

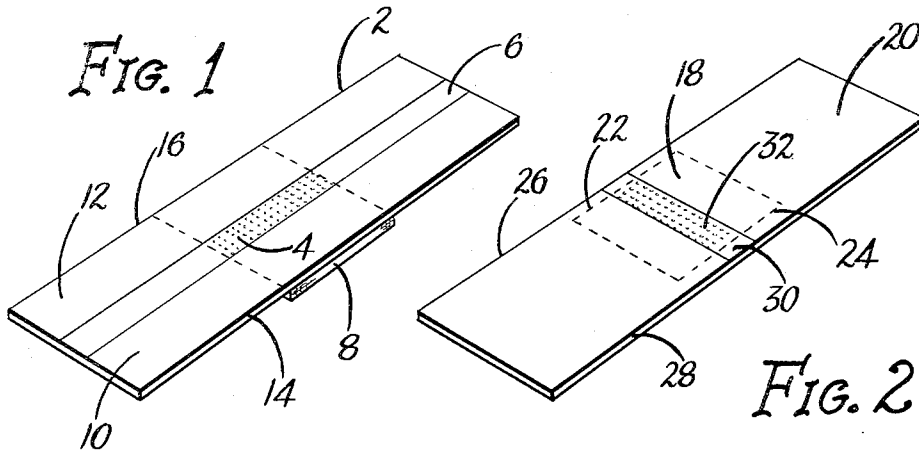
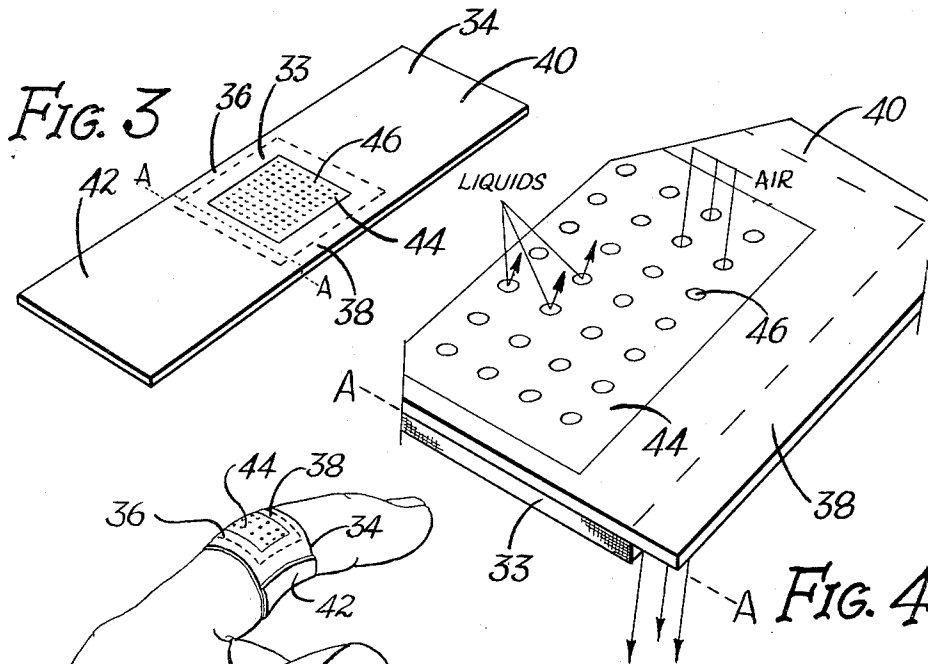
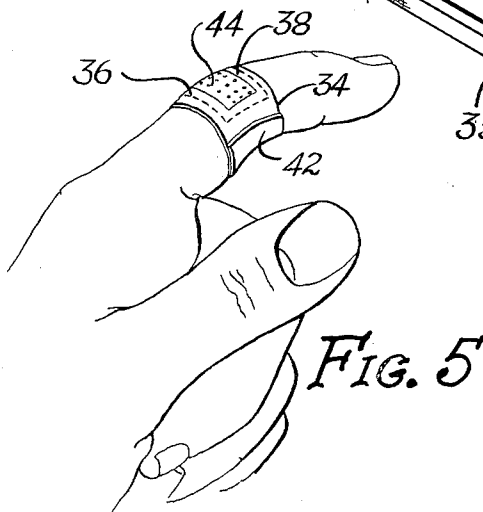
March 13, 1962

G. T. FUZAK

3,024,786

POROUS WATERPROOF BANDAGE

Filed Dec. 26, 1957



INVENTOR.

GEORGE T. FUZAK

BY

Arthur W. Fuzak

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3,024,786

POROUS WATERPROOF BANDAGE

George T. Fuzak, 1022 Delaware Ave., Buffalo, N.Y.

Filed Dec. 26, 1957, Ser. No. 705,230

5 Claims. (Cl. 128-156)

This invention generally pertains to improvements in first-aid bandages of the type having a protective covering or absorbent surgical compress secured to an adhesive surfaced backing strip, and is more particularly concerned with bandages having an ability to exclude liquids as well as other infectants and undesirable substances from the bandaged area while permitting the passage of air to that area.

Precut or manufactured bandages which are commercially available are generally constructed of a sheet or strip of fabric or plastic which is provided on one side with an adhesive surface to which a surgical compress is secured. Facing strips of paper or other suitable material are temporarily secured to the adhesive strip and overlap the compress in order to prevent adhesion of the bandage to its wrapper and to assist in preventing contamination of the compress. Because it is widely recognized that a wound or injury heals most rapidly and satisfactorily when air is permitted to contact the injury continuously during the healing period, it has been customary to provide apertures or vent holes in the adhesive strip immediately adjacent to the compress. The presence of such vents permits air to come in contact with the injury. Unfortunately, providing such apertures in the bandage in large measure defeats the basic purpose of the bandage since external infectants of various types gain ready access to the injury through them. The result is either a retardation of the healing processes or, where more virulent infectants or irritants are admitted, serious infection and increased incapacity of the injured area.

The problem is especially accentuated when the injury is on the hand or fingers since the hands are necessarily frequently immersed in water or other liquids. Obviously, when this is done the compress immediately absorbs liquid and the wound becomes wet and soft. In combination with a liquid soaked pad, bacteria or irritants become and continue to be a hazard to the culmination of the healing process.

For these reasons it may be preferable, for certain applications, to construct a first-aid type of bandage having no vents or apertures, especially where the bandage is destined for industrial use. Healing of the injury is accelerated by constructing the bandage in this manner since the injury is protected against all outside contaminants, including liquids. Healing is not, however, as rapid as it would be if the injury were protected against infectants and irritants while at the same time being exposed to air.

It is therefore a principal object of my invention to provide a first-aid bandage which is capable of excluding liquids and other outside contaminants from an injured area while admitting air to such area, thus protecting the injury and accelerating its healing. Further objects will be apparent from a consideration of the following disclosure as related to the drawings in which:

FIGURES 1 and 2 are perspective views of two variant forms of my invention,

FIGURE 3 is a perspective view of a preferred form of bandage embodying my invention,

FIGURE 4 is an enlarged perspective view of a section of the bandage of FIGURE 3 schematically illustrating liquid exclusion and air admission characteristics, and

FIGURE 5 is a perspective view showing application of the preferred form of my bandage to a knuckle.

Referring to the above figures of the drawing it will be noted that the bandages shown are illustrated without the usual facing strip since the employment, posi-

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tioning and removal of such strips are well known to the art.

The bandage of FIGURE 1 generally comprises a sheet or strip 2 of plastic or other suitable liquid impermeable material which, in accordance with my invention, is provided with a multiplicity of perforations 4 which may extend over the complete surface of the plastic strip 2. These perforations are generally a few thousandths of an inch in diameter and may be made by passing the plastic material through a pair of adjacent roller members one of which is provided with the desired number of radially extending needle-like projections. Other means for providing minute perforations in the plastic material will be readily apparent. Although it is preferred that there be at least twenty-five or more, and preferably at least approximately fifty to one-hundred or more perforations per square inch, their surface density is not critical. It will nevertheless be evident that the greater the density of minute perforations, the greater the degree of air permeability. It will similarly be recognized that the diameter of the perforations is not limited except by the ability of the plastic sheet to prevent transmission of water and other liquids. Thus in referring to "minute perforations" I intend to refer to perforations which are of sufficient size to transmit air but which are small enough to prevent passage of liquids. These minute perforations which are provided in the plastic bandage backing are thus somewhat similar to the pores of the skin which in a sense permit the skin to "breathe."

Notwithstanding the presence of minute perforations in the bandage backing, I have found that air permeability cannot be obtained simply by perforating the plastic in the manner indicated, either before or after providing the plastic with an adhesive surface, since the adhesive tends to flow into and close the perforations. In accordance with my invention, I provide, immediately adjacent to the surgical compress of the bandage, an area which does not have an adhesive film. This adhesive-free area may be coextensive with substantially the complete area of the compress except that sufficient adhesive area must adjoin the compress to permit its adhesion to the backing strip.

In FIGURE 1 this adhesive-free area 6 is shown as a centrally positioned longitudinally extending area on rectangular bandage backing 2. Adhesive-free area 6 in effect divides the bandage strip into three areas, two of which 10 and 12 are spaced apart by adhesive-free area 6 and extend from that area to the side edges 14 and 16 of the bandage. The compress 8 is positioned in the center of the bandage strip and may extend to the opposite edges 14 and 16 of the bandage or, if desired, from points spaced inwardly from these side edges. Notwithstanding the fact that the sides of the compress are coextensive with bandage sides 14 and 16, the bandage remains substantially waterproof as a result of the firm adherence of the adhesive areas to the skin. It will of course be readily evident that while this form of bandage performs an improved function, more satisfactory service is obtained with a bandage whose compress sides are spaced inwardly of the bandage sides so that an adhesive area is provided externally on all sides of the compress which completely seals the compress from the surrounding environment except the air permitted by the perforations described above.

One form of bandage embodying this modification is shown in FIGURE 2. Here, the bandage compress 18 is centrally adhered to the adhesive strip 20 and is of a width such that compress sides 22 and 24 are spaced inwardly from the sides 26 and 28 of the strip 20. The adhesive-free area 30 of this form, which may be approximately one-fourth to one-half inch in width, extends transversely across the compress from the side 26 to the side 28 of the strip 20. This adhesive-free area is pro-

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vided with minute perforations 32 similarly to those provided in the bandage of FIGURE 1.

A preferred form of bandage is illustrated in FIGURES 3 through 5. In this bandage, the compress 33 is centrally adhered to a rectangular adhesive strip 34. The compress is of less width than the strip 34 to provide compress sealing side adhesive areas 36 and 38 which, in conjunction with adhesive areas 40 and 42 on opposite ends of the adhesive strip, insure complete sealing of the compress to the injury. As illustrated, the compress 33 is roughly square in shape although it will be evident that its shape can be circular, oblong or polygonal without detracting from the improved results attainable with my invention.

Spaced interiorly of and adjacent to compress 33 on the adhesive strip 34, is an adhesive-free area 44 which is provided with minute perforations 46, as illustrated more clearly in FIGURE 4. These perforations are of the size already indicated with reference to the disclosure directed to FIGURE 1 and as schematically shown in FIGURE 4 are sufficient in size to transmit air but insufficient in size to transmit water and other liquids.

These minute perforations may of course extend throughout the entire area of the bandage strip without in any manner impairing the securing function of the adhesive areas. In fact, their presence in such areas tends to decrease the maceration of the skin which commonly occurs when a bandage is retained in place over long periods.

It will be clear from the foregoing, as well as the accompanying drawings, that the adhesive-free area which is provided with a multiplicity of perforations can be of substantially any size so long as it is adjacent to the compress and so long as an adhesive area is present externally of the compress to adhere the compress to the injured area. My preferred form, nevertheless, is one in which the adhesive-free area is wholly adjoined by adhesive areas.

Various modifications of my invention will be apparent from a consideration of the foregoing description and hence reference is made to the following claims as definitive of my invention.

I claim:

1. A bandage comprising a liquid impermeable adhesive strip having a continuous coating of pressure sensi-

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tive adhesive thereon and a surgical compress secured thereto, said strip being provided with an adhesive-free area adjacent to and extending wholly internally of said compress, said strip being provided with a multiplicity of minute perforations in said adhesive-free area whereby said bandage is liquid impermeable but air permeable.

2. The bandage of claim 1 in which the minimum density of said minute perforations is 25 per square inch.

3. A bandage comprising a substantially rectangular liquid impermeable adhesive strip and a surgical compress centered thereon and of a width less than the width of said strip, said compress having an adhesive area of said strip externally adjacent the sides of said compress whereby said compress is completely bounded by adhesive area, said strip having, in adjacency to said compress and extending wholly internally of said compress, an adhesive-free area and said strip being provided with a multiplicity of minute perforations in said adhesive-free area whereby said bandage is liquid impermeable but air permeable.

4. The bandage of claim 3 in which the minimum density of said minute perforations is 25 per square inch.

5. A first-aid bandage comprising a pliable backing strip of liquid impermeable material having disposed centrally on one side thereof an adhesive-free area and having a continuous uninterrupted pressure sensitive adhesive surface disposed contiguously to said adhesive-free area and occupying the entire remaining portion of said side of said backing strip, and a surgical compress adhered to said backing strip centrally thereof adjacent to said adhesive-free area, said adhesive-free area extending wholly internally of said compress, said strip being provided with a multiplicity of minute perforations in said adhesive-free area, whereby said bandage is liquid impermeable but air permeable.

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