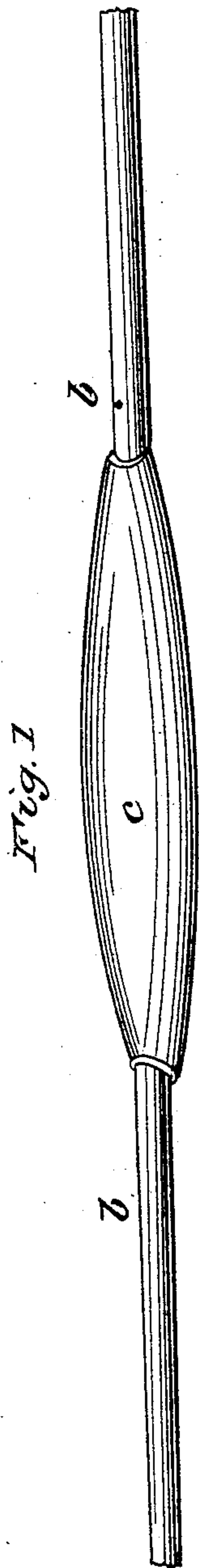


J. N. POWER.  
Telegraph Cable.

No. 31,622.

Patented March 5, 1861.



Witnesses  
C. W. Brown  
C. W. Brown

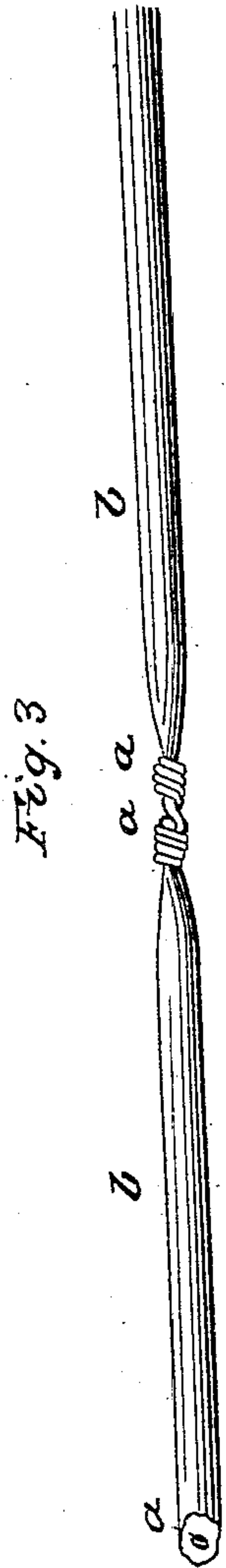


Fig. 2

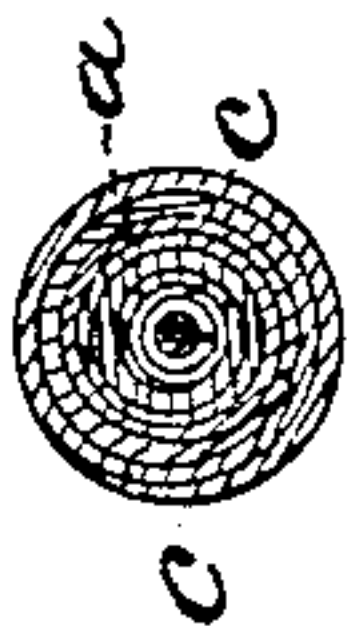
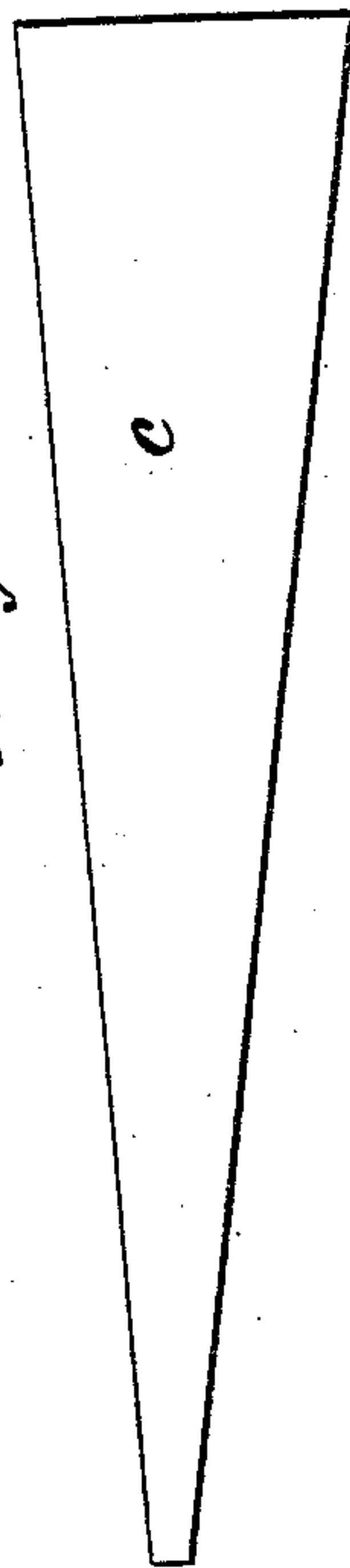


Fig. 4



Fig. 5.



Inventor  
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# UNITED STATES PATENT OFFICE.

JOHN N. POWER, OF NEW YORK, N. Y.

## IMPROVED METHOD OF JOINTING TELEGRAPHIC CONDUCTORS.

Specification forming part of Letters Patent No. 31,622, dated March 5, 1861.

*To all whom it may concern:*

Be it known that I, J. N. POWER, of the city, county, and State of New York, have invented a new and useful Improvement in the Joints of Insulated Telegraph Wires or Cables; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a longitudinal view of a finished joint. Fig. 2 is a transverse section of the same. Fig. 3 is a longitudinal view of the joint prepared for the insulating-wrapper. Fig. 4 is a transverse section of the joint with the wrapper partly applied. Fig. 5 represents the wrapper before it is applied.

Similar letters of reference indicate corresponding parts in the several figures.

Much difficulty has been hitherto experienced in making perfectly-insulated joints in the gutta-percha insulated telegraph wires or cables employed as submerged conductors at the crossings of rivers and other waters. The method generally adopted of making the joints has been to strip off the gutta-percha covering from the terminal portions of the conducting wire or wires, taper off the said covering for some distance from the stripped portion, and, after twisting the uncovered portions of the wire or wires together, to cover the connection so formed with gutta-percha by warming a lump of the latter sufficiently to make it plastic and adhesive and working it round the connection with the hand. The gutta-percha of the cable requires to be softened by dipping the ends of the cable in boiling-hot water. The gutta-percha which is intended to form the wrapper also requires to be softened in the same manner. The hot-water apparatus must be sufficient in capacity to allow of this manipulation freely, and there must be at least three assistants—two to hold the cable and one to apply the gutta-percha. Much care and skill is required to apply the gutta-percha quickly before it can cool, and also in such a manner as to prevent the inclosure of any water in the joint. Experience shows that even a single drop of water, if inclosed, is fatal to the joint, as it soon makes an opening in the joint and finds its way out under the heavy pressure to which a submerged

cable is generally subjected. This inclosure of water at the time of joining is a source of serious trouble. The common method is therefore slow, costly, unreliable, and inconvenient. It is also objectionable because the attendants, as practice proves, are liable to have their hands frequently scalded in dipping and working with the boiling water. By this method, also, it is difficult to make the gutta-percha covering free from crevices, and in many cases, when the insulation of the joint appears perfect, it will prove not to be so a short time after it has been submerged.

In carrying out my improvement I use a wrapper made of sheet gutta-percha, which has one or both of its surfaces covered with an adhesive cement made of india-rubber dissolved in naphtha or other solvent.

*a a* are the conducting-wires, and *b b* their insulating-covering of gutta-percha. In Fig. 3 the gutta-percha is represented as stripped from the terminal portions of the wires and tapered off and the wire twisted together to make the connection.

*c* is the wrapper, made preferably of the taper form shown in Fig. 5, or in any other suitable form. The cement having been applied to this wrapper, it is rolled tightly round the joint, as represented in Figs. 4 and 2, and the joint, when finished, assumes the form shown in Fig. 1.

When the wrapper is of taper form I apply the smaller end next the connection.

The wrapper, after being coated with the cement, should be slightly warmed when applied to the cable. This may be done by holding the wrapper over a candle or piece of burning paper, except in summer, when the heat of the sun will afford sufficient warmth.

By the use of this improvement the joints of telegraph-cables may be covered in a perfect and most expeditious manner. The cement is so adhesive that the folds of the wrapper become united with each other and with the covering of the cable in a very firm manner by simply winding the said wrapping around the cable. The joint thus covered is also perfectly water-proof, and as no water is employed none can be inclosed in the joint to cause damage.

This improvement also effects an important economy, because the cement-covered wrap-



pers may be prepared and kept on hand in quantities, are light, cheap, and always ready for use. In joining cables by the old process it is often found necessary to use several pounds of gutta-percha for each joint, and the covering assumes the form of a bulky clumsy mass.

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

In joining telegraph-cables, the use of a sheet gutta-percha wrapper covered with india-rubber cement, in the manner and for the purpose herein shown and described.

JOHN N. POWER.

Witnesses:

M. M. LIVINGSTON,  
LEWIS A. TUCKER.