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[54] **WIRE SPLICE GAUGE AND CONNECTOR**

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[51] **Int. Cl.** **H01r 5/00**

[58] **Field of Search** ..... 174/84 R, 87; 287/75, 78

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[57] **ABSTRACT**

A wire splicing connector that longitudinally aligns the terminal ends of a plurality of conductors in a common plane and that confines the said conductors within a maximum diameter adapted to be spliced thereby, and comprised of a hollow cap-shaped body within which a tapered helix of conductive wire twists onto and constrictively engages a bundle of conductors established by the hollow body and its cap wall which closes the same so as to establish both a gauge and a closed connector.

6 Claims, 3 Drawing Figures

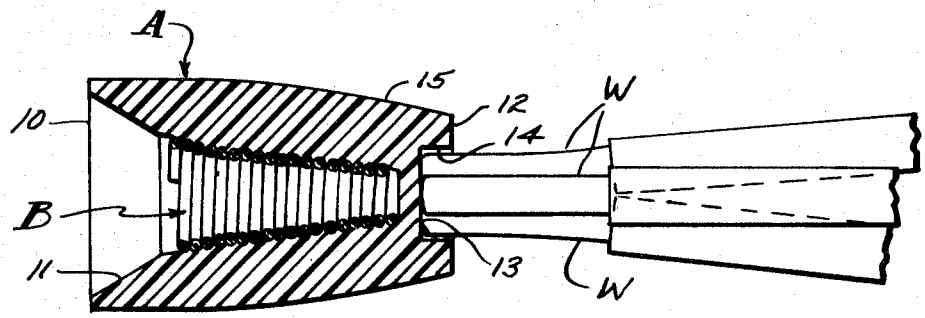


FIG. 1.

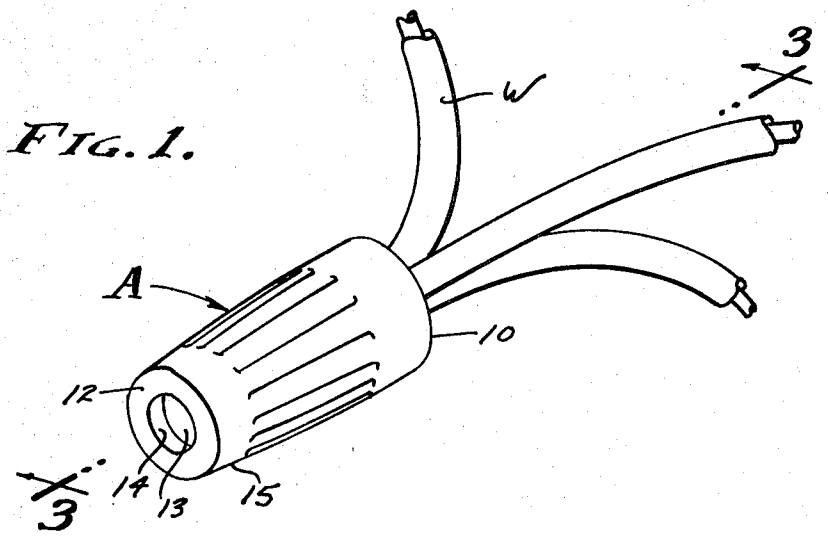


FIG. 2.

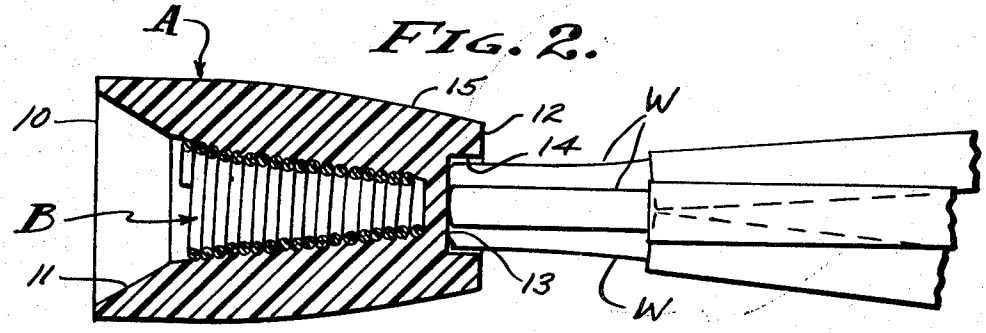
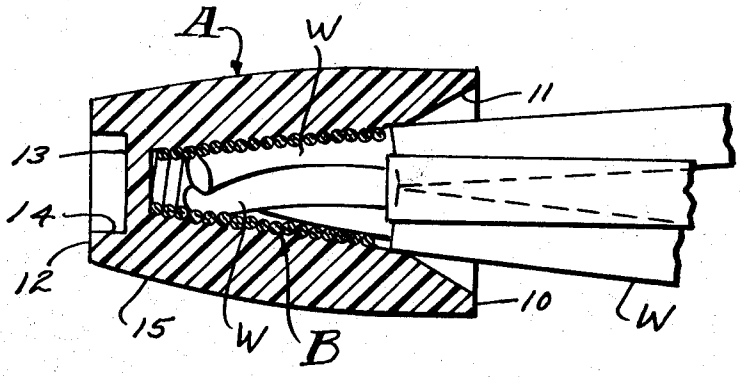


FIG. 3.



WIRE SPLICE GAUGE AND CONNECTOR

BACKGROUND

This invention relates to wire splicing connectors which are characterized by a capshaped body within which a tapered helix of spring wire is confined and thereby screwed onto a bundle of conductor ends to be spliced. The body is necessarily hollow and formed of dialectric material, open at one end and capped at the other end. The coupling spring is made with a right hand helix for clockwise rotation of the connector in making a splice. With this type of connector the barred or stripped connector ends are bundled together and inserted into the coupling spring which is then revolved so as to constrict advancively onto and twisting said conductors together into a tight splice. In order to produce an optimum splice, it is necessary to align the terminal ends of the conductors in a common plane, and to limit the total accumulated diameter of the bundled conductor end portions; whereupon rotation of the connector automatically twists the plurality of conductor end portions and bites into said end portions with a substantial reduction in diameter as caused by deformation. It is recognized as best practice to commence with straight and parallel conductor end portions forming a bundle to be spliced, and that said end portions be longitudinally aligned to terminate in a common plane and not to exceed a maximum accumulated diameter. Therefore, it is an object of this invention to provide a wire splicing connector wherein the hollow cap-shaped body thereof is also a gauge by which the optimum conditioning of the bundled conductors is established and following which the said hollow cap-shaped body is installed over the gauged bundle with the assurance of a reliable splice.

Splicing connectors of the type under consideration are provided with a funnel-shaped mouth which leads into the coupling spring, and it is this feature alone that feeds the conductor ends into tractive engagement with the said coupling spring. If, for example, one of a plurality of conductor ends falls short of the foremost end plane of another conductor of the group, traction thereof with the coupling spring will not be assured and the said one barred end portion is likely to remain exposed outside the funnel-shaped mouth of the connector. The conductors might slip longitudinally relative to each other, or be jammed against the coupling spring and not readily enter therein. In any case, the funnel-shaped openings do not correct improper longitudinal alignment, and to this end I provide an improved connector body which is useful as a longitudinal alignment gauge for positioning the barred ends of a plurality of conductors prior to being guided into the coupling spring of the connector.

Splicing connectors of the type referred to herein also rely upon the above described funnel-shaped mouth as a means to reduce the bundle of conductors to a diameter acceptable by the coupling spring. However, this reduction to an accepted diameter is not always possible, and to this end I provide an improved connector body which is useful as a diameter gauge for restricting the maximum girth of the bundle of conductors to be accepted by the coupling spring of the connector.

It is also an object of this invention to provide a connector body with at least two heretofore unavailable

gauging functions without the addition of any parts or elements and simply by means of relocation of existing parts and/or elements, and also without distracting in any way from the existing effectiveness of the accepted prior art forms of such wire splicing connectors.

FIELD OF INVENTION

This invention relates to wire splicing connectors of the type involving a coupling spring carried within a hollow cap-shaped body. With connectors of this type, various sized units are provided and each with a certain capacity, range or capability. That is, a certain size connector will have a predetermined splicing capability by accommodating certain numbers of and/or group combinations of given wire sizes. An over sized connector is obviously ineffective and cannot gain traction upon too small a bundle of conductors, while an under sized connector cannot receive too large a bundle of conductors. Therefore, it is within the range of effective capability that each connector is to be gauged by the modified body thereof as hereinafter disclosed. Accordingly, each wire splicing connector of the present invention is formed to have a dual purpose body adapted to condition and restrict a bundle of conductors for optimum reception into the coupling spring carried therein.

The connector is characteristically a hollow cylinder of tapered form, open at its large diameter end for the reception of the bundle of conductors to be spliced, and capped at its small diameter end for the protective enclosure of the splice, there being a coupling spring carried within the capped body to constrictively advance onto the bundle of conductors when rotated thereover. In accordance with this invention, it is the cap of the hollow body that is repositioned and spaced from the terminus of the said small diameter end, thereby to provide a gauge cylinder at the exterior of the connector and separated from the coupling spring chamber at the interior of the connector. The said cap presents a flat wall in a plane normal to the central axis of the connector and utilitarian as a longitudinal alignment gauge against which the plurality of conductor ends are adapted to be stopped; and the cylinder recess left remaining outside the cap presents a restrictive inner diameter wall utilitarian as a maximum diameter gauge within which the plurality of conductors must be accommodated in order to be acceptable within the coupling spring of the connector.

DRAWINGS

The various objects and features of this invention will be fully understood from the following detailed description of the typical preferred form and application thereof, throughout which description reference is made to the accompanying drawings, in which:

FIG. 1 is a perspective view of the wire splice gauge and connector as it appears when coupling a plurality of insulated conductors.

FIG. 2 is an enlarged longitudinal sectional view of the wire splice gauge and connector illustrating the dual gauging functions provided by the body configuration thereof.

FIG. 3 is an enlarged detailed sectional view taken as indicated by line 3—3 on FIG. 1.

PREFERRED EMBODIMENT

Referring now to the drawings, the wire splice gauge and connector involves generally, a body A and a coupling member or spring B, and all of which is adapted to splice together two or more conductors W. The number and size of conductors to be spliced is a matter of choice, provided the bundling thereof is within the effective range of the connector size involved. Therefore, the first requisite is to have a large enough bundle of conductors within an acceptable maximum diameter, and the second requisite is to maintain longitudinal alignment of the separate conductors; these being the general requirements for any such connector. Accordingly, the coupling member B is a conical helix of resilient wire having a large diameter end open to receive a bundle of conductors within a maximum diameter, and said bundle is received with facility when within said maximum diameter. The coupling spring B is elongated and has a small diameter end to constrictively compress with progressively increased force onto the bundle of conductors, providing said bundle is greater in diameter than said small diameter end. As shown, the coupling B is wound as a right hand helix for clockwise rotation onto the bundle of wire to be spliced.

Body A is a monolyth of dielectric material and is characteristically of hollow form, open at one end and closed by a cap at the other end. As shown, the body A is tapered commensurate with the taper of the coupling spring B and has a large diameter open end **10** with a funnel-shaped mouth **11**, and has a small diameter closed end **12** with a cap **13**. The flare of the mouth **11** is substantial and its small diameter inner end opens at the maximum diameter of the coupling spring B, and this diameter is the controlling maximum diameter of the bundle of conductors to be received by the said coupling spring B. The ends **10** and **12** are in planes normal to the central axis of the body and the cap **13** is a disc-shaped wall disposed in a plane also normal to the axis of the body. Thus, the body A is a part having inner and outer walls **14** and **15**, and it is of tubular form closed by the cap **13**.

In accordance with this invention, the disc-shaped cap **13** is spaced from the small diameter end **12** so as to expose the inner diameter wall **14** at the exterior of the body, said inner diameter wall **14** corresponding in diameter to the controlling maximum diameter of the coupling spring B. In practice, the controlling gauge diameter **14** exposed by the offset spacing of cap **13** from the end **12** can be more or less than the said controlling coupling spring diameter, depending upon its bundle receiving capability as circumstances may require. Thus, the inner diameter **14** of body A is exposed and adapted to receive a bundle of conductor ends within its confining limits, and on the contrary a bundle of too large a configuration will not be received therein and is rejected as not acceptable in the coupling spring of the connector.

Concurrently with the above described gauging procedure, the cap **13** provides for simultaneous longitudinal alignment of all of the conductors comprising the bundle thereof to be spliced. As shown in FIG. **2** of the drawings, the bared ends of conductors W are simultaneously manipulated into engagement with the

cap **13** held normal thereto, while confinement within the inner diameter **14** of body A determines acceptability.

From the foregoing it will be seen that this improved connector can be handled with facility in one hand of the mechanic or technician making the spliced connection of a plurality of conductors. The other hand of the person is used to effect the gauging relationships as shown in FIG. **2**, and when the longitudinal alignment and acceptable bundling configuration is achieved the person's grip upon the conductors is maintained while the connector unit is immediately reversed and reapplied by screwing the large diameter open end of the coupling spring B onto the bundle of gauged conductors. The gauging for acceptability is thereby accomplished by means directly associated with the connector being installed and with the assurance of a reliable splice in each instance where the gauge limitations and alignment functions are observed.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to myself any modifications or variations that may appear to those skilled in the art.

I claim:

1. A wire splice gauge and connector comprising, a hollow body closed at one end and open at its other end to form a conductor receiving chamber therein, a coupling member carried in said chamber and having an open end to receive a bundle of conductors entered therein through said other end of the body, the body having an inwardly displaced portion corresponding in size to the said open end of the coupling member and exposed at the exterior of the body to receive the bundled end portions of the conductors limiting the accumulated size thereof to acceptance by said coupling member.

2. The wire splice gauge and connector as set forth in claim **1** and wherein the said inwardly displaced portion is recessed in the outer surface of the body and has a flat wall to stop and thereby longitudinally align all conductors engaged therewith and is bounded by a projecting inner wall limiting the accumulated size of the bundled conductors.

3. The wire splice gauge and connector as set forth in Claim **1**, wherein the said open end of the coupling member is of a controlling diameter, and wherein the said inwardly displaced portion is recessed in the outer surface of the body and has a flat wall to stop and thereby longitudinally align all conductors engaged therewith and is bounded by a projecting inner diameter wall corresponding in diameter to said controlling diameter of the coupling member and limiting the accumulated size of the bundled conductors thereto.

4. A wire splice gauge and connector comprising, a hollow body of tube-form with a cap at one end and open at its other end to form a conductor receiving chamber therein, a coupling spring carried in said chamber and having an open end to receive a bundle of conductors entered therein through said other end of the body, the said cap being displaced inwardly from the first mentioned one end of the body with the tube-form thereof corresponding in size to the said open end of the coupling spring and exposed to receive the bundled end portions of the conductors limiting the accu-

mulated size thereof to acceptance by said coupling spring.

5. The wire splice gauge and connector as set forth in claim 4 and wherein the said inwardly displaced cap is recessed in said one end of the body and has a flat wall to stop and thereby longitudinally align all conductors engaged therewith and is bounded by the projecting inner wall of the tube form limiting the accumulated size of the bundled conductors thereto.

6. The wire splice gauge and connector as set forth in claim 4, wherein the said open end of the coupling spring is of a controlling diameter, and wherein the said inwardly displaced cap is recessed in said one end of the body and has a flat wall to stop and thereby longitudinally align all conductors engaged therewith and is bounded by the projecting inner diameter wall of the tube form corresponding in diameter to said controlling diameter of the coupling spring and limiting the accumulated size of the bundled conductors thereto.

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