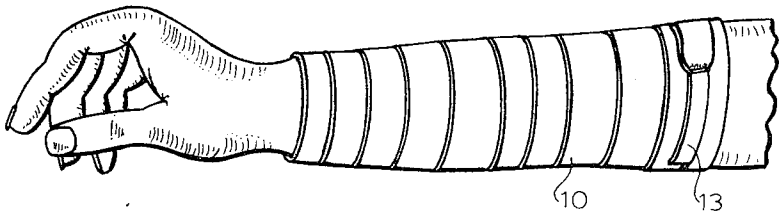
April 7, 1970 J. R. MOON 3,504,672

SURGICAL AND ANIMAL BANDAGING

Filed Jan. 19, 1968

FIG. 2



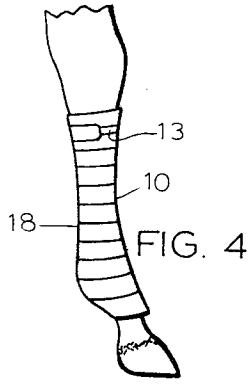


FIG. 4

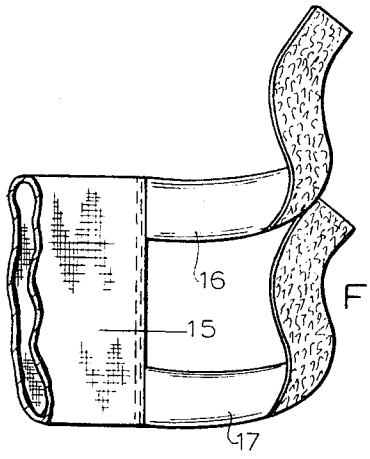


FIG. 3

FIG. 1

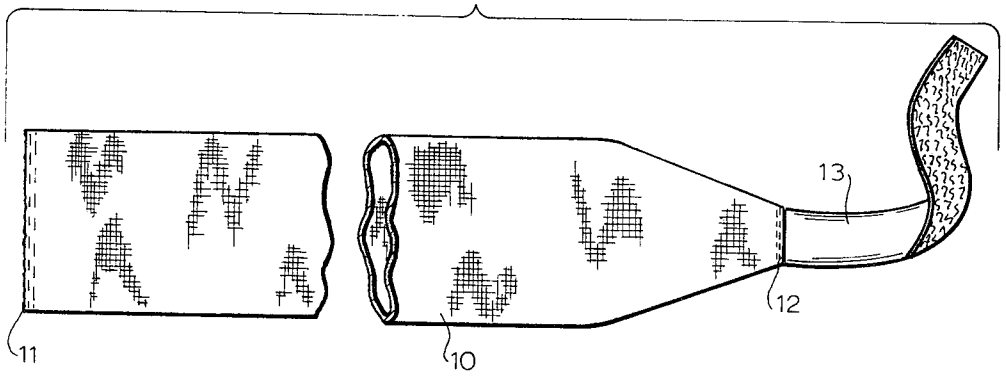
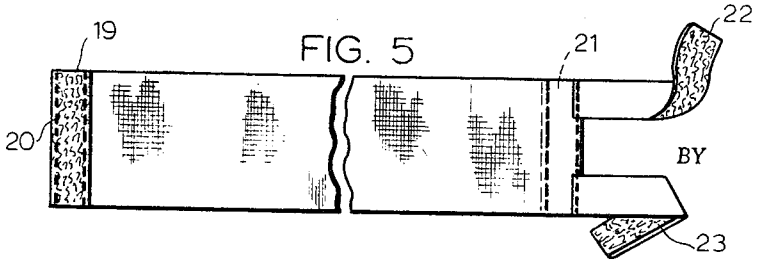


FIG. 5



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SURGICAL AND ANIMAL BANDAGING

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U.S. Cl. 128—169 6 Claims

ABSTRACT OF THE DISCLOSURE

A bandage suitable for animal and surgical application comprises a seamless tube knit of synthetic yarn and having at one end a Velcro hook strap, the tube when flat and wrapped as a bandage exhibits substantial stretch in all directions and a fuzzy surface adapted to engage and be securely held by the hooks of the Velcro strap.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to bandages and particularly to stretch fabrics employed for bandaging.

DESCRIPTION OF THE PRIOR ART

It has been the practice to use single thickness, cotton strap bandages exhibiting the character essentially of tightly woven, light weight cotton canvas. This type of bandage has normally required the use of some form of underpadding for the absorption of shock. Thus, it has been necessary first to apply the underpadding and then the bandage in both surgical and animal application. Where conventional bandage is wrapped around a changing form a considerable length of bandage is required to envelope the changing curvature. For example, in working conventional cotton bandage around an elbow, a substantial length of bandage is consumed in the process of fitting the bandage to the form of the elbow.

Prior bandages have exhibited very little stretch or elasticity and have been relatively heavy in weight. Various forms of fastening means have been employed to fasten the outer terminal end of the bandage to the body of the bandage previously wrapped. In one prior bandage, it has been the practice to sew the nap portion of a Velcro fastener to one end of the bandage and to sew the hook portion of the Velcro fastener to the other end of the bandage. After the bandage is wrapped, the portions of the bandage having the mating Velcro hook and nap portions are engaged to secure the bandage. The nature of the surface of the conventional cotton bandage is smooth and has no facility for holding the hooks of a Velcro fastener.

SUMMARY OF THE INVENTION

The invention provides a much improved bandage which eliminates the need for underpadding, provides inherent shock absorption, fits to changing forms, e.g., an elbow, with a minimum bandage requirement and exhibits substantial elasticity or stretch in all directions. The bandage of the invention is preferably made of a seamless, rib knit tube formed of synthetic yarn, preferably nylon. The terminal end of the bandage is secured by means of using the hook portion only of a Velcro fastener and embedding this in the surface of the bandage. According to the invention it has been discovered that a nylon seamless knit tube provides a fuzzy surface and that the nap portion of the standard Velcro fastener is not needed and can be eliminated. That is, the hook portion of the Velcro fastener can be embedded directly into the surface of the bandage. In contrast to the prior art the terminal end of the bandage can be fastened to any portion of the bandage simply by embedding the

Velcro hook portion into the bandage surface whereas prior art bandages have required that the terminal end of the bandage having, say, the hook portion of the Velcro fastener be positioned next to that part of the bandage having the nap portion of the Velcro fastener. Other embodiments utilize a plurality of Velcro hooks portions for securing the starting end and enabling various lengths of bandage to be joined.

An object is to provide an improved fabric bandage which can be made with readily available materials and equipment.

Another object is to provide a lightweight stretch bandage which can be easily joined to other similar bandages and which eliminates the need for underpadding.

A further object is to provide a bandage exhibiting positive support with a minimum use of bandaging, minimum restriction of movement and minimum chafing when applied over joints or other moving portions of an animal or human body.

The foregoing and other objects will appear from the drawings and description to follow.

DESCRIPTION OF THE DRAWING

FIGURE 1 is a fragmentary side view of a seamless tubular knit fabric having a Velcro hook strap attached at the terminal end.

FIGURE 2 is a pictorial view showing the bandage in position on an arm.

FIGURE 3 is a fragmentary side view of a fabric embodying two Velcro hook fasteners.

FIGURE 4 is a pictorial view showing the bandage in position on a horse's leg.

FIGURE 5 is a fragmentary side view of an alternate embodiment of the bandage.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the drawings (FIGURES 1, 2 and 4) there is represented a seamless, rib knit, tube having a sewn end **11** and a terminal end **12** to which is sewn a Velcro hook fastener strap **13**. Here it should be understood that while the ordinary Velcro fastener employs a hook portion and a separate nap portion only the hook portion is required for the present invention. Tube **10** is preferably formed with a stitch formation and utilizing a type of yarn selected such that the Velcro hook fastener **13** tends to naturally engage the surface of the fabric as securely as would be the case were the strap **13** engaging the nap portion of a conventional Velcro fastener. In one embodiment, tube **10** is knit on a dial and cylinder knitting machine and is formed with a multifilament, stretch ply all nylon yarn sold by the Madison Throwing Company of Madison, N.C. and identified as 2/100/34 representing two ends, 100 denier and 34 filaments. This particular form of ply nylon when formed into a conventional rib knit tube exhibits substantially 100% longitudinal stretch and 300% lateral stretch. When heat processed, the fabric exhibits infinite way stretch. The infinite way stretch enables the bandage to follow the exact contour of the base upon which it is wrapped and the complete elasticity provides a soft responsive support that offers virtually no impediment to movement. The fabric is relatively lightweight, e.g., approximately one-half that of conventional bandage. Various lengths and widths may be employed. A rib knit all nylon seamless tube which measures when flat and relaxed 3 inches in width and 3 to 6 feet in length is generally suited for most bandaging requirements. Such stretch characteristic and lightweight when combined with the characteristic of having a Velcro hook engaging surface has been discovered to be especially suited to use as bandaging. That is the surface has been found to be fuzzy and ideally suited to engaging Velcro

hooks. While rib knit tubes of this same structure which have been knit and then heat tumbled at about 165° F. for fifteen minutes to give the desired stretch characteristic are old in the art for apparel applications such as head gear bands, no one, so far as is known, has ever recognized the utility of this type fabric for bandaging and particularly when employed with a Velcro hook fastener strap.

A further advantage of the invention is illustrated in FIGURE 2 where the tube **10** is shown wrapped around an arm and exhibiting perfect conformation to the member to which applied. It will be noted in FIGURE 2 that the strap **13** which is secured to the terminal end **12** is embedded in the surface of the bandage remote from the starting end **11**. Thus, the terminal portion of the bandage does not have to be wrapped back on itself as in the case of prior art bandages where the terminal end normally bears the nap portion of a Velcro fastener.

In FIGURE 3 it is recognized that the invention adapts itself equally well to a wide or girdle type bandaging **15** and which may require two or more Velcro hook fasteners **16, 17** but which nevertheless, do not require, according to the invention, any Velcro nap portions as would be the case according to prior art practices.

Further advantages previously mentioned can be recognized in that it will be noted that no underpadding is required and further the nature of the bandage of the invention requires a minimum amount of bandage when working around a changing form such as at the animal leg joint indicated at **18** in FIGURE 4.

Referring to FIGURE 5, there is illustrated an alternate form for the bandage of this invention. This alternate bandage utilizes a Velcro hook strip **19** which extends crosswise the starting end **11** and acts as a positive lock or bond in the first lap of the wrapping. This bond negates any possibility of slippage or creeeping at this critical point and holds the bandage in place for the continued wrapping. Also, the stitching **20** which secures the Velcro hook strip **19** to the starting end acts as a closing stitch for the starting end and prevents ravelling and also eliminates the need for additional stitching at the starting end. Velcro hook strip **19** also makes it possible for an individual to easily apply a bandage to himself.

The terminal end in this alternate embodiment is also provided with a crosswise Velcro hook strip **21**, the strip **21** being on the side opposite that of the strip **19** on the starting end. Further, a pair of Velcro hook strips **22, 23** are secured on the opposite side from the crosswise strip **21** on the terminal end. Strips **19, 21, 22** and **23** together provide a securely bound bandage.

This alternate arrangement for the terminal end also makes possible the linking of any number of such bandages to provide a bandage of any desired length such as for abdominal or chest use.

It may also be noted that in both embodiments the characteristic of stretch in all directions combined with the tube type rib fabric creates a unique elasticity which, in effect, flows with the movement of the body on which it is wrapped, thus reducing the probability of chafing.

In addition to its primary use as bandaging, the bandage of the invention has also been discovered to be useful as a soft but effective tourniquet by simply repeating wraps under tension, and over the same circumference. It has also been found that a seamlesss rib knit tubular fabric, typical rib knitting being described in volume I, "Principles of Knitting," chapter III by William E. Shinn, when made of stretch nylon will not shrink or lose its elasticity because of washing, is easily washed and dried, is exceptionally long wearing, can be sterilized for repeated use and presents a permanent fuzzy surface receptive to Velcro hooks all of which are desirable characteristics for the bandaging of the invention.

Having described the invention what I claim is:

1. A bandage comprising a seamless knit tube having at one end a bandaging starting end closed by a sewn seams across such starting end and at the opposite end a bandaging terminal end, said terminal end having a first Velcro hook fastener means secured thereto, a stretchable stitch formation and multi-filament stretch ply synthetic yarns being utilized to form said tube and being selected such that said tube is characterized by substantially 100% longitudinal stretch, 300% lateral stretch and a substantially fuzzy outer surface adapted to receive and securely engage the hooks of said Velcro fastener means.

2. A bandage as claimed in claim **1** wherein said tube is formed entirely of stretch ply nylon and constitutes a rib knit fabric.

3. A bandage as claimed in claim **1** wherein said tube includes at least two of said Velcro hook fastener means each being adapted to engage the outer surface of said tube.

4. A bandage as claimed in claim **1** wherein said tube starting end has a second crosswise extending Velcro hook fastener means secured thereto by means of said sewn seam.

5. A bandage as claimed in claim **4** wherein said terminal end has a third crosswise extending Velcro hook means secured thereto on the side opposite said second crosswise hook means.

6. A bandage as claimed in claim **5** wherein said terminal end has an additional pair of Velcro hook means extending lengthwise and secured to said terminal end on the side opposite said third crosswise strip.

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