Oct. 30, 1951 R. R. LOCKHART 2,572,940

WIRE GRIP INDICATING MEANS

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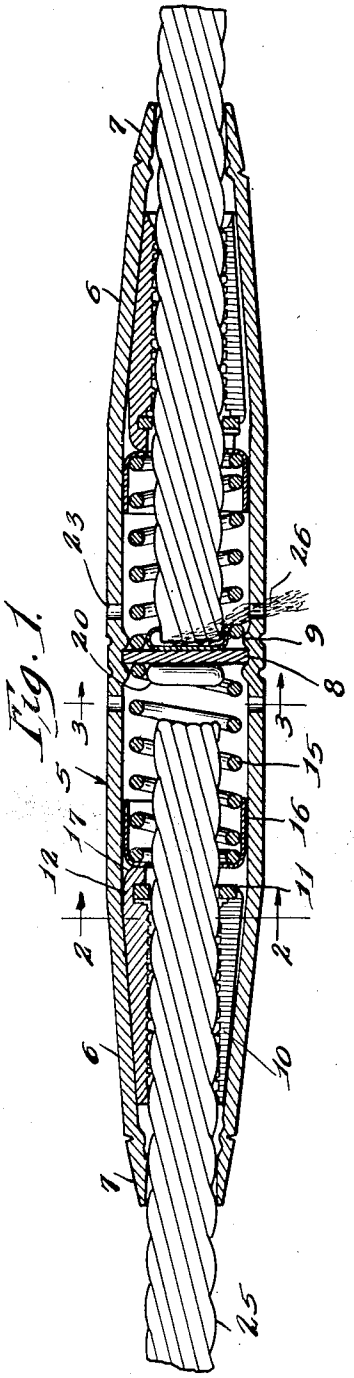


Fig. 1.

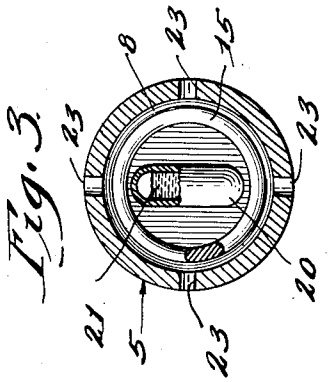


Fig. 3.

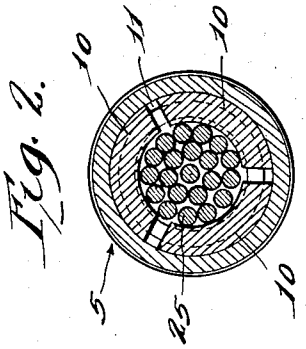


Fig. 2.

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WIRE GRIP INDICATING MEANS

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4 Claims. (Cl. 116—124)

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My invention covers an arrangement that is used with a tubular type wire grip to provide a visual indication showing when a proper relationship has been established between the wire grip and an inserted wire end.

The wire grip for which my invention is particularly adapted is of the general type shown in U. S. Letters Patent 2,138,913 and 2,288,133. These grips have wire gripping jaws that cooperate with a tapering tubular shell to produce wire gripping action.

Heretofore, wire grips of this type have occasionally failed due to the fact that the wire end was not threaded a sufficient distance into the grip. Under that circumstance, the full effective length of the gripping jaws is not utilized. Also, an "out-of-lay" strand sometimes enters one of the spaces between adjacent jaws with the result that proper gripping action does not occur. Similarly, burrs at the conductor end produce an improper relationship. These last mentioned difficulties would be eliminated if the wire end were threaded completely through, and perhaps beyond, the gripping jaws.

Faulty connections as above described will withstand some tension, and thereby make a careless user think that a proper connection has been established. However, such a connection is quite likely to fail under service conditions.

Accordingly, the object of my invention is to provide an arrangement whereby a visual indication is produced when, and only when, the wire end has been passed completely through and beyond the gripping jaws. With such an arrangement, effective utilization of the entire length of the gripping jaws is insured. Similarly, the difficulties produced by "out-of-lay" strands and burrs are effectively eliminated.

My novel indicator arrangement is illustrated and described as embodied in a line splice of the general type shown in said U. S. Patent 2,138,913. It may, however, equally well be used in other wire gripping devices.

Other objects and advantages of my invention will be apparent as the description proceeds, reference being had to the accompanying drawing which illustrates one structural form of the invention. It will be understood, of course, that in a practical, commercial application of the invention, the essential features are necessarily susceptible of changes in details and structural arrangements. The legal scope of the invention is to be measured by the claims hereinafter set forth.

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In the drawing:

Fig. 1 is a sectional view showing a wire splice embodying my invention;

Fig. 2 is a sectional view on line 2—2 of Fig. 1, and

Fig. 3 is a sectional view on line 3—3 of Fig. 1.

The illustrated line splice has a tubular shell 5 that tapers toward both ends as shown at 6. Each end terminates in an increased tapering portion 7.

Shell 5 is divided into two half portions by a central barrier which may take the form of a transverse disk 8 held in position by upsets 9 punched from the shell.

Each shell end contains a plurality of tapered gripping jaws 10, there being three jaws in each end of the splice illustrated (Fig. 2). Jaws 10 are interconnected by means of a jaw positioning ring 11 that has spaced radial slots (not shown). Each jaw has a reduced neck portion 12 that is received in one of such slots. This arrangement permits the jaws to "float" radially a distance depending on the longitudinal position of the jaws within the tapered shell. Also, the ring maintains the jaws in proper circumferentially spaced relation so that no "bunching" occurs.

Jaws 10 are biased toward the tapered end of shell 5 by means of a partially compressed spiral spring 15. One end of spring 15 bears against central disk 8 while the other end is received within a cup 16 which engages heads 17 of the gripping jaws. Cup 21 has a central opening in its bottom that registers with the opening in jaw positioning ring 11.

A fragile capsule 20 is disposed on each side of central disk 8. Capsule 20 conveniently may be mounted on the surface of disk 8 by means of a suitable adhesive, although other mounting arrangements may be employed. Capsule 20 preferably takes the form of a gelatin tube sealed at both ends.

Each capsule 20 contains a liquid material 21 (Fig. 3) that has sufficient coloring and body so as to be readily visible when the capsule is broken and the material flows to the exterior of the splice.

Capsule 20 extends, as shown in Fig. 3, diametrically across a substantial portion of the shell interior. The dimensions of capsule 20 are so chosen that it is impossible to abut the end of an inserted wire against disk 8 without first rupturing the capsule.

Shell **5** has a plurality of circumferentially spaced holes **23** around each capsule so as to provide outlets for the liquid material when the capsules are ruptured.

A wire **25**, illustrated as a stranded conductor, is applied to the wire grip in the usual manner. The wire end is threaded into the shell where it pushes jaws **10** against the action of bias spring **15**. Jaws **10** radially expand as they recede down the taper to permit passage of the wire end. When the wire has been inserted a sufficient, safe distance, its end ruptures capsule **20** as illustrated in the right hand portion of the splice of Fig. 1. The liquid material flows from capsule **20** and at least a portion of it escapes as shown at **26** to the exterior of the splice. This visual indication informs the user that the wire end has passed completely through and beyond jaws **10**, and that thereby a proper relation between the wire and the grip has been established.

From the above description it is thought that the construction and advantages of my invention will be readily apparent to those skilled in the art. Various changes and modifications may be made without departing from the spirit or losing the advantages of the invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a wire splice having a tubular shell tapering toward each end and wire gripping jaws in each end, the combination therewith of a transverse central barrier fixed within said shell, a fragile capsule carried on each side of said barrier and extending diametrically across a substantial portion of the shell interior, a colored liquid material sealed within each capsule, the said shell having a plurality of circumferentially spaced holes around each capsule whereby said material, when a capsule is ruptured by an inserted wire end, may escape to the shell exterior to provide a visual indication.

2. In a wire grip having a tubular tapered shell and wire gripping jaws therein, the combination therewith of means providing a visual indication when the end of an inserted wire has passed through and beyond said jaws, said means comprising a fragile capsule disposed within said shell beyond said jaws and extending diametrically across a substantial portion of the shell interior, and a colored liquid material sealed within said capsule, the said shell having a plurality of circumferentially spaced holes around said capsule whereby said material, when said capsule is ruptured by an inserted wire end, may escape to the shell exterior.

3. In a wire grip wherein it is necessary that a wire end be inserted a predetermined distance in order to insure satisfactory gripping action, the combination therewith of a fragile capsule disposed within said grip, and a colored liquid material sealed within said capsule, the wire grip having openings leading from the interior to the exterior thereof for the escape of said material when said capsule is ruptured by an inserted wire end.

4. A visual signal for indicating the proper degree of insertion of a wire in a wire grip comprising a fragile container, colored liquid material within said container, and means producing rupture of said container upon proper degree of wire insertion, the wire grip having apertures enabling said material to flow to a visible portion of the grip.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
649,542	Gerard	May 15, 1900
698,127	Mitchell	Apr. 22, 1902
1,854,783	Cook	Apr. 19, 1932
2,460,215	Chase	Jan. 25, 1949