

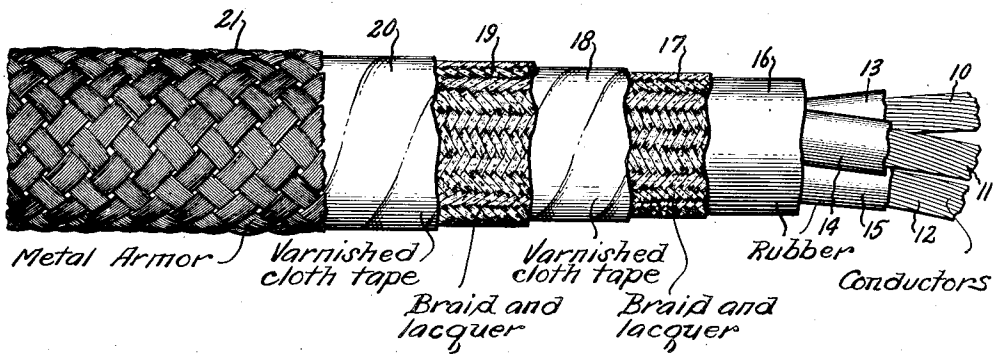
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ELECTRIC CABLE

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ELECTRIC CABLE

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4 Claims. (Cl. 173-266)

My invention relates to electric cables and more particularly to electric cables protected against mechanical abrasion and resistant to oil and moisture. In the more extensive use of electric devices in the performance of operations formerly performed by hand operation or mechanical tools, it has become necessary to design cables for connecting such devices which meet with particularly severe operating conditions. This is particularly true of cable for connecting electrical devices used in mining operations and in oil well drilling.

The object of my invention is to provide an improved electric cable designed to withstand hard usage, and which is resistant to moisture and oil.

What I consider to be novel and my invention will be better understood by reference to the following specification and appended claims when considered in connection with the accompanying drawing in which the single figure is a plan view of my improved cable with adjacent layers of insulation cut back to expose the layer beneath.

Referring to the drawing, 10, 11 and 12, indicate stranded conductors provided with individual layers of rubber insulation 13, 14 and 15 respectively. Over the combined conductors and their individual insulation, an overall rubber jacket 16 is provided. The individual insulation coverings 13, 14 and 15 provide the necessary insulation between the conductors 10 and 11 for the normal voltages which will be supplied by these conductors and the overall covering 16 provides the additional insulation necessary to protect the conductors from breakdown by contact of the cable with ground. If this cable were to be used under normal conditions indoor, the insulating coverings just described would be sufficient to protect the cable from breakdown during its life. However, when such a cable is subjected to moisture and oil the moisture is absorbed by the rubber which reduces the insulating properties of the rubber. Also, when the cable is subjected to oil the rubber swells and rapidly deteriorates. The rubber ultimately breaks away from the core and becomes extremely soft. In addition, when the rubber covering is subjected to mechanical abrasion, the rubber wears and ultimately reduces the insulation thickness and so the insulating properties. Thus to protect this cable from the deleterious effects of moisture, oil and mechanical abrasion, the additional layers of material are provided over the rubber covering 16. Directly over the rubber

covering 16 a cotton braid 17 is provided and covered with a plurality of coats of lacquer. The lacquer film is both moisture and oil resistant and so serves to prevent the entrance of moisture and oil into the rubber covering 16. The cotton braid 17 is used primarily as a carrier for the lacquer film. The lacquer film will not withstand any mechanical abrasion so it must be protected by an additional covering. Over the cotton braid 17 and the lacquer film a varnished cloth tape 18 is wound spirally with overlapping edges. The varnished cloth tape is very highly resistant to the passage of oil there-through. The tape also serves to protect the lacquer film from mechanical abrasion. To provide further protection against the passage of moisture and oil a second cotton braid 19 is provided over the varnished cloth tape 18 and is also coated with multiple coats of lacquer. Over the braid 19 a second varnished cloth tape 20 is wound spirally with overlapping edges. Obviously if the use of the cable does not subject it to unusually severe conditions of oil and moisture, the second cotton braid 19 and lacquer layer and varnished cloth tape 20 may be omitted. To provide the desired resistance to mechanical abrasion, an armor 21 is provided consisting of a steel braid. The armor 21 not only serves to protect the cable against mechanical abrasion but it also prevents the swelling of the rubber covering 16 if any oil should pass through the protective layers into the rubber covering. The steel braid form of armor 21 is used in preference to other forms of armor as it does not greatly reduce the flexibility of the cable. The flexibility of the cable is important as it is frequently used as a portable cable.

From the foregoing it may be seen that an improved cable is provided very highly resistant to the effects of subjection to moisture and oil and will withstand considerable hard usage.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. An electric cable comprising a plurality of electric conductors, insulating coverings over each conductor, an overall rubber jacket, a fibrous braid over the rubber jacket, a lacquer film over the braid, a varnished cloth tape completely covering the lacquer film, and a metal armor provided directly over the last named tape.

2. An electric cable comprising a plurality of conductors, a covering of insulation for each conductor, an overall covering of rubber, a fibrous braid over the rubber covering, multiple coats of lacquer over the braid, a varnished cloth tape

wound spirally over the lacquer coats, a second fibrous braid over the last named tape, multiple coats of lacquer over said last named braid, a varnished cloth tape completely covering said last named lacquer coats, and a metal armor directly over the last named tape.

3. An electric cable comprising a plurality of conductors, a covering of insulating material for each conductor, an overall rubber jacket, a cotton braid over the rubber jacket, a coat of lacquer over the braid, a varnished cloth tape wound over the lacquer coat, a second cotton braid

over the tape, a lacquer coat over the second braid, a varnished cloth tape completely covering the last named lacquer coat and a steel braid armor directly over the last named tape.

4. An electric cable comprising a conductor, a rubber covering over the conductor, a fibrous braid over the rubber covering, a lacquer coat over the braid, a varnished cloth tape completely covering the lacquer coat, and a metal armor provided directly over the tape.

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