June 14, 1966 J. A. SMITHERS 3,255,749

BANDAGE WRAP

Filed June 27, 1963 2 Sheets-Sheet 1

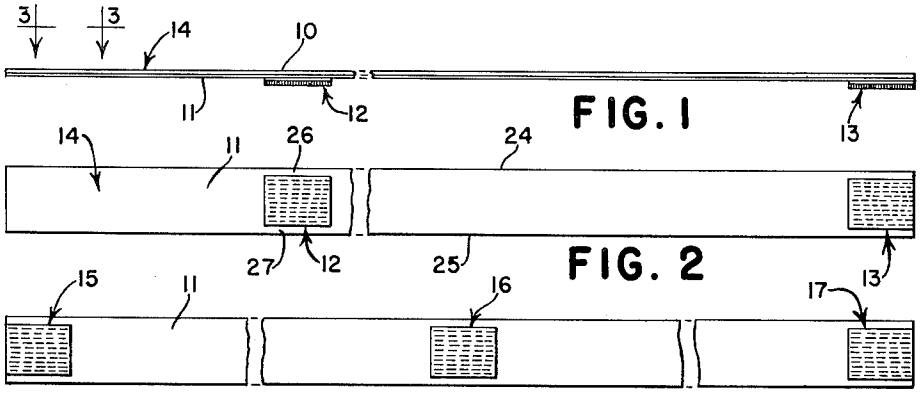


FIG. 1

FIG. 2

FIG. 8

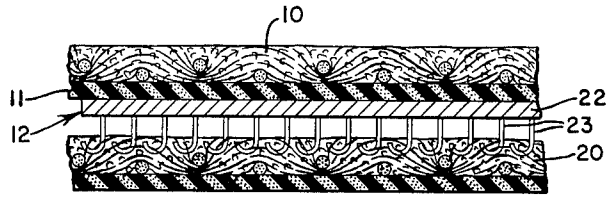


FIG. 4

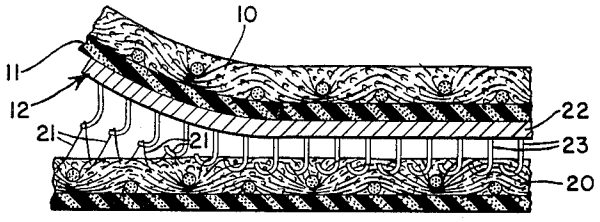


FIG. 5

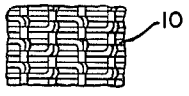


FIG. 3

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BANDAGE WRAP

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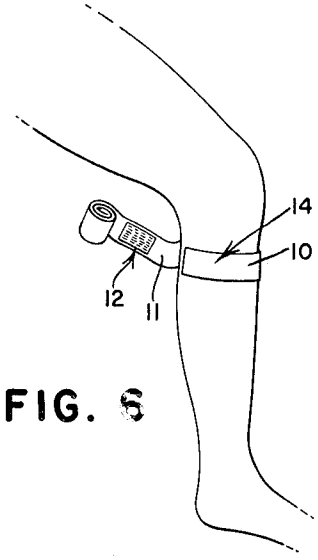


FIG. 6

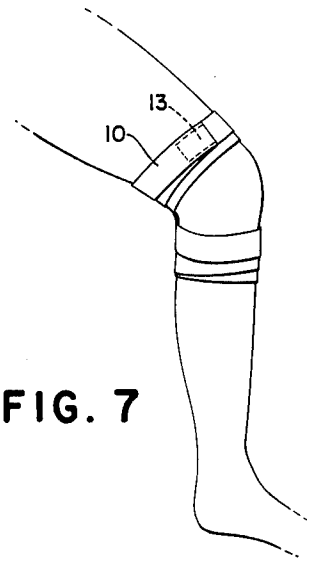


FIG. 7

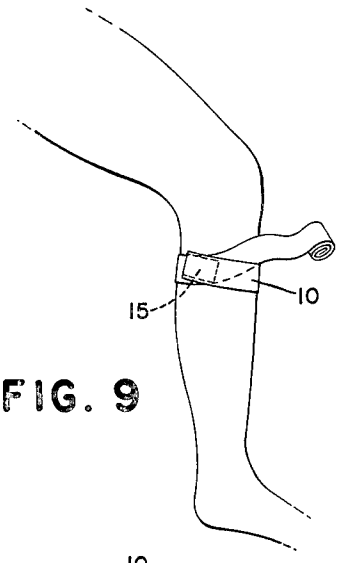


FIG. 9

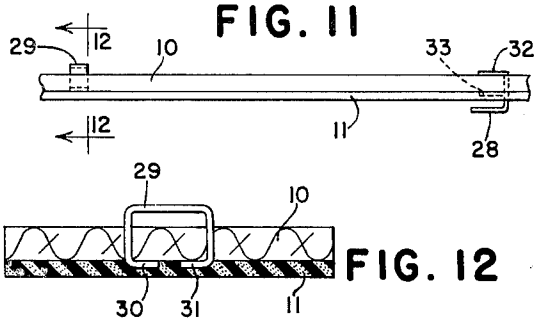


FIG. 11

FIG. 12



FIG. 10

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BANDAGE WRAP

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Filed June 27, 1963, Ser. No. 291,129
18 Claims. (Cl. 128—169)

This invention relates to a bandage or wrap and more particularly to a wrap or bandage that may be used a multitude of times for surgical and medical purposes. Still more particularly, this invention relates to a bandage of the above type that has unique means of retaining itself on the body, the latter being unaffected by laundering or cleaning or by the natural exudations of the body.

The main object of the present invention is to provide a bandage having a basic fabric backing fabricated to be resiliently yieldable both lengthwise and crosswise so that the fabric may closely conform to the various contours of the body part to be wrapped. Formed on one face of the fabric is a thin layer of latex material which will normally lie adjacent the body part.

It is a further object of the invention to provide on the wrap adjacent opposite ends thereof a pair of short sections or patches on the latex side of the wrap, the patches being composed of adhering material in the form of a multitude of small or minute hooks projecting outwardly therefrom. The hooks have an adhering characteristic with the fibers of the fabric backing and consequently by merely implanting the hooks into the fabric there exists a relatively strong adherence thereto.

Specifically it is an object of the invention to provide a backing fabric having fibers of generally long length, high tensile strength, and having a quality of resistance to relatively high temperatures sufficiently to permit the wrap to be laundered or cleansed at conventional temperatures. The fabric is woven so as to create resiliency in the fabric. Further, the fibers have a high elastic recovery characteristic. By crimping the fabric, the fibers become small loops capable of extending over the hooks of the adhering sections when the latter are implanted in the fabric. The preferred fabric is that utilizing synthetic organic fibers of the polyamide or nylon field. Further, this fabric is desirable because of its capability of bonding directly to the latex layer and the ability to withstand the heat required in vulcanizing or bonding the latex thereto.

A further object of the invention is to provide a method of applying the above type of bandage to a body part consisting of making an initial or complete turn of the wrap around the body part while the wrap is in an elongated stretched condition and while in a stretched condition implanting the patch or section carrying the hook elements at the initial end into the fabric so that the initial turn is anchored to the body portion. It is further proposed to continue wrapping the body part while stretching the wrap until the wrap is exhausted and to implant the patch or section of hook elements at that end into the fabric. By so applying the wrap the initial turn about the body part is anchored and the terminal end of the wrap is anchored and consequently the wrap is generally fixed against slippage and eventual looseness.

Other objects and advantages of the invention will become apparent to those skilled in the art as the nature of the invention is better understood from the following description and as shown in the accompanying drawings.

FIGURE 1 is an edge view of the bandage.

FIGURE 2 is an underside view of the wrap as shown in FIGURE 1.

FIGURE 3 is an enlarged view, generally schematic, of the fabric as shown substantially along the line 3—3 of FIGURE 1.

FIGURE 4 is an enlarged sectional view showing the patch sections in contact with the fabric overside.

FIGURE 5 is a view similar to FIGURE 4 showing removal of the patch from the fabric.

FIGURE 6 is a view showing a body part with the wrap being applied in its initial stages.

FIGURE 7 is a view similar to FIGURE 6 showing the wrap in its final stages of application.

FIGURE 8 is a view similar to FIGURE 2 showing a modified form of the invention.

FIGURE 9 is a view similar to FIGURE 6 showing use of the modified form of wrap shown in FIGURE 8.

FIGURE 10 is a view somewhat similar to FIGURE 2 showing still a further modification of the invention and with the wrap twisted to show opposite sides thereof.

FIGURE 11 is an enlarged edge view as seen along the line 11—11 of FIGURE 10.

FIGURE 12 is an enlarged sectional view taken along the line 12—12 of FIGURE 11.

Referring now to the drawings, the individual wraps are composed of an elongated fabric layer or backing **10**, a latex layer **11** on the underside of the fabric **10**, and a pair of patches or sections **12**, **13** adjacent opposite ends of the wrap. In the form shown in FIGURES 1, 2, 6 and 7 the initial end of the wrap is defined as that end portion **14** between the patch **12** and the actual end of the wrap. By actual length, the portion **14** is substantially equal to that required to completely circumscribe the body part to be wrapped one complete turn. The purpose of placing the section or patch **12** in this position is to permit the initial end **14** of the wrap or bandage to circumscribe the body part one turn and to then apply the adhering patch **12** to the face or surface of the fabric and to cause that part of the wrap to be anchored to the body part without actual adhesion to the body part. As will later become apparent, the construction of the wrap itself will aid in the anchoring of the initial section or portion to the body part.

In the form of the invention shown in FIGURES 8 and 9, patches **15**, **17** are provided on the extreme opposite ends of the wrap or bandage. The method of anchoring the initial wrap around the body portion will be described following further description of the product.

The fabric itself is composed in its preferred form of synthetic organic fibers generally of the polyamide or nylon class with each fiber relatively long. The fibers are best indicated at **20** in FIGURES 4 and 5.

The organic fibers are woven into a crimped fabrication resiliently yieldable in all directions, the type of weave, for illustrative purposes, is best shown diagrammatically in FIGURE 3. Generally, other weaves and fabric patterns are usable and would operate in similar manner. However, in the crimped type weave, the individual fibers are generally in relaxed condition and provide short exposed lengths that eventually become the loops **21** shown in FIGURE 6, that accommodate or complement the adhering characteristics of the patches or sections **12**, **13** and **15**, **17**. Consequently, the fabric backing **10** serves not only as a resiliently yieldable basic support for the wrap, but also as a part of the adhering or locking portion of the wrap.

The latex layer **11** is a non-sulphur white rubber latex material soft to the touch. Having no sulphur, it will not turn yellow with use and consequently will retain its white or antiseptic appearance. It is bonded directly to the nylon or polyamide fabric **10** when the latex is being cured or vulcanized. The latex layer has greater stretching ability than the fabric backing and consequently may yield with the fabric without splitting or tearing from the fabric. The latex is generally porous and consequently perspiration and other fluid matter will penetrate into the latex and the fabric. However, other than the porosity of the latex, the latex itself and fabric generally will retain little moisture.

The patch sections **12**, **13** and **15**, **17** are generally identical in characteristics. They are composed of a base layer **22** of a nylon material. Extending from the surface of the base layer **22** are a multitude of short minute nylon adhering elements **23** with outer hook ends. The patches **12**, **13**, and **15-17** are male Velcro patches. The elements **23** may also be made of nylon and may yield, bend, or distort upon sufficient pressures exerted thereon. The hook elements cover the area of the patch. However, the patch of hook elements is recessed from opposite edges **24**, **25** of the wrap and exposes narrow strips, as shown at **26**, **27**, of the latex **11** on opposiite edges of the respective patch.

The method of applying the wrap to the body part, here shown as a knee, is to begin with the anchor or initial end **14** and to extend that portion completely around the body part so that it is slightly stretched lengthwise. The first step or procedure is best shown in FIGURE 6. While the portion is in a stretched condition, the patch **12** is applied on an overside portion of the fabric **10** and the hook elements implanted into the fabric fibers as shown in FIGURE 4. This action will anchor the initial end **14** on the leg. Wrapping may then continue, using the initial or anchor end **14** as a base to pull against, by crossing above and below the knee at intervals until the entire wrap is used, as shown in FIGURE 7, at which time the end patch **13** is pressed into the fabric and the hook elements implanted into the fibers so that the end of the wrap is held in a fixed relation to the remainder of the wrap.

There are several features believed to be important relative to the successful operation of the wrap. Of particular importance is the generally long length of the fibers in the fabric portion **10** of the wrap. The fibers must be of such length that they will operate as complementary to the hook elements **23**. The weave of the fabric must be such that individual elements are sufficiently relaxed that the hook elements **23** may penetrate beneath the fibers for connection thereto. It is believed necessary that the elements of the fabric must be at least three-fourth inch long, to obtain the necessary anchoring or adhering characteristic relative to the hook elements. They could not be less than one-half inch.

The latex surface not only has a soothing effect on the skin, but also will tend to cling to the surface of the skin in the sense that there will be a frictional engagement therebetween to prevent slipping of the wrap. This, plus the condition that the fabric **10** and the latex **11** will yield in all directions so as to follow the minute contours of the body portion to be wrapped, will cause the anchor or initial end **14** of the wrap to be firmly established on the body part and serve as an anchor for pulling against when stretching the remainder of the wrap. This is extremely important since with no slipping occurring, the human hairs on the body part need not be removed or shaved to prevent discomfort. In the same line is the basic feature that there is a complete mechanical adhering between the patches and the wrap. Consequently, the necessity of using tape or adhesive and tacky compounds is not required. As a result, the discomfort of having the body in contact with the compound is eliminated.

The fact that the patch and the hook elements are retained in the center of the patch with edge portions of the latex exposed on opposite sides is also for comfort of the wearer. By so constructing the patch the hook element **23** or its backing layer **22** will not contact the skin of the individual. The patch is of the nature that such contact would create discomfort.

In removing the wrap it is necessary only to pull off the end patches **12**, **13** substantially as shown in FIGURE 5. The hook elements will bend out and the fiber loops **21** will yield or pull out of the fabric until the hooks are detached from the fabric.

In the modification shown in FIGURES 8 and 9 the anchor or initial end of the wrap is applied in the manner

shown in FIGURE 9 by making a complete loop around the part and impressing end patch **15** onto the fabric side of the wrap so as to anchor the loop or initial turn to the part. The remainder of the wrap is applied as previously described.

The purpose of the center patch **16** is to provide a secondary anchor within the wrapping of a body part. For example in wrapping the chest of the body, there would be relatively long wrap required. It might be desirable to provide only a few turns based on the initial or anchor wrap. By providing intermediate patches, such as at **16**, the additional anchors or base wraps may be established. Such might be provided every three or four turns around a large body part.

If it is desired to apply more than one wrap around a body part such may readily be done with this type of wrap merely by applying the second wrap over the first. If it is desired to anchor or attach it to the first wrap, it is necessary only to apply the initial patch **12** or **15** to the fabric surface of the first wrap and continue to wrap the body part.

Of great advantage to the present wrap is the complete simplicity in its use. Any individual may apply it to his own body parts. Of particular value is its use in athletics, where it is desired to apply it to the ankles, knees, and wrists of the individual. So simple is the application of the wrap that individuals use it as an injury preventive device. For example, football players may use it for purposes of preventing "football knee" or a condition in which the lateral ligaments in the knee are torn or damaged. By providing in a manner shown in FIGURE 8 a wrap for the knee, the resiliency of the fabric and latex will resist the lateral movement of the lower leg portion to a side of and relative to the upper leg portion. A trainer is not required to apply the present wrap although he would no doubt instruct in its initial use. A player will adapt it for his own comfort and use. If for some reason it is too loose or too tight, the simplicity of the wrap is such that it may be removed and replaced in a matter of seconds.

After use of the wrap it may be laundered and reused. The latex, fabric and patch is such that the temperature of the laundry water or other cleaning fluid will not damage the wrap. The various parts of the wrap are also capable of withstanding most medicines and antiseptics. Consequently, the wraps may be reused by various individuals for medical purposes of wrapping injuries.

In the form of the invention shown in FIGURES 10, 11 and 12 a more mechanical type of connection is provided for attaching the wrap to the body part. A series of metal loops or female joints **29** are applied to the end of the wrap. The loops **29** project above the fabric **10** but have a pair of anchoring legs **30**, **31** on the underside of the fabric and generally between the latex layer **11** and fabric **10**. Positioned substantially a length of the circumscribed body part away from the loops **29** is a male element **28** capable of insertion into one of the loops **29**. The male portion **28** is secured to the fabric **10** by a pair of lateral legs **32**, **33** positioned on opposite sides of the fabric **10** and operating to clamp the male section **28** to the fabric.

At the opposite end of the wrap are a series of longitudinally spaced female locking elements **34** spaced from the end substantially a full body wrap length away from the end and a male locking element **35** closely adjacent the end. The female elements **34** project from the face of the fabric layer **10** and the male element **35** projects from the face of the latex layer **11**.

In applying the wrap shown in FIGURES 10–12, the initial end of the wrap is formed around the body part in a stretched condition and the hook or locking element **28** is inserted in a suitable loop **29** so as to maintain the wrap comfortably in a stretched condition. The wrap is continued to be wrapped and after completion the hook

element 35 is inserted in a suitable loop 34 so as to maintain the wrap on the body part.

While only three forms of the invention have been shown, it should be recognized that other forms and variations will occur to those skilled in the art without departing from the basic concept of the invention. Therefore, it should be understood that detailed and concise description set forth relative to the preferred forms was for the purpose of clearly and concisely illustrating the principles of the invention and was not intended to limit or narrow the invention beyond the broad concept set forth in the appended claims.

What is claimed is:

1. An elongated relatively narrow bandage wrap for application to a body part composed at least in part of a layer of fabric composed of crimped fibers and fabricated to resiliently yield in all directions whereby it may conform to the contours of the body part, the wrap having dry non-tacky over- and under-surfaces; a short section of non-tacky adhering material on the under-side of the wrap adjacent to but spaced from one end of the wrap and defining with that end an anchor end portion of the wrap, said section having a multitude of hook elements adapted to adhere to the fibers of the fabric and being spaced from the aforesaid end whereby the anchor end portion may circumscribe the body part in a stretched condition and be retained in a stretched condition by placing the section in contact with the fabric surface for purposes of anchoring said end portion to the body part.

2. A bandage wrap for application to a body part composed of an elongated relatively narrow band of material composed on one side of a layer of pervious latex and on the other side of a layer of fabric composed of comparatively long crimped nylon fibers fabricated to be resiliently yieldable in all directions; a short patch fixed to the latex side of the wrap at a distance from one end of the wrap substantially equal to the circumferential dimension of the body part to be wrapped and defining with that end an anchor end of the wrap, said patch having a multitude of minute hook connectors adapted to connect to the crimped fibers of the fabric whereby the anchor end may circumscribe the body part in a stretched condition and be retained in a stretched condition by placing the patch in contact with the fabric; and a second relatively short patch fixed to the other end of the wrap on the latex side thereof whereby that end may be anchored to the body part by engagement of the latter patch with a portion of the fabric side of the wrap.

3. A bandage wrap for application to a body part composed of an elongated relatively narrow band of material resiliently yieldable lengthwise composed of fabric having comparatively long crimped fibers; a short patch fixed to the underside of the wrap at a distance from one end of the wrap at least the circumferential dimension of the body part to be wrapped and defining with that end an anchor end of the wrap, said patch having a multitude of minute hook connectors adapted to connect to the crimped fibers of the fabric whereby the anchor end may circumscribe the body part in a stretched condition and be retained in a stretched condition by placing the patch in contact with the fabric; and a second relatively short patch fixed to the other end of the wrap on the underside thereof whereby that end may be anchored to the body part by engagement of the latter patch with a portion of the overside of the wrap.

4. A bandage wrap for application to a body part composed of an elongated relatively narrow band of material resiliently yieldable lengthwise composed of fabric having comparatively long crimped fibers; a short patch fixed to the underside of the wrap at a distance from one end of the wrap at least the circumferential dimension of the body part to be wrapped and defining with that end an anchor end of the wrap, said patch having a multitude of minute hook connectors adapted to connect to the crimped fibers of the fabric whereby the anchor end may circumscribe the body part in a stretched condition and be retained in a stretched condition by placing the patch in contact with the fabric; and a connecting means at the other end of the wrap whereby that end may be anchored to the body part by connection to a portion of the overside of the wrap.

5. An elongated relatively narrow bandage wrap for application to a body part composed of a thin layer of latex and a layer of fabric fabricated to be resiliently yieldable at least lengthwise, the fabric and latex having dry non-tacky surfaces on opposite sides of the wrap; a first non-tacky connector on the latex side of the wrap at a distance from one end of the wrap to at least the circumferential dimension of the body part to be wrapped; first connecting means complementary to and adapted to receive and connect to the connector, the connector means being at the aforesaid end of wrap on the fabric side thereof whereby the end portion of the wrap between the end and connector may circumscribe the body part in a stretched condition and be retained on the body part in a stretched condition by connecting the connector with its complementary connecting means to thereby operate to anchor that end portion of the wrap to the body part; a second connector on the other end of the wrap on one side thereof; second connecting means on the opposite side thereof complementary to and adapted to receive and connect to the second connector whereby the opposite end may be anchored to the body part by connection between the second connector and second connecting means.

6. The invention defined in claim 5 in which the connectors are in the form of patches having minute hook elements projecting therefrom and the connecting means are portions on the fabric side having loop elements adapted to tenaciously engage the hook elements upon contact therewith.

7. A bandage wrap adapted to be applied around a body part comprising: an elongated length of fabric defining one side of the wrap composed of a material having relatively long crimped fibers and fabricated to resiliently yield both lengthwise and crosswise in respect to the general dimensions of the wrap and whereby the fibers will be exposed; a layer of latex fixed to a side of the fabric and defining the other side of the wrap; a pair of relatively short patches fixed to the other side of the wrap adjacent opposite ends thereof with each patch having a multitude of hook elements extending outwardly from its surface and capable of attachment to the crimped fibers of the fabric upon said hook elements being implanted into the surface of the fabric.

8. A bandage adapted to be applied around a body part comprising: an elongated length of fabric wrap having relatively long crimped fibers and having opposite longitudinal edges adapted to extend around the body part a multitude of turns; a pair of patches fixed to the wrap adjacent opposite ends thereof with each patch having a multitude of minute hook elements extending outwardly from its surface, said hook elements being capable of implantation into the surface of the fabric for attachment to the crimped fibers.

9. A bandage adapted to be applied around a body part comprising: an elongated length of fabric wrap having relatively long crimped fibers and having opposite longitudinal edges adapted to extend around the body part a multitude of turns; a pair of short patches fixed to the wrap adjacent opposite ends thereof and recessed inwardly from the opposite edges of the wrap with each patch having a multitude of minute hook elements extending outwardly from its surface, said hook elements being capable of implantation into the surface of the fabric for attachment to the crimped fibers.

10. The invention defined in claim 9 in which the fibers are synthetic organic fibers of not shorter than one-half inch.

11. The invention defined in claim 5 in which the complementary connector and connecting means are in the form of mating male and female mechanical connecting elements at the ends and at distances at least a full length of the body part away from the respective ends and capable of insertion in one another upon overlaps whereby complete turns of wrap about the body part may be independently anchored to the body part at the initial and terminal rounds of the wrap about the body part.

12. The invention defined in claim 11 further characterized by part of the male and female connecting elements being spaced along the wrap whereby the lengths of the respective anchor turns at the initial and terminal ends may be adjusted to conform to the size of the body part.

13. The invention defined in claim 5 in which the complementary connector and connecting means are in part a relatively short patch on the underside of the wrap with each patch having a multitude of minute hook elements projecting therefrom and in part of a surface on the overside of the wrap at said distances away from the aforesaid part capable of tenaciously gripping the hook elements upon surface contact with said patches.

14. An elongated relatively narrow bandage wrap for application to a body part composed in part on one side of a thin layer of latex and in part on the opposite side of a layer of fabric fabricated to be resiliently yieldable at least lengthwise, the fabric and latex having dry non-tacky surfaces on opposite sides of the wrap; a first male non-tacky connector on the latex side of the wrap at a distance from one end of the wrap at least the circumferential dimension of the body part to be wrapped; first female connecting means complementary to and adapted to receive and connect to the connector, the connecting means being at the aforesaid end of the wrap on the fabric side thereof whereby the end portion of the wrap between the end and connector may circumscribe the body part in a stretched condition and be retained on the body part in a stretched condition by connecting the connector with its complementary connecting means to thereby operate to anchor that end portion of the wrap to the body part; a second male connector on the other end of the wrap on one side thereof; and second female connecting means on the opposite side thereof complementary to and adapted to receive and connect to the second connector whereby the opposite end may be anchored to the body part by connection between the second connector and second connecting means.

15. In a fabric bandage wrap adapted to extend around a body part and having an overside and underside and composed of relative long crimped fibers, the improvement of a patch fixed to a side of the wrap with a multitude of minute hook elements extending outwardly from the side, said hook elements being capable upon the patch being in an overlapped relation to the opposite side of implantation into the opposite side of the wrap for attachment to the crimped fibers and for holding the sides together.

16. The invention defined in claim 15 in which the patch of hook elements is on the underside of the fabric wrap at least one full turn of the body part away from the end of the wrap.

17. The invention defined in claim 16 further characterized by a second patch of hook elements being on the opposite end of the fabric wrap and on the underside thereof.

18. The invention defined in claim 17 further characterized by the underside of the wrap having a latex surface.

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