

July 8, 1947.

D. R. WHEELER

2,423,537

FIRE DETECTING CABLE

Filed March 5, 1943

Fig. 1.

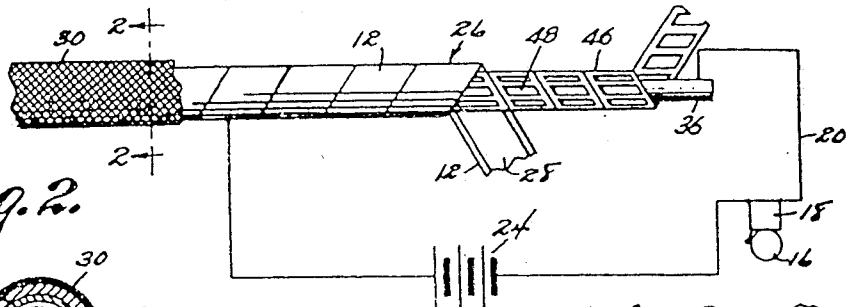


Fig. 2.

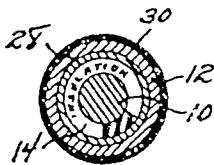


Fig. 3.

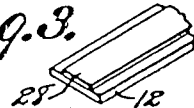


Fig. 4.

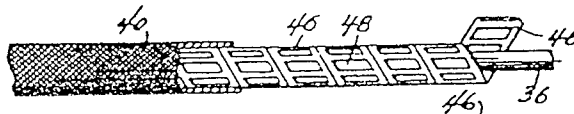


Fig. 5.

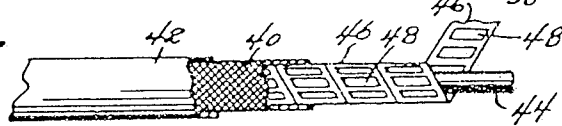


Fig. 6.

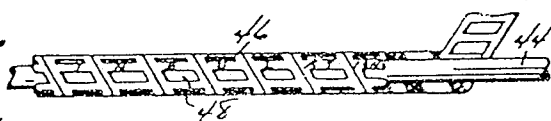
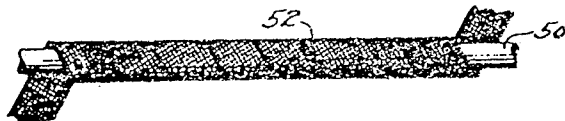


Fig. 7.



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2,423,537

FIRE DETECTING CABLE

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Application March 5, 1943, Serial No. 478,152

5 Claims. (Cl. 200-143)

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My invention relates to electric circuits, and has among its objects and advantages the provision of an improved fire detecting cable which may be produced at a low cost, folded and easily handled without damage, and in which the cable structure is such as to provide a relatively compact construction.

In the accompanying drawings:

Figure 1 is a fragmentary view of a cable in accordance with my invention and in association with an electrically energized signal.

Figure 2 is an enlarged sectional view along the line 2-2 of Figure 1.

Figure 3 is a perspective view of a conductor and its noncorroding protector.

Figure 4 is a detailed view of the construction.

Figure 5 is a view similar to Figure 4 but illustrating an additional shield incorporated in the cable structure.

Figure 6 is an elevational view illustrating the insulation per se, and

Figure 7 is a view of a modification in the insulation part of the cable.

In the embodiment of the invention selected for illustration, Figure 1 illustrates a conductor wire 36 enclosed in a second conductor 12 and separated therefrom by insulation 46. The insulation 46 is in the nature of a ribbon wrapped spirally about the wire 36 and the conductor 12 is of ribbon like contour and spirally wound over the insulation 46 but in a reverse direction. Both conductors 36 and 12 are of fusible alloy which fuses at a relatively low temperature. Such materials are well known in the art.

A signal, such as a conventional electric bell embodying a bell 16 and the common electromagnetic operating mechanism in a housing 18, has one terminal connected through a wire 20 with the center conductor wire 36 and the other terminal connected, through a wire 22 with the exterior ribbon like conductor 12. A source of electric current, such as a battery, 24 is interposed in the wire 22. Thus, when the cable is in normal and proper condition the circuit through the bell remains open but when the cable is subjected to an abnormal condition so as to cause fusion, of the exterior conductor 12 and effect contact between the same and the inner conductor wire 36 the circuit is closed and the bell is caused to ring and indicate such fusion. The insulation 46 is wrapped with its convolution so spaced as to provide ample clearance for fused material from either conductor to flow into contact with the other. The convolutions of the metal tape constituting the conductor 12 are close

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wound so that this conductor constitutes a housing for the insulation 46. This insulation may be cemented to the conductor 36, if desired.

On the inner face of the conductor 12 is applied a thin body or strip 28 of noncorroding material which fuses at a low temperature. This strip acts as a protector which provides better contact between the fused conductors 36 and 12, particularly in cases where these two conductors might become corroded after a period of years. A fabric wrapper or braid 30 is applied over the conductor 12.

In wrapping the conductor 12 about the insulated conductor 36, the cable structure 26 comprises a unit line of relatively small proportions, one of which eliminates necessity of insulating and connecting as a unit two parallel conductors. The cable structure is easy to handle and may be rolled without harm to the line.

In Figure 4, the conductor 36 is provided with a ribbon 38 of spirally wound insulation. A metallic sleeve 40 of braided wire encloses the insulation 38, the conductor 36 and the sleeve 40 corresponding to the conductors 10 and 12, respectively.

The construction of Figure 5 differs from that of Figure 6 only in that a protective sleeve 42 is applied over the conductor sleeve 40. The conductors 36 and 40 are also fusible at low temperatures.

In Figure 6, the conductor 44 is enclosed in a covering 46 of insulating material in the nature of a ribbon close wound spirally about the conductor. The ribbon is perforated at 48 to allow fused material from the two conductors to make contact.

In Figure 7, the conductor 50 is enclosed in a braided insulating ribbon 52 wound spirally thereon. This braid is sufficiently open to permit free passage of fused material.

The covering 30 of Figure 1 may constitute fabric or metal wire. A wire covering affords protection against gnawing animals. Obviously all the cable devices may be enclosed in such a protective covering, with insulation provided wherever necessary. All the forms are identical with respect to the compact arrangement of the parts when considered in cross section.

Without further elaboration, the foregoing will so fully explain my invention, that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

I claim:

1. A cable of the type described comprising first and second conductors each of material

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fusing at a relatively low temperature, insulation wound spirally on said first conductor; said second conductor assuming the shape of a ribbon and wound spirally on said insulation reversely thereof with spaces between the convolutions and said insulation normally spacing said first conductor from said second conductor therefor, and said insulation being provided with interstices through which fusion of the conductors will make contact therebetween.

2. The invention as in claim 1 wherein a non-corroding strip which fuses at low temperature is provided on said second conductor.

3. The invention as in claim 1 wherein a protective noncorroding strip which fuses at low temperature is provided on said second conductor adjacent said insulation.

4. In a cable of the character described, an inner conductor, insulation on said conductor, an outer conductor wound spirally on said insulation, and a strip of noncorroding material fusible at a relatively low temperature secured to the inner face of the spirally wound conductor, said insulation being provided with interstices disposed to provide spacing whereby fusing of the noncorroding and fusible strip will effect electrical connection between the inner and outer conductors.

5. In a cable of the character described, an inner conductor, an outer conductor, and insulating spacing means between said conductor

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provided with interstices forming separated pockets, supporting the conductors in normally non-contacting relationship; said conductors being formed of material which is fusible at relatively low temperature, the insulating spacing means provided with open areas between the two spaced conductors through which the fused material of the conductors may pass to make contact when the fusion point in temperature of the conductors is reached.

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