

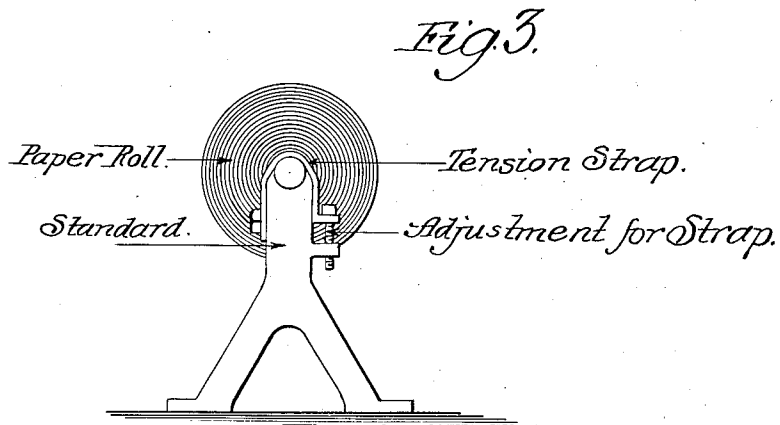
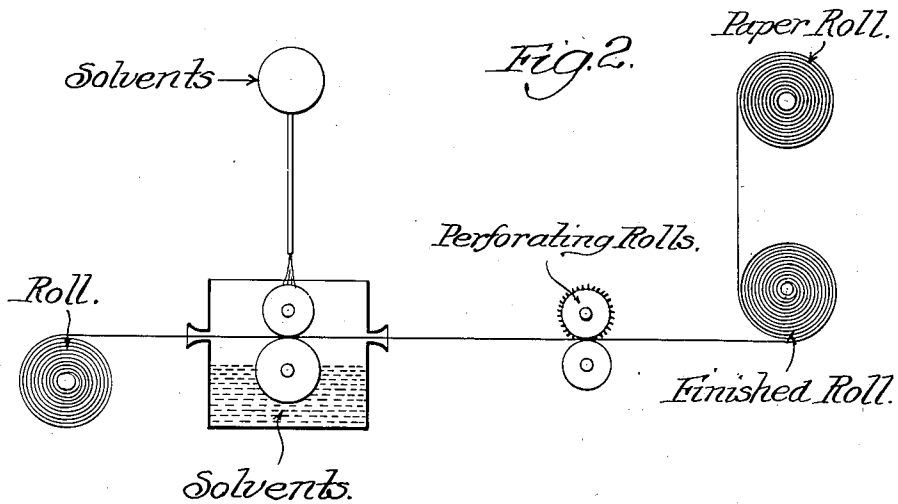
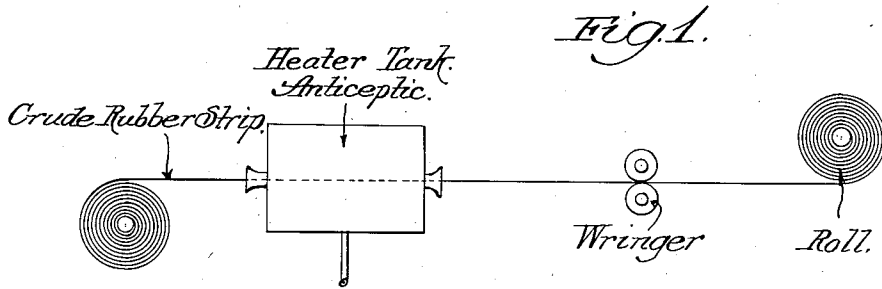
Nov. 20, 1934.

W. D. LLOYD

1,981,561

BANDAGE

Filed Jan. 14, 1933



Inventor:
William D. Lloyd,
By J. J. Penforth, Sec., Critton & Miles,
Attys.

UNITED STATES PATENT OFFICE

1,981,561

BANDAGE

William D. Lloyd, Chicago, Ill., assignor, by direct and mesne assignments, to National Super Products Corporation, Chicago, Ill., a corporation of Illinois

Application January 14, 1933, Serial No. 651,825

6 Claims. (Cl. 128—268)

This invention relates to a bandage or tape and also to methods of forming the same.

An object of the invention is to provide an improved bandage formed of treated crude rubber which will remain flexible and cohesive at low temperatures, and which is so treated as to retain for almost an indefinite time an antiseptic or medicinal preparation incorporated with the bandage. A further object is to provide a substantially non-porous or substantially impermeate bandage of like characteristics. A further object is to produce a modified form of bandage which is substantially impermeate except for spaced or regular openings formed in the body of the elastic strip. Other specific objects and advantages will appear as the specification proceeds.

It has been known for many years that crude rubber strips could be heated to increase the elasticity thereof and to render them tenaciously cohesive when parts thereof are pressed together. Such strips are usually so treated as to retain a certain amount of moisture therein to give them the property of elasticity. The product, however, has been found unsatisfactory for cool or cold climates because of the tendency of the strips to become stiff, thereby rendering them unsuitable for use as bandages.

I have found that a bandage suitable for use in cold climates can be obtained by giving the strip or sheet of crude rubber a preliminary and brief treatment with heat which will give the product elasticity but not the property of tenacious cohesion, and then subsequently treating the strip with solvents which are suitable for developing, by partially depolymerizing the rubber, the quality of great cohesiveness in the product. A bandage formed in this manner remains pliable and soft, elastic and highly cohesive, at temperatures below zero.

The invention is illustrated, in its preferred embodiment, by the accompanying drawing, in which—

Fig. 1 is a diagrammatic view of the first step of my process in which the crude rubber strip is passed through a heated aqueous medicated solution, then between wringer rolls and then wound in a roll; Fig. 2, a diagrammatic view of the second part of the process in which the strip from the roll, which has been treated in the first step of the process, is passed between rollers to which solvents are supplied and then wound with paper in a finished roll, an optional step of the process consisting in the perforating of the strip by perforating the rolls; and Fig. 3, an

end view in elevation of the paper roll supported upon a standard. The tension strap is secured to the standard and provided with an adjustable clamp by which tension may be placed upon the spindle or shaft upon which the paper roll is mounted.

While the crude rubber may be in any suitable form, I prefer to use thin sheets or strips of creped rubber, known generally in commerce as "pale crêpe". The sheets or strips are preferably heated in water or a medicated aqueous solution, to a temperature of about 180 to 200° F., for a brief period of from ten to twenty seconds. I prefer to employ the heating step for thoroughly incorporating into the sheet or strip an antiseptic or medicinal preparation such as, for example, mercuric chloride or a mercuric salt. The antiseptic is dissolved in the heated water, and in the short period of the heat treatment, thoroughly impregnates the interstices of the crepe rubber.

The rubber from the bath may be passed through a wringer and dried and then, if desired, may be rolled upon itself without employing paper or other separating strips between the rubber layers. Because the character of the rubber has not been changed substantially with regard to the property of cohesion, there is no difficulty in handling the sheets or strips.

As the next step in the process, I prefer to draw the heat-treated strip from the roll, if the strip is rolled, and to pass it through rollers, the lower roller being partially immersed in a bath of solvents and also solvents being fed to the upper roller. As the strip passes between the rollers, the solvents are pressed evenly into the rubber. Excessive application of solvents is avoided by use of the rollers, and just a sufficient amount is applied as to soften or partially depolymerize the rubber and render it tenaciously cohesive. The solvents employed may be of any suitable type and proportions. As an illustration, the following is set forth as satisfactory:

	Per cent
Low test gasoline.....	75
Solvent naphtha.....	15
Refined mineral oil.....	2
Dibutyl phthalate.....	8

In place of dibutyl phthalate, any other suitable plasticizer may be employed for keeping the product permanently soft and pliable.

The treatment with the solvent described not only renders the product tenaciously cohesive when parts thereof are pressed together, but also

prepares the rubber sheets or strips for another step of the process which I desire to employ.

One objection to the crude rubber wrappings heretofore employed, is that they are full of irregular openings or pores which not only weaken the product, but tend to allow blood from the wound to flow directly through the rubber wrapping. To avoid this difficulty, I prefer to process the solvent-treated strips so as to close the pores of the strip and to obstruct the passage of air therethrough. I have found that if the rubber sheet or strip is pressed against an even surface shortly after the application of the solvents thereto, the softened rubber yields under the pressure to assume a form which is substantially imperforate. Any suitable means for applying the pressure may be employed. In order to prevent the layers of the crude rubber from sticking together after being treated with solvents, it is necessary to place a paper strip between the layers, as the rubber strip is formed into a roll. During the roll-forming process, I have found that sufficient pressure can be applied by placing tension upon the paper strip so as to draw it tightly against the rubber. The crepe rubber strip is thus enclosed between tightly drawn layers of paper, and the pressure exerted thereby, causes the soft rubber body to assume the substantially imperforate state described. The resulting product has much greater strength, with respect to thickness, than products heretofore developed because the large irregular openings which permeated the old product are avoided.

In some cases, it is desired to employ the rubber bandage for holding a fabric packing or pad against the wound. In such cases, it is often desired to have the bandage perforated to permit the circulation of air therethrough. In order to produce such a product, I prefer to form in my imperforate sheet or strip, a series of spaced and regular openings, by means well known to the art, such as the perforating rolls shown in Fig. 2. This product is superior to the old product in that the perforations are now at spaced intervals and are regular, thus making the entire strip of uniform strength and affording a uniform degree of extensibility.

The bandage not only is antiseptic on its exterior surfaces, by virtue of its treatment in a heated aqueous medicated solution, but also, by reason of this treatment prior to the sealing of many of the pores, the medicinal preparation extends through all of the recesses of the product and if, during the stretching of the bandage, a portion of the walls of the product should give way and reopen some of the pores, the exposed surfaces also have an antiseptic value. This is one of the reasons why I prefer to introduce the antiseptic at the heating step of the process. It will be understood, however, that the antiseptic might be applied, if desired, with the solvents or in other stages of the process.

While I have described certain temperatures and certain time periods of treatment as satisfactory, it will be understood that such tempera-

tures and time periods may be departed from in the practice of my invention. Also, it will be understood that the solvents and plasticizer given by way of example, may be replaced by other equivalent materials known in the art. Many obvious variations may be made in the process herein described while employing the principles of my invention.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible, in view of the prior art.

I claim:

1. A bandage comprising a strip of unvulcanized and partially depolymerized crude rubber having elastic extensibility and being tenaciously cohesive, said strip having a porous interior containing an antiseptic and having its outer surfaces closed to provide a substantially imperforate strip.

2. A bandage comprising a strip of unvulcanized and partially depolymerized crude rubber having great elastic extensibility and containing solvents rendering the strip tenaciously cohesive, said strip having a porous interior containing an antiseptic and having its outer surfaces closed to provide a substantially imperforate strip.

3. A bandage comprising a strip of unvulcanized and partially depolymerized crude rubber having elastic extensibility and containing solvents rendering the strip tenaciously cohesive, and containing also a plasticizer rendering it permanently flexible, said strip having a porous interior containing an antiseptic and having its outer surfaces closed to provide a substantially imperforate strip.

4. A bandage comprising a strip of unvulcanized and partially depolymerized crude rubber having great elastic extensibility and being tenaciously cohesive, said strip having a porous interior containing an antiseptic and having at least one outer surface closed to provide a substantially imperforate strip.

5. A bandage comprising a strip of unvulcanized and partially depolymerized crude rubber having elastic extensibility and containing solvents rendering the strip tenaciously cohesive, said strip having a porous interior impregnated throughout with an antiseptic and having the walls of the pores at their outer ends stuck together to provide closed outer surfaces for the strip.

6. A bandage comprising a strip of unvulcanized and partially depolymerized crude rubber having elastic extensibility and being tenaciously cohesive, said strip having a porous interior containing an antiseptic and having its outer surfaces closed, and said strip also having spaced perforations extending across a portion of said strip.

WILLIAM D. LLOYD.