

[54] **BANDAGE CONSTRUCTION**

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[58] Field of Search..... 128/335, 334 R, 303, 156, 128/21; 27/21; 24/203, 204, 201 C, 205 R, 205 G, 208 A

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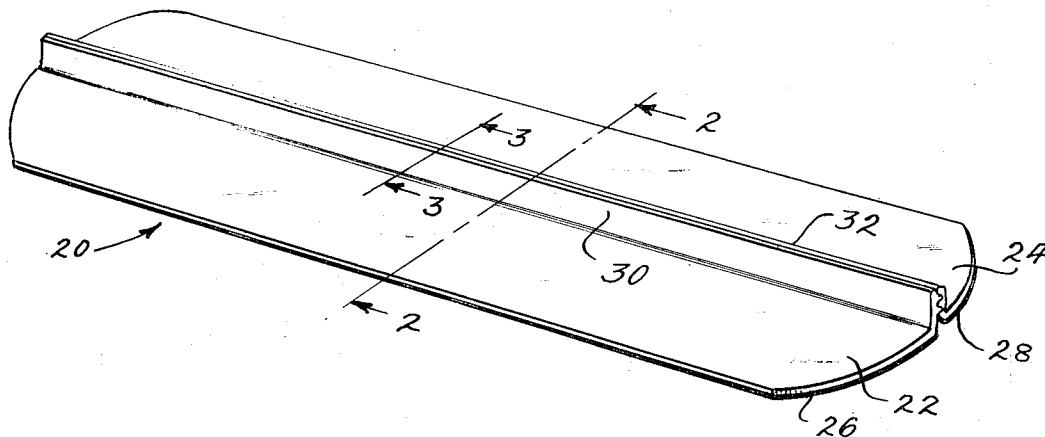
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[57] **ABSTRACT**

A bandage construction incorporating means for drawing flesh along two or more sides of a wound together and holding it so drawn during healing so that the formation of scar tissue is substantially minimized or eliminated. To this end, the present bandage construction includes two or more portions, which are adhesively or otherwise attached to the skin adjacent to the edges of the laceration, cut, incision, or the like and have cooperating engageable means to bring and hold the wounded flesh together.

19 Claims, 15 Drawing Figures



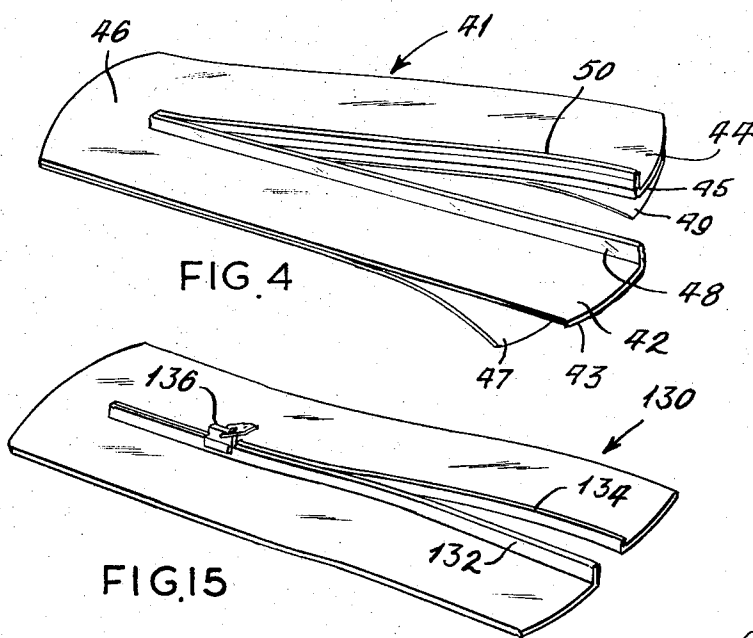
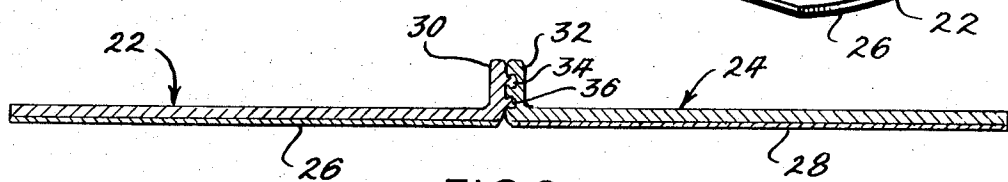
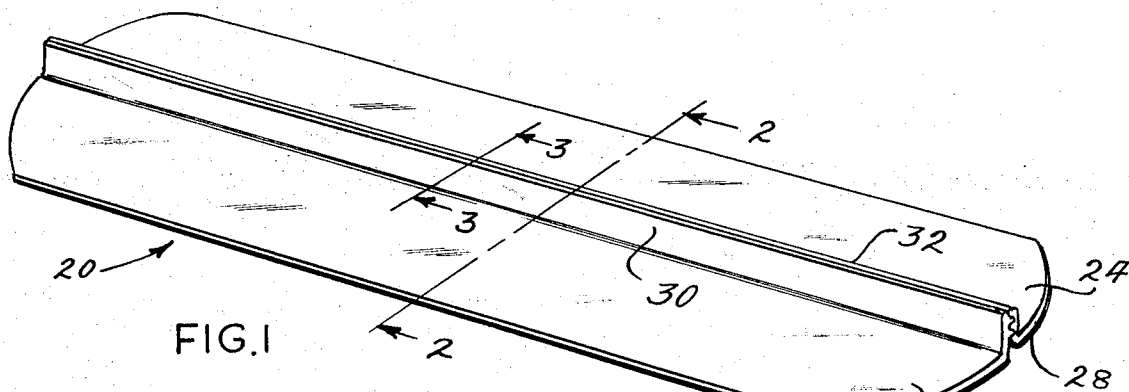
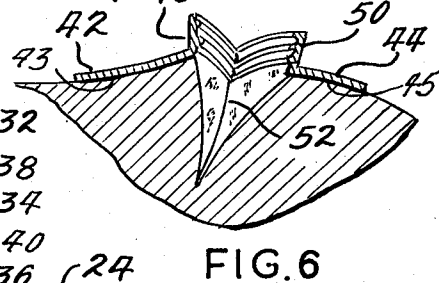
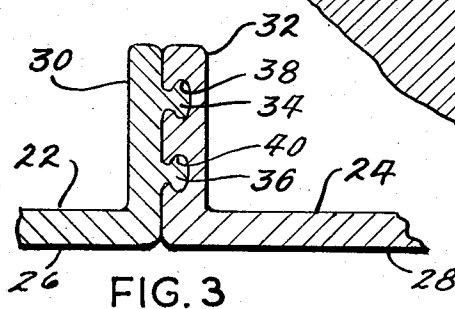
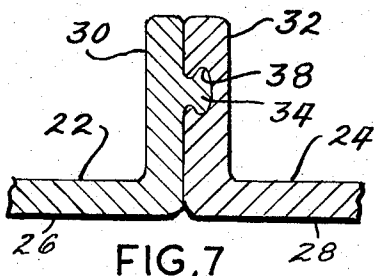
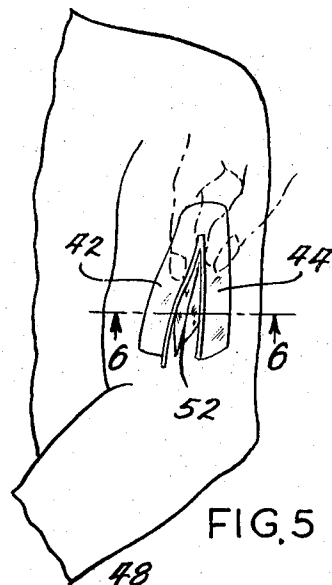
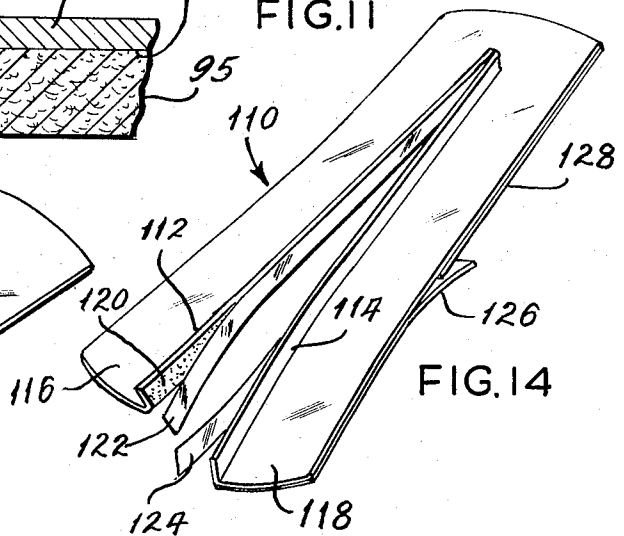
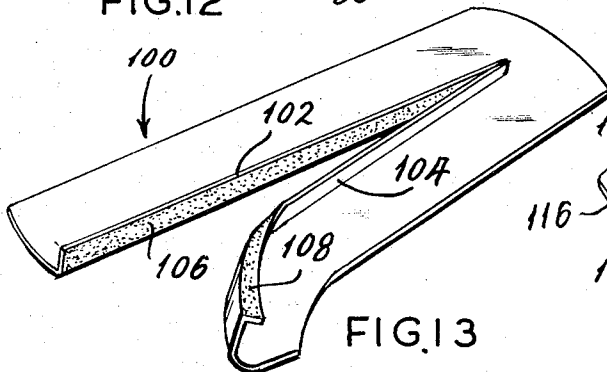
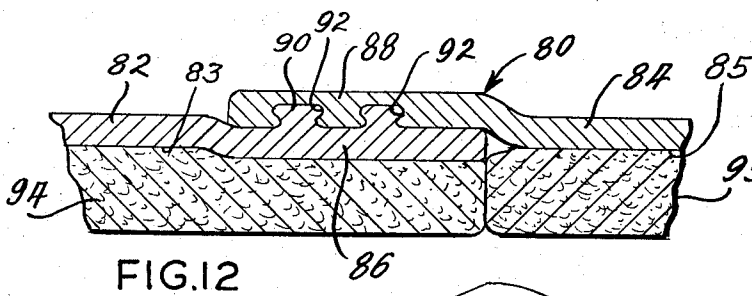
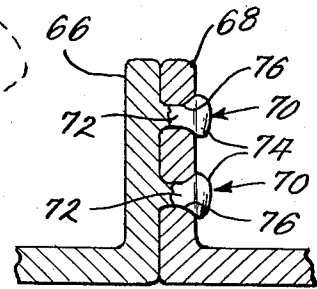
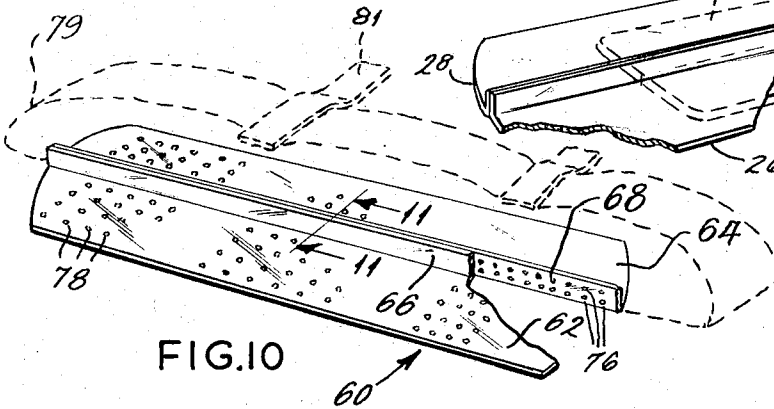
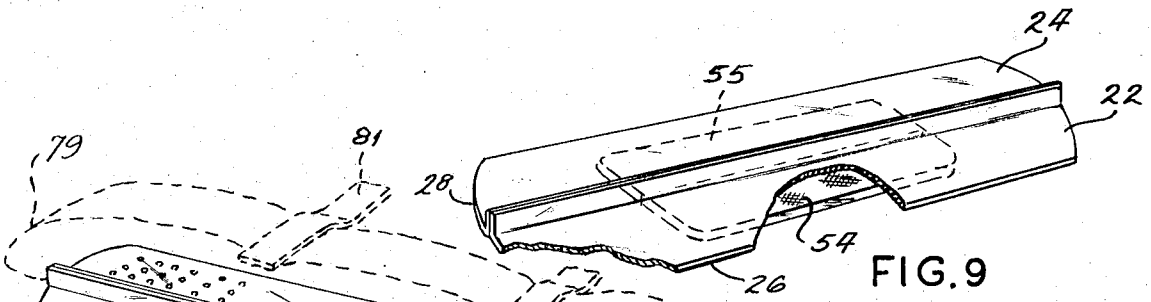
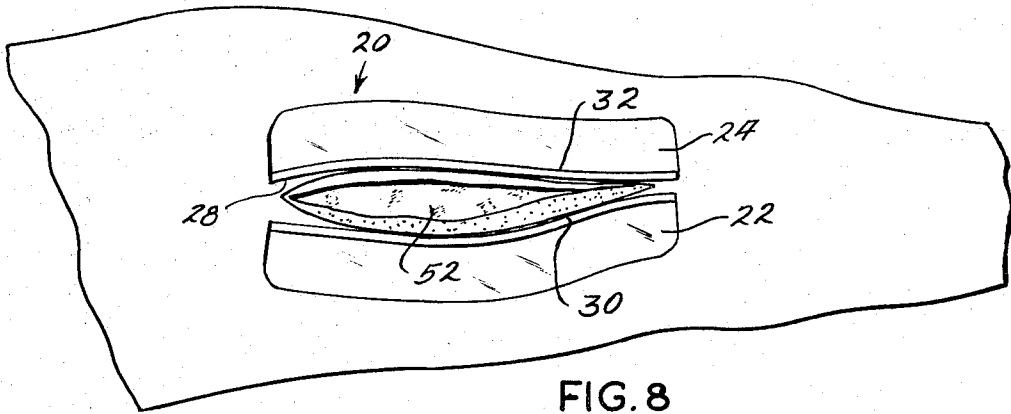


FIG. 5





BANDAGE CONSTRUCTION

Many different kinds of bandage constructions are known and are commonly used. One of the problems with most known bandages and other dressings, however, is that they do not provide any means for drawing and holding together the portions of the flesh adjacent opposite sides of a wound or open sore. Instead, most known bandage constructions simply provide an adhesively attached protective covering for the injury, and in some cases, they also provide a means for applying medication. So far as known, however, no surgical dressing or bandage includes means for drawing the flesh on either side of a wound or injury together so that need for surgical stitching is eliminated or reduced. This is important when avoidance of sutural cicatrix is desirable and is especially important in situations when injury occurs at remote locations where medical attention is unavailable and when it is not possible, for a considerable period of time, to bring the injured person to a doctor or other person qualified to give medical assistance. In such cases, if some immediate means, other than conventional bandaging, are not used to draw the flesh together, there is a relatively greater likelihood that functionally or cosmetically undesirable scar tissue will form in the wound even if it is subsequently stitched, and furthermore, if treatment is substantially delayed, it is often impracticable to stitch the untreated wound and attendant scarring is substantially certain to follow. The present constructions overcome these and other shortcomings and disadvantages of existing bandages, and provide a construction which is simple to apply and will hold the separated flesh portions of a wound together, thereby minimizing the chances for scarring. The present bandage constructions can also be applied quickly and effectively by persons having little or no medical training.

It is therefore a principal object of the present invention to provide a multipartite bandage or dressing construction with zipper or zipper-like means that are used to draw together the separate bandage portions and the flesh thereunder, to improve the condition of the flesh during healing and to reduce the possibility of the formation of scar tissue.

Another object is to provide a bandage construction which can be applied by persons having little or no medical skill and training and which is an effective means to minimize the need for surgical stitching.

Another object is to provide a relatively inexpensive bandage construction which can be applied adhesively as separate portions along opposite sides of a break in the skin and includes means which can draw together the separate bandage portions and the attached flesh thereunder.

Another object is to provide a bandage construction which is applied as two or more separate pieces, which pieces include cooperating zipper or zipper-like means which can be used to unite the separate pieces.

Another object is to provide a relatively simple bandage construction which can be packaged and sold for use in hospitals, medical centers, and doctors' offices and by the general public.

Another object is to provide means to substantially minimize or eliminate the formation of scar tissue at locations where the skin has been lacerated or broken open.

Another object is to provide means for more accurately and uniformly drawing the skin together along an open wound.

Another object is to minimize the surgical procedures and the discomfort to patients in the treatment of skin lacerations and other similar injuries.

Another object is to provide an emergency bandage construction which can be used to close an open wound to promote proper healing.

Another object is to provide better means for immediately closing a wound involving break in the skin until medical help is available.

These and other objects and advantages of the present invention will become apparent to those skilled in the art after considering this specification and the accompanying drawings which show and describe several different embodiments of the subject bandage construction, and wherein:

FIG. 1 is an enlarged perspective view showing a bandage constructed according to one embodiment of the present invention;

FIG. 2 is an enlarged cross-sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is a further enlarged fragmentary cross-sectional view taken along line 3—3 of FIG. 1;

FIG. 4 is a perspective view showing another embodiment of the subject bandage;

FIG. 5 is a view showing the bandage of FIG. 4 being applied to a skin laceration on the upper arm;

FIG. 6 is a fragmentary cross-sectional view taken along line 6—6 of FIG. 5;

FIG. 7 is a fragmentary cross-sectional view similar to FIG. 3 showing another form of the zipper-like connection means;

FIG. 8 is a view showing a bandage such as the bandage of FIGS. 1—3 being applied to an open wound;

FIG. 9 is a perspective view showing another modified form of the subject bandage;

FIG. 10 is a perspective view, partly in section, showing another embodiment of the subject bandage;

FIG. 11 is an enlarged fragmentary cross-sectional view taken along line 11—11 of FIG. 10,

FIG. 12 is an enlarged fragmentary cross-sectional view showing another form of the cooperative engagement means that can be used with the subject bandage;

FIG. 13 is a perspective view showing still another form of cooperative attachment means;

FIG. 14 is another perspective view showing yet another form of cooperative attachment means; and

FIG. 15 shows a form of the present bandage employing a slide-type zipper member which is movable to join together or separate the separate bandage portions.

Referring to the drawings more particularly by reference numbers, number 20 refers generally to a bandage constructed according to one embodiment of the present invention. The bandage 20, shown in FIG. 1, has two separable portions including a portion 22 and a portion 24. The portions 22 and 24 are shown as being similar in shape and each is preferably formed of a plastic or plastic-like material such as are commonly used in bandages. The two portions 22 and 24 when combined in the structure 20 as shown in FIG. 1 have an overall size and shape similar to the size and shape of a more or less conventional bandage, although both the size and shape can be varied as desired and as is usual in the bandage art. Each of the portions 22 and 24 has an adhesive coating 26 and 28 applied respectively on

corresponding surfaces thereof, namely, the bottom surface as shown in FIGS. 1 and 2. The bottom surfaces may also have a gauze or other similar plain or medicated absorbent material positioned on the adhesive coatings 26 and 28, or the bandage may be constructed without any absorbent or medicated material, which latter construction may in some cases be preferred. In addition to the features described above, the bandage portion 22 has an attached or integral ridge or flange 30 which extends along one side thereof. In like manner the bandage portion 24 has an elongated ridge or flange portion 32 along one of the side edges. Referring to FIGS. 2 and 3 it can be seen that the flange portion 30 has one or more sidewardly extending elongated beads 34 and 36, and the flange portion 32 has elongated grooves 38 and 40 which are shaped to cooperatively receive and engage the beads 34 and 36 when the beads are pressed into the respective grooves. Cooperating beads and grooves of this general type are well known and widely used, and the flanges 30 and 32 are preferably formed of some plastic or plastic-like material having proper resiliency and flexibility characteristics. Certain kinds of plastic are particularly suitable for this type of construction including some of the well known film or sheet forming plastics such as polyethylene, polypropylene, polyvinyl chloride, and the like. Natural and synthetic rubbers can also be used for this purpose.

FIG. 4 shows another embodiment 41 of the same basic construction wherein the two bandage portions, identified as portions 42 and 44, are connected integrally at one end of the bandage 46. Over the rest of the length of the bandage, however, the portions 42 and 44 are separate or separable, each separable portion being provided with a resilient and flexible flange portion 48 and 50, respectively, each of which is disposed at substantially a right angle to the corresponding separable portion. The flange portions 48 and 50 may be similar to the flange portions 30 and 32, and they may be constructed to have one or more cooperating beads and grooves. It is also contemplated to construct the bandage of FIG. 4 with integral portions at both ends, if desired; in which case, only the inbetween portions will have cooperative flange means for attaching them together. Each of the portions 42 and 44 has an adhesive coating 43 and 45 applied, respectively, to the bottom surfaces thereof. The adhesive coatings 43 and 45 may also be provided with protective overlayers of an easily removable material 47 and 49, respectively, which may be formed of wax or wax-like material or plastic. Such layers of materials are also well known and commercially available and are removed just prior to the application of the subject bandage to the skin.

FIG. 5 illustrates application of the bandage construction shown in FIG. 4 to a wound such as to a skin laceration or cut in the upper arm. The skin laceration is identified by the number 52. In FIG. 5 the bandage portion 42 is adhesively attached to the skin along one side of the laceration 52 and the other portion 44 is adhesively attached to the skin along the opposite side of the laceration, thus the wound is disposed between the portions 42 and 44. It is normally also desirable to have the edges of the flanges 48 and 50 close to the edges of the laceration or, in some cases, slightly spaced therefrom, but it is not usually desirable that the bandage portions or the flanges overhang the wound itself so that when the flanges are brought together for joinder

they cooperate with the bandage portions to close the wound. The positions of the bandage portions after being attached are even more clearly shown in FIG. 6 where it can be seen that the skin along one side of the laceration is adhesively attached to the bandage portion 42 and the edge of the wound is immediately adjacent attaching means 48, while the skin on the opposite side of the laceration 52 correspondingly is adhesively attached to the bandage portion 44 with the edge of the wound adjacent attaching means 50. The adhesive attachment of the bandage portions 42 and 44 is accomplished with the bandage portions separated from each other by the width of the wound therebetween or by a slightly greater distance. This is usually done after the flesh has been cleaned or treated adjacent to the skin separation. Thereafter with the two bandage portions adhesively attached in the positions shown in FIGS. 5 and 6, pressure is applied along the members 48 and 50, usually starting at one end thereof, to bring the cooperating engageable means thereon together and into engagement. At this is done, the bandage draws the torn skin together, to be left in place until the healing process is completed. It is anticipated that in many cases it may be possible to use the subject bandages to draw the skin close enough together so that it is not necessary to use any surgical stitches, thus avoiding sutural cicatrix normally associated therewith. In those cases where stitching is necessary, the subject bandage may be used in combination therewith and as a substitute for the topmost layer thereof to avoid suture marks as above. The cooperating means are shown enlarged for the sake of clarity, but they are preferably relatively small in cross-section and relatively close to the adhesively coated bandage itself to maximize the pulling and holding force on the skin.

FIG. 7 shows a modified embodiment wherein only one groove and cooperating bead are included in the cooperating attachment means. Selection of a particular embodiment depends on the desired holding power and the materials used in the cooperating parts. In this construction, as above, the joining of the cooperating parts is accomplished without pressure being applied downwardly into or against the wound.

FIG. 8 shows the two-piece bandage 20 of the type shown in FIG. 1 being applied to an open wound in the upper arm. In this case, the two separate bandage portions 22 and 24 are separately applied by means of adhesive coatings 26 and 28, respectively, to the skin in the positions shown, adjacent the injured area and in spaced relationship to each other. Once this is done, it is a simple matter to bring the cooperative flange portions 30 and 32 into engagement along the length of the bandage. This is usually done starting at one end of the bandage by pressing the flanges together using the fingers or some other pressing means. As the flanges are joined, the skin along the wound is brought together to be held during the healing process. It is also apparent that the present construction enables adjacment to be made in the holding force applied in closing the wound by properly positioning the separate bandage portions. This is an important advantage since if the bandage is too tight for comfort or too loose for effective non-scarring joinder of the wound as initially applied, adjustment can be made either by relocating the separate bandage portions before rejoining them or by replacing them with new bandage parts. This, therefore, affords

a relatively inexpensive way for achieving the most desirable healing condition.

FIG. 9 shows a somewhat modified embodiment of the aforesaid constructions wherein the bandage is provided with gauze or other absorbent bandage pads 54 and 55 which are attached in the usual manner to the adhesive side of the bandage. The gauze in this case extends only part way to the side edges of bandage portions 22 and 24, respectively, as shown in FIG. 9. It is also contemplated as mentioned above, to use a construction wherein there is no gauze or medicated pad provided; in which case, the adhesive parts of the bandage portions are applied directly to the skin adjacent the edge of the wound. This embodiment usually provides the greatest and best holding power along the length of the wound, but it may be desirable to perforate the separate bandage portions at various locations, especially adjacent the injury, to permit blood and other body fluids to escape. In this type of construction, an absorbent gauze overlayer or pad may be applied over the top of the attached bandage portions to absorb the fluids escaping from the injury. The overlayer or pad can be attached in any convenient way such as by using adhesive tape or other attaching means.

FIG. 10 shows another embodiment 60 of the subject bandage construction wherein the bandage portions 62 and 64 have respective elongated side edge flanges 66 and 68. The flange 66, in this case, has a plurality of sidewardly extending knobs or beads 70 which are formed by narrow neck portions 72 and larger diameter head portions 74. The flange 68, on the other hand, has a plurality of spaced holes 76 positioned to cooperatively receive the knobs 70 when the two portions 66 and 68 are pressed together, see FIG. 11. No gauze is provided under the bandage portions 62 and 64, but they are perforated as at 78 to facilitate the escape of body fluids such as blood from the wound. The use and application of construction 60 is similar to that described above for other constructions. The construction in FIG. 10 is also shown having an absorbent gauze overlayer 79 which is taped as by adhesive tape 81 or otherwise attached to absorb any escaping blood or the like.

FIG. 12 shows another form 80 of the attaching means formed on the separable bandage portions 82 and 84. In this case the cooperating means are found on flange portions 86 and 88 which are in the plane of the bandage portions 82 and 84. The flange 86 in this construction has one or more elongated beads 90 which are shown extending upwardly therefrom for engagement with complementary shaped elongated grooves 92 found in the flange 88. Application of the band 80 is similar to that for the above construction except that in this case the pressure applied to join the bandage portions 82 and 84 is applied in a downward direction adjacent the damaged flesh rather than being applied in a direction normal thereto. In the construction 80 the bandage portions 82 and 84 are also shown having gauze pads 94 and 95 applied respectively to a portion of their adhesive sides 83 and 85. The adhesive sides as well as the gauze pads may also be overlaid with another layer of a removable and disposable material, such as are commonly used on many bandages.

FIG. 13 shows embodiment 100 wherein the means for attaching the separable bandage portions together include flanges 102 and 104 which have attaching means such as cooperating VELCRO means 106 and

108 applied thereto. VELCRO is a trademark of John Dritz and Sons and is a type of attaching means wherein one member includes many little tines or hooks and another member has a fabric or fabric-like material that is gripped and held by the tines when they are brought into engagement. In this case the bandage is applied as before and after the portions are adhesively attached to the skin, the flanges 102 and 104 are brought together so that their cooperating means become entangled and interlacked thereby.

FIG. 14 shows another bandage 110 which has flanges 112 and 114 attached to separable bandage portions 116 and 118, respectively. One or both of the flanges 112 and 114 has an adhesive 120 applied to it, and the adhesive is overlaid before use with a removable disposable strip or strips 122 and 124. The strips 122 and 124 can be made as a single folded member, one or both ends of which extend beyond the ends of the respective flanges 112 and 114 to facilitate removal therefrom. Similar non-adhesive members 126 and 128 can be applied to the other adhesive portions of the bandage as shown. The members 126 and 128 have end tabs or they can be lapped at the center of the bandage to permit ease of removal. In some cases only one of the flanges 112 and 114 need have an adhesive coating, although it is normally preferable to have adhesive on both to increase holding power.

FIG. 15 shows yet another embodiment 130 which is similar to the above described constructions except that in this case the flanges 132 and 134 are provided with a movable zipper-type operator member or slide fastener 136 which can be easily moved in either direction along the flanges to unite them or separate them in a manner common to zippers. The engageable means found on flanges 132 and 134 may be as described in FIGS. 1-14 or may consist of interlocking tabs in the manner of ordinary placket zippers.

It is also contemplated to combine various of the bandage features disclosed herein as desired to achieve a particular construction or desired result. Thus there has been shown and described a novel bandage construction which fulfills all of the objects and advantages sought therefor. Many changes, modifications, variations, and other uses and applications of the present bandage construction will, however, become apparent to those skilled in the art after considering this application and the accompanying drawings; all such changes, modifications, variations, and other uses and applications which do not depart from the spirit and scope of the invention are deemed to be covered by the invention which is limited only by the claims which follow.

What is claimed is:

1. A bandage for closing a wound comprising first and second strip portions of a relatively flexible material, each of said strip portions having a skin attaching surface and a flange formed of a flexible material extending along one side edge thereof, a coating of an adhesive substance applied to at least a portion of said skin attaching surfaces on each of said strip portions for attaching the said strip portions to the skin in spaced relationship to each other and along opposite edges of the wound, at least a portion of the adhesive substance on each of said strip portions extending to the side edges of the respective surfaces thereof which are to be attached along opposite edges of the wound, and cooperating engagable means including elongated male and female members extending respectively along each of

said flanges, said male member being movable into cooperative resilient engagement with the female member when pressure is applied against the respective flanges in a direction to press the male and female members together thereby to unite and hold the strip portions and the skin along opposite side edges of the wound together.

2. The bandage defined in claim 1 wherein said cooperating engagable means includes interlocking means and slide fastener means to bring said interlocking means together and into engagement.

3. The bandage defined in claim 1 wherein the cooperatively engagable means include a sidewardly extending rib portion on the flange of the first strip portion, and the flange on said second strip portion has a groove of a size and shape to cooperatively receive and hold said rib portion when pressure is applied to push said rib portion into said groove.

4. The bandage defined in claim 1 wherein a non-adhesive absorbent bandage pad is located partially across said adhesive coating on the bottom surface of at least one of said strip portions and at an intermediate location along said strip portion.

5. The bandage defined in claim 1 wherein said first and second strip portions are formed of a flexible plastic material.

6. A bandage-like construction for closing a skin separation thus obviating the necessity of surgically stitching comprising a flexible bandage-like member formed by separable first and second portions each of which has an adhesive substance applied to corresponding surfaces thereof for attaching the respective portions to the skin in spaced relationship to each other adjacent to opposite edges of the skin separation to be closed, and means for joining the separate first and second portions and the skin to which they are attached together including elongated flange means including respectively elongated male and female mating members respectively on said first and second portions located thereon extending along said edges thereof adjacent to the edges of the skin separation, said adhesive substance applied to each of said first and second portions extending to the respective edges thereof which are to be attached extending along opposite side edges of the skin separation, said mating members being movable toward each other into mating condition to hold the first and second portions and the attached skin together in closing the skin separation.

7. The bandage construction defined in claim 6 wherein each of said first and second bandage portions has a removable protective covering applied over the adhesive coating substance thereon.

8. The bandage construction defined in claim 6 wherein said cooperating male member includes an elongated bead extending sidewardly from along the side edge of the said associated first bandage portion and the female member includes an elongated groove extending along the side edge of said second bandage portion, which groove being constructed to cooperatively receive said bead therein when said bead is

pressed into engagement therewith.

9. Means for closing a skin separation during healing comprising a bandage-like structure having first and second portions each including a strip portion having opposite surfaces and spaced side edges, a coating of an adhesive applied to corresponding surfaces of said portions for attaching the first portion to the skin extending along one side of the skin separation and for attaching the second portion to the skin extending along the opposite side of the skin separation in spaced relationship to the first portion, said adhesive extending to the respective side edges of the first and second portions which are positioned to extend along opposite side edges of the skin separation, and cooperatively engagable means respectively on said first and second portions on the side edges of the portions to be located extending along the respective side edges of the skin separation, said cooperatively engagable means including elongated flanges extending along the respective side edges of said portions, and means on said flanges which become engaged to hold the flanges together when pressure is applied against the flanges in a direction to press the flanges against each other.

10. The bandage defined in claim 9 wherein at least one of said first and second strip portions has a plurality of spaced perforations.

11. The means defined in claim 9 wherein the cooperatively engagable means include zipper means.

12. The means defined in claim 9 wherein the cooperatively engagable means include VELCRO fastener means.

13. The means defined in claim 9 wherein the cooperatively engagable means include adhesive means.

14. The means defined in claim 9 wherein the cooperatively engagable means include respective flanges on the first and second portions and male type means on one of the flanges and female type means on the other of said flanges.

15. The means defined in claim 9 including an operator member movable in one direction to unite the cooperatively engagable means and in another direction to separate the said cooperatively engagable means.

16. The means defined in claim 9 wherein the first and second portions are flexible perforated members each having an adhesive substance on one side for attaching it to the skin.

17. The means defined in claim 16 including a layer of an absorbent material overlaying the said first and second attached portions, and means for attaching the absorbent overlayer to the skin.

18. The means defined in claim 9 wherein said cooperatively engagable means include means that become engaged when pressure is applied to them in a direction in the plane of the first and second portions.

19. The means defined in claim 9 wherein the said cooperatively engagable means include means that become engaged when pressure is applied to them in a direction normal to the plane of the first and second portions.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,863,640 Dated February 4, 1975

Inventor(s) Charles B. Haverstock

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 3, line 24, "thpe" should be --- type ---.

Column 4, line 6, "bound" should be --- wound ---.

Column 4, line 21, "At" should be --- As ---.

Column 4, line 58, "adjactment" should be --- adjustment ---.

Column 5, line 34, "gauge" should be --- gauze ---.

Signed and Sealed this

second Day of September 1975

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks