

(No Model.)

G. F. BARKER.
ELECTRICAL CONDUCTOR.

No. 274,699.

Patented Mar. 27, 1883.

Fig. 1

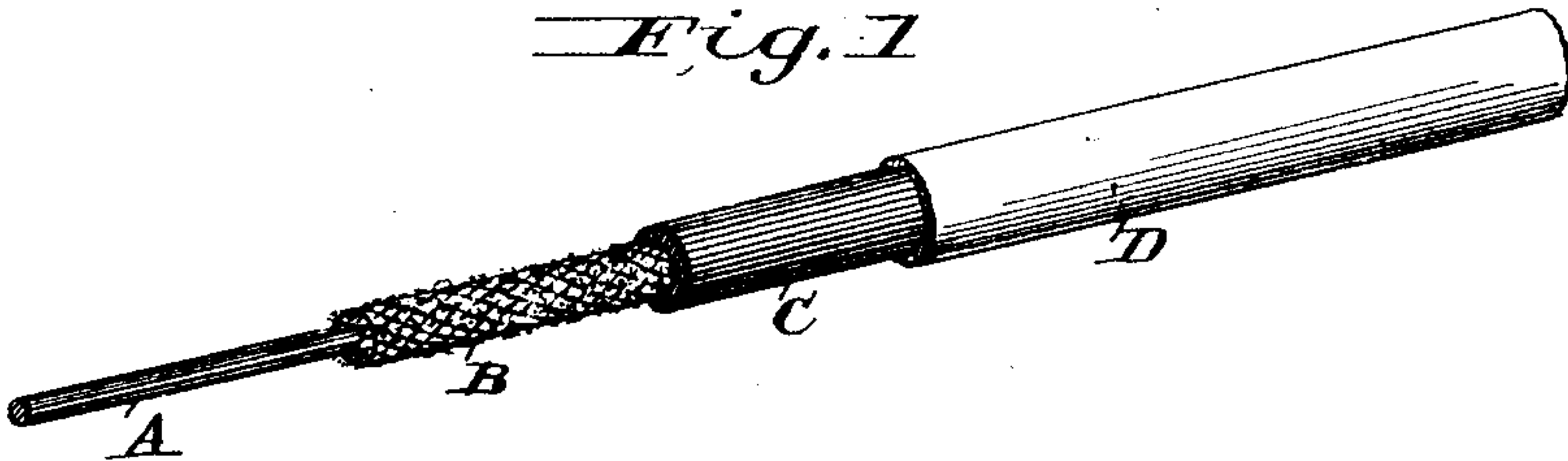


Fig. 2.

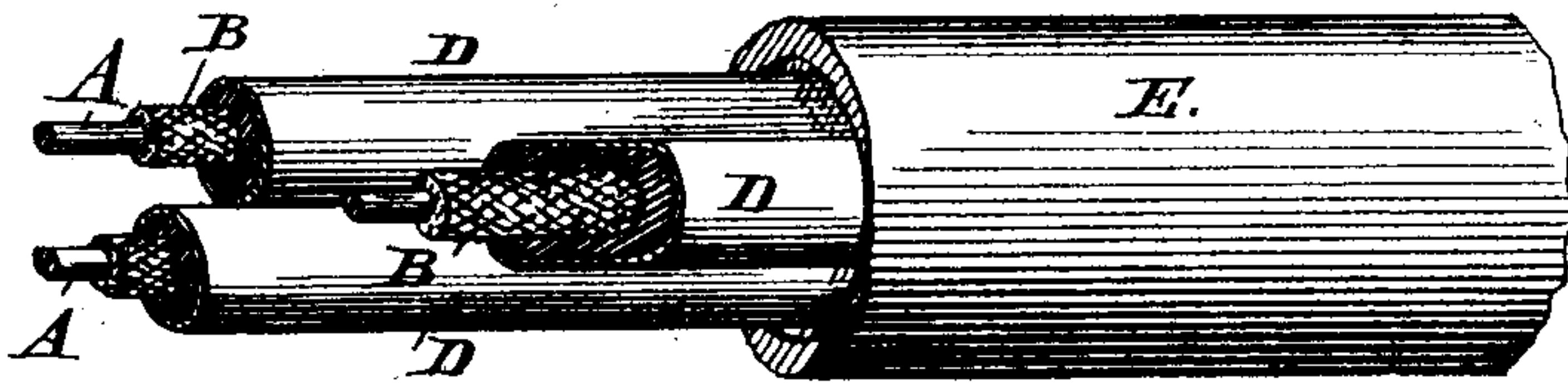


Fig. 3.

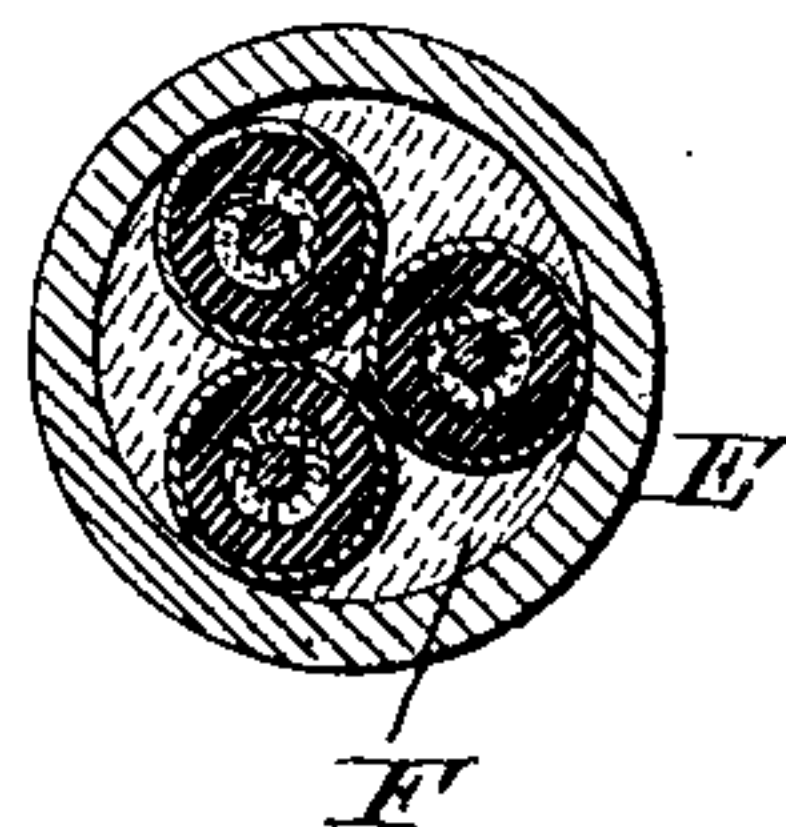
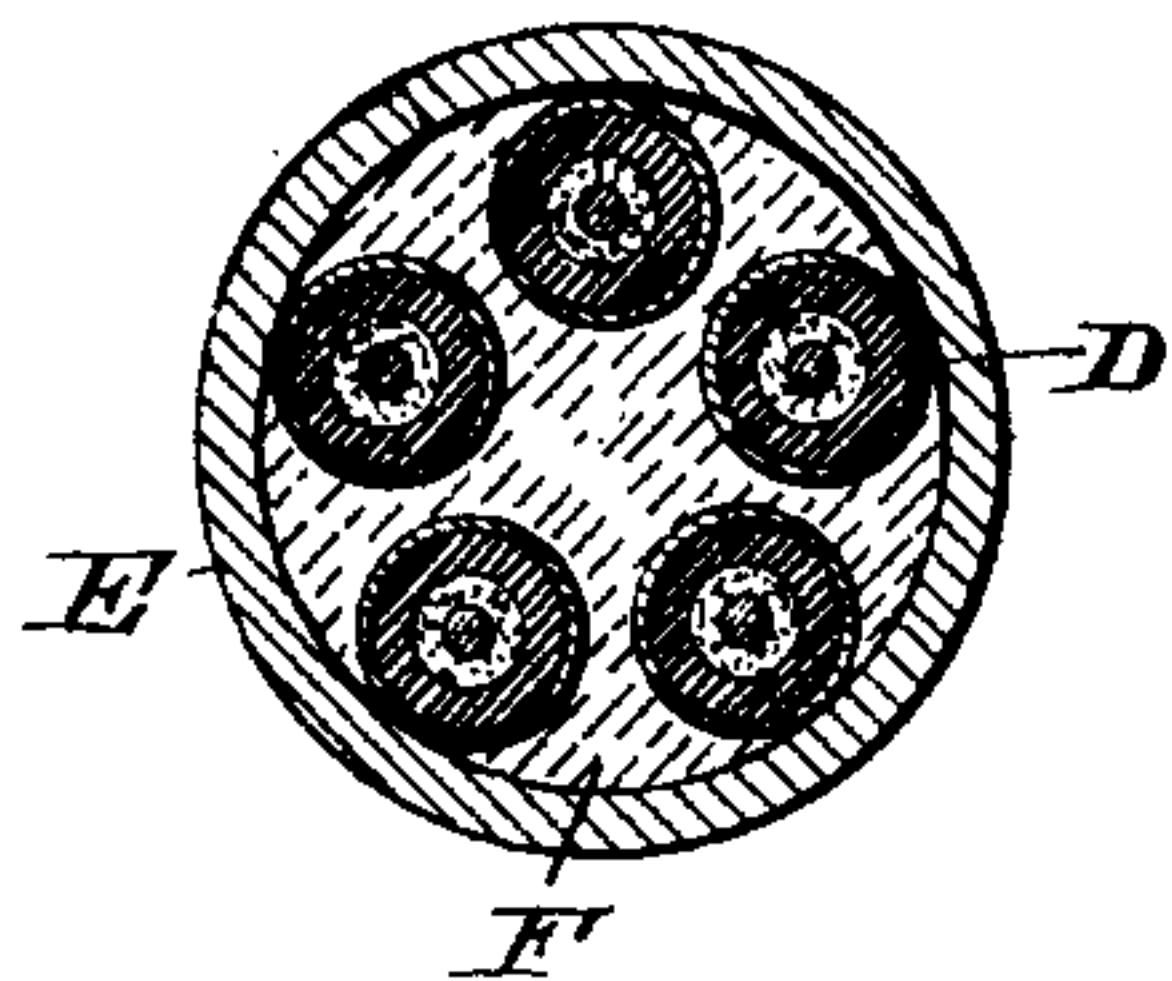


Fig. 4.



Attest:

H. D. Bernie

D. P. Cowl

Inventor:
George F. Barker.

By *Fred M. Royce*
Atty.

UNITED STATES PATENT OFFICE.

GEORGE F. BARKER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
WILLIAM J. PHILIPS, OF SAME PLACE.

ELECTRICAL CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 274,699, dated March 27, 1883.

Application filed July 14, 1880. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. BARKER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Electrical Conductors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

15 This invention relates to electrical conductors especially adapted for telephonic single lines and cables.

It is well known that induction is the chief obstacle to telephonic communication, the telephonic current being so feeble as to suffer great interruption from the inductive influence of currents passing over neighboring conductors and from air-currents. Induction has heretofore prevented the successful use of cables or multiplex conductors for telephonic purposes, on account of the influence the adjacent wires have upon each other; but by my invention I so effectually protect the wires from inductive influence that not only have I practically obviated interruption of currents upon single telephone-lines, but I am enabled to group any number of wires into a cable without danger of their material interference with each other.

35 The main idea of the invention is to interpose a conducting-screen between a line-wire and neighboring wires or conductors, in order to shield said line-wire from induction from said neighboring wires or conductors. It is founded upon the discovery of Professor Henry that when a metallic layer is interposed between a wire conveying a current and an adjacent wire the induced current, which otherwise would appear in the latter, is absent.

45 In the accompanying drawings, Figure 1 is a view of a single electrical conductor constructed according to my invention. Fig. 2 is a view of a three-wire cable having three of my improved conductors incased in a lead tube, 50 the conductors being in contact with each

other and with the tube. Fig. 3 is a cross-section of same. Fig. 4 is a cross-section of a five-wire cable, in which five of my improved conductors are incased in a lead tube and are in contact with the tube, but not with each other. 55

Referring to Fig. 1, the letter A indicates the central conducting-wire, upon which is braided a covering of woolen yarn, B. This woolen covering is saturated with and has a slight covering, C, of insulating material, upon which has been superimposed a thin coating of pulverized plumbago, (incapable of being shown in the drawings;) and D indicates an outer metallic covering, preferably of copper, which has been deposited upon the plumbago by the electroplating process. The several parts are respectively bared to permit of observation. 65

In preparing this conductor the central core may be braided with the woolen yarn by any of the known braiding-machines adapted for such purposes, and is then drawn through a bath of fused insulating material, which may be rosin, Burgundy pitch, or beeswax, or two or more of these substances combined, or any other known or suitable fusible insulating material. The wire thus coated is then covered with a conducting layer of plumbago or other suitable material by being made to pass in contact with a series of revolving brushes charged with said material. The wire thus prepared passes then through the bath of an electroplating apparatus at a proper degree of speed to allow a coating of copper or other metal, of suitable thickness, to be deposited thereon. This completes the conductor, the entire process of manufacture being preferably a continuous one. 80 85

Such conductors, as now described, may, in any desired or convenient number, be assembled in cables by any of the known methods. I prefer, however, to manufacture the cables by inclosing the conductor in a lead or other suitable close metallic tube, and filling all the interstices of the tube—that is, the spaces between the conductors or conductors and tube—with a fusible insulating material introduced in a fused state and left to solidify. Such a tube effectually protects the interior parts of 90 95 100

the cable from moisture, and at the same time serves as a means of grounding the sheaths or metallic coverings of the interior conductors. In the drawings, E indicates the incasing-tube, and F the insulating material. The insulating material is not essential; but it serves to hold the conductors in position, and of course also adds to the insulation.

It is of no importance to the general utility of the cable whether the conductors touch each other or not, as the outer metallic coating of each of the interior conductors takes up and dissipates the effect of all induced currents falling upon it to such an extent that the central conducting-cores are not materially interfered with, so that such cables may be used for telephonic or any other purposes.

In order to "ground" the metallic coverings of the separate conductors, and so rapidly relieve the conductors of static charge, the said coverings should be in contact with the inclosing-tube separately, as in Fig. 3.

The continuous process of covering wires with metal coverings insulated therefrom I intend to make the subject of a separate application for Letters Patent.

What I claim is—

1. An electrical cable consisting of two or more interior electrical conductors, each composed of a central conducting-core and an inclosing covering of conducting material insulated from said core, and a tube of conducting material inclosing the several interior conductors and in electrical connection with the conducting-coverings thereof, substantially as described.

2. An electrical cable consisting of two or more interior electrical conductors, each composed of a central conducting-core and an inclosing covering of conducting material insulated from said core, and a tube of conducting material inclosing the several interior conductors and in electrical contact with the conducting-coverings thereof, respectively, substantially as described.

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

GEORGE F. BARKER.

Witnesses:

O. B. HARDEN,
FRANK T. FREELAND.