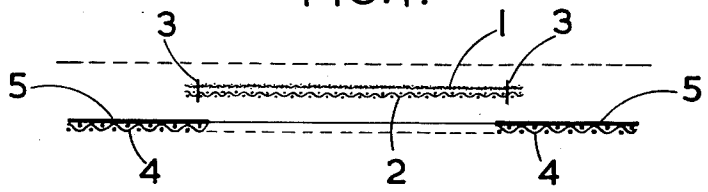
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DRESSING FOR WOUNDS

Filed June 12, 1961

FIG. 1.



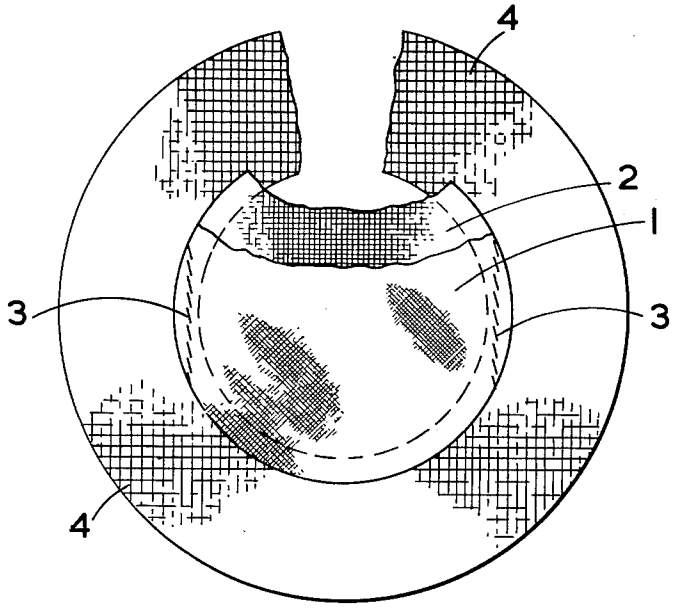


FIG. 2.

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DRESSING FOR WOUNDS

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10 Claims. (Cl. 128—156)

This invention relates to dressings for wounds.

When a dressing is applied to an open wound, it usually sticks to the exudate from the wound. Removal of the dressing for inspecting or treating the wound is painful and damages the tissues, thus retarding healing.

According to this invention there is provided a dry dressing for wounds in which the side to be applied to the wound comprises a porous layer of textile material capable of sticking to the exudate from the wound and which is composed of fibres of such low tensile strength that when the dressing is peeled off the wound part of said layer which has not stuck to the wound tears away readily from that part which has stuck to the wound and can thereby be removed without disturbing the wound.

The dressings of this invention are primarily applicable as insoluble dressings in cases where one or more changes of dressing are required during the period in which full healing of the wound is accomplished. With such cases in mind, the present invention has been devised in order to facilitate changing the dressing, to minimise the discomfiture of the patient, and to avoid disturbing any part of the wound upon which new skin has not yet formed. Thus, advantage is taken of the tendency of a dressing to stick to the wound because it is believed that the wound is beneficially protected thereby, but by providing a fabric layer which tears very easily i.e. ensure that, when the dressing is changed, only so much of the dressing is left in situ as is necessary to achieve objects; the bulk of the dressing (which will be more fully described hereinafter) containing most of the exudate is conveniently removed and discarded.

The textile material forming the porous layer of the dressing may be arranged in any form that is convenient to handle as a fabric. It may consist, for example, of a self-supporting matt or felt of fibres but is preferably a woven or knitted fabric. It is required that this fabric have sufficient porosity to allow exudate from the wound to pass through it. To produce a fabric of very low tearing strength for this purpose it is convenient to weaken a fabric of conventional strength by photo chemical degradation by means of ultra-violet radiation. Cellulose ester fabrics e.g. acetate fabrics (diacetate and triacetate) may be weakened by ultra-violet radiation down to very low tensile strength e.g. approximately 20 gms./½ in. width of fabric. For most of the wounds that have been dealt with, mainly wounds induced in the pig and small wounds occurring in accidents in human patients, a tensile strength of about 200 to 250 grams/½ in. width of acetate fabric has been found advantageous. Provided that a textile material can be weakened to this extent photo-chemically and is capable of sticking to a wound it may be employed as the porous layer for the purpose of this invention. For example, regenerated cellulose fabrics may also be weakened by ultra-violet radiation, although they generally require more severe treatment than do cellulose ester fabrics.

In practice, of course, it will be most usual to include in the replaceable part of the dressing a backing layer of absorbent material to absorb the exudate from the wound and to protect the wound generally. The choice of material for the backing layer will be governed by the fact that the part of the porous layer which still adheres to the wound must not be disturbed when the replaceable part of the dressing is peeled off. Consequently, it is important that the backing impregnated with exudate does not stick to the porous layer so firmly as to defeat this object.

In the form of dressing with which our most encouraging results have been obtained the backing layer is a viscose rayon, and the porous layer is a secondary cellulose acetate woven fabric. In such duplex forms of dressing, especially those intended for first-aid purposes, it is convenient to secure the backing layer to the peripheral (tear away) portion of the porous layer e.g. by stitching or an adhesive. In some cases it may be desirable to bond the backing layer to the porous layer, although the strength of the bond must be less than that with which part of the porous layer adheres to the wound.

As an alternative to a dressing available commercially in the duplex form mentioned above the dressing may be made up from its constituent layers by the practitioner as and when required, successive layers being laid separately over the area of the wound. In the latter case the porous layer may be cut to size from rolls or other suitable bulk form of the appropriate fabric, although this will involve careful handling of the material on account of its low tearing strength.

The weakening of various fabrics of usual strength by ultraviolet rays is illustrated in the following examples.

Example 1

A secondary cellulose acetate, warp 75 denier (20 filaments) weft 100 denier (26 filaments) of plain weave construction (82 ends/inch, 64 picks/inch) is subjected to radiation (1850—3700A.) from a Hanovia medium pressure mercury arc in quartz source. (U.V.S. 500 watts.) A curved polished aluminium reflector is set approximately 6 inches from the lamp. The radiation unit consists of two such lamps and reflectors the lamps being set 10 inches apart. The fabric to be irradiated is placed midway between the lamps so that both sides of fabric are directly irradiated.

Before irradiation the fabric has a tensile strength greater than 2 kg./½ in. width. After irradiation for 1 hour its strength is reduced to approximately 230 gms./½ in. width.

Example 2

A cellulose triacetate fabric, 100 denier yarn (25 filaments) of plain weave construction, 102 ends per inch/84 picks per inch is treated by irradiation employing the arrangement described in Example 1. Before irradiation the tensile strength of the fabric is greater than 2 kg./½ in. width. After irradiation for 1 hour the strength has dropped to 130 gms./½ in. width.

Example 3

A saponified acetate rayon, 30 denier yarn, plain weave construction, 114 ends per inch/114 picks per inch is irradiated employing the arrangement utilised for Examples 1 and 2. Before irradiation the tensile strength of the fabric is greater than 2 kg./½ in. width. After irradiation for 1 hour the strength has dropped to approximately 230 gms./½ in. width.

The tensile strength figures given in col. 2, lines 42 to 44, are determined as follows: A half-inch width strip of the fabric is held vertically between two gripping jaws the upper jaw being connected to a spring whose tension is measurable. The spring is connected via a scale pointer to a recording drum and has been previously calibrated by means of weights. The lower jaw is moved by a mechanised device slowly away from the upper jaw and the reading on the drum is noted when the fabric tears. By placing the U.V. lamps much closer to the fabrics e.g. 1

inch therefrom lower times of irradiation are possible e.g. 10–15 minutes and continuous movement of the fabric can be provided for.

The accompanying drawings represent a plan view (FIGURE 2) and section (FIGURE 1) of a typical embodiment of the invention.

The dressing comprises a central porous layer 1 of roughly circular shape, which is a cellulose diacetate fabric which has been weakened photo-chemically as described in the example given above and has a tensile strength of about 190 grams/½ in. width. The porous layer 1 is attached to a backing layer 2 of viscose rayon absorbent fabric by two lines of stitching 3. The laminate so formed is bonded to an annulus 4 of strong protective fabric by means of an adhesive layer 5. The exposed area of adhesive will, of course, be covered in practice by a suitable tear-off strip (not shown in FIGURE 2 but indicated by the upper dotted line in FIGURE 1). When applied to the wound with the porous layer 1 in contact with the damaged tissue exudate from the wound will pass through the layer 1 and will be absorbed by the backing layer 2. When the dressing is to be changed it will be gripped by the outer annulus 4 and peeled off, leaving behind so much of the porous layer 1 as is firmly stuck to that part of the wound which is not healed.

We claim:

1. A dry dressing for wounds in which the side to be applied to the wound comprises a porous layer of textile material capable of sticking to the exudate from the wound, and which is composed of fibres of such low tensile strength that when the dressing is peeled off the wound part of said layer which has not stuck to the wound tears away readily from that part which has stuck to the wound and can thereby be removed without disturbing the wound.

2. A dressing according to claim 1, in which the porous layer is composed of photochemically degraded fibres.

3. A dressing according to claim 2, in which the fibres are cellulose ester fibres.

4. A dressing according to claim 3, in which the cellulose ester is a cellulose acetate.

5. A dry dressing for wounds comprising at least two layers of material connected together, wherein one layer is of an absorbent material for absorbing exudate from the wound and the other layer is porous to allow exudate to pass through it when placed in contact with the wound and is a textile fabric having exceptionally low tear strength over the entire area for covering the wound, whereby when the bulk of the dressing is peeled off the wound the said fabric tears easily and so leaves behind any part thereof which has stuck to the wound thus enabling the bulk of the dressing to be readily removed without damaging the wound.

6. A dressing according to claim 5 in which the tensile strength of the porous fabric is from 20 to 250 gms./½" width.

7. A dressing according to claim 5 in which the porous fabric is a woven fabric.

8. A dressing according to claim 5 in which the absorbent material is of cellulose fibres.

9. A dressing according to claim 8 in which the absorbent material is of viscose rayon.

10. A dressing according to claim 5 comprising an outermost protective layer and having a projecting outer edge portion bearing an adhesive.

No references cited.