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CONDUCTOR WITH SPUN GLASS CORE

Filed Jan. 6, 1937

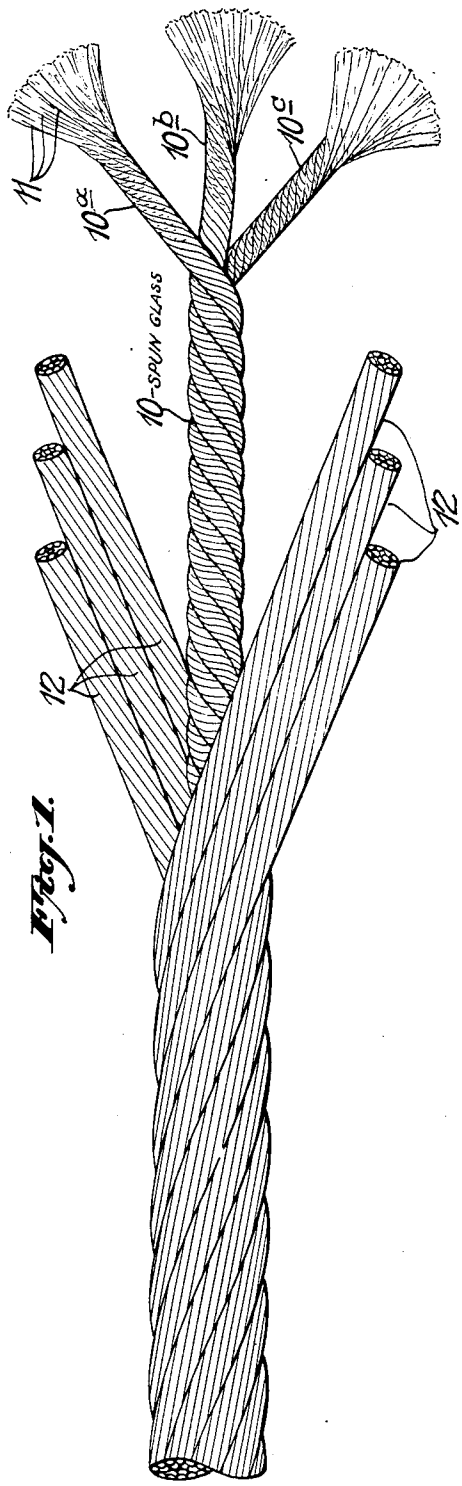


Fig. 1.

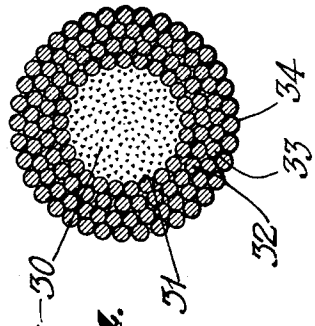


Fig. 4.

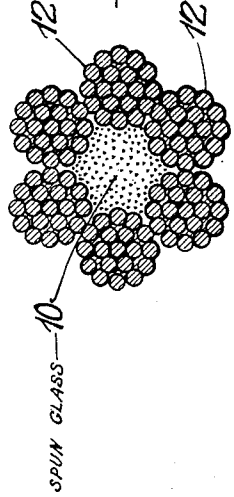


Fig. 2.

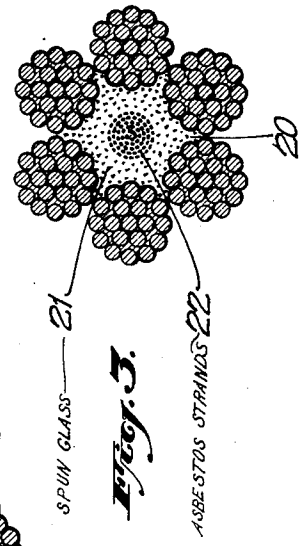


Fig. 3.

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CONDUCTOR WITH SPUN GLASS CORE

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7 Claims. (Cl. 174—131)

This invention relates to a new type of electric conductor, the novelty residing chiefly in the inclusion therein of a core consisting principally of material, such as flexible spun glass, glass wool, slag wool, rock wool, mineral wool and mineral fibre. Any of these alternative materials are intended to be referred to herein under the general expression—"non-deteriorating chemically inert fibrous material".

Heretofore, conductors or cables having hemp rope-like cores have been used. Practice has shown that, after a few years of service, such hemp-containing cables have become so brittle or unpliable that the metal strand wires can be readily broken merely by the pressure of one's hand.

One explanation of the short life of such old cables is that the hemp core absorbs or retains moisture which, when combined with the decaying hemp, releases acid or alkaline compounds, which attack the metallic conductor. It is probable that the attack on the metallic conductor is accelerated in the presence of corona.

In certain types of cables and conductors, it is desirable to have the greater mass of the conducting material spaced a considerable distance from the central axis of the conductor, so as to cut down so-called "skin effect". Where hemp or other organic substances are used as cores, the cable is definitely limited in operating temperature.

Under my present invention, I aim to overcome the difficulties which arise from the utilization of centers of hemp or like organic substances and I aim to provide a construction which will result in an approved type of cable having a relatively longer life and higher operating temperature than conventional types, such as above referred to.

In place of the cores of hemp, or other organic materials heretofore used, I propose to provide a cable whose core may be formed entirely of non-deteriorating chemically inert fibrous material, such as flexible spun glass or its equivalents, or of spun glass, or the like, combined with asbestos. Around this core will be arranged one or more layers of copper or other metallic conducting strands. These metallic conducting strands may be laid up around the flexible inert core in various conventional manners.

Certain embodiments of the invention are illustrated in the accompanying drawing, in which—

Fig. 1 is a side elevation of a short length of cable embodying the invention, certain of the conducting strands being splayed apart to reveal the interior spun glass or equivalent core; Fig. 2 is a cross-section of the cable shown in Fig. 1; Fig. 3 is a view similar to Fig. 2, showing a modification in which the core consists of spun glass or its equivalent combined with asbestos; Fig. 4 is a cross-sectional view of a modification, in which the outer conducting strands are made up in substantially concentric layers, as distinguished from the rope-like stranding in the other figures.

In the drawing, 10 represents a core of flexible spun glass or equivalent material hereinabove mentioned which, as shown in Fig. 1, may comprise a plurality of strands 10^a, 10^b and 10^c, which are twisted together to form a rope-like core. And each of the strands 10^a, 10^b and 10^c are themselves composed of a multiplicity of filamentary bodies 11. This arrangement endows the spun glass core with great flexibility. About the core, in the embodiment shown in Figs. 1 and 2, there are a plurality of cable strands 12, which are laid up with a long lay, according to conventional cable-making practice.

In the modification of Fig. 3, the construction is similar to that of Fig. 2 with the exception that the core 20 comprises spun glass strands 21 and asbestos strands 22. The asbestos may be in the center of the spun glass strands surrounding the spun glass strands, or, alternatively, if desired, the spun glass and asbestos strands may be laid up together.

In the modification of Fig. 4, I have shown a spun glass central core 30 surrounded by layers 31 to 34 of copper, or other metallic conducting strands, such as aluminum or steel. These strands may be regarded as being laid up around the core with a long helical lay, in separate concentric layers, as shown.

While spun glass has been determined in practice to form an excellent flexible core characterized by the fact that it is non-deteriorating and chemically inert, as above indicated, various other core materials may be employed. Such alternatives are the following—glass wool, which may be defined as a fibrous wool-like material composed of fine filaments of glass intermingled like ordinary wool, and mineral wool, which consists either of slag wool or rock wool. Slag wool is an intermingled mass of grayish-yellow filaments obtained by blowing steam or hot air through molten slag. Rock wool is a product

consisting of a fibrous mass made of an argillaceous limestone.

It is believed that I am the first to conceive the idea of providing a conductor having a flexible core of non-deteriorating chemically inert material surrounded by conducting strands and it is my intention that the appended claims shall cover the invention both generically and specifically.

In the several described constructions, the likelihood of the copper or other metallic strands being corroded will be greatly minimized and thus the useful life of the conductor will be materially lengthened.

The invention is thought to be broadly new and it is intended that the following claims should cover the same both generically and specifically.

What I claim is:

1. An article of the class described comprising a flexible core consisting of spun glass strands twisted together like a rope, and metallic conducting strands surrounding said core.

2. A cable of the character described comprising an axial core of flexible spun glass strands twisted into a hard, flexible structure, and a plurality of stranded metallic conductors disposed in a long helical lay about the exterior of said core.

3. An article of the class described comprising a flexible axial core of spun glass twisted into a rope-like structure surrounded by an outer series of metallic helically disposed conducting strands.

4. An article of the class described comprising a flexible axial core of spun glass twisted into a rope-like structure surrounded by an outer layer of copper conducting strands.

5. An electric conductor comprising a flexible core of filaments of fused high melting silicates twisted into a rope structure free from organic materials, water absorbing materials and chemically active materials, and metallic conducting strands about and enclosing said core, said metallic strands having a long helical lay.

6. A wire rope comprising wire strands and a center, said strands carrying the tensile stresses on the rope and imposing compressive stresses on the center, said center being composed of a plurality of strands of glass elements, the strands being twisted together and forming a stabilized mass possessing sufficient compressibility to permit the rope strands to embed themselves in the surface thereof when said strands are wound thereon.

7. The cable of claim 2 and a core of asbestos strands within said core of spun glass strands.

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