

UNITED STATES PATENT OFFICE

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SURGICAL DRESSING

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This invention relates to surgical dressings, bandages and similar products and is concerned particularly with surgical bandages of the type wherein a soft pad is attached to an adhesive coated carrier strip.

Surgical dressings and more particularly first aid surgical dressing units of the type that are known as adhesive bandages are intended mainly for use in the emergency treatment of cuts, burns, abrasions and other injuries. Adhesive bandages comprise usually a carrier strip of surgical adhesive tape, a soft and/or absorbent pad or dressing disposed thereon, and a coating or protective layer overlying the tacky side of the adhesive tape and protecting the adhesive coating and the dressing. The invention is of special importance in connection with surgical bandages having backings or carrier strips that are extensible in at least one direction. Adhesive bandages of this type may be used on knuckles and fit readily and securely permitting tight attachment to the surface of the skin without immobilizing that surface or the underlying body member and without discomfort to the wearer.

Adhesive bandages of the prior art, whether extensible or not, were made using relatively loose pads or dressings that were weak and frayable because composed of gauze, scrim, tobacco cloth, paper or other porous and loose fabrics. In other words, individual strands or fibres were held loosely by the fabric and tended to separate, particularly near the margins thereof. During manufacturing, packaging, and storage, the loose margins of the pads were frayed frequently and frayed strands had a tendency to attach to the uncovered part of the adhesive coating, giving the adhesive bandage an untidy appearance and affecting its usefulness. After application of the frayable pads to the wound surface, frayed strands remained and adhered to the scab, making removal of the pad or of residual strands difficult and frequently painful. Moreover, the presence, near the margins of the pad, of individual cut strands, which were highly absorbable, caused absorption and accumulation of considerable impurities in use and contamination of the adhesive bandage. Looseness of the pad also tended to cause deformation and partial separation of this essential part of the adhesive bandage and poor contact with the wound whenever the carrier strip was extended in the natural movement of the body. In some "elastic" types of adhesive bandages the uniform contact with the carrier strip of the bottom surface of the pad

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limited severely the extension of the carrier strip rendering the bandage in effect "non-elastic."

The invention aims to improve and simplify the production and use of adhesive bandages that include soft pads. An object of the invention is the prevention of fraying in pads that include otherwise frayable layers. Other objects are the provision of an extensible bandage that can be extended without fraying; the provision of a pad presenting no exposed cut sections of the fabric, and the provision of a bandage in which the central absorbent pad does not lose its shape, does not inhibit extension of the carrier strip yet adheres securely to the carrier strip even during and after extension of the latter. It is yet another object of the invention to provide an adhesive bandage with a soft pad, the center portion of which is adapted to contact evenly most any surface to which the bandage is applied.

While some of the objects have been stated, the other objects and the nature of the invention will be readily understood from the following description of the invention which provides an adhesive bandage having a pad wherein the margins of the frayable fabric are folded inwardly, adhered to the adhesive, shielded under a uniform exposed layer of fabric and adapted to unroll on extension of said carrier strip without limiting that extension. The description should be read in connection with the accompanying drawing, and the novel features will be particularly pointed out in the appended claims. In the drawing in which certain preferred embodiments of the invention are shown:

Fig. 1 is a perspective view of an adhesive bandage having its protective liners partially removed and embodying features of the invention;

Fig. 2 is a vertical sectional view on the line 2—2 of Fig. 1;

Fig. 3 is a vertical sectional view taken at right angles to Fig. 2 on the line 3—3 of Fig. 1;

Fig. 4 is a perspective view showing the pad section of the bandage partially folded before application to the adhesive coated carrier strip;

Fig. 5 is a vertical sectional view similar to Fig. 2, but illustrating another embodiment of the invention.

The illustrated bandage is of elongated shape and, depending upon its size, may be used to bandage small or large wound surfaces. The embodiment of the invention shown in Figs. 1-4 comprises a carrier strip 10 that may be non-extensible but is preferably extensible as explained hereafter having an adhesive coating 11 on its top surface and carrying thereon a non-

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frayable pad 12 which may be soft and/or absorbent and which comprises a piece of frayable fabric folded in accordance with the invention. The folding of the frayable fabric is best illustrated in Fig. 4. A unitary piece of frayable fabric is folded inwardly upon itself along two folds 13 and 13a that are preferably substantially parallel to each other as shown. Thus folded, the pad is folded again inwardly along two additional folds 14 and 14a that are at substantially right angles to the original folds and preferably parallel or nearly parallel to each other. The resultant pad 12 has one layer 15 that is free of marginal portions of the original fabric piece and that is adapted to cover the free margins 16 and 16a of the folded ends. If the pad 12 is positioned with the above mentioned layer 15 placed topmost, a flat unitary pad presenting one surface free of exposed margins results as shown in Fig. 1.

This pad 12 is applied to the adhesive coated carrier strip 10 with margins 13 in contact with the adhesive coating 11 of the carrier strip 10, parallel to the length thereof and shielded by the exposed fabric layer 15 which is free of margins. In this manner, no margin of the frayable fabric is exposed and folds 13 and 14 form the exposed edges of the pad. Protective sheets 17 made of paper, crinoline, or other textile material are not part of the bandage proper and may or may not be applied to the completed bandage to cover the adhesive layer and to prevent contamination of the pad during handling and storage. The margins 16 of the fabric forming pad 12 are preferably in abutting central relation parallel to the folds as shown because this provides a uniform pad presenting a flat non-chafing exposed surface. Folding of the fabric to provide either overlapped or separated margins thereof is, however, permissible and in fact, preferable in some embodiments of the invention and for some uses. On extension of the carrier strip 10, the adhesive coating 11 releases the edges of the folded pad 12 near folds 14 and 14a and this permits slight unrolling of the folded pad. Accordingly, extension of the bandage is not limited by a rigid non-extensible pad as in the prior art and on extension of the carrier strip, a smooth and presentable pad results that is not distorted unevenly by resistance of individual strands against that extension.

Fig. 5 illustrates an embodiment of the invention, in many respects similar to the above described embodiment except that the abutting margins 18 of the fabric layer are slightly overlapped close to the center of the pad 19 and between the top layer 15 and the adhesive coated carrier strip 10. This overlap 20 insures good contact between the wound surface and the pad which otherwise would tend to be somewhat depressed along its central line when the carrier strip expands and separation of the margins occurs. Throughout Fig. 5, similar numerals refer to parts that are similar to parts of the first embodiment.

In either embodiment and in modifications of the invention, the carrier strip may comprise any of the fibrous or other backings that are useful in the adhesive tape industry. Cloth and particularly elasticized or extensible cloth is preferred, but one may use paper, non-woven bonded webs, tissue, synthetic or natural films such as cellophane, rubber, cellulose, acetates, cellulose acetate butyrate, cellulose acetate propionate, other cellulose esters or ethers, polyvinyl esters,

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salts or acetates, polyethylene, superpolyamides and the like. As indicated earlier in this specification, the pad itself is preferably porous, soft and/or absorbent, and may be composed of any material the description of which fits within these terms. The protective layer will usually be crinoline, crinkled paper, treated gauze or tobacco cloth, cloth, a film or any material that will adhere but slightly to the adhesive surface and that can be removed without disintegration and without destroying that surface. The adhesive itself may be any of a wide number of pressure- or solvent-sensitive adhesives, including for example those based on rubber, glue, butadiene polymers and copolymers, polyisobutylene, and its copolymers, acrylic or methacrylic polymers and copolymers and the like. The finished adhesive bandage is usually sterilized and completely sealed in sterile condition, for instance, in accordance with Ganz Patent 2,329,262, issued on September 14, 1943.

The invention provides an adhesive bandage presenting no exposed margin which could become frayed. Accordingly no loose strands of the pad will present themselves and the folded pad will not give way during stretching of the bandage should an elastic strip be used, and will prevent fraying of the pad and of the bandage. In addition the pad has discontinuous contact with the adhesive coating of the carrier strip and permits accordingly full extension of the carrier strip. The product of the invention may be used for all purposes for which adhesive bandages of the prior art have been used in the past and will perform better and more reliably when so used.

While two principal forms of the bandage embodying the improvements of the invention have been shown, it will be understood that these have been shown merely by way of example and that various modifications and changes in the details thereof, for instance, additional or non-parallel folds or additional adhesive layers, can be made without departing from the principles and spirit of the invention or from the scope of the appended claims.

The claims are:

1. An adhesive bandage comprising a carrier strip, an adhesive coating thereon and a non-frayable pad adhering to said adhesive coating and comprising a frayable fabric folded inwardly and toward said adhesive coating at all of its margins thereby presenting one exposed layer free of margins of said fabric and an opposite layer shielded by said exposed layer, composed of marginal portions, facing said adhesive coating, and attached thereto.

2. An adhesive bandage comprising a carrier strip, an adhesive coating thereon and a non-frayable pad adhering to said adhesive coating and comprising a unitary piece of frayable fabric folded inwardly and toward said adhesive coating at all of its margins thereby presenting one exposed layer free of margins of said fabric and an opposite layer shielded by said exposed layer, composed of marginal portions, facing said adhesive coating, and attached thereto.

3. An adhesive bandage comprising an extensible carrier strip, an adhesive coating thereon and a non-frayable pad adhering to said adhesive coating and comprising a frayable fabric folded inwardly and toward said adhesive coating at all of its margins thereby presenting one exposed layer free of margins of said fabric and an opposite layer shielded by said exposed layer,

composed of centrally overlapped marginal portions, facing said adhesive coating, and attached individually thereto by said marginal portions.

4. An adhesive bandage comprising an extensible carrier strip, an adhesive coating thereon and a non-frayable pad adhering to said adhesive coating and comprising a woven gauze type fabric folded inwardly and toward said adhesive coating at all of its margins thereby presenting one exposed layer free of margins of said fabric and an opposite layer shielded by said exposed layer, composed of marginal portions, facing said adhesive coating, and attached thereto.

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