

H. W. BUCK.
ELECTRIC CABLE.

APPLICATION FILED JULY 27, 1904.

Fig. 1.

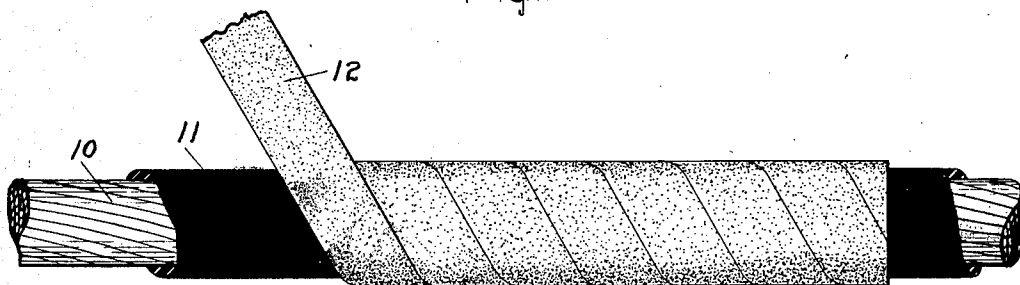


Fig. 2.

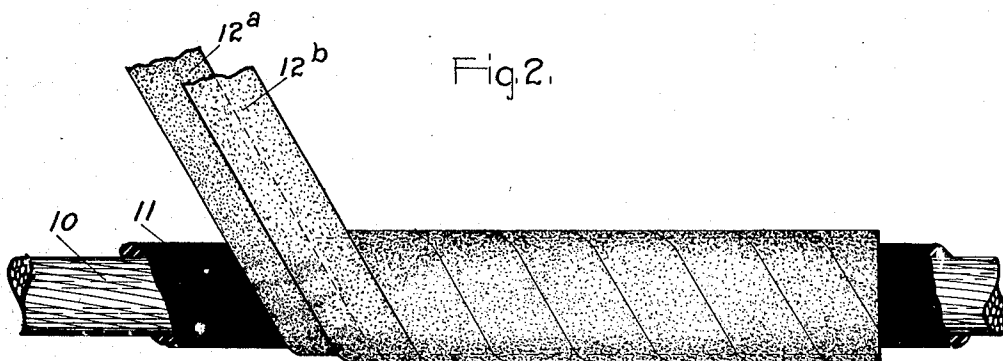
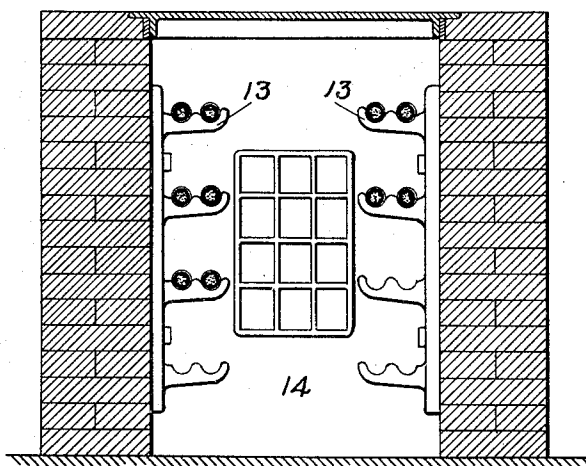


Fig. 3.



WITNESSES:

Not L. Chapman
Allen Oxford

INVENTOR

Harold W. Buck.
by *Albert G. Davis*
ATTY.

UNITED STATES PATENT OFFICE.

HAROLD W. BUCK, OF NIAGARA FALLS, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTRIC CABLE.

No. 816,428.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed July 27, 1904. Serial No. 218,407.

To all whom it may concern:

Be it known that I, HAROLD W. BUCK, a citizen of the United States, residing at Niagara Falls, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Electric Cables, of which the following is a specification.

Where a large number of cables are to be located in close proximity to each other, as in a subway, it is necessary that the cables when installed be thoroughly fireproof. The object of my invention is to provide such a fireproof installation.

It has been proposed heretofore to render electric cables fireproof by applying to the cable during the process of manufacture a braid which has been previously impregnated with some fireproof liquid. This method of protection, however, has proved unsatisfactory, because the subsequent coiling and uncoiling of the completed cables at the factory and during the installation cracks the fireproof braid, which is naturally hard and brittle, and leaves it full of minute cracks and pores. Under such circumstances in case of a neighboring short circuit or excessive heating in the conductor of the cable the rubber compound of the insulation gives off a combustible gas which comes out through these cracks and burns in the form of numerous little gas-jets, which is practically the equivalent of the rubber burning directly. It has also been proposed to provide the cable, after it has been installed, with a wrapping of untreated asbestos, but this is usually no better even where the asbestos is held by a steel binder, for the reason that the heating of the cable causes the binder to melt and uncoil and allow the asbestos wrapping to fall off, or if the binder does not fall off the rubber insulation inside of the wrapping melts comes out through the pores of the asbestos, which acts as a wick, and soon the cable is destroyed. Another objection to the use of untreated asbestos as a wrapping is that it is a good insulator of heat, and consequently the heat of the cable-conductor is retained within the wrapping, which thereby directly assists in increasing the temperature of the cable. Furthermore, the use of steel tape or wire to hold the asbestos wrapping in position is very expensive.

The object of the present invention is to install an electric cable which shall be free from any of the above defects.

In carrying out my invention the cables are placed in their final position and then covered with a fireproof fibrous material which has previously been impregnated with some fireproof self-hardening liquid. Specifically, I employ a strip of asbestos and soak the same in a solution of silicate of soda and then while still wet wrap it about the cable in place. The silicate of soda is then allowed to harden and all the pores of the asbestos are left filled, so that in case the cable becomes unduly heated the rubber insulation cannot work out through the asbestos and take fire. Furthermore, the asbestos when so treated becomes a very good conductor of heat, and thus assists in maintaining the cable at a low temperature.

In the accompanying drawings, Figure 1 is an elevation of a cable treated in accordance with my invention and showing a single strip of the fireproof wrapping. Fig. 2 is a similar view showing a wrapping composed of two overlapping strips, and Fig. 3 is a cross-section of a subway, showing the cable installed.

In said drawings, 10 designates the cable, which is provided with the usual covering 11, of rubber or other insulation, upon the outer surface of which is wound the wrapping 12. According to my invention the cable is placed in its final position—as, for example, upon the brackets 13 in the subway 14. As previously indicated, when thus positioned a strip of asbestos or equivalent fireproof material is soaked in a silicious solution, such as silicate-of-soda solution, and then when thoroughly impregnated it is wrapped about the cable. It is obvious that this wrapping may be done in different ways; and for illustration I have shown in Fig. 1 the impregnated asbestos strip 12, spirally wound about the cable. In Fig. 2 the single strip is replaced by two overlapping strips 12^a and 12^b, which are also spirally wound. From the above it will be apparent that my invention possesses many advantages over installations of the prior art, and that while the covering is hard and brittle it is nevertheless without cracks or pores, since it is not moved after it has hardened upon the cable, but remains solid and homogeneous.

It will be apparent to those skilled in the art that the asbestos may be replaced by other fireproof material and that other self-hardening solutions might be employed in-

stead of a silicate-of-soda solution. I therefore do not wish my invention to be unduly limited, but aim to cover by the terms of the appended claims all equivalents.

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

10 1. The method of fireproofing electric cables which consists in placing the cables in their final position, treating a fireproof material with a fireproof self-hardening liquid, and applying said treated material while wet to the cables so as to completely inclose them.

15 2. The method of fireproofing electric cables which consists in placing the cables in their final position, impregnating a porous fireproof material with a silicious solution, and applying said impregnated material while wet to the surface of the cables so as to completely envelop them.

3. The method of fireproofing electric cables which consists in placing the cables in their final position, impregnating asbestos with a silicate-of-soda solution, and wrapping said impregnated asbestos while wet about the cables so as to completely envelop them. 25

4. The method of fireproofing electric cables which consists in placing the cables in their final position, impregnating a strip of asbestos with a silicious solution, and wrapping the impregnated strip while wet spirally about the cables so as to completely incase them. 30

In witness whereof I have hereunto set my hand this 22d day of July, 1904.

HAROLD W. BUCK.

Witnesses:

G. E. BROWN,
I. M. INNES.