Aug. 15, 1944. R. S. WADE ET AL 2,356,014

COUPLING FOR SPLICING CABLES

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Fig. 1.

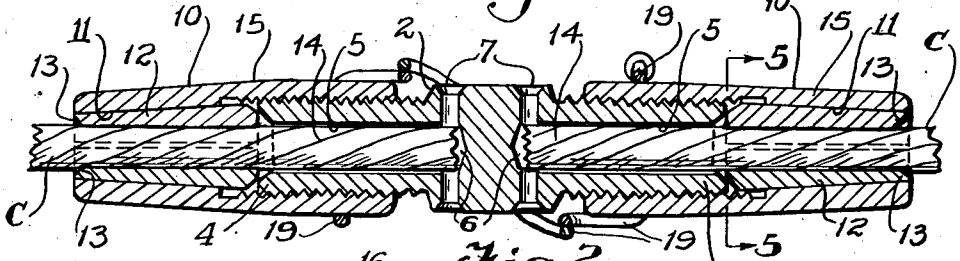


Fig. 2.

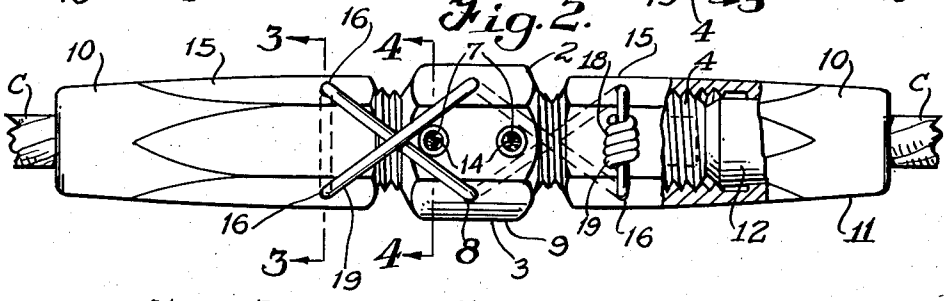


Fig. 3

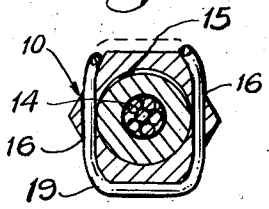


Fig. 4.

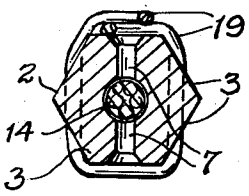


Fig. 5.

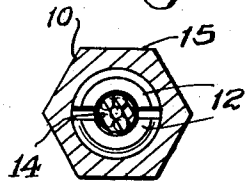


Fig. 6.

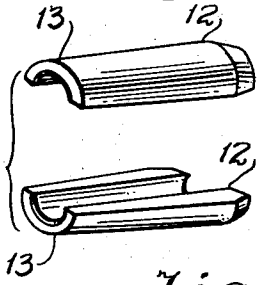


Fig. 7.

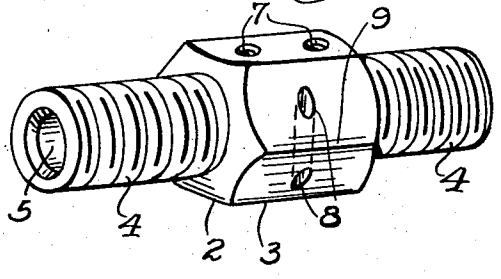
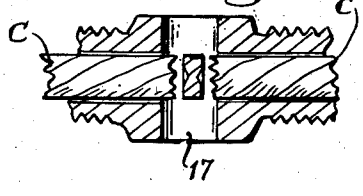


Fig. 8.



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COUPLING FOR SPLICING CABLES

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Application January 15, 1943, Serial No. 472,536

2 Claims. (Cl. 287—76)

This invention relates to couplings for splicing cables and more particularly to certain improvements therein, and is an improved coupling for stated purpose.

In practical applications it has been found that inserting of a loose end of a cable, especially when the latter is composed of many separate threads, into a coupling with a sleeve or a plurality of sleeves therewithin is often difficult and obstructed when said sleeves are located beyond immediate visibility and a finger reach of the operator and when they form an obstructing and invisible edge against a cable when the latter is being forced into the coupling thereagainst.

One of the objects of this invention is to provide a coupling with a plurality of split clamp-sleeves therewithin with outer ends thereof remaining visible from outside when the coupling is engaged by a cable-end being inserted thereinto.

Many accidents were caused by a blind contention that cable-ends are properly inserted into a coupling. A common inspection hole in a coupling wall is often misleading due to a dark background formed by the opposite inner wall thereof whereby locating a cable-end is handicapped or delayed. Inspectors often may assume they saw the cable-end through a common inspection hole while what they actually may have seen was merely a shadow of the cable-edge against a natural screen formed by the opposite solid inner wall.

Thus another object of this invention is to provide means to test degree of cable insertion into a clamp independently from vision, said means comprising a through opening in the middle section of side walls of the clamp which opening is adapted to allow a wire rod, stick or like to be inserted therethough prior to inserting a cable end into the clamp, and thereafter tried to be pulled out when the cable end inserted into the clamp will come in pressing and frictional contact with prior insertion. A relative difficulty in pulling the latter out from the through opening would indicate the proper degree of cable end insertion into the clamp.

In a coupling it is a common practice to provide a removable sleeve at each end thereof. In practical applications it has been found that threads alone are not sufficient to be entirely dependent on for holding those sleeves in place under tension and constant wear. Many attempts have been made in the past to provide great variety of means to lock those sleeves in place after they are regularly mounted in a coupling. Importance of such locking is fully emphasized by such high authority as United States Army (Turn buckle assembly, U. S. Army Standards AN130, AN135, AN140, AN150 as far back as 3-22-26 and 5-6-35). These wires were already used in an effort to lock said removable sleeves after they have been screwed in in a regular manner over a coupling.

It has been observed that a main defect of heretofore known locking means for said sleeves was inability to eliminate a certain margin of play either one way or another which eventually provided an opportunity to develop a loosening of the grip against the cable-ends.

The third object of this invention is to provide improved and original means of locking the coupling sleeves in place, and more specifically, a playless self-equalizing and self-locking lock comprising a plurality of locks of relatively equal strength applied in relatively opposite directions, for instance, a wire held at series of relatively dependent points in an X-like relationship in such a manner (shown and described below) that a tendency of either sleeve to loosen up either way will naturally tighten the wire hold thereagainst and such wire tightening will simultaneously tighten the opposite pull of the other wire section in the X-like relationship.

While present war efforts have convincingly demonstrated that responsibility of a coupling in industrial applications in many instances is very great a practical observation of heretofore used couplings reveals that some lack in simplicity of construction, or in efficiency of operation, or in durability, or are not quite economical for manufacture, therefore the general object of this invention is to incorporate the others in a structure that is simple, efficient, durable and susceptible of economical manufacture, as illustrated in the accompanying drawing and following references thereto.

Reference now will be had to the accompanying drawing in which—

Fig. 1 is a central section transversely as to what is shown in Fig. 2.

Fig. 2 is a plan view of what is shown in Fig. 1.

Fig. 3 is a section on line 3—3 of Fig. 2.

Fig. 4 is a section on line 4—4 of Fig. 2.

Fig. 5 is a section on line 5—5 of Fig. 1.

Fig. 6 shows perspective views of the semi-circular tapered clamping wedges of the coupling.

Fig. 7 is a perspective view of the unitary central body of the coupling.

Fig. 8 indicates a modified form of an inspection aperture in the body piece of Fig. 7, wherein one aperture for inspection is used as compared with two apertures for inspection which are shown in Figs. 1 and 2.

In the drawing our coupling is shown as being composed in part of a central unitary piece or block 2 shown in perspective in Fig. 7. This block 2 is provided with a central hexagonical portion 3 on each end of which there are threaded nipple ends 4. Central tubular holes 5 extend through

the nipple ends only and terminate at 6 in the hexagonical block 2, see Fig. 1.

The diameter of the holes 5 are of a diameter closely to that of the cable C which is being spliced by the coupling.

The central hexagon portion 3 of the block 2 is provided with inspection holes 7 extending entirely through that portion of the block 2. These holes 7 are located to pass through the holes 5 at or near the ends 6 of the holes 5. These inspection holes 7 permit an inspector to observe that the ends 14 of the cables which are being spliced are extended into full depth in the holes 5 of the nipples 4.

In the block 2, at the hexagonical portion 3, there are provided holes or apertures which extend through the corners 9 and these are located on opposite sides of each other and at ninety degrees, or other desirable angle, from the inspection holes 7. The holes 8 are a part of a locking means to prevent the parts of the coupling becoming loose in service.

On the ends of the threaded nipples 4 there are internally threaded sleeves 10 screwed thereon. In the outer ends of the sleeves 10 beyond the internal threads of the sleeves and the ends of the nipples 4, there are tapered interior chambers 11, the small ends of which are at their outer ends.

Located in these chambers 11 in the said sleeves 10 there are semi-circular tapered wedges 12 having their small ends 13 located at the outer ends of the said sleeves. Their wedges 12 are curved on their inside to fit the contour of the cable C which is being spliced.

In making a splice with our coupling the ends of the cable are shoved into the ends of the coupling when the sleeves 10 and wedges 12 are sufficiently released to permit easy entrance of the cable ends. The ends are shoved clear into the coupling and through the holes 5 in the threaded nipples 4 to abut against the ends of the holes 5 as is shown at 6 in Fig. 1.

As shown in Figure 1, the distance between inner ends of wedges 12, and the edge of nipple end 4 is relatively small (in this instance, and taking in consideration the relatively diagonal slices, the total moving margin within the clamp is approximately ⅛''), thus, when cable end is being inserted into the coupling, wedges 12 may move but relatively very small distance, as illustrated, to allow outer edges 13 thereof to remain vsible from outside while the coupling is being engaged.

The cable ends then are by any suitable means held closely in those positions while the sleeves 10 are screwed on the nipples 4 toward the center of the coupling, which results in causing the tapered semi-circular wedges 12 to clamp tightly on the cable body at the interior of the tapered chambers 11 in the sleeves 10.

The wedges 12 then clamp the cable ends tightly substantially to the limit of the strength of the cable itself by frictional resistance under the pressure of the wedges 12.

It will be noticed that the ends of the cable extend into the holes 5 of the nipples 4 a distance beyond the wedges 12 approximating the length of the wedges 12. Thus these portions 14 of the cable ends are not compressed in diameter by the wedges 12 and on that account they have a holding resistance against withdrawal from the coupling approximating to some extent as if the cable ends had been upset in some manner to prevent withdrawal of the cable inside of the portion beyond the wedges 12.

The sleeves 10 at their inner ends are provided with hexagonical portions 15 closely approximating the size and shape of the hexagonical portions 3 of the block 2. Through the corners of the hexagonical portions 15 of sleeves 10 there are holes 16.

On the final adjustment of the application of the coupling in making a splice, the hexagonical surfaces of the block 2 and the sleeves 10 are brought in parallel relations as much as may be necessary for proper adjustments for the clamping of the sleeves to the cable C. This parallelism is desirable for convenience in locking the parts together to prevent them from coming loose in service, as there is provided a wire means 19 which is trained through the holes 8 in the block 2 and the holes 16 in the corners 15 of the sleeves 10. This wire is threaded through those holes back and forth on each side of the coupling, as is best observed in Fig. 2. This wire terminates in a twisted connection indicated by 18 in Fig. 2.

This wire is criss crossed on itself as is indicated by Fig. 2 whereby there is prevented any twisting or rotary movement of the sleeves 10 with the block 2.

We prefer to provide the two inspection holes 7 by means of which to observe that the cable ends are inserted to the full depths desired into the coupling. However, one larger hole, indicated by 17 in Fig. 8, may in some instances be used.

We have shown and described hexagonical shapes 3 for the central body 2 and the inner ends of the sleeves 10. However, any suitable shapes may be used for these parts which are adaptable for the service. In cases where circular shapes are used in place of the hexagonical shapes, or other shapes having corners, then there will be provided in the sides of such circular shapes, the holes 8 for the locking wires 19 in substantially the same manner as herein described.

What we claim is:

1. A coupling for wires, rods or the like comprising a body block having a nipple at its end, said nipple having a tubular and longitudinal opening therewithin adapted to receive a wire, rod or the like, a tubular sleeve longitudinally and movably mounted over the nipple, clamping means within said sleeve, a plurality of through and relatively opposite openings in relatively opposite side walls of the coupling relatively far from its outer end and communicating with said longitudinal opening.

2. A coupling for wires, rods or the like comprising a body block having a nipple at its end, said nipple having a tubular and longitudinal opening therewithin adapted to receive a wire, rod or the like, a tubular sleeve longitudinally and movably mounted over the nipple, said block and sleeve having transverse openings therethrough clamps within said sleeve, locking means adapted to hold the sleeve in clamping position when a wire, rod or the like is engaged in said coupling, said means comprising an elongated member extending sequentially through the transverse openings of said block and said sleeve, portions of said member engaging one another in crossing relationship and the end portions of said member being interlocked to lock and hold the sleeve in stationary position relative to the block.

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