

(No Model.)

W. R. PATTERSON.

TELEGRAPH CABLE.

No. 398,442.

Patented Feb. 26, 1889.

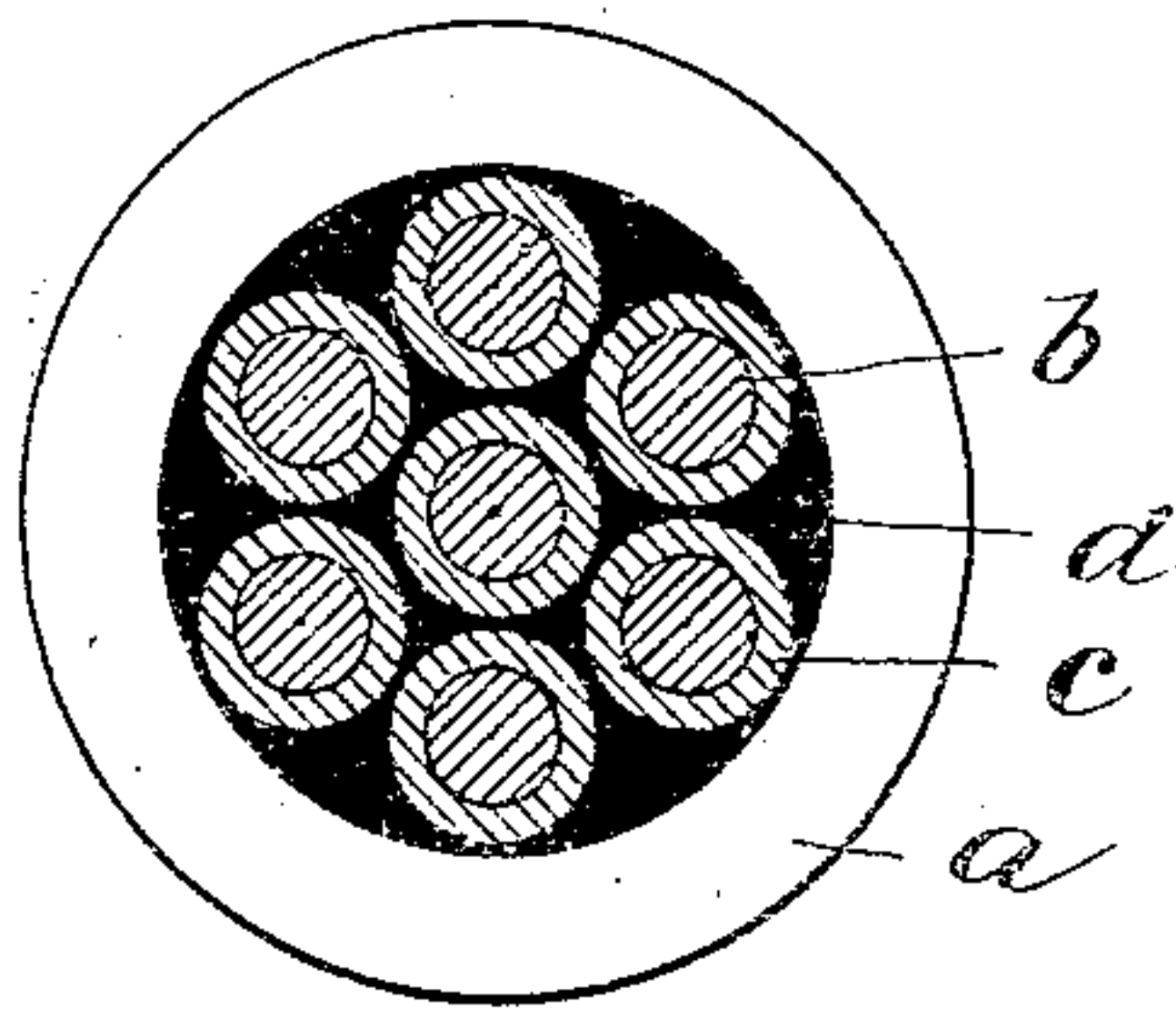


Fig. 1.

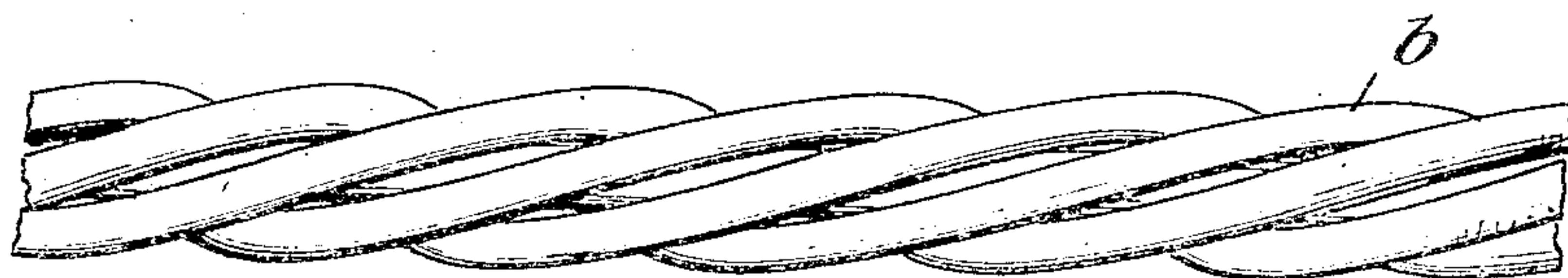


Fig. 2.

Witnesses:
Sam B. Dover,
Wm. M. Giller,

Inventor:
William R. Patterson
by George P. Barton
attorney.

UNITED STATES PATENT OFFICE.

WILLIAM R. PATTERSON, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN
ELECTRIC COMPANY, OF SAME PLACE.

TELEGRAPH-CABLE.

SPECIFICATION forming part of Letters Patent No. 398,442, dated February 26, 1889.

Application filed July 18, 1887. Serial No. 244,602. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. PATTERSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Telegraph-Cables, (Case 73,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to telegraph-cables in which the conductors are separately insulated with a fibrous material and formed into a core which is protected by a water-proof pipe, the space remaining in the pipe about and among the conductors being filled with an insulating material which is preferably forced in charged with gas. Heretofore in this class of electric cables the core has been formed by twisting the insulated conductors together and binding them together by a strong serving, the conductors being compressed by a die just before the serving as the serving is being wound on. In this manner the electrostatic capacity of the cable is greatly increased and its usefulness thereby impaired.

My invention consists in simply loosely twisting the conductors together and dispensing with the serving, so that the core, when surrounded by the lead pipe, will substantially fill the same, and the wires, being only twisted loosely together, the insulating filling of paraffine or other substance will become solid as it cools and fill, as it were, in mass the spaces between the different wires.

Heretofore the paraffine that has been forced in has mostly formed in an annular ring about the core, the core itself being penetrated to only a slight extent by the filling. In order to thoroughly saturate the fibrous covering, it has been necessary to soak the core in insulating material before the core is drawn into the pipe.

According to my invention herein, it will be seen that all unnecessary compression of the fibrous covering of the core is avoided, and the conductors are so evenly distributed and uniformly protected that the electrostatic

capacity of the cable is greatly reduced and at the same time made more uniform, thus increasing greatly the utility of the cable.

The methods and apparatus employed in manufacturing the cable herein described are claimed in other applications filed herewith, and will therefore be referred to herein only incidentally. It is evident that only comparatively short lengths of a loosely-twisted core of fine wires without a serving could be pulled into a lead pipe without injury to the conductors, unless the lead pipe were much larger than the core. Therefore, while it is practicable to make my cable herein described by this old method of drawing in the core it would be expensive and liable to cause some slight injury to the conductors. I therefore preferably use the method described in my application of even date herewith, No. 244,601.

Having thus briefly indicated some of the processes by which my invention herein may be carried out, I will refer to the drawings, in which—

Figure 1 is an enlarged section of my cable. Fig. 2 is a side view of the slightly-twisted core.

The pipe *a*, it will be seen, incloses the core, the different wires, *b*, of the core being separately insulated by fibrous covering *c*. The different insulated conductors, it will be seen, are not closely pressed together, as heretofore, but are so disposed that the spaces among them and between the interior of the pipe and the outside wires will be substantially uniform. Thus, when the insulating-filling *d*, of paraffine or other substance, is forced in, it will distribute itself not only about the core, but also to a certain extent in mass among the conductors; and, thus, with a given-sized pipe, the conductors will arrange themselves so as to utilize the whole space within the pipe, and, none of the conductors being closely compressed together, as heretofore, the cable will be of very low electrostatic capacity—as low as is consistent with the size of the pipe.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

As a new article of manufacture, a cable
consisting of an unserved core of separately-
insulated conductors slightly and loosely
twisted together, an exterior pipe inclosing
5 said core, and a filling of insulating material
forced into the pipe among and around the
conductors of the core, said insulating-filling
being solidified when cold, like paraffine.

In witness whereof I hereunto subscribe my
name this 7th day of May, A. D. 1887.

WILLIAM R. PATTERSON.

Witnesses:

GEORGE P. BARTON,

WM. M. GILLER.