

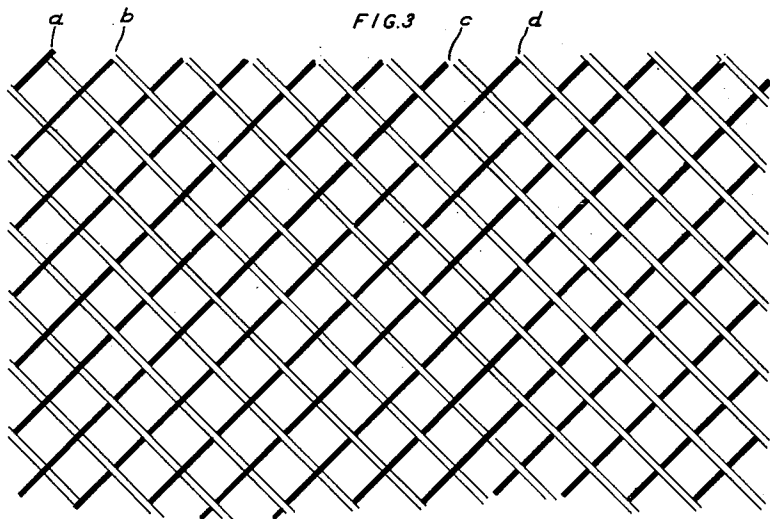
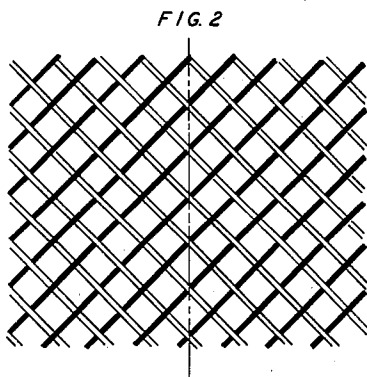
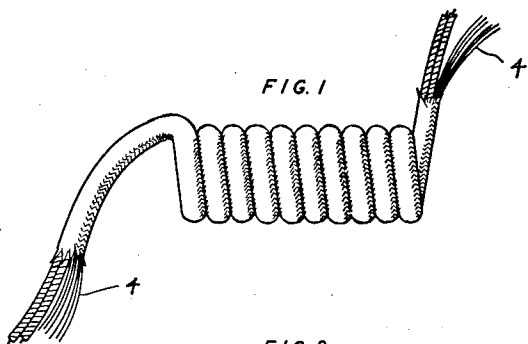
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ELECTRICAL CONDUCTOR

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ELECTRICAL CONDUCTOR

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This invention relates to an electrical conductor and more particularly to an extensible retractile cord.

An object of the invention is to provide a conductor cord which may be readily bent or coiled.

In accordance with one embodiment of the invention a retractile cord of helical form is provided having a braided covering in which the outer portions of the helical convolutions are braided progressively one strand over one strand and under the next strand, while the inner portions are braided progressively one strand over two strands and under two strands.

A full understanding of the invention may be had by reference to the following description taken in conjunction with the accompanying drawing, in which:

Figure 1 is a detailed view of a helically coiled conductor embodying the invention;

Figure 2 is a plan development showing the inner and outer portions of one type of braid, and

Figure 3 is a plan development of another type of braid.

In making a braid covered electrical cord of the extensible retractile type it is common practice to provide elastic material underlying the braid to cause the cord, which usually consists of several conductors, to assume a helically coiled form. The braid may be applied to the conductor in a braiding machine of the type disclosed in the patent to Miller, 1,602,442, of October 12, 1926. The braid is applied to a straight portion of the cord with the elastic material under tension and when the cord is released from the machine the elastic material tends to draw it into helical form. As the conductor is bent in a helix the inner portion of a convolution of the braided material has a tendency to be compressed and the outer portion of a convolution of the braid has a tendency to be stretched.

When a braided covering is made in such a manner that one yarn passes progressively over one yarn and under the next, a plain braid is made which resists compression to a high degree.

When, however, the braid is formed in such a manner that a yarn passes progressively over two yarns and under two yarns, there is less resistance to compression of the braided covering. This so-called compressibility of the braid may be increased still farther by progressively passing one yarn over three yarns and under three yarns and so forth. A cord may, therefore, be made in which the braid in the outer portions of the convolutions are braided progressively one yarn over one yarn and under the next, and the

inner portions of the convolutions are braided progressively one yarn over two yarns and under the next two which permits the cord to coil with considerably greater facility. Referring, for instance, to Figure 2, the right hand half of the figure represents a one over one braid which forms the outer half of the braid and the left hand half of the figure represents a one over two braid which forms the inner half of the braid. In order to obtain this type of braid on a standard Wardwell type of braider, it is simply necessary to properly arrange the deflectors as described in the above referred to patent to Miller. In a similar manner cords may be made in which the outer portion of the braid is made one over one, the intermediate portion of the braid along the neutral bending axis may be made one over two and the inner portions of the braid one over three. In some cases it has been found to be desirable to braid the outer portion of the braid one over two and the inner portion of the braid one over three, or even of a higher order or degree. In fact, a very satisfactory cord may be made by not interbraiding the inner yarns of the convolutions at all, simply serving them onto the conductor while the outer portion of the yarn is interbraided. The resistance to bending of the conductor is decreased in all cases by making the overlapping of the yarns on the inner side of the convolutions of a higher order or degree than the overlapping on the outer portion of the convolutions.

Fig. 3 shows in plan development a braided cover for a cord in which the braid between lines *a* and *b* is braided one yarn over two yarns, the braid between lines *b* and *c* is braided one yarn over one yarn, the braid between lines *c* and *d* is braided one yarn over two yarns, and the yarn between lines *d* and *a* is unbraided. When this covering is on a helically coiled cord the braid between lines *b* and *c* is on the outside of a convolution, and on each side thereof on the neutral bending axis of the cord the yarn is braided one yarn over two. On the inside of a convolution the yarn is unbraided.

It will be understood that the invention herein described and illustrated is merely illustrative of the invention and that many changes and modifications may be made therein without departing from the spirit and scope of the invention.

What is claimed is:

1. An electrical cord comprising a conductor having a covering of strand material having circumferentially different orders of interbraiding of the strand material to provide greater com-

pressibility on one side than on the other to facilitate bending of the cord.

2. An electrical cord comprising a conductor having a covering of braided strand material in which one side of the covering is interbraided to a higher degree than the other to facilitate bending of the cord.

3. An electrical cord comprising a conductor having a covering of braided strand material in which one side of the covering has a predetermined degree of interbraiding of the strands, the portions along the neutral bending axis of the cord having a lesser degree of interbraiding of the strands, and the side opposite the first mentioned side having the least degree of interbraiding of the strands.

4. A retractile cord comprising a helically coiled conductor having a covering of braided strands, the outer portion of a convolution of the coil having the covering strands interbraided to a predetermined degree, and the inner portion of the convolutions of the coil having the covering strands interbraided to a lesser degree.

5. A retractile cord comprising a helically coiled conductor having a covering of braided strands, the outer portion of a convolution of the coil having the covering strands interbraided to a predetermined degree, the inner portion of the convolutions of the coil having the covering

strands interbraided to a lesser degree, and means tending to retain the cord in helical form.

6. A retractile cord comprising a helically coiled conductor having a covering of braided strands, the outer portion of a convolution having the covering strands braided progressively one strand over one strand and under the next while the inner portion of a convolution has the covering strands braided progressively one strand over two strands and under the next two.

7. An electrical cord comprising a helically coiled conductor having a covering of braided strands, the outer portion of a convolution of the covering being interbraided progressively one strand over one strand and under the next, and the inner portion of a convolution having the covering strands interbraided to a lesser degree.

8. An electrical cord comprising a helically coiled conductor having a covering of braided strands, the outer portion of a convolution of the covering being interbraided progressively one strand over two strands and under the next two, and the inner portion of a convolution having the covering strands interbraided to a lesser degree.

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