

No. 642,738.

Patented Feb. 6, 1900.

C. BOREL.

ELECTRIC CABLE FOR HIGH TENSION CURRENTS.

(Application filed Dec. 13, 1898.)

(No Model.)

FIG. 1

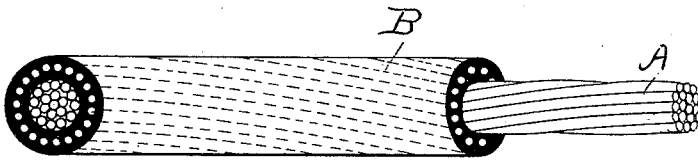
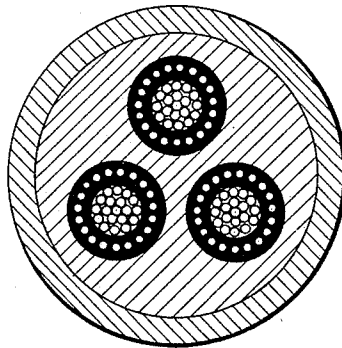


FIG. 2



Witnesses:

E. R. Cotton

W. D. Mumford

Inventor:
Charles Borel

By

Renard R.

his Attorneys

UNITED STATES PATENT OFFICE.

CHARLES BOREL, OF LYONS, FRANCE.

ELECTRIC CABLE FOR HIGH-TENSION CURRENTS.

SPECIFICATION forming part of Letters Patent No. 642,738, dated February 6, 1900.

Application filed December 13, 1898. Serial No. 699,144. (No model.)

To all whom it may concern:

Be it known that I, CHARLES BOREL, a citizen of the French Republic, residing at Lyons, France, have invented certain new and useful
5 Improvements in Electric Cables for High-Tension Currents, of which the following is a full, clear, and exact description.

Subterranean electric cables are generally constituted of one or several copper cords insulated from the earth, as also from each other,
10 by the interposition of layers or coats of materials which are bad conductors of electricity.

Electric cables for currents of high tension, two thousand volts and upward, hitherto differ only from cables for low-tension currents
15 in the quality of the insulating material employed and in the thickness of the insulating layers or coats separating the conductors from each other and from the earth.

The present improvement has for its object to increase the resistance of these insulating layers or coats by a special arrangement of the electric cords or conductors which are enclosed therein.

The conducting-cords (the cores, the conductors) of subterranean electric cables are generally composed of a certain number of cylindrical strands of naked copper wire twisted together, the number and diameter of these
25 strands varying with the conducting-section it is desired to obtain.

Figure 1 is a view of a section of the improved cable containing one conductor. Fig. 2 is a transverse section of a cable containing
35 three conductors.

Experience has brought us to constitute the improved conducting-cords for high-tension currents in the manner represented at Fig. 1 of the accompanying drawings. In the center, as usual, are placed, twisted together, a certain number of strands A of naked copper, forming a certain fraction of the total required section. On this central naked copper cord A is placed a concentric layer or coat B
45 of copper strands covered with an insulating layer or coat which insulates them from each

other, as also from the central conducting-cord. The sum of the metallic sections of this peripheral layer or coat will complete the section the conductor is required to have.
50 The conducting-cords thus formed are placed in the usual manner and in convenient number in their envelop furnished with insulating material, as is shown, by way of example, at Fig. 2 in section. A given thickness of
55 insulating material, with these conducting-cords with peripheral insulated strands, resists double or triple tensions, according to the diameters of the peripheral strands employed as compared with those which it resists
60 with ordinary conducting-cords of naked strands. The insulating material separating these strands may be of any kind—india-rubber, gutta-percha, cotton, paper, or jute, impregnated or not. The thickness of the
65 insulating material between the conducting-strands of the conducting-cords may also be of any kind, but generally very thin—say a few tenths of millimeters.

The proportion between the section of the insulated peripheral strands and the section of the central non-insulated strands may be varied and such as to facilitate as much as possible the construction of the cables.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

An electrical conductor comprising a cylindrical central core or conductor composed of a plurality of wires bare and in contact with
80 each other, a plurality of exterior wires encircling said core and slightly insulated therefrom, and a thin insulating-covering around said outer wires, all of said wires conveying the same current, substantially as described.
85

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES BOREL.

Witnesses:

YVIN RABILLOUD,
GASTON JEANNIAUX.