C. BARBOUR.

ARMOR FOR FLEXIBLE ARTICLES.

APPLICATION FILED NOV. 13, 1914.

1,155,460. Patented Oct. 5, 1915.

FIG. 1.

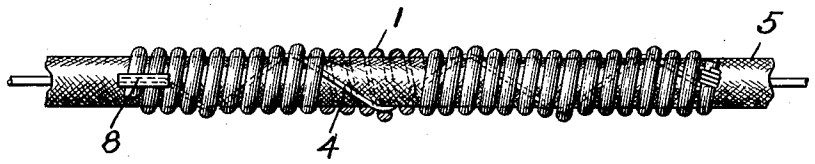


FIG. 2.

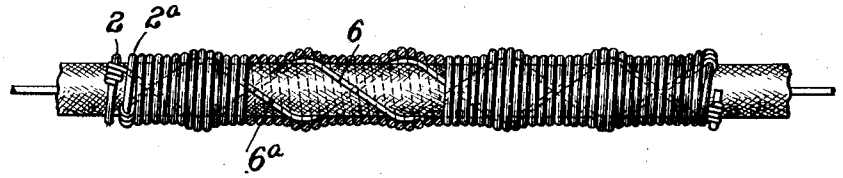
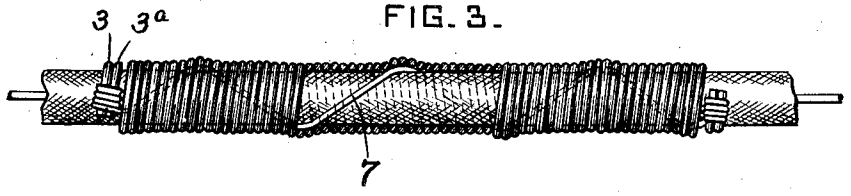


FIG. 3.



WITNESSES

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CHARLES BARBOUR, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO STANDARD UNDERGROUND CABLE COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

ARMOR FOR FLEXIBLE ARTICLES.

1,155,460. Specification of Letters Patent. Patented Oct. 5, 1915.

Continuation of application Serial No. 748,752, filed February 15, 1913. This application filed November 13, 1914. Serial No. 871,881.

To all whom it may concern:

Be it known that I, CHARLES BARBOUR, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Armor for Flexible Articles, of which improvements the following is a specification.

This application, as far as there is common subject-matter in the two cases, is a continuation of my application Serial No. 748,752, filed February 15, 1913.

The object of my invention is to provide a simple and effective means for locking upon flexible articles, such as cables, hose, etc., a helical wrapping of flexible and resilient metal, such metal wrapping being used as a protecting armor for the article, and the locking means being such as will not diminish the flexibility of the article.

A further object of my invention is to increase the practical usefulness of metal armor of this character when it is used to protect flexible articles, which, after being manufactured, are cut into various lengths.

Several embodiments of my invention are illustrated in the accompanying sheet of drawings which forms part of my specification. Each of the three figures show short sections of electrical conductor cables with locked armor applied thereto.

In the practice of my invention in its preferred form the armor consists of a helical wrapping of a strip or strips of flexible and at the same time resilient metal, and the locking of the armor is effected by providing a second helix of wire, preferably, although not necessarily, incased within the armor. The opposite ends of the locking wire are attached in a suitable manner to the opposite ends of the armor strip so that the unwinding and consequent slackening of such strip will be resisted by the locking wire.

The armor may be formed of any desired number of strands which may be of any suitable cross-sectional configuration. In the embodiment of my invention illustrated in Figure 1 a single strip of semi-circular wire 1 is used, whereas in Figs. 2 and 3 the armor is made of two strips of cylindrical wire 2, 2^a and 3, 3^a, respectively, laid side-by-side. Various arrangements of the locking wire may be employed, it being essential only that it be laid in a helix so that it will not diminish the flexibility of the article to which it is applied, and that it be so arranged that it will resist the tendency of the resilient armor to unwind. There may be a locking wire for each strand or strip of armor as is shown in Figs. 1 and 2, in the former of which a single locking wire 4 is secured at its opposite ends to the ends of the single strip 1, while in Fig. 2 there are two locking wires 6 and 6^a having their opposite ends secured to the armor strips 2 and 2^a, respectively. Or, as in Fig. 3, there may be a single locking wire 7, each end of which is secured to the ends of all the armor strips, in this case the two strips 3 and 3^a. Also the locking wire or wires may be wound in the opposite direction to that of the armor strip or strips, as shown in Figs. 1 and 2, or in the same direction as is illustrated in Fig. 3. When wound in the same direction as the armor it is essential that the locking wire be incased within, and be at a materially greater pitch than, the armor strip.

The ends of the locking wires may be secured to the ends of the armor strips in any desired manner. The connection 8 at the left end of Fig. 1 is effected by bending the end of the locking wire back upon, and soldering it to, the armor strip, whereas, in all other instances shown herein, the locking wire is twisted around the otherwise free ends of the armor strips. To effect such connections, after the armored flexible article has been cut to a desired length, a portion of the armor strips or wires are unwound and cut off, leaving a short length of the locking wire available for such manner of connection as may be desired.

While the armor which I have shown and described may be used to protect various forms of flexible articles, I find it particularly applicable for such electrical cables as are used in wiring automobiles, motor boats and like structures.

I claim as my invention:

1. An envelop for a flexible article consisting of an inner helix of resilient wire coiled at one pitch, and an outer helix of resilient wire coiled at a materially less

pitch than the inner helix, said helices being united at their ends.

2. An envelop for a flexible article consisting of two helices of resilient wire coiled in opposite directions and united at their ends.

3. The combination with a flexible article, of a protecting armor comprising a resilient wire coiled around said article, and a locking wire extending spirally around said article at a pitch materially greater than that of said armor, the locking wire being within said armor.

4. The combination with a flexible article, of a protecting armor comprising a resilient wire coiled around said article, and a locking wire coiled at a pitch materially greater than that of said armor and in an opposite direction thereto, said locking wire being incased within and held against movement by said armor.

5. The combination with a flexible article, of a protecting armor comprising a plurality of resilient wires coiled around said article, and a corresponding number of locking wires extending spirally around said article and at a pitch materially greater than that of the armor, each of said locking wires being secured to the free end of one of said armor coils.

In testimony whereof I have hereunto set my hand.

CHARLES BARBOUR.

Witnesses:

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