Nov. 13, 1934. W. A. DEL MAR 1,980,388

OIL FILLED CABLE WITH TUBULAR OIL CHANNELS

Filed Jan. 16, 1933

FIG. 1.

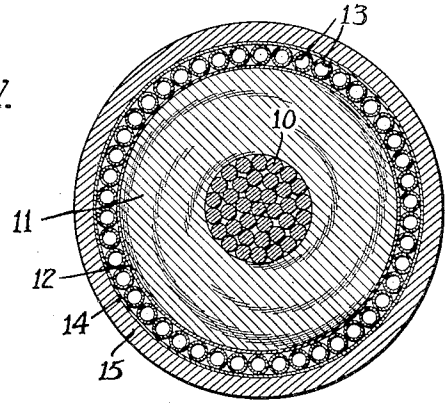


FIG. 2.

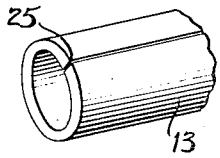
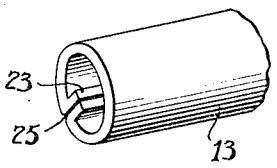


FIG. 3.



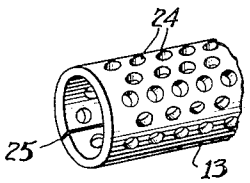


FIG. 4.

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Patented Nov. 13, 1934

1,980,388

UNITED STATES PATENT OFFICE

1,980,388

OIL FILLED CABLE WITH TUBULAR OIL CHANNELS

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Application January 16, 1933, Serial No. 651,976

4 Claims. (Cl. 173—266)

My invention relates to high tension electric cables and more particularly to the type known as "oil filled" in which the insulation consists of paper impregnated with oil of low viscosity. In cables of this type it is essential that one or more channels be provided longitudinally of the cable, to permit the free flow of oil in and out of the cable during temperature cycles.

Heretofore most cables of this type have been provided with oil channels within the conductor and means must be provided whereby the oil can pass through the insulation to an external reservoir. This method requires a special design of joint which is very costly; but if the oil channel could be placed outside of the insulation, this difficulty would be avoided and joints of ordinary design could be used.

One of the objects of my invention is to produce a cable that has its oil channels outside of the insulation so that joints of ordinary design may be used without impairing the mechanical stability of the cable as a whole.

My invention makes use of a longitudinally seamed metallic tube, preferably of copper. A large number of such tubes are disposed helically between the insulation of the cable and the external lead sheath. These tubes would normally be about 150 mils in diameter and would be laid on the insulation helically and in close contact with one another. They would be held in place by a binder tape and covered with a lead sheath.

In some cases the above construction may be used in connection with shielded conductor cables, either single conductor or multiple conductor.

The foregoing and other features of my invention will now be described in connection with the accompanying drawing, forming part of this specification, in which I have represented my oil filled cable with tubular oil channels in its preferred form, after which I shall point out more particularly in the claims those features which I believe to be new and of my own invention.

In the drawing:

Figure 1 is a cross section of a typical cable made after my design.

Figures 2 to 4 show enlarged detail sections of the tubular wires which are stranded between the insulation and the lead sheath in my cable.

In the preferred form of my cable I employ a conductor 10 of the usual copper strand, insulated with the paper tapes 11. Over this insulation I provide a perforated copper tape, 12. Around this construction I strand a plurality of tubular wires 13 all being bound together by a steel tape 14 and covered with the usual lead sheath 15.

The tubular wires 13 may be made of a copper strip and formed and drawn to size and stranded over the insulated cable.

It will be observed that the hollow wire shown in Figure 3 shows the edges 23 of the tube turned up; this is for the purpose of preventing the edges of the tube from slipping by when the tube thickness is very thin, so that it can withstand a maximum radial compression. Should it be desirable to have these hollow wires 13 supply a larger amount of oil than will readily flow out through the seam 25, or the oil to flow from the wire in all directions, I provide perforations 24 in the wall thereof for that purpose.

I wish it distinctly understood that my oil filled cable with tubular oil channels herein described and illustrated is in the form in which I desire to construct it and that changes or variations may be made as may be convenient or desirable without departing from the salient features of my invention and I therefore intend the following claims to cover such modifications as naturally fall within the lines of invention.

I claim:

1. An electric cable comprising a conductor enclosed in oil-impregnated paper and an oil pervious metallic shield, a lead sheath, and longitudinally split oil ducts open to the impregnating oil stranded around and encircling the shield and beneath the sheath.

2. An oil filled electric cable comprising a conductor enclosed in oil impregnated paper, a lead sheath, and longitudinally split, substantially incompressible metallic oil ducts open to the impregnating oil, encircling the insulation and under the sheath.

3. The device of claim 2 with the addition of an oil pervious shielding between the insulation and the ducts.

4. An electric cable comprising a conductor enclosed in oil impregnated paper having a perforated shielding, a lead sheath and longitudinally split, substantially incompressible metallic oil ducts, open to the impregnating oil, stranded entirely around the insulation and shield, and under the sheath.

WILLIAM A. DEL MAR.