

## UNITED STATES PATENT OFFICE

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## CONDUIT

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2 Claims. (Cl. 64—3)

This invention relates to conduits and more particularly to flexible conduits and a process for the manufacture thereof.

An object of the invention is to provide a flexible conduit which may be bent in various positions without injury thereto.

Another object of the invention is to provide a flexible conduit for a cable which will not chafe or otherwise injure the cable.

Another object of the invention is to provide a helical conduit, each convolution of which is so related to the adjacent convolution that the conduit may be bent without disturbing the continuity of the inner diameter of the cable or causing a separation between the respective convolutions.

A further object of the invention is to provide a helical conduit with a covering wound thereon in an opposite direction with no space between the conduit and the covering, thus preventing compression.

A still further object of the invention is to provide a flexible conduit formed of a single helically wound element having tapered side walls and a rounded inner base section to facilitate flexing of the conduit and to expel dirt or grit from between adjacent convolutions as the conduit is flexed.

Other objects of the invention will appear from the following description taken in connection with the drawing which forms a part of this specification, and in which:

Figure 1 is a side elevation of a section of a conduit partly broken away with a cable positioned therein embodying the invention;

Figure 2 is a side elevation of a die illustrating the form in which the strand is drawn;

Figure 3 is a cross sectional view of the strand after drawing;

Figure 4 is a modified form of the invention illustrating a section of a conduit partly broken away and a cable positioned therein;

Figure 5 is an end elevation of the die illustrating the form in which a strand is drawn preparatory to winding; and

Figure 6 is a cross sectional view of the strand after it has been drawn and coiled to form the helix.

Referring to the drawing for more specific details of the invention, 10 represents a conduit having a covering 11 and a cable 12 is positioned in the conduit. The conduit is a helix wound in one direction and the covering is a helix wound in the opposite direction. In practice, the metallic strands from which the conduit and cover-

ing are wound are both heat treated and wound with no space between the conduit and the covering to prevent compression.

The conduit is wound from a single strand 13. This strand is first drawn through a die to incline the sides 14 and 15 upwardly toward each other and to round the corners 16 and 17 formed by the sides and the top 18. After the drawing process, the strand is wound under compression on a suitable mandrel, not shown. Upon winding, the strand is deformed by squaring, as indicated at 19, and rounding the corners 20 and 21.

The form which the strand takes upon winding is largely due to the upsetting of the inner surface and drawing the outer surface. In this embodiment of the invention, the respective convolutions of the helix forming the conduit are flush against the adjacent convolutions and the faces on the inner diameter of the respective convolutions are rolled to save injury to the cable operating in the conduit, and to afford the least possible frictional resistance between the cable and the conduit.

In the modification, the strand forming the helix 10 is drawn through a die to incline one of its sides outwardly, as indicated at 22, and to round the corners 23 and 24. Upon winding, the strand takes the form shown in Figure 6, wherein the strand is somewhat flattened and the relative position of the sides are reversed, as indicated at 25. In this form, the strand has a greater width at its top portion 26 than at its base 27, hence, the respective convolutions of the helix engage each other at their inner edges and since the engaging portions are rounded, the conduit may be bent in various positions within certain limits restricted by the degree of the inclination of the sides 25 without disturbing the continuity of the conduit and causing injury to the cable positioned therein. It will be observed that when the conduit is flexed a wedging action is set up between the tapered side walls of the successive convolutions of the conduit whereupon dirt and grit is prevented from entering the conduit.

While preferred embodiments of the invention have been described, it is to be understood that these are given merely as examples of the underlying principles of the invention and since these may be incorporated in other specific mechanical structures, I do not intend to be limited to those shown, except as such limitations are clearly imposed by the appended claims.

Having thus described the various features of the invention, what I claim is new and desire to secure by Letters Patent is:

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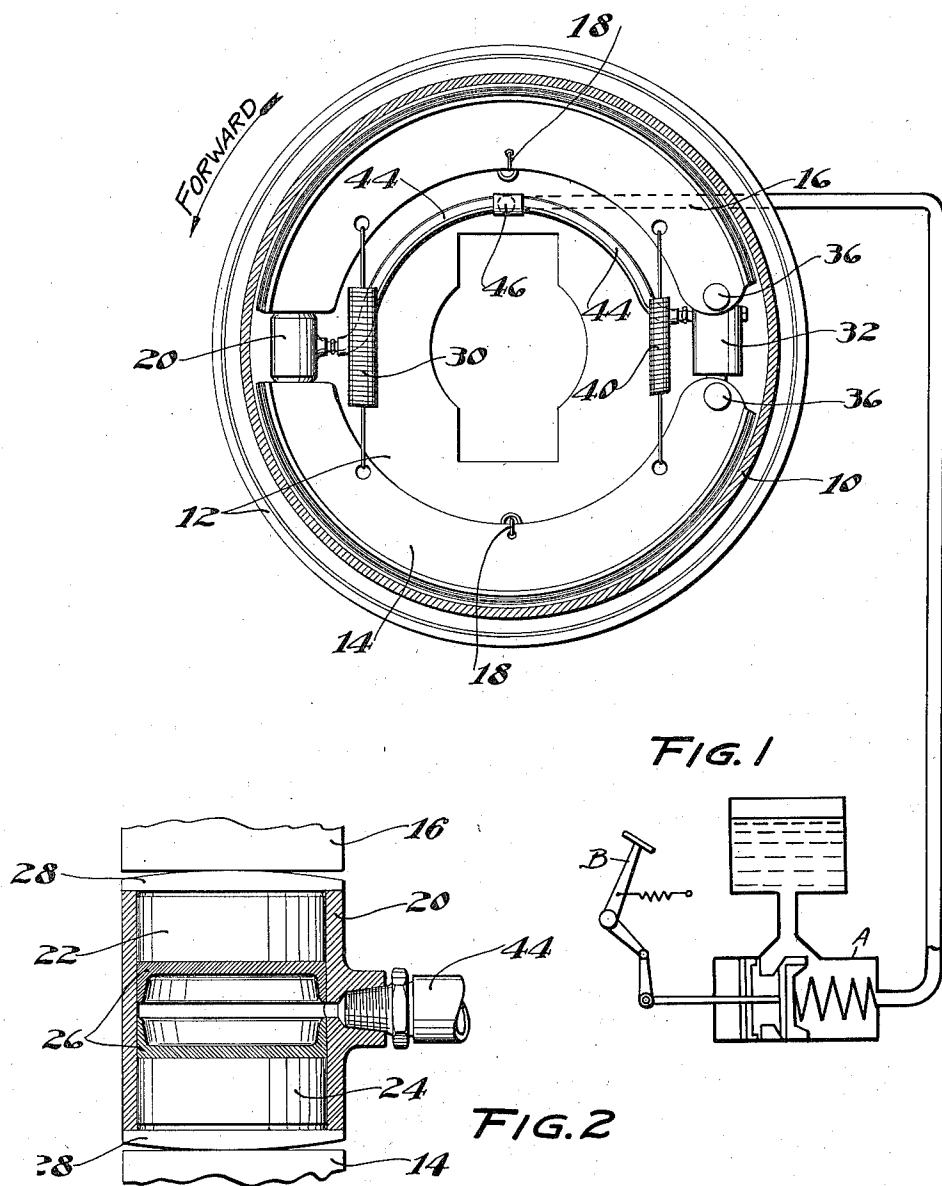
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