Nov. 29, 1966 S. E. GOODMAN 3,288,139

BANDAGES

Filed Sept. 23, 1964

FIG. 1

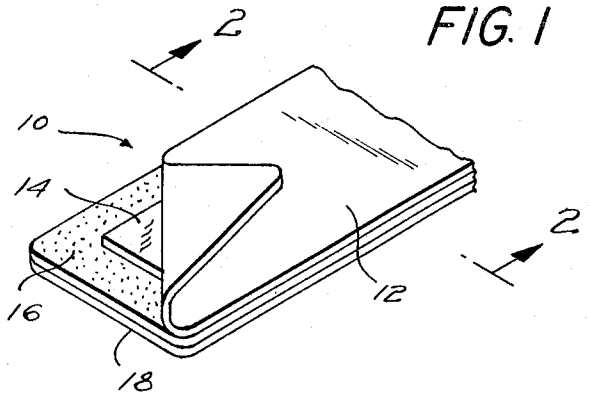


FIG. 2

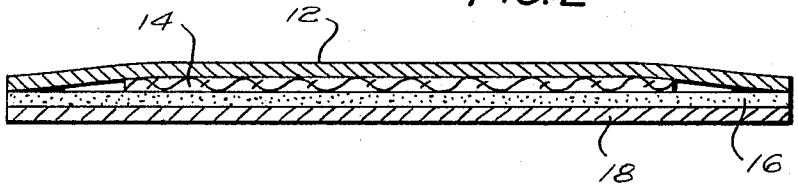
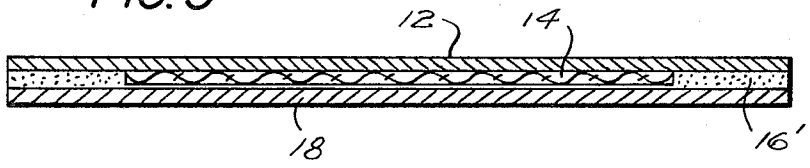


FIG. 3



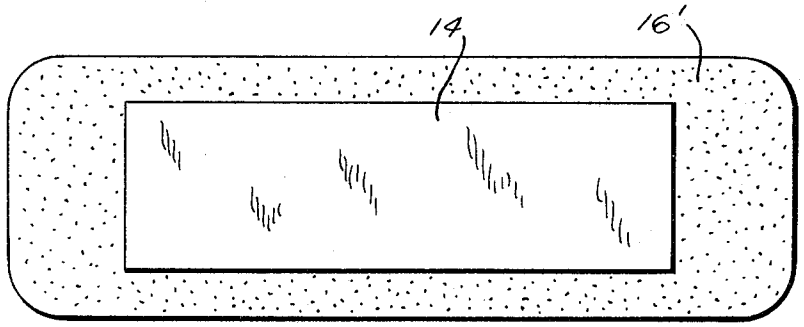


FIG. 4

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BANDAGES

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The present invention relates to bandages.

Since ancient times wounds have been covered with leaves, skins, cloth and other materials in order to protect the injured area. In modern times cotton bandages have gained universal acceptance. These bandages are in the form of a cloth, gauze, or any other special fabric. While these cotton bandages are of general utility and can be manufactured in sterile condition, they nevertheless are not full satisfactory in all situations. For example, the treatment of the cotton before the weaving thereof may render it less absorbent. Moreover, the cotton fabric when placed over a bleeding wound adheres to the clot which forms, and when the bandage is removed it tears the clot and reopens the wound. An additional problem involved with conventional bandages is that they do not adhere well to skin areas which are relatively mobile, such as the chest and abdomen during respiration, or the leg or arm during body movement, even in bed.

It is accordingly a primary object of the present invention to provide a bandage which will avoid the above drawbacks.

In particular it is an object of the present invention to provide a bandage which will not become embedded in a clot during the formation thereof and which, therefore, will not tear the clot and reopen a wound when the bandage is removed.

Another object of the present invention is to provide a bandage which is capable of freely moving with the skin which carries the bandage while permitting a wound to heal without the possibility of clinging undesirably to the bandage so that the latter does not interfere with the healing and will not tear the wound when the bandage is removed.

Furthermore, it is an object of the present invention to provide a bandage which while it is capable of moving freely with the skin will nevertheless remain reliably attached thereto until it is desired to remove the bandage.

In addition, it is an object of the present invention to provide a bandage of the above type which can be manufactured in sterile condition and which can be maintained sterile until it is applied to the wound.

Furthermore, the objects of the present invention include the provision of a bandage of the above type which can have any desired configuration so that it can be adapted to all parts of the body, which can have practically any size, and which moreover can be manufactured very inexpensively and is at the same time convenient to manipulate and apply.

Primarily the bandage of the invention includes a backing layer made of a fabric, for example, which is stretchable at least in one direction, and this backing layer carries at one of its faces a layer of clot-releasing material which adheres to this one face of the backing layer. The outer peripheral edge of the backing layer is situated beyond the outer peripheral edge of the layer of clot-releasing material so as to define with the latter a marginal portion of the backing layer which extends beyond the layer of clot-releasing material, and at least this marginal portion of the backing layer carries a layer of adhesive so that when the layer of adhesive is applied to a wound in a manner surrounding the wound with the clot-releasing material covering the wound, it is possible for the bandage to move with the skin while at the same time permitting free movement of the wound and the subjacent skin without the possibility of the clot-releasing material sticking undesirably to the wound.

The invention is illustrated by way of example in the accompanying drawings which form part of the application and in which:

FIG. 1 is a fragmentary perspective layer of a bandage according to the invention shown in FIG. 1 with a covering layer partly removed so as to illustrate the portions of the bandage which are covered by the covering layer;

FIG. 2 is a transverse sectional view of the bandage of FIG. 1 taken along line 2—2 of FIG. 1 in the direction of the arrows and having an enlarged scale as compared to FIG. 1;

FIG. 3 is a transverse sectional view of another embodiment of a bandage according to the invention; and

FIG. 4 shows how the bandage of FIG. 3 appears in a top plan view when the covering layer is removed.

Referring now to FIG. 1, there is shown therein a bandage **10** having the structure of the present invention, this bandage being of a generally rectangular configuration and having any desired length and width. The bandage **10** includes a removable cover **12** which may be removed from the remainder of the bandage in the manner indicated in FIG. 1 before the bandage is applied to a wound. When the covering layer **12** is removed it exposes a layer of clot-releasing material **14**, and the layer of clot-releasing material **14** is surrounded by a layer of adhesive **16**, the layers **14** and **16** both being carried by a backing layer **18** which is at least longitudinally stretchable.

As may be seen from FIG. 2 the backing layer **18** is covered at its top face, as viewed in FIG. 2, by the layer of adhesive **16**, and the layer of adhesive **16** carries the layer of clot-releasing material **14** so that the portion of the adhesive **16** which extends beyond the layer **14** can serve to attach the bandage to the skin while the portion of the layer **16** between the layers **14** and **18** serves to attach the layer **14** to the layer **18**. The portion of the layer **16** which projects beyond the layer **14** also serves to removably hold the covering layer **12** in position, and after the covering layer **12** is removed the clot-releasing material will be exposed so as to be capable of being applied to a wound with the portion of the layer **16** which projects beyond the layer **14** adhering to the skin and surrounding the wound.

The layer of backing material **18** is preferably a fabric and it is a known fabric which has the property of being stretchable in at least one direction. Thus, this fabric may be Ace fabric as used in Ace bandages, or Elastoplast fabric. The bandages of generally rectangular configuration, as pointed out above, and the backing layer **18** is preferably arranged in such a way that it is at least longitudinally stretchable.

The layer of clot-releasing material **14** is of the same general configuration as the layer **18**, and both of these layers may be substantially rectangular, although at least the backing layer is preferably provided with rounded corners. The outer peripheral edge of the backing layer **18** is located beyond the outer peripheral edge of the layer of clot-releasing material **14**, so that these edges define a marginal portion of that face of the layer **18** which carries the layer **14** extending beyond the outer edge of the layer **14** and at least this marginal portion of the backing layer **18** is covered with the adhesive layer **16**.

The layer of adhesive **16** is any well known pressure sensitive adhesive which clings to the skin simply by being applied thereto.

The layer of clot-releasing material **14** can have different constructions. Thus, there are known fabrics which have a special thread or a special weave, or both, for im-

parting to the fabric the properties which render it clot-releasing. Further, a cloth which is covered or impregnated with a suitable grease will also have this property, and a cloth which is woven from siliconed threads will also have the clot-releasing property. Thus, a variety of constructions are available for the layer of clot-releasing material.

The covering layer **12** may be a sheet of polyethylene or polypropylene, or it may simply be a covering of crinoline.

Another embodiment of the invention is illustrated in FIG. 3 where the backing layer **18** may be identical with that of FIGS. 1 and 2, and the layer of clot-releasing material **14** may also be identical with that of FIGS. 1 and 2. Here again the layer of clot-releasing material **14** is of the same general configuration as but smaller than the layer of backing material **18**, and the layer **14** is centrally arranged on the backing layer **18** so as to provide the latter with a marginal portion projecting beyond the layer **14** in the manner described above. With the embodiment of FIG. 3, however, the layer of clot-releasing material clings to the layer of backing material **18** either due to the properties of the materials of both of these layers or with the use of an extremely thin layer of adhesive situated between the layers **14** and **18**. In this case, the marginal portion of the backing layer **18** carries a layer of adhesive **16'** which may be the same type of pressure-sensitive adhesive as the layer **16**, but in this case the thickness of the layer **16'** is substantially equal to that of the layer **14** so that the layer of adhesive **16'** has an exterior surface which is substantially flush with the exposed surface of the layer of clot-releasing material **14**. With this embodiment the layer of clot-releasing material **14** is also covered by a layer **12** of a suitable covering material as described above, and this layer **12** may be identical with the layer **12** of FIGS. 1 and 2, although it will lie in a somewhat flatter condition because of the particular construction of FIG. 3 where the layer of adhesive **16'** has its exterior surface substantially flush with the exterior surface of the layer **14**.

When the covering layer **12** is removed from the bandage of FIG. 3, the bandage may have, for example, the appearance shown in FIG. 4 from which it is apparent that the layer **14** is of the same general configuration as the backing layer and is smaller than but substantially centrally situated with respect to the backing layer so as to expose the layer of adhesive **16'** along the marginal portion of the backing layer which extends beyond the layer **14**. The structure of FIGS. 1 and 2 will have the same appearance as the structure of FIG. 4 when the covering layer **12** is removed, the only difference being that in the case of FIGS. 1 and 2, the adhesive **16** covers the entire upper face of the layer **18**, as viewed in FIG. 1 and as pointed out above.

When the bandage of the invention is removed the layer of clot-releasing material will release its position of contact, whether this layer of clot-releasing material is in contact with dry skin, and open sore, and oozing wound or a solid clot.

All parts of the bandage of the invention are sterilizable.

When the bandage is used the marginal portion thereof which carries the adhesive remains adherent to the skin, while the releasing quality of the clot-releasing material permits the marginal adherent part of the bandage to move with the subjacent skin while the central part of the bandage which has the clot-releasing material releases itself from the wound or clot, so that this may also move without any tearing or pulling.

It is to be understood that the term "wound" is to be applied very generally not only to wounds in the form of injuries but also to any contusions and incisions.

Moreover, the bandage of the invention can have any size and configuration to adapt it for a particular purpose. For example, the bandage of the invention has been used after a thoracotomy, and when used for this purpose the layer of clot-releasing material releases and stretches from the long wound. The backing is elastic and stretches also so that there is no resistance to respiratory movements.

The layer of adhesive is of the pressure-sensitive type, as pointed out above, and can be placed on the layer of backing during the manufacture of the bandage, and the backing layer is of course cut in such a way that it will have longitudinal elasticity. The entire bandage can be manufactured with known machines in a manner which will not undesirably increase the cost of the bandage while at the same time maintaining all parts of the bandage sterile.

What is claimed is:

1. A bandage comprising a backing layer which is stretchable in at least one direction and which has an outer peripheral edge of a predetermined configuration, a layer of clot-releasing material carried by said backing layer and adhering to one face thereof, said layer of clot-releasing material having an outer peripheral edge of the same general configuration as said edge of said backing layer and said edge of said backing layer being situated beyond said edge of said clot-releasing material to define with the latter a marginal portion of said backing layer extending beyond said layer of clot-releasing material, a layer of adhesive carried by said marginal portion of said backing layer at the same face thereof as that which carries said layer of clot-releasing material, and a covering layer covering said layer of clot-releasing material and releasably adhering to said layer of adhesive, so that when said covering layer is removed said clot-releasing material can be placed over a wound with said adhesive surrounding the wound and attaching the backing layer removably to the skin.

2. A bandage as recited in claim **1** and wherein said covering layer is in the form of a polyethylene film.

3. A bandage as recited in claim **1** and wherein said covering layer is crinoline.

4. A bandage as recited in claim **1** and wherein said layer of clot-releasing material is Novalind.

5. A bandage as recited in claim **1** and wherein said covering layer is polypropylene.

6. A bandage comprising a backing layer stretchable in at least one direction, a layer of clot-releasing material adhering to one face of and carried by said backing layer, said backing layer having an outer peripheral edge and said layer of clot-releasing material having an outer peripheral edge, said outer peripheral edge of said backing layer being situated along its entire length beyond said outer peripheral edge of said layer of clot-releasing material so that said edges define a marginal portion of said backing layer at said face thereof which extends beyond said edge of said layer of clot-releasing material, and a layer of adhesive carried by said marginal portion of said backing layer and having an exterior surface which is substantially flush with an exterior surface of said layer of clot-releasing material which is directed away from said backing layer, so that said layer of clot-releasing material can be placed over a wound which is surrounded by the adhesive carried by said marginal portion of said backing layer to releasably attach the latter to the skin while the wound during healing will not cling to said layer of clot-releasing material.

7. A bandage comprising a layer of backing material stretchable in at least one direction and an adhesive layer attached to and covering one face of said backing layer, and a layer of clot-releasing material carried by said layer of adhesive and having an outer peripheral edge of predetermined configuration, the backing layer having an outer edge which along its entire length is situated beyond said outer edge of said layer of clot-releasing material so that said layer of adhesive extends beyond said edge of said layer of clot-releasing material to be adapted to be applied to the skin at a portion surrounding a wound which is covered by said layer of clot-releas-

ing material so that the wound can heal without clinging to said layer of clot-releasing material.

8. A bandage as recited in claim 7 and wherein a removable covering layer covers said layer of clot-releasing material and is releasably attached to said layer of adhesive at its portion which extends beyond said layer of clot-releasing material so that after said covering layer is removed said clot-releasing material can be placed over a wound.

9. A bandage comprising an elongated backing layer made of a fabric which is at least longitudinally stretchable, an elongated layer of clot-releasing material adhering to one face of said backing layer, the length and width of said backing layer both being greater than the length and width of said layer of clot-releasing material and the latter being arranged substantially centrally on said backing layer so that said backing layer has at said

one face thereof a marginal portion extending beyond and surrounding said layer of clot-releasing material, and a layer of adhesive carried by said face of said backing layer at least at said marginal portion thereof for releasably attaching said backing layer to the skin with said layer of clot-releasing material covering a wound so that the wound can heal without clinging to the bandage which thereafter may be removed without injury.

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