

Oct. 6, 1925.

1,555,856

A. C. JEWETT

METHOD OF COVERING DRY CELL CARTRIDGES AND THE LIKE

Filed July 1, 1920

2 Sheets-Sheet 1

Fig. 1.

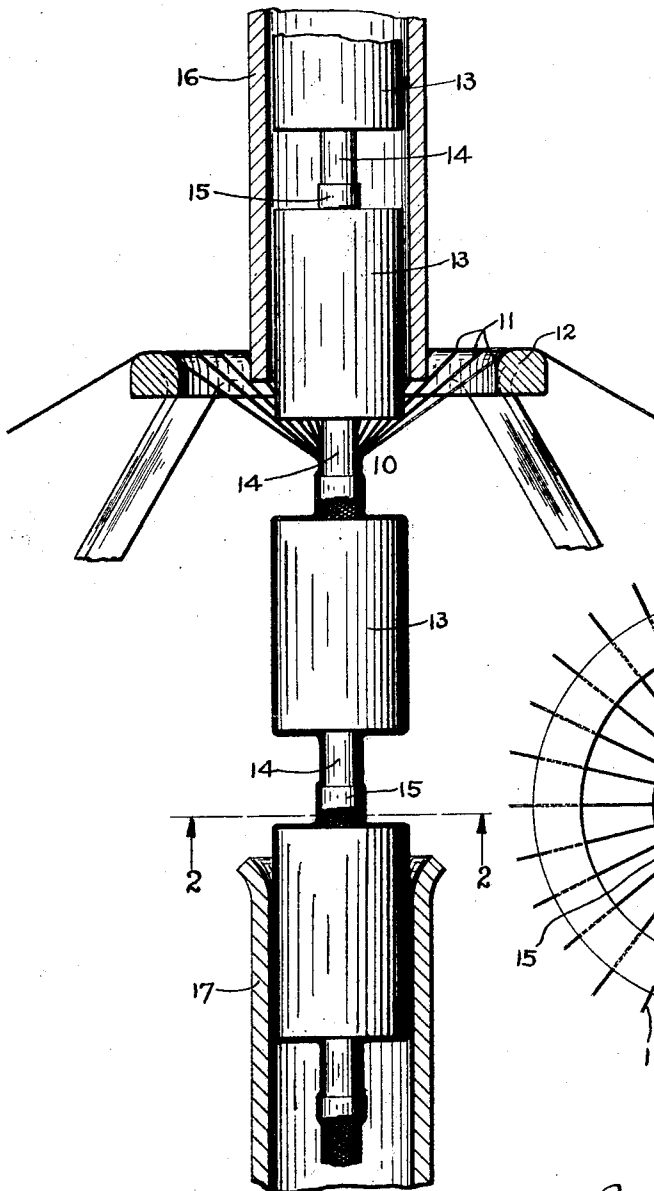


Fig. 3.

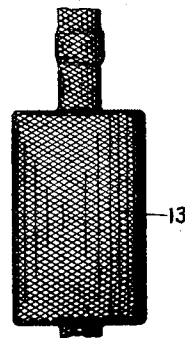
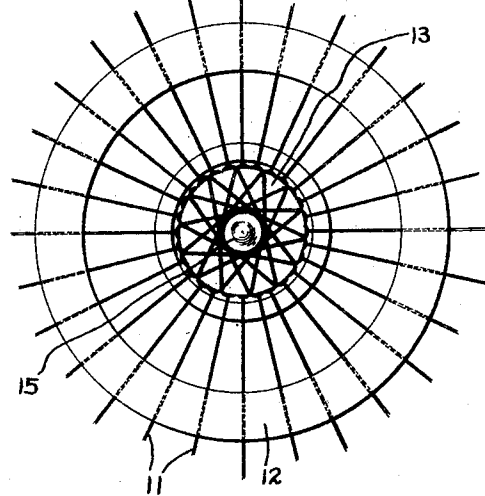


Fig. 2.



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Fig. 4.

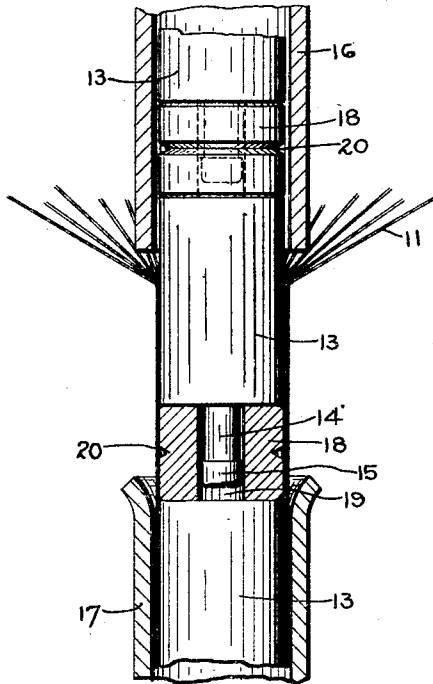


Fig. 6.

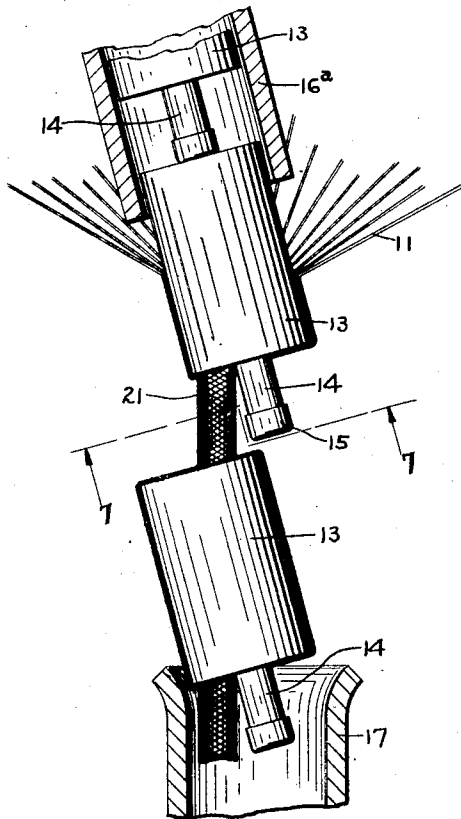


Fig. 7.

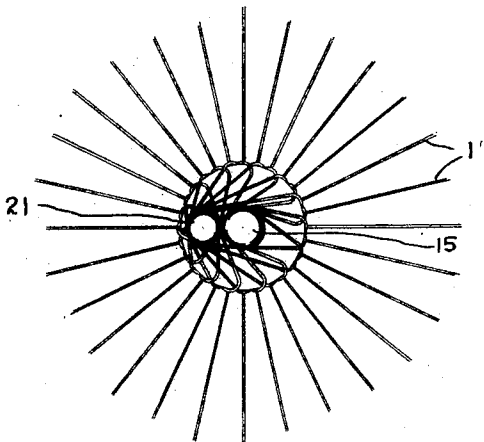
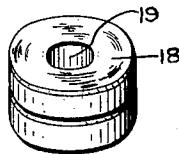


Fig. 5.



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UNITED STATES PATENT OFFICE.

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METHOD OF COVERING DRY-CELL CARTRIDGES AND THE LIKE.

Application filed July 1, 1920. Serial No. 393,336.

To all whom it may concern:

Be it known that I, ARTHUR C. JEWETT, a citizen of the United States, residing in the city of New Haven, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Methods of Covering Dry-Cell Cartridges and the like, of which the following is a full, clear, and exact description.

This invention relates to dry cells and more particularly to those in which a body of suitable depolarizing material surrounds the carbon pencil or other central electrode. The invention also has special reference to dry cells of the so-called miniature type, such as used in connection with hand lamps and pocket flash-lights. It is not limited however, to this particular application.

In galvanic dry cells of the Le Clanché type, it has been common practice to enclose the depolarizing mass, body or cartridge in an envelope or cover of bibulous material, usually of cotton fabric such as cheese-cloth. This material is commonly applied to the cartridge in the form of a strip which is folded or wrapped around the cartridge and held in place by threads or the like wound about the cheese-cloth and tied in place. This method of wrapping has serious drawbacks, owing to the fact that the operation is a tedious one requiring considerable experience and skill. The wrapping of the fabric is in itself a somewhat difficult operation and the tying of the string or thread is an additional operation which must follow the wrapping and which usually involves the passing of the thread around the cartridge both transversely and longitudinally a multiplicity of times. The cartridge is usually cylindrical in shape and it is a difficult matter fully and securely to enclose in a wrapping strip a cylindrical object. As a consequence of these conditions the wrapping of the cartridges has been expensive, it has been difficult to obtain the necessary skilled labor, and in many cases the character of the work done has not been satisfactory.

One of the primary objects of the present invention is to overcome these disadvantages and drawbacks by the provision of a novel and superior method of wrapping or covering the cartridges. By my invention the wrapper or jacket is applied directly to the cartridge so as to fit the same neatly. A textile wrapper generated directly on the car-

tridge can be used very satisfactorily without the objections to which I have referred and it serves very efficiently in the functioning of the cell. By my invention, also, the wrapping can be done very expeditiously by labor not possessing a high degree of skill and the cartridges may be wrapped or jacketed in a more secure and uniform manner than heretofore.

To these and other ends the invention consists in the novel steps and procedure and features to be hereinafter described and claimed.

In the accompanying drawing:

Fig. 1 is a diagrammatic vertical section of a portion of a braiding apparatus for carrying out my improved method;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 is a detail of one of the braided cartridges;

Fig. 4 is a fragmentary sectional view generally similar to Fig. 1, illustrating a modification of the method;

Fig. 5 is a detail of one of the spacer blocks shown in Fig. 4;

Fig. 6 is a view generally similar to Fig. 4, illustrating a further modification of the method; and

Fig. 7 is a section on line 7—7 of Fig. 6.

In a companion application, Serial No. 393,335, filed July 1, 1920, now Patent 1,471,486 of Oct. 23, 1923, I have described and claimed a dry cell cartridge having a braided or woven jacket or cover applied to the same so as to conform thereto and fit the cartridge snugly and neatly, the jacket being so constructed as to form practically an integral part of the cartridge. The present invention relates among other things to a method whereby the dry cell cartridge may be provided conveniently and advantageously with such a jacket or cover.

While in the following description I shall refer specifically to a method of forming the jacket or cover by braiding, I do not limit myself in all aspects of the invention to the employment of an operation technically known as braiding, as distinguished from weaving or the like.

In carrying the invention into practice I prefer to employ a braiding machine having the usual movable spools (not shown), adapted to deliver threads or strands in tubular braided form at point 10 shown in Fig. 1. In the particular form shown, the

radially arranged threads 11 extend downwardly and inwardly to the braiding point from a supporting ring 12. In this particular embodiment the threads pass from the
 5 spools (not shown) to the ring 12 in an upward direction. The cartridge to be jacketed is shown at 13 and it consists, in the particular embodiment illustrated, of a cylindrical block of depolarizing material
 10 having a carbon pencil or other electrode 14 projecting therefrom at one end only. In the particular case under discussion the carbon pencil of the cartridge to be wrapped has a metallic contact cap 15 at its projecting
 15 end, but this is not a material feature. The carbon pencil presents, however, a protruding neck or projection at one end of the cartridge which is of considerably less diameter than the main part of the
 20 cartridge.

I feed the cartridges endwise into the tubular braid being formed, so that the braid is created directly on the cartridge. I also
 25 prefer to feed in the cartridges with the small end first and as, in the case illustrated, the braided tube is fed downwardly the cartridges are fed downwardly into the tube with the projecting carbon pencils
 30 lowermost. In accordance with my invention, also, I provide a substantially continuous series or procession of cartridges which are braided one after another without any appreciable interval or gap between them, the electrode of one cartridge being in contact with, or at any rate in proximity to,
 35 the bottom of the cartridge next in front of the same. Thus there is formed a tubular fabric closely adhering to the main parts of the several cartridges and connecting them all together, such tubular fabric conforming closely to the series of cartridges as a whole and decreasing in diameter at
 40 intervals as where the neck portions of the cartridges occur, so as to follow the lines of the reduced portions or electrodes as well as those of the main cylindrical cartridge parts. The braided cartridges, formed in this manner into a connected
 45 series linked together by portions of the tubular fabric, are then separated to form the individual jacketed members.

In the apparatus shown in Fig. 1, the fabric tube as generated, assumes a pendent position and the weight of the cartridges
 50 around which the tube is formed is just sufficient to draw out or extend the tube to the required degree. The cartridges are fed downwardly in a continuous succession or series in any convenient manner, in the preferred practice, as by placing them in the
 55 upper end of a vertical feed tube 16. This feed tube is of slightly larger interior diameter than the exterior diameter of the cartridges and in this tube one cartridge rests
 60 on another, as shown in Fig. 1. It may

be expedient in certain cases, however, to dispense with the use of such a feed tube and to place the cartridges within the generating fabric tube one after the other by
 65 hand, preferably with their smaller ends in advance, as previously stated, as this facilitates the entrance of each cartridge into the forming braid.

As the braided cartridges pass downwardly from the braiding point they may enter
 70 a discharge tube 17 vertically arranged beneath the tube 16, which holds them in place. It is preferred to form a connected series of braided cartridges of some length and to separate the individual cartridges
 75 from each other only after such a series has been formed. In the particular instance shown in Fig. 1, the cartridges may be severed from each other as they issue from the lower extremity (not shown) of
 80 the discharge tube 17. In severing them the tubular jacket is cut transversely at points adjacent the bottoms of the cartridges, such points being located between
 85 said bottoms and the front ends of the next cartridges. In other words, the line of severing will correspond more or less to the section line 2-2 of Fig. 1. Subsequently the fabric encircling the upper end of the
 90 projecting electrode may be removed.

In the modification of the method shown in Fig. 4, substantially cylindrical spacer blocks 18 are interposed between the cartridges, said spacer blocks being provided
 95 with central perforations 19, into which the carbon pencils may be introduced. In this manner the series of cartridges is caused to present a substantially continuous cylinder of uniform diameter throughout its
 100 length, over which the fabric is braided without any appreciable variation in the diameter of the fabric tube which in this case conforms to the side surfaces of the
 105 body of the cartridge but not to the end surfaces. The spacing block 18 may be advantageously provided with an annular groove 20, into which a cutting tool may be introduced for severing the jacket of one
 110 cartridge from another. After the jackets have been severed along a line which is in alignment with the groove 20, the spacing block may be lifted out and one extremity
 115 of the cut fabric may be folded over the bottom of one cartridge, whereas the other extremity may be folded over the top of the
 120 adjacent cartridge.

In the modification shown in Fig. 6, the procedure is substantially the same as shown in Fig. 1, with the exception that the cartridges are caused to meet the generating
 125 fabric tube at an angle. This may be effected by setting the feed tube 16^a at a slight angle to the vertical. The result is that a narrow fabric neck 21 extends from the lower (upper) surface of one cartridge
 130

at a point to one side of the projecting carbon electrode to a point on the bottom of the next lower cartridge, at a point offset from the center. In this manner the fabric necks
5 instead of being in line with the electrodes are offset laterally with respect to the same. This is a feature of advantage in certain cases as it enables the neck portions after being severed to be flattened down readily,
10 as described in my companion application, which is now Patent No. 1,471,486.

Various changes may be made in the details of the procedure, as herein particularly described, without departing from the
15 scope of the invention as set forth in the claim.

It will be understood from the foregoing description that the tubular fabric jacket is placed on the cartridge snugly, the threads
20 being under tension. The braiding tension is such that the threads of the jacket are quite tight and conform closely to the cartridge exterior so as to prevent any appreciable displacement of the depolarizing material if the depolarizing body becomes
25 cracked or chipped. In braiding the cartridge, a thread of No. 20 cotton has been employed with good results. The interstices between the threads on the cylindrical side
30 surface of the cartridge body may be fairly large. Where the cartridge is braided they are rhomboidal in shape and in braiding a cartridge for a No. 5 cell the minor axis of the rhomb may be a scant $\frac{1}{16}$ of an inch,
35 the major axis being a scant $\frac{1}{8}$ of an inch. Good results have been obtained in this way, but various modifications will be found useful. The minor axes of the rhomboidal interstices are parallel to the longitudinal cartridge axis except where the cartridge is introduced into the braid at an angle, as explained in connection with Fig. 6.

It will be understood from what has been

said above that, in the broader aspects of the invention, the application of the jacket to
45 the cartridge may be effected by weaving it thereon instead of braiding. Likewise, in some cases, the jacket may be formed on the cartridge by being knitted directly thereon; or a thread or tape may be wound about
50 the cartridge a multiplicity of times to create closely set strands that lie snugly against the depolarizing material, as shown in my application, which has matured to the patent
55 before mentioned.

In all of these cases the cartridge is jacketed by direct application of a multiplicity of strands, preferably of textile material of a bibulous character. The strands are closely
60 set together on the cartridge so as to create a jacket which serves the functions, substantially, of a fabric, and such strands are placed while under slight tension, so that the textile jacket, generated directly on the cartridge, conforms to the lines of the cartridge
65 and hugs the same closely. The strands will also preferably cross each other, as by being braided, woven, knitted, or wound in crossing relation. All of these features are not essential, however, in the broad phases of the
70 invention.

What I claim is:

The method of covering a compact body of depolarizing material, having a carbon electrode projecting therefrom, which comprises
75 introducing the same endwise into the generating tubular fabric with the axis thereof disposed obliquely to the axis of the generating fabric, and with the projecting end of the electrode protruding from the
80 tube being formed so that this end remains uncovered.

In witness whereof, I have hereunto set my hand on the 29th day of June, 1920.

ARTHUR C. JEWETT.