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U. MEYER ET AL

2,223,116

TUBULAR CONDUCTOR

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Fig. 1

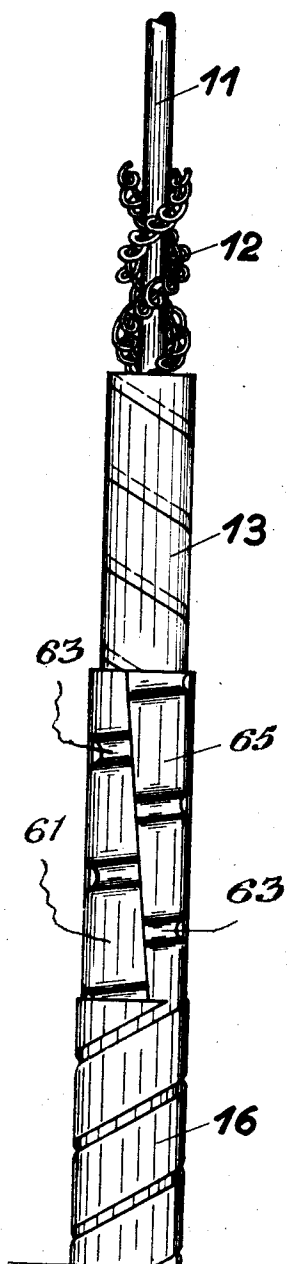


Fig. 2.

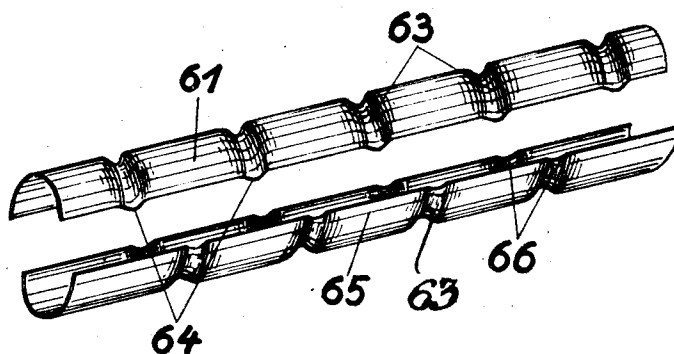
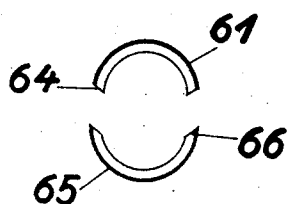


Fig. 3



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## UNITED STATES PATENT OFFICE

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## TUBULAR CONDUCTOR

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2 Claims. (Cl. 174-130)

The present invention relates to tubular conductors and particularly pertains to improvements in cables of the air space insulation type.

In a co-pending application maturing as Patent No. 2,165,737 it has been proposed to manufacture tubular conductors from a plurality of metal bands, more particularly as an outer conductor for high frequency cables, by providing the metal bands along their longitudinal edges with indentations at definite distances from one another. The indentations of adjacent bands were preferably staggered relatively to one another. Bands provided with such indentations are prevented from being individually laterally displaced. The object of the present invention is to provide an improvement of such tubular conductors.

In the case of concentric conductors for high frequency currents it is important that the diameter of the outer conductor, measured at great distances apart, shall be as uniform as possible, otherwise the impedance will be subject to fluctuations. It has been found that bands which are provided at short distances apart, with indentations in the form of transverse grooves, mutually support one another very well, since the transverse grooves prevent the bands from sliding over one another. According to the invention this is ensured to a large extent by the metal bands being provided with indentations in the form of transverse grooves and by being preshaped in such a way that, after they have been stranded together, a circular cross-section is obtained. Around the tubular conductor there is preferably wound a further band with a comparatively short laying length in order to keep together the bands of the outer conductor. An outer conductor, constructed in the manner referred to, is pressure resisting and also very flexible, even when the thickness of the outer conductor is small.

In order further to increase the stability the transverse grooves may, according to the invention, be provided with projecting parts. The projections engage with the bands which abut against one another and prevent a lateral displacement between the bands, while a relative longitudinal displacement is possible in the interval between the consecutive projections. An unlimited possibility of displacement in the longitudinal direction may be obtained by providing only one of the two bands abutting against one another with projecting parts and by cutting out portions of the transverse grooves of the other band at the abutting edge, so that the

projections of the one band can slide past at these points.

Other and further features and objects of the invention will be apparent from a consideration of the accompanying drawing and the following description wherein an exemplary embodiment of the invention is disclosed.

In the drawing:

Fig. 1 is a plan view of a cable embodying the invention with parts broken away.

Fig. 2 is a perspective view of the bands provided with transverse grooves and illustrating the projecting parts.

Fig. 3 is an end view of the conductor bands shown in Fig. 2.

Referring to Figure 1, 11 is the inner conductor of a concentric high frequency cable surrounded by the supporting helices 12 of polystyrol and the polystyrol bonds 13. Thereon there is provided the outer conductor consisting of pre-shaped bands 61 and 65, which are provided with transverse grooves 63 at short distances from one another. The bands 61 and 63 are held together by a further copper band 16.

The bands are more clearly shown in Figs. 2 and 3 wherein the outer conductor 61 is provided with transverse grooves 63 and projecting parts 64. The projections 64 engage with the abutting tubular half 65 and prevent a lateral displacement between the two tube halves, while a relative longitudinal displacement is possible within the interval between the consecutive projections. An unlimited possibility of displacement in the longitudinal direction may be obtained by providing only one of the two abutting bands with projecting parts 64, and by cutting out portions of the transverse grooves of the other band 65 at the points 66, so that the projections 64 of the opposite band 61 can slide past at these points, as will be seen from Fig. 3, in which only the transverse grooves of the upper tube half are provided with projections 64.

What we claim is:

1. A tubular electric high frequency conductor consisting of a plurality of metal bands stranded together and having indentations in the form of transverse grooves extending at right angles to the plane of the bands, said bands being preshaped in such a manner that the bands have a circular cross-section when arranged with the edges thereof adjacent each other, and said indentations terminating in projections extending beyond at least one edge of some of the bands for engaging an adjacent band and preventing lateral displacement between adjacent bands.

2. A tubular electric high frequency conductor consisting of a plurality of metal bands stranded together and having indentations in the form of transverse grooves extending at right  
5 angles to the plane of the bands, said bands being preshaped in such a manner that the bands have a circular cross-section when arranged with the edges thereof adjacent each other, said indentations terminating in projections extending  
10 beyond at least one edge of some of the bands

and said indentations having recesses at edges thereof adjacent said projections so that the band carrying the projections may move longitudinally with respect to the band provided with recesses.

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