Oct. 25, 1927. 1,646,660

H. PRINCE

CABLE SPLICE

Filed April 15, 1924

Fig. 1.

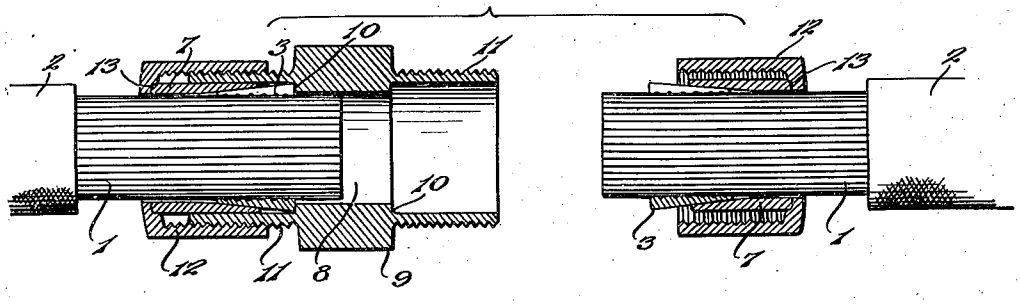


Fig. 2.

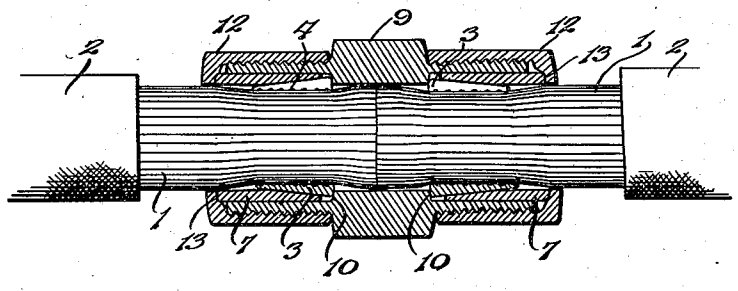
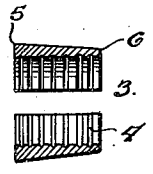


Fig. 3.



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Patented Oct. 25, 1927. 1,646,660

UNITED STATES PATENT OFFICE.

HARRY PRINCE, OF BUFFALO, NEW YORK, ASSIGNOR TO THE AMERICAN MINE DOOR CO., OF CANTON, OHIO, A CORPORATION OF OHIO.

CABLE SPLICE.

Application filed April 15, 1924. Serial No. 706,732.

This invention relates to means for connecting electrical cables and has for its object the provision of means whereby a strong connection between the meeting ends of cables or the ends of a broken cable may be easily effected. The invention seeks to provide a simple and inexpensive device which may be very easily applied to a cable and operated to bind the strands of the cable closely together so that a strong joint will be effected and pulling apart of the cables at the splice cannot occur. Other objects of the invention will appear incidentally in the course of the following description, and the invention resides in certain novel features which will be particularly pointed out in the appended claim.

In the accompanying drawing:

Figure 1 is a longitudinal sectional view showing the meeting ends of a cable arranged in alinement and ready to be connected by my improved splicing device;

Fig. 2 is a similar view showing the completed connection, and

Fig. 3 is a detail view of one of the split sleeves employed in accordance with my present invention.

In the drawing, the reference numeral 1 indicates a cable consisting of a plurality of wire strands having insulation 2 applied about the same. In carrying out my present invention, I fit around the ends of the cables split sleeves 3 which are provided in their inner circumferences with annular grooves 4 adapted to permit the formation of slight bends in the strands of the cables as the splicing connection is formed so that movement of the sleeves along the cables will be prevented and a firm engagement between the sleeves and the cable will be effected whereby endwise pulling apart of the ends of the cables will be prevented. The external diameter of each split sleeve 3 is greater at its inner end 5 than at its outer end 6, as clearly shown in the drawing, and around each split sleeve and partly overlying the cable I provide a compression sleeve 7, the external diameter of the compression sleeve being uniform from end to end, but the internal diameter being greater at its inner end than at its outer end, as clearly shown in the drawing, whereby the compression sleeve will have a wedging binding engagement with the split sleeve. Fitting about and housing each split sleeve and the coacting compression sleeve is a large coupling sleeve 8 which is provided externally at its center with a rib 9 which is provided with flat faces whereby it may be easily engaged by a wrench or turning tool. Internally the coupling sleeve 8 is smooth-bored, but it is provided between each end and its center with an internal annular shoulder 10 against which the larger end of the respective split sleeve may abut, as clearly shown in Figs. 1 and 2. The end portions of the coupling sleeve are externally threaded, as shown at 11, and upon the said threaded end portions are engaged the sleeve nuts 12 which are provided internally at their outer ends with annular shoulders 13 adapted to abut the outer ends of the compression sleeves 7 and reduced in thickness from their inner faces to form seats 13′ to receive the end portions of the compression sleeves and hold the sleeves and nuts in concentric relation to each other, as shown clearly in Figs. 1 and 2.

The sleeve nuts will obviously be engaged over the uncovered ends of the cables before the compression sleeves and the split sleeves are applied thereto. The split sleeves and the compression sleeves may, however, be assembled with the nuts and the assembly engaged over the ends of the cables without departing from the principles of my invention. The large coupling sleeve should, however, be so disposed that the ends of the cables will be at the center of said sleeve and each end portion of the coupling sleeve fits around a compression sleeve and a split sleeve and is, in turn, encircled by a sleeve nut. The parts having been assembled, as shown and described, the main coupling sleeve is held stationary and each sleeve nut is rotated so that it will travel along the threaded end portion of the coupling sleeve toward the center of the same, the internal shoulder or the end of the sleeve nut abutting the outer end of the compression sleeve and causing the latter to travel with the nut so that the beveled or wedging end of the compression sleeve will be caused to slide along the outer surface of the split sleeve which is held against movement by its engagement with the internal shoulder 10 of the main coupling sleeve 8. As a result of this action, the split sleeve will be caused to contract around the cable and will tightly compress the strands of the same and effect

a very close binding engagement therewith. At the same time a wedging action occurs between the main coupling sleeve and the split sleeve whereby the inner end portion of each compression sleeve is clamped between the main sleeve and the split sleeve, the result being that the cables are very firmly connected and the parts of the splicing device are brought into intimate contact so that resistance to the passage of the electrical current is practically eliminated and the conductivity of the repaired cable or of the joined new cables will be as good, if not better, than the conductivity of an original uninterrupted cable. After the splicing connection between the cable ends has been completed, insulation may be wrapped around the entire structure so as to avoid short circuits through accidental contact with adjacent metallic parts or other elements which would be apt to interfere with the efficiency of the device.

My present invention provides a splicing or coupling connection between cable ends which may be very easily applied by unskilled workmen at the point where a break occurs or wherever ends of cables are to be joined. No particular machinery or tool is required to manipulate the device other than an ordinary wrench and frequently sufficient force may be applied through the hands to effect the desired tight engagement between the parts. While the splice will generally be retained in place as a permanent part of the completed or repaired cable, it will be readily understood that it may be advantageously employed in connection with temporary cables which are dismantled after a predetermined operation has been completed, the structure being very easily removed from the cable by the application of a wrench or turning tool so that it may be applied to other cables. When the device has, however, once been applied, it will hold the cables against separation under ordinary strain and against the shock of contact with adjacent objects, and to separate the parts it is necessary to physically apply a wrench or other tool to overcome the positive resistance to separation existing by reason of the wedging engagement between the several elements.

It will be understood that all the sleeves are of metal, generally brass, so that they will have proper strength and durability and the completed splice will be efficient as a conductor of electricity. It is also to be understood that the terms "inner" and "outer" sometimes employed herein are used for convenience and refer to position relative to the center of the completed splice.

Having thus described the invention, I claim:

A device of the character described comprising a coupling sleeve internally thickened intermediate its length and from said thickened portion to one end of the sleeve having its bore unthreaded and of an even diameter, the said end portion of the sleeve being externally threaded, a longitudinally split sleeve fitted into said coupling sleeve and abutting said thickened portion, said split sleeve being externally tapered towards its outer end, a rigid compression sleeve of an even external diameter throughout its length for snug reception in said coupling sleeve and having its bore increasing in diameter towards its inner end, said compression sleeve being adapted to fit snugly about said split sleeve when moved into said coupling sleeve and effect compression of the split sleeve, and an internally threaded sleeve nut screwed upon the externally threaded end portion of said coupling sleeve and provided at its outer end with an inwardly disposed annular flange to engage the outer end of said compression sleeve and force the compression sleeve inwardly when the sleeve nut is screwed onto the coupling sleeve, said flange having its free peripheral edge portion reduced in thickness from its inner face to provide an annular seat adapted to receive the outer end of said compression sleeve and retain the compression sleeve and sleeve nut in concentric relation to each other.

In testimony whereof I affix my signature.

HARRY PRINCE. [L. S.]