

(No Model.)

J. A. BARRETT.
ELECTRIC CONDUCTOR.

No. 482,150.

Patented Sept. 6, 1892.

Fig. 1.



Fig. 2.



Fig. 5.



Fig. 6.



Fig. 3.

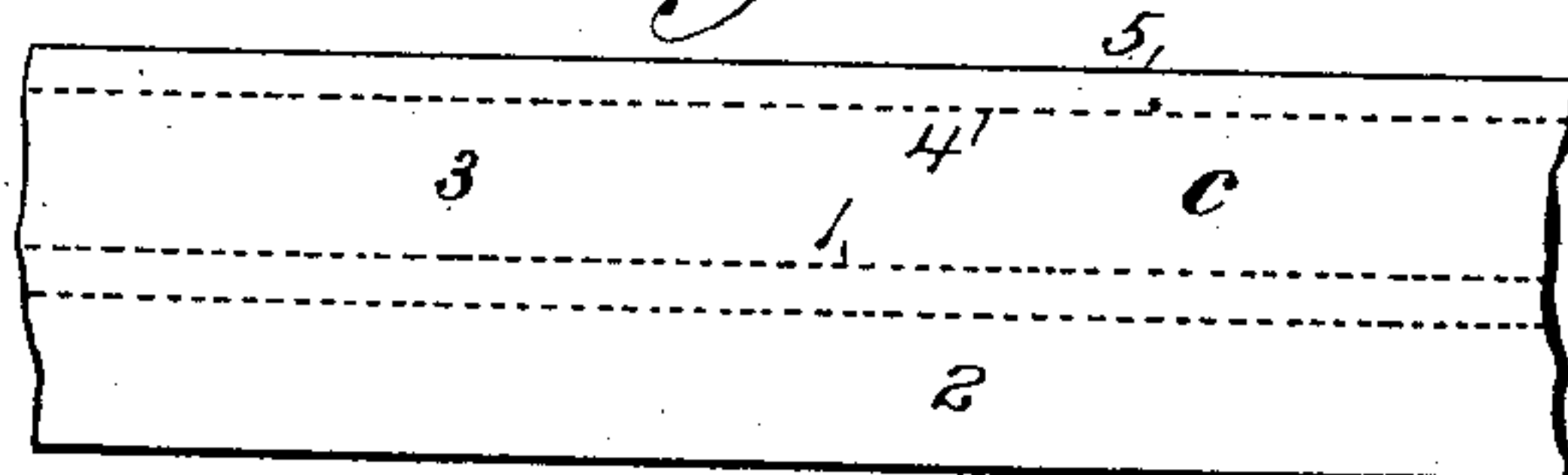


Fig. 7.

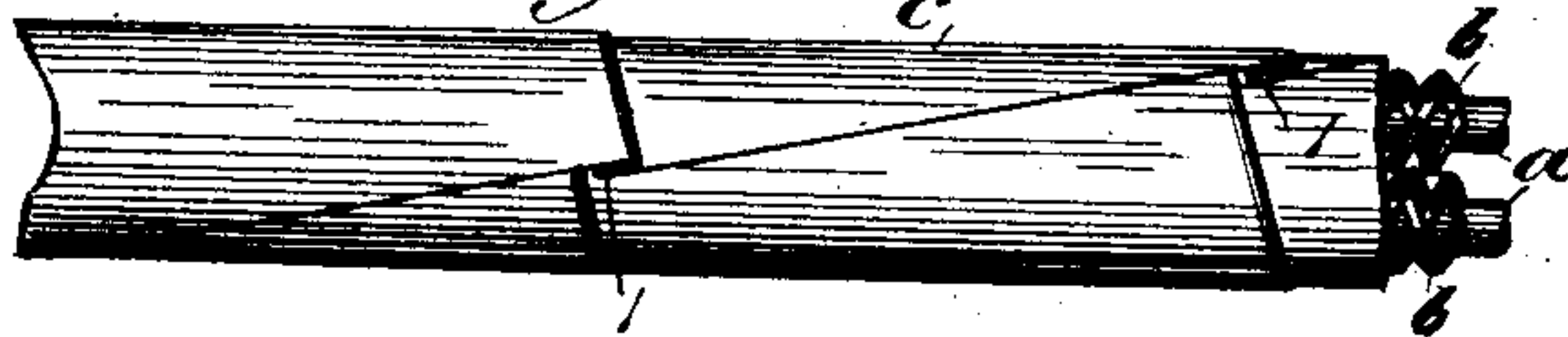


Fig. 8.

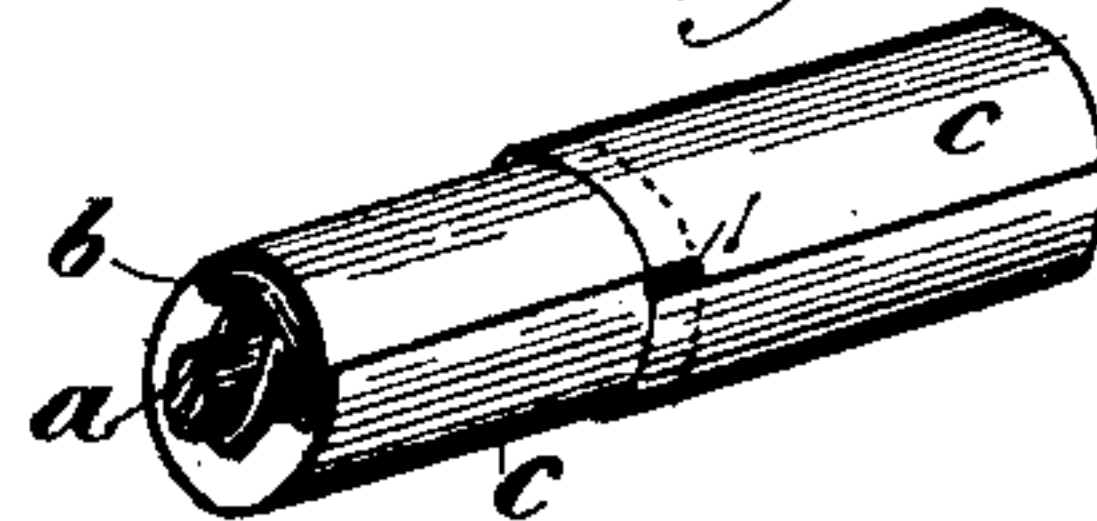


Fig. 4.

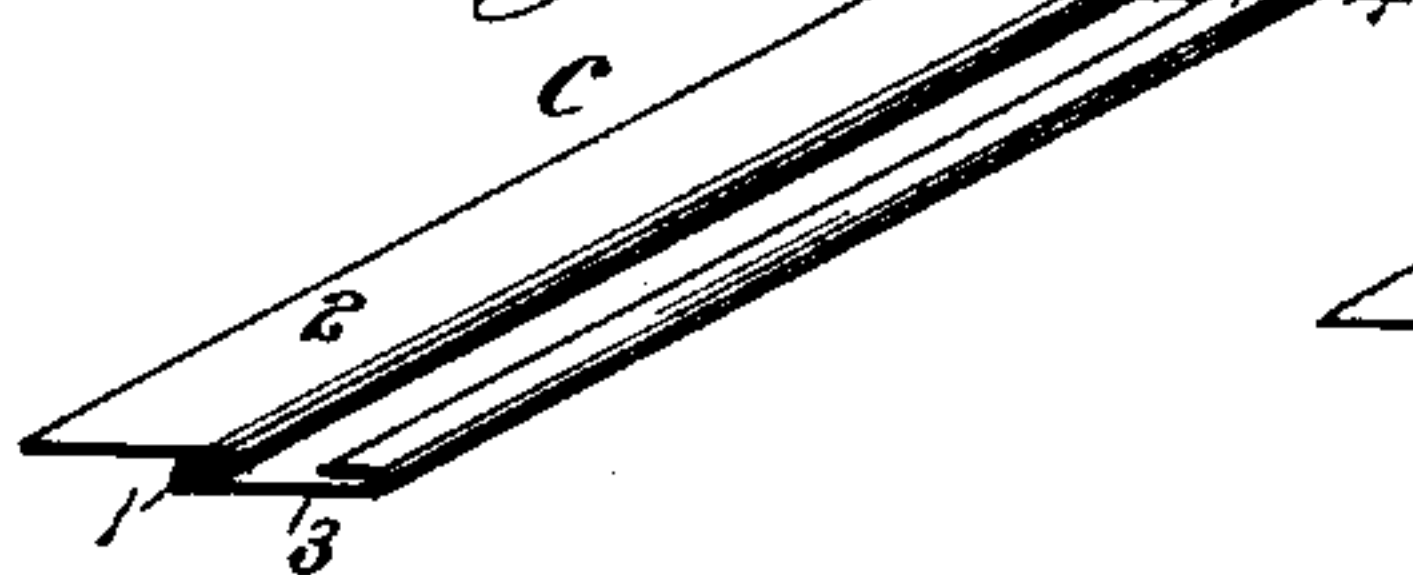
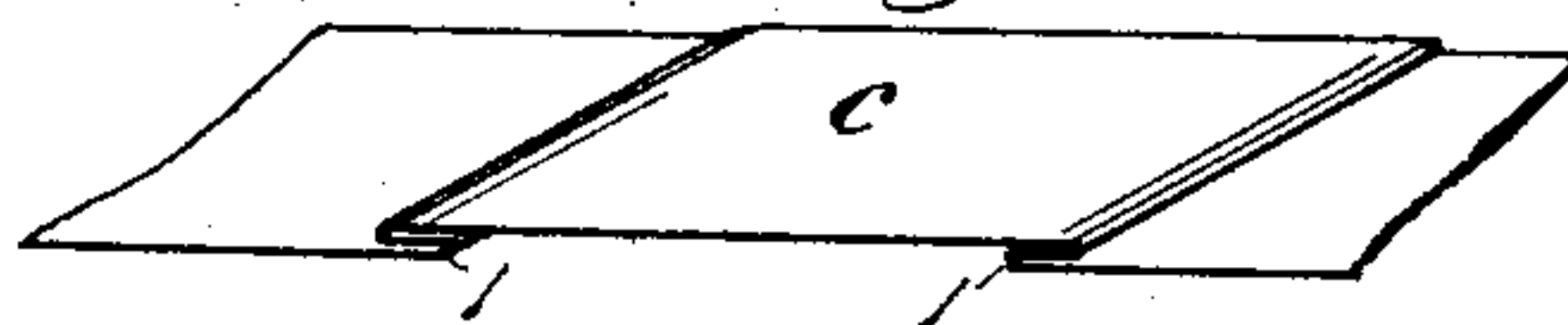


Fig. 9.



Attest:

Geo. H. Bette
C. J. Sawyer

Inventor:

John A. Barrett
By Philip Phelps Hoey

Atty

UNITED STATES PATENT OFFICE.

JOHN A. BARRETT, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE STANDARD UNDERGROUND CABLE COMPANY, OF PITTSBURG, PENNSYLVANIA.

ELECTRIC CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 482,150, dated September 6, 1892.

Application filed January 8, 1891. Serial No. 377,087. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. BARRETT, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have
5 invented certain new and useful Improvements in Electric Conductors, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention relates to the manufacture of insulated electric conductors, its object being to provide an improved flexible covering for a conductor or group of conductors.

In the manufacture of many classes of
15 insulated electric conductors it is the practice to surround a conductor or group of conductors with flexible covering, which consists of a wrapping of paper or of tape, the latter usually being saturated with some suitable
20 material.

In my patent, No. 424,751, dated April 1, 1890, I have shown and described a conductor in which a wrapping, preferably of paper, is used to form an envelope about an electric
25 conductor or group of conductors for the purpose of preventing the passage of the sealing material through the wrapping to the air-containing serving directly surrounding the conductor, and while the improvements constituting the present invention are of general
30 application in all classes of electric conductors in the manufacture of which a flexible covering it is used it is of special value as applied to the conductor of the patent referred to and has been especially designed for use in connection therewith. In the manufacture of this conductor the paper or other material is preferably applied by winding in long or short overlapping spirals, and the
35 joints between the successive windings are closed by some suitable adhesive material. It is found, however, that paper is liable to break under the flexure to which the conductor is subjected, and with cloth or other
40 stronger material a tight joint between the windings can be maintained only by a loss of flexibility.

If the covering be applied in any other manner, as by folding or winding a continuous strip about a conductor or group of conductors lying parallel thereto, the same dan-

ger of breaking in the use of paper and loss of flexibility with stronger material exists. Moreover, it is well known that in applying a strip of any material by winding it spirally
55 about the article to be wrapped a slackness, and consequent buckling, in the wrapping is caused at the advance edge, this resulting from the overlapping of the rear and front edges of the successive windings, so that the
60 wrapping is more rapidly taken up by the rear than the front edge. This is objectionable in all cases in which such a wrapping is used, but is especially so as applied to electric conductors on account of the irregulari-
65 ties in the form and size of the conductors and core, caused by the bending over of the buckling portion, and in conductors in which a tight joint is required there is the further objection that the openings thus formed afford a passage for the material which the
70 covering is intended to exclude. I avoid these difficulties by the use of a wrapping formed and applied as will now be described in detail, and set forth in the claims. 75

In the accompanying drawings, in which for the purpose of illustration my invention is shown as applied to a conductor of the construction shown in my patent referred to, Figure 1 is a detail of a partially-wound
80 single conductor, showing the application of my invention in its preferred form. Fig. 2 is a central longitudinal section of the same. Fig. 3 is a plan view of the wrapping strip of Figs. 1 and 2 before folding, the lines of fold
85 being indicated in dotted lines. Fig. 4 is a perspective view of the wrapping folded ready for winding. Fig. 5 shows another method of applying the wrapping. Fig. 6 shows a slightly-modified form of wrapping. Fig. 7
90 shows a long spiral wrapping applied to a group of two conductors. Fig. 8 shows a straight-wound conductor, and Fig. 9 is a perspective view of the wrapping of Figs. 7 and 8.

Referring to Figs. 1 to 4, *a* is the conductor. 95
b is the air-containing serving, which may be applied in any suitable manner, and *c* the wrapping embodying the present invention in its preferred form. I prepare this wrapping by taking a strip of paper or other material and forming in it a tuck 1, preferably
100 approximately upon the central line thereof,

as shown in Figs. 3 and 4. By this tuck the strip is divided longitudinally into two sections 2 and 3, lying in different planes, the section 2 being raised above the section 3 by two thicknesses of the material, which form the tuck 1. A fold 4 is then preferably formed near the outer edge of the section 3 parallel to the tuck 1 and a narrow strip or section 5 folded over upon the upper side of the section 3, thus forming two thicknesses of material at the outer edge of the lower section.

The wrapping may be used without adhesive material; but usually adhesive material will be applied either to the whole lower side of the strip before folding or to the section 5, either before or after folding, so that the joint is closed by uniting the outer edge of section 2 and section 5, as will presently be described.

In applying this wrapping to my conductor I prefer to coat the wrapping on one side and to use as the adhesive material a sizing of mucilaginous, gelatinous, or albuminous material, which is adhesive when moist and flexible when dry, as described and claimed in my patent, No. 462,681; but so far as the present invention is concerned other materials may be used. The wrapping thus prepared is applied to the article to be wrapped—in this case the served conductor *a*—by winding the wrapping about the article in short spirals, preferably with the adhesive section 5 outside and in advance, and with the section 2 of each winding overlapping the adhesive section 5 of the previous winding, the overlapping being preferably just sufficient to bring the edges of the sections 2 and 5 together. This application of the wrapping is fully shown in Fig. 2. With the wrapping thus formed and applied it is found that great flexibility is secured while preserving a tight joint and that paper may be used without danger of breakage, the opening and closing of the tucks enabling the wrapping to bend freely in any direction without strain upon the material. It will be seen, also, that the sections 2 3 of the wrapping lie at equal distances from the center throughout, so that the material of no part of one of these sections is taken up more rapidly than that of any other part of the same, and it is found in practice that all slackness or buckling is taken up in the central part of the wrapping, where no joint is formed, and that the objectionable tendency to buckle at the edges and break the joint is entirely obviated.

Many modifications may be made in the construction and method of applying my wrapping without departing from my invention. For instance, while I prefer to wind the wrapping with sections 3 inside, as shown in Fig. 1, as there is less tendency to buckling, the wrapping may with approximately as good results be wound with sections 2 and 5 inside, as shown in Fig. 5.

The fold 4 and section 5 may be omitted and a wrapping used employing only the

feature of the tucks 1, which will still operate to secure flexibility, this construction being shown in Fig. 6. The tucks are applicable, also, to other than the preferred short spiral wrapping thus far described. If a long spiral wrapping be desired, the strip shown in Fig. 9 will be used, the tucks 1 being formed transversely of the strip instead of longitudinally and lying as shown in Fig. 7 when the wrapping is applied. The strip shown in Fig. 9 may also be applied by winding it about the conductor in the manner shown in Fig. 8, the strip and conductor extending parallel with each other.

It will be seen that the essential feature of one branch of my invention consists in the flexible covering having tucks extending transversely to the line of flexure, and this feature forms a part of my invention, whether the covering be applied by winding a strip of material about the article covered or in any other manner.

It will be understood that my cover is applicable to other classes of conductors than that shown and that this cover may be applied directly to the conductor or outside an inner covering or coverings of any desired form.

While I have shown and described my cover as applied to electric conductors and it is especially designed therefor and of especial value as applied thereto, it will be understood that my invention is applicable, also, in all cases in which a covering of paper, cloth, or similar flexible material is applied to any article which is to be subjected to flexure, and any such application is within my invention.

What I claim is—

1. An electric conductor or group of conductors having a covering of paper, cloth, or other flexible material provided with tucks extending transversely to the lines of flexure, substantially as described.

2. An electric conductor or group of conductors having a covering consisting of a strip of paper, cloth, or other flexible material wound about the conductor or group of conductors and provided with tucks extending transversely to the lines of flexure, substantially as described.

3. An electric conductor or group of conductors having a covering consisting of a strip of paper, cloth, or other flexible material wound spirally about the conductor or group of conductors and provided with tucks extending transversely to the lines of flexure, substantially as described.

4. An electric conductor or group of conductors having a covering consisting of a strip of paper, cloth, or other flexible material wound spirally about the conductor or group of conductors and provided with tucks extending transversely to the lines of flexure, the overlapping edges of the successive windings being gummed together, substantially as described.

5. An electric conductor or group of con-

ductors surrounded by a spiral wrapping formed of the flexible strip *c*, having the longitudinal tuck 1, substantially as described.

5 6. An electric conductor or group of conductors surrounded by a spiral wrapping formed of the flexible strip *c*, having the longitudinal tuck 1 and the fold 4 parallel thereto, the sections formed by the tuck and fold overlapping, substantially as described.

10 7. An electric conductor or group of conductors surrounded by a spiral wrapping formed of the flexible strip *c*, having the longitudinal tuck 1 and the fold 4 parallel thereto, the sections formed by the tuck and fold
15 overlapping and being gummed together, substantially as described.

20 8. A wrapping consisting of a strip of paper *c*, or other other flexible material, provided with tucks extending transversely to the lines of flexure of the applied wrapping, substantially as described.

9. A spiral wrapping consisting of the flexible strip *c*, having the longitudinal tuck 1, substantially as described.

10. A spiral wrapping consisting of the flexible strip *c*, having the longitudinal tuck 1 and fold 4 parallel thereto, substantially as described. 25

11 A spiral wrapping consisting of the flexible strip *c*, having the longitudinal tuck 1 and fold 4 parallel thereto, forming comparatively wide sections 2 3, and narrow section 5, lying in a plane intermediate of the planes of the other two sections, substantially as described. 30

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses. 35

JOHN A. BARRETT.

Witnesses:

J. W. MARSH,
C. C. WOLFE.