

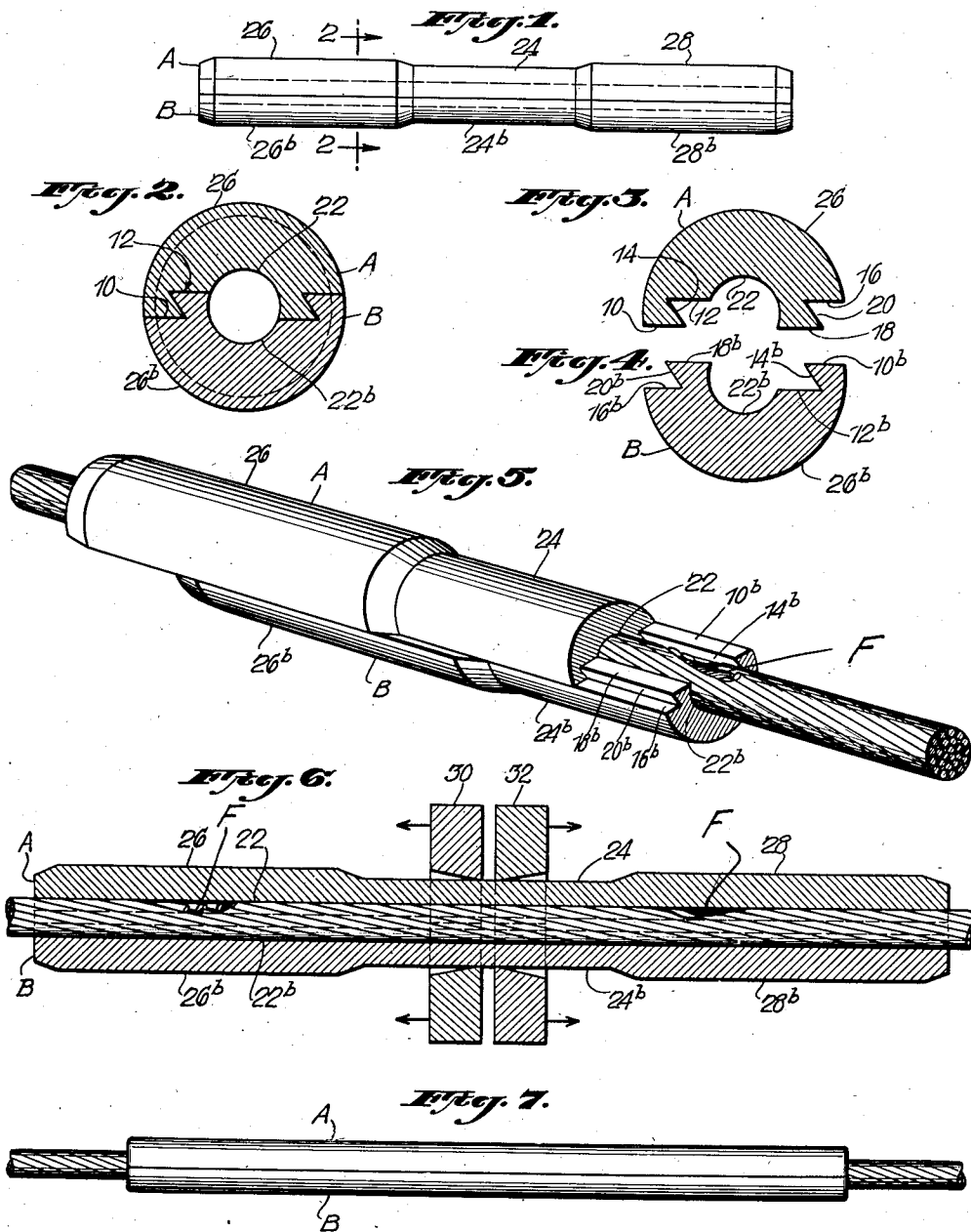
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REPAIR SLEEVE FOR DAMAGED WIRES AND CABLES

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REPAIR SLEEVE FOR DAMAGED
WIRES AND CABLES

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This invention relates to improvements in the method and means for repairing damaged wires and cables and involves fitting a split sleeve about the damaged portion of the wire or cable and subsequently subjecting the sleeve to a drawing action or mechanical working, whereby the cross sectional area of the sleeve is reduced and the length thereof materially increased.

It is broadly old to join wires or cables by attaching a tubular connecting casing thereof and subjecting the casing to a pressure circumferentially and progressively along the tubular casing to produce a concurrent reduction in cross section and elongation thereof. Such old method is disclosed in Auspitzer Patent 1,599,356 and suitable apparatus for subjecting the tubular casing to a drawing operation is also disclosed in Auspitzer Patent 1,599,357. My present invention is directed more specifically to improvements over the disclosures in the Auspitzer patents and has certain advantages thereover, which will appear hereinafter as the description proceeds.

The invention is exemplified in the accompanying drawing, in which

Fig. 1 is a side elevation of a repair sleeve embodying my invention; Fig. 2 is an enlarged cross section on line 2—2 thereof; Figs. 3 and 4 are views showing the two component parts of the improved repair sleeve; Fig. 5 is a perspective view illustrating a step in the method of positioning the sleeve about a damaged wire or cable; Fig. 6 is a view in longitudinal section, diagrammatically illustrating a method of attaching the sleeve; Fig. 7 illustrates a length of wire or cable with my improved repair sleeve secured thereto.

Referring in detail to the drawing, the repair sleeve of my invention includes two component parts interlocked one with another and formed of material and shaped in such a way that the parts can be simultaneously subjected to a drawing operation so as to work the metal and elongate it in such a manner that the component parts of the sleeve will be intimately united with the wire or cable on opposite sides of the broken or weakened part thereof.

The repair sleeve comprises complementary members A and B which preferably, though not necessarily, are of duplicate form. The member A has lower flat faces 10 and 12 in planes offset horizontally and joined by an inclined face 14 and also similar flat faces 16 and 18 joined by an inclined face 20 and a wire engaging recess portion 22 of substantially circular form in cross section lies between the flat faces 12 and 18.

The other member B has flat faces 10^b and 12^b and also inclined faces 14^b and 20^b and an intermediate circular face 22^b. As thus formed, the two component parts of the split sleeve can be interlocked with one another by sliding one on the other longitudinally while the two have their portions 22 and 22^b engaged with the wire or cable to be repaired. Thus, if a wire develops a weak spot due to abrasion or other causes, or if one or more strands of a multiple strand cable are fractured or broken, my improved split sleeve can be assembled over the weakened part of the wire or cable without the necessity of cutting the cable in two.

The intermediate portions 24 and 24^b of the members A and B are of reduced diameter, as compared with the outer portions 26, 28, 26^b and 28^b.

In repairing a damaged or broken cable, according to my improved method and by the use of my improved split repair sleeve, I assemble the portions A and B about the fractured or weakened portions F in the stranded cable or wire and fit the die members 30 and 32 of a suitable draw bench about the portions 24 and 24^b of reduced diameter and cause said die members 30 and 32 to move outwardly, as indicated by the arrows in Fig. 6, whereupon the die members come into engagement with the enlarged portions 26, 26^b, 28 and 28^b of the repair sleeve and their continued movement subjects the metal to a drawing or working operation, whereby the component elements of the sleeve are simultaneously reduced in cross section and elongated, thus intimately securing the parts to one another and also to the wire or cable being repaired.

The drawing or working of the sleeve will cause the metal thereof to enter the interstices between the adjacent strands of a stranded cable and also to fill or partially fill the voids caused by the elimination or part elimination of strands and the resulting joint will have a tensile strength at least equal to that of the wire or cable.

By making the repair sleeve in two parts, it will be appreciated that it is unnecessary to sever the ends of the wire and it is not required to thread separate ends into a tubular casing as was heretofore regarded desirable, as disclosed for example in the Auspitzer patents referred to.

The parting line of the two duplicate complementary parts of the repair sleeve may be described as of zig-zag form. This zig-zag parting line provides a joint of a tongue and groove

nature, which when the parts are assembled about the wire or cable prevents their separation in a radial direction. They are thus self-locking. The particular form of dovetailed joint in which the inclined portions are substantially parallel is advantageous because it enables me to form the two part sleeve of two parts of identical size and shape. This permits of manufacturing economies and avoids the necessity of making rights and lefts. It is also a time saver because it avoids the necessity of mechanics in the field going to the bother of selecting mating parts, which of course would be required if the parts were dissimilar.

The dove-tailed or undercut interlocked connection between the two sections or parts of the repair sleeve provides means whereby they can be united by a sliding motion in a direction longitudinally of the wire or cable and once the parts are thus assembled they cannot be displaced radially or transversely. This facilitates the subsequent drawing operation by means of which the parts are permanently secured to the wire or cable.

The repair sleeve sections are preferably made of relatively ductile metal such as copper or the like, in order to facilitate the drawing action of mechanical working whereby portions thereof can be readily caused to enter the interstices between the strands or to fill or partially fill in voids caused by broken or damaged strands of a multiple strand cable.

While I have described quite precisely certain steps in the method and certain specific details of the design of repair sleeve illustrated it is to be understood that various modifications may be made by those skilled in the art without departing from the invention as defined in the appended claims.

What I claim is:—

1. The method of repairing weakened wires or cables by applying sections of a split sleeve in the weakened zone of the wire or cable and subjecting said sleeves to a drawing operation to produce a concurrent reduction in cross sec-

tion and elongation of said sleeve, whereby the sleeve and wire or cable are brought into intimate interengagement.

2. In the repairing of damaged wires or cables, the method which comprises interlocking sleeve elements about the weakened zone of the wire or cable and subjecting said sleeve elements to a drawing operation to effect an intimate interengagement between the damaged wire or cable and said sleeve elements.

3. A split sleeve for repairing damaged wires or cables comprising a pair of complementary sections adapted for sliding interlocking engagement with one another and each having an intermediate portion of relatively reduced diameter and adjacent outer portions of larger diameter adapted to be subjected to a drawing action, whereby the component sections of the sleeve are intimately secured to the wire or cable and to each other.

4. A split repair sleeve for repairing damaged wires or cables comprising a pair of complementary sections adapted for sliding interlocking engagement with one another, each section having a central substantially part-cylindrical surface and a pair of parallel flat surfaces on each side of the cylindrical surface joined by inclined surfaces, and outer portions offset outwardly from the part-cylindrical surfaces, said sections being adapted to be subjected to a drawing operation whereby they are intimately secured to the wire or cable and to each other.

5. A split sleeve for repairing damaged wire or cables comprising a pair of half sections adapted for sliding interlocking engagement with one another, each having an intermediate portion of relatively reduced diameter and adjacent outer portions of enlarged diameter adapted to be subjected to a drawing action, said sections having substantially central wire engaging surfaces and having duplicate interlocking dove-tailed connection portions adapted to be intimately secured to the wire or cable and to each other by such drawing action.

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