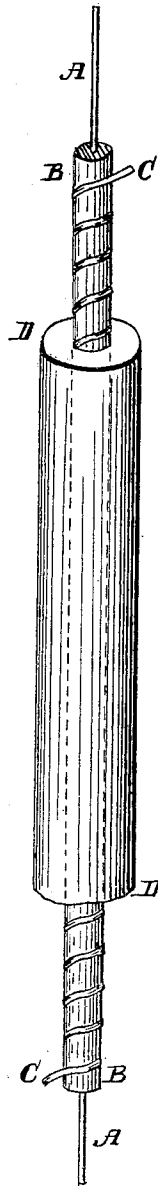


J. N. PHELPS.
Telegraph Cable.

No. 59,318.

Patented Oct. 30, 1866.



Witnesses:
A. Le Clerq
J. W. Coombz

Inventor:
James M. Phelps

UNITED STATES PATENT OFFICE.

JAMES N. PHELPS, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF
AND JOSEPH BAILEY, OF THE SAME PLACE.

IMPROVEMENT IN TELEGRAPH-CABLES.

Specification forming part of Letters Patent No. **59,318**, dated October 30, 1866; antedated
October 16, 1866.

To all whom it may concern:

Be it known that I, JAMES N. PHELPS, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Insulated Electric Conductors for telegraphic or other purposes; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, said drawing representing a piece of a telegraph-cable constructed according to my invention, with portions of the insulating material removed to expose the conductors to view.

It has been desirable, more especially for submarine and other subaqueous telegraphs, to obtain insulated electric conductors which would be elastic or capable of extension in the direction of their length without having their insulation impaired, and therefore not liable to be broken or injured by any lateral drag or pressure to which they might be subject from any body passing over and in contact with them; but, as far as known to me, no conductor has hitherto been invented which has possessed these essential requisites in a suitable degree to render its use practicable.

The object of this invention is to supply the above-mentioned want; and to this end it consists, first, in a conducting-wire with a loose tubular covering of india-rubber or other elastic insulating material; and, secondly, in a metallic conductor of spiral form coiled around a core of india-rubber or other elastic material and covered with a sheath of similar material; and, thirdly, in the employment, in a cable, of the spiral metallic conductor coiled around an elastic core, which also constitutes a loose covering to a central conducting-wire.

In the cable represented in the accompanying drawing the several features of my invention are all illustrated.

A is the central conductor, of simple copper or other wire.

B is the tubular covering, of india-rubber or other elastic insulating material, so fitted to the said wire as to be capable of longitudinal extension independently of the wire A, which is capable of extension. This tubular covering of elastic insulating material serves

also as the core around which the spiral metallic conductor C is tightly wound. This conductor C, I prefer to make of a thin flat ribbon of copper.

D is the outer sheath, of india-rubber or other elastic insulating material, applied tightly outside of the core B and spiral metallic conductor C. This sheath may be protected by an armor of metallic wire or other suitable material in cases in which such protection may be necessary or desirable.

When the cable thus constructed is laid the ends of the elastic loose tube or core B and outer sheath are to be firmly secured; but the ends of the central conductor A are to be wound on reels, to which springs are applied in such manner as to permit the said conductor to be unwound by any unusual strain or drag upon the cable, by which the elastic core and sheath are stretched and caused to slip lengthwise on the said conductor; and when the said strain is removed the springs will turn back the reels, and so cause the wire to be wound up again as the elastic core and sheath resume or approach their normal condition. In the stretch of the cable the coil of the spiral conductor is elongated in the direction of the length of the cable, and as the elastic core and covering resume or approach their normal condition by reason of their elasticity they contract the length of the coil of the spiral conductor.

The spiral conductor may be covered with a sheath of thin elastic insulating material, and another similar conductor be applied outside of the said sheath, which forms a core to the latter conductor. This additional conductor should be also protected by an outer sheath, or two or more conductors may be coiled at suitable distances apart on one core.

What I claim as my invention, and desire to secure by Letters Patent, is—

The employment, in a cable, of one or more spiral metallic conductors, C, wound around a core of india-rubber or elastic insulating material, B, which constitutes a loose insulating covering to a central conductor, A, substantially as herein described.

JAMES N. PHELPS.

Witnesses:

J. W. COOMBS,
A. LE CLERC.