing a suitable explosive charge. This charge when detonated, causes a deformation of the terminal walls which is used to secure the terminal to its support and the wires to be connected to the terminal.

Explosive terminals of the general kind above referred to are fully disclosed in my co-pending application Serial No. 382,083 filed September 24, 1953, now Patent No. 2,909,758.

The present application is a divisional application divided out of co-pending application Serial No. 427,256, filed May 3, 1954 by the applicant herein.

The principal purpose of the present invention is to provide improvements on explosive terminals generally enlarging the usefulness and versatility of explosive terminals.

A more specific object of the invention is to provide a novel and improved terminal of the splice link kind which permits connection of two wires without the use of special tools by simply applying heat to the splice link for instance, by a blow torch. Overhead lines and other outdoor wires must often be connected under adverse weather conditions such as rain, snow or extreme cold. Under such conditions, soldering operations heretofore often used for joining wires, insertion and tightening of clamping screws, etc. are difficult to carry out. In contrast thereto, the simple heating of a cartridge-like splice link presents no difficulties, even under the most unfavorable weather conditions.

Another more specific object of the invention is a novel and improved explosive terminal in form of a two part service tap which is particularly suitable for application to overhead lines. The service tap according to the invention permits a convenient insertion of the wires to be connected between the two parts of the tap and a joining of the two parts by the detonation of an explosive charge. The service tap according to the invention further provides that the wires are secured within the tap by the detonation of a second explosive charge effect of which presses the wires against the metal of the tap parts. The heat required for successively setting off the two charges can again be generated by the lineman directing a blow torch against the service tap.

Other and further objects, features and advantages of the invention will be pointed out hereinafter and set forth in the appended claims forming part of the application.

In the single FIGURE of the accompanying drawing a preferred embodiment of the invention in the form of a service tap is shown by way of illustration and not by way of limitation.

The service tap according to the figure comprises two complementary members 30 and 31. These members are preferably symmetric halves and are so shown, but they may also be of different shape. The coacting faces of the two members each include a semi-cylindrical groove 32 and 33. As will be readily apparent, the grooves 32 and 33 in the two members form two cylindrical channels when members 30 and 31 are in abutment. The channels serve to receive and guide wires 34 and 35. While the wires are shown as being of different diameter, they may of course also be of equal diameter. To secure the two

members together in wire receiving and retaining position explosive holding or clamping means are provided. These holding means are basically so arranged that they will hold the two halves of the tap provisionally together when fitted to the halves and secure the halves fixedly and permanently together when they are detonated. To this end, aligned bores 36 and 37 extend transversely to the two halves. The aligned bores serve to receive a headed explosive rivet 38. This rivet will provisionally or loosely join the two halves when it is inserted in bores 36 and 37. The length of the rivet may be such that its hollow part 38' filled with the explosive charge protrudes beyond the outside of member 30. When the rivet is exploded by application of heat thereto, the protruding part thereof will laterally expand thereby fixedly joining the two halves. However, it has been found preferable to give the shank of the rivet a length such that its end is flush with the outside wall of half 30 and to provide a recess or countersink 39 into which the hollow part of the rivet shank can expand when the rivet is determined. As is apparent, such expansion into countersink 39 will fixedly join members 30 and 31. Member 31 is preferably also countersunk at 40 to accommodate the head of the rivet. As a result, no part of the rivet will laterally protrude from the service tap when its halves are fixedly secured to each other.

To mechanically secure the service tap in a fixed position on the wires and to establish a highly conductive connection between the wires and the metal of the tap, second explosive holding means are provided. These holding means are shown as explosive cartridges 45 and 46, one coacting with each wire. These cartridges are fitted in pockets disposed at or very close to one edge of grooves 32 and 33 respectively. Each pocket is formed by complementary semi-cylindrical grooves 47 and 48 respectively. Any other suitable shape of the cartridges and the pockets therefor may of course also be provided.

Detonation of the cartridges causes an expansion of the cartridge walls which presses the respective wire against the material of members 30 and 31. As a result, the wires are tightly held within the service tap and in intimate electric contact with the metal thereof. While comparatively short cartridges are shown, they may of course extend along substantially the entire length of grooves 32 and 33.

When it is desired to mount the service tap on the wires, the two members 30 and 31 are fitted over the wires after insertion of cartridges 45 and 46. The two members are then provisionally joined by inserting rivet 38 in bores 36 and 37. Heat is now applied for instance, by means of a blow torch, preferably directly to rivet 38. Detonation of this rivet mechanically clamps together the two members of the tap as previously explained. The application of heat is continued until cartridges 45 and 46 are detonated thereby pressing wires 34 and 35 tightly against the walls of grooves 32 and 33. The pressure of the wires against the tap material as a result of the detonation of the cartridges 45 and 46 is sufficient to produce a gas tight electric joint.

As appears from the previous description, the service tap according to the figure employs staggered detonations, one for joining the two members of the service tap and the other for joining the service tap to the wires. This affords the advantage that the "conduction effecting explosion" (by the cartridges) presses the wires against a structure (formed by members 30 and 31) which is already rigidly assembled by the first "mechanical explosion." Both detonations are set off in proper sequence by the simple and single step of applying heat to the outside of the service tap.

While the invention has been described in detail with respect to a certain now preferred example and embodiment of the invention it will be understood by those

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skilled in the art after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention, and it is intended, therefore, to cover all such changes and modifications in the appended claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. An electric wiring terminal of the service tap kind for connecting two wires, comprising two coacting members for fitting therebetween the wires to be connected, first explosive holding means attached to said members for loosely joining the same in wire retaining relationship, the said holding means when detonated experiencing a deformation such as to fix said holding means to said members, and second explosive holding means deformable by a detonation thereof, the said second holding means being positioned between said members in predetermined positions in which the deformation thereof presses wires inserted between the members tightly against the material of said members.

2. An electric wiring terminal of the service tap kind for connecting two wires, comprising two complementary members for fitting therebetween said wires, first explosive holding means frictionally held in corresponding holes of said two members for loosely joining said members in wire retaining relationship, the said holding means when detonated experiencing a deformation such as to tighten said loose joint, and second explosive holding means deformable by a detonation thereof, the said second holding means being disposed between said members in a predetermined position in which the detonation thereof presses wires inserted between the members tightly against the material of said members.

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3. A terminal according to claim 2, wherein the explosive charge of the first holding means is disposed near the outside of said complementary members and the explosive charge of the second holding means is encased by the material of the members when the same are loosely joined by the first holding means whereby the first holding means are detonable prior to the second holding means by application of external heat to said members.

4. A terminal according to claim 2, wherein the said first holding means are in form of a hollow rivet having a hollow shank filled with an explosive charge, the outer wall portion of the member receiving the end of the shank of said rivet having a peripheral outline wider than the peripheral outline of said shank end to provide space for a lateral expansion of the rivet when the charge thereof is detonated thereby forming a holding head at said end fixedly joining the said members.

5. A terminal according to claim 2, wherein each of said members is grooved for inserting the wires in said grooves, and wherein said second holding means are in form of explosive cartridges fitted in pockets provided in said members at the edges of said grooves.

6. A terminal according to claim 5, wherein the said members constitute symmetric halves of the service tap, the said grooves and pockets being provided in the coacting face sides of said halves.

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