

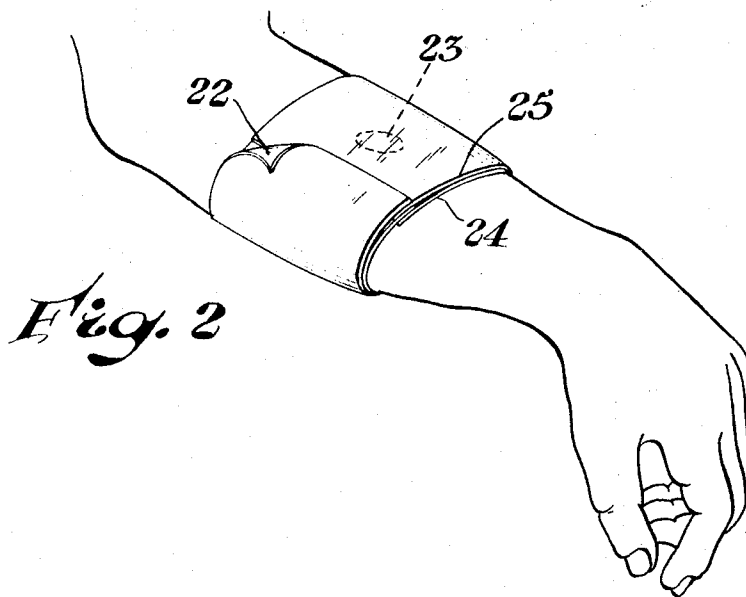
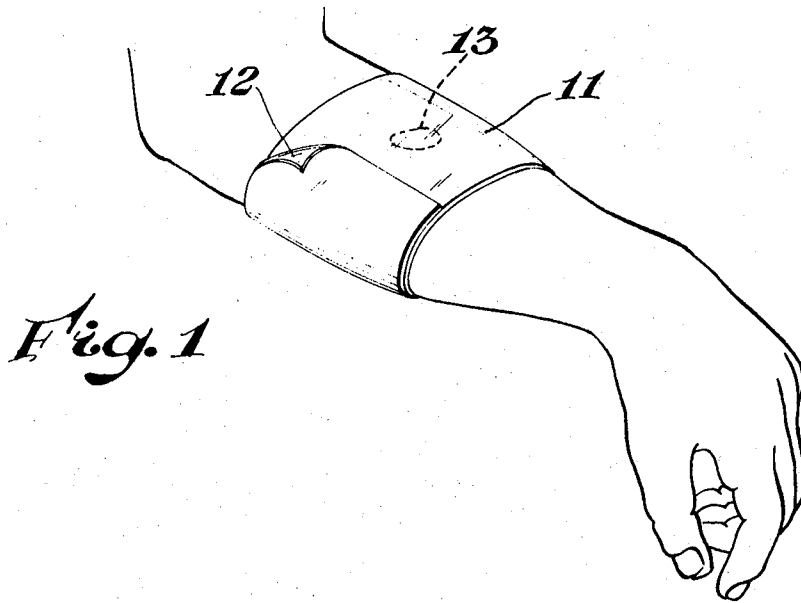
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WOUND DRESSING

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3,439,676

WOUND DRESSING

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ABSTRACT OF THE DISCLOSURE

An improved wound dressing which is transparent and is composed of a self-adhering silicone elastomer having medicaments dispersed therein which are controllably released to the site of the wound.

This invention relates to an improved wound dressing and the like. More particularly, this invention relates to a wound dressing which possesses a multiplicity of desirable properties and hence, solves many problems associated with the application and performance of presently available dressings.

Wound dressings which are now obtainable by the consumer are generally comprised of some type of adhesive backed tape or the like which has a patch of cotton gauze or similar fabric attached thereto. The fabric portion of the dressing is applied to the surface of the wound and the adhesive readily adheres to the surrounding tissues maintaining the wound dressing in a fixed position.

To observe the progress of the wound, the dressing must be removed and replaced frequently. Due to the strength of the bond existing between the adhesive and the surrounding tissue, upon subsequent removal of the dressing extreme pain is often encountered. In addition, the affected tissues may be unduly irritated resulting in the possibility of secondary infections and the like.

In the prior art dressings of the nature described above, the fabric that is immediately in contact with the wound is normally attached to material that is essentially non-porous. As a result, its non-porous nature will prevent air from easily permeating the material and finding its way to the wound. In many cases it is very desirable that the wound be in contact with air for a substantial period of time and hence, the dressing must necessarily be removed during sleeping hours or at other intervals. Such a procedure inevitably increases the risk that the wound will be repeatedly damaged in some manner which may extend the period of recovery at the expense of discomfort to the patient.

In the past, various medicaments have been incorporated in the fabric so that the wound can be accorded the benefit of said medicaments. However, due to the types of fabrics employed, the medicament may be so completely absorbed in the fabric that the wound receives only negligible amounts of medicament or the fabric absorbs so inefficiently that an excess of medicament can detrimentally contact the wound.

In accordance with the above, it is an object of the present invention to provide a wound dressing or the like which avoids the aforesaid disadvantages related herein.

Hence, it is an object of this invention to provide a wound dressing consisting of a silicone elastomer impregnated with medication whereby the medication is released to the site of the wound at a controlled rate.

It is also an object of the present invention to provide a wound dressing composed of a silicone elastomer that can be transparent, therefore permitting one to observe the progress of the wound absent the need of frequent

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removal of the dressing which was heretofore required for such a purpose.

It is still another object of this invention to provide an improved wound dressing which is self-adhering, thus obviating the need for adhesive backed tape or a like material to maintain the dressing in its fixed position. A further object is also apparent when the dressing has self-adhering properties due to the fact that the amount of pressure the dressing exerts to the wound can be efficiently controlled. For example, if the wound is particularly receptive to slight pressure, this can be satisfactorily achieved. In contrast, if the wound is receptive to extensive pressure, this can likewise be readily achieved.

Other objects and attendant advantages of the invention will become obvious to those skilled in the art from a consideration of the following detailed description when read in conjunction with the accompanying drawings wherein:

FIGURE 1 is a perspective view of a wound dressing constituting a preferred embodiment of the invention which has been applied to a wound.

FIGURE 2 is a perspective view of a wound dressing constituting another preferred embodiment of the invention which has been applied to a wound.

Referring now to the drawings wherein like reference numerals designate like or corresponding parts there is shown in FIGURE 1, a wound dressing 11 of this invention applied about the arm and surrounding the wound 13. As shown, the wound dressing 11, is preferably transparent and hence, the wound 13 is clearly visible after the wound dressing 11 has been appropriately applied. The decided advantage to be derived when employing a wound dressing 11 which is transparent and of the type described herein is obvious since one is able to observe the progress of the wound without having to remove the dressing. As also shown, at the area of attachment 12, the dressing is self-adhering and thus, eliminates the need for adhesive backed tape or other like adhesives which are required to maintain prior art wound dressings in a fixed position. The use of a self-adhering wound dressing also allows one to control the pressure that the dressing imparts to the wound. For example, the dressing can be applied as loosely or as tightly as one wishes while still achieving the objects of the present invention.

It is of importance to note that the wound dressing of this invention and as illustrated in FIGURE 1 has been impregnated with medicaments so that the medicament is released to the wound after the dressing is applied. Any desired quantity of medication may be impregnated in the dressing so that the wound will receive the required amount of medication while at the same time there is assurance that excess medication shall not be deposited upon the wound. As a result, one can effectively control the amount of medication the wound receives by merely controlling the quantity of medicament to be impregnated in the dressing.

The medicament is readily impregnated in the dressing by simply dispersing it in a suitable solvent and thereafter contacting the dressing with the dispersed solvent for a time sufficient to insure that the dressing has absorbed the required amount of medicament. The silicone elastomer, hereafter described, which is employed as the dressing is permeable to countless solvents, hence the desired medicament is readily absorbed by the dressing. The dressing is then air-dried during which the solvent volatilizes while the medicament remains absorbed. Any known solvent which will readily disperse the medicament and which will not perniciously or otherwise affect the dressing can be employed for such a purpose. Solvents which have been found to be satisfactory for such a purpose include chloroethylene, perchloroethylene, xylene, and ether, among numerous others.

FIGURE 2 is illustrative of another wound dressing within the contemplation of the present invention. There is shown a wound dressing 21 of this invention applied about the arm and surrounding the wound 23. The dressing 21 is similar to that shown in FIGURE 1 with the exception that it is composed of two identical layers 24 and 25. Both layers, 24 and 25, are preferably transparent, hence the wound 23 is clearly visible after the wound dressing 21 is appropriately applied. In practice the initial layer 24 is wrapped about the arm and surrounds the wound 23. After the initial layer 24 has been wrapped about the site of the wound 23, the desired medicament is applied to the surface of the initial layer 24 in the general area of the wound. As a result, the medicament diffuses through the layer and contacts the wound 23. Subsequent to the above procedure, the second layer 25 is applied upon the initial layer 24. At the area of attachment 22, the layer 25 is self-adhering and therefore, eliminates the need for adhesive backed tape or other like adhesives required to maintain prior art wound dressings in a fixed position.

The modification illustrated in FIGURE 2 is particularly advantageous for a number of reasons. For example, as additional medication is required, the second layer 25, can be easily and rapidly removed and the additional medicament placed on the surface of the initial layer 24. In this manner, the wound 23 remains covered; its progress is still observable; and the wound is never disturbed. In fact, one need not even remove the second layer 25 since the additional medication can be feasibly injected between the two layers 24 and 25 by use of a hypodermic needle or other like source.

The preferred embodiment described in FIGURE 2 is particularly suitable in situations where speed is an important factor. Thus, in battlefield situations where dressings must be removed and replaced rapidly or additional medication must be applied quickly, the improved wound dressing of FIGURE 2 would be especially applicable.

Any known silicone elastomer that readily adheres to itself can be suitably employed in the present invention. It has been observed that when strips of such elastomers in the form of tapes or the like are superimposed one upon the other so that the weight of the tapes constitutes the only form of pressure, the superimposed elastomer surfaces effectively adhere to each other with an excellent bond existing therebetween. Although the self-adhering elastomers of this invention will easily and readily adhere to themselves, they retain their releasability with respect to the wound. Therefore, the dressing does not stick to the wound and hence, effects a more rapid cure of the afflicted area. Illustrative of the self-adhering silicone elastomer and methods for their preparation that are useful herein are those elastomers disclosed in U.S. Patents 3,050,490; 3,050,491; 3,070,567; and 3,146,799, among numerous others.

In addition to the self-adhering properties which are characteristic of the above elastomers, they are also air permeable thus, the self-adhering elastomer inherently permits air to constantly pass through the dressing and contact the wound which may increase the rate at which the wound heals.

Prior to use, the novel wound dressings of this invention are preferably prepared in the form of a roll. Hence, after curing and impregnating the elastomer with the medicament, the dressing can be fed to winding rolls and wrapped about a core in overlapping fashion to provide a roll of dressing of any desired size. Due to the characteristic self-adhering properties, the dressing is normally wound upon itself with an interlayer such as paper or plastic film between the overlapping surfaces. While the dressing exhibits a tendency to adhere to such surfaces, the tendency is not sufficient to prevent removal of the dressing from the interlayer when occasion for its use arises. That is, due to the limited degree of adhesion which the dressing exhibits towards the interlayer

material, the concentric layers of dressing can be easily unwound and the dressing can thereafter be readily stripped away or otherwise removed from the interlayer material.

Materials which can be typically employed as an interlayer for the rolls of dressing are paper, nylon, and cellophane, as well as plastic materials such as the polymers and copolymers of vinyl chloride and polyvinylidene chloride, Mylar (polyethylene terephthalate resin) and polyolefins, such as polyethylene and polypropylene. If paper is employed as the interlayer it is generally treated or coated with wax, such as paraffin wax, or other like material to limit the degree of adhesion that the dressing exhibits towards the paper.

The interlayer materials described above can also be used to separate unrolled strips or flat sheets of the dressings of this invention. This combination of a layer of dressing having at least one surface in contact with a layer of one of the materials toward which the dressing exhibits a limited degree of adhesion provides an efficient means for storing or transporting the dressing. The dressing can be easily stripped away or otherwise removed from such materials when so desired.

Alternatively, powders such as talcum powder, baking soda, and the like can be dusted on one surface of the dressing and when rolled, the dressing will not tend to adhere to itself. However, for practical purposes and other general considerations, the former method of preparing the dressings prior to use is most desired.

The invention has been described with reference to preferred embodiments, but it is to be understood that these are by way of illustration only. Accordingly, it is contemplated that modifications and variations can be made in the operating techniques without departing from the spirit of the invention or the scope of the appended claims.

That which is claimed is:

1. A method for dressing a wound which comprises: wrapping a wound with a band of self-adhering silicone elastomer impregnated with a medicament so that the impregnated elastomer is in contact with the wound and the impregnated silicone elastomer is in self-adhering contact with itself.
2. The method as recited in claim 1 wherein the impregnated silicone elastomer is transparent.
3. The method as recited in claim 2 wherein the self-adhering silicone elastomer is impregnated with a medicament by dissolving said medicament in a solvent and thereafter contacting the self-adhering silicone elastomer with the dissolved medicament whereby the medicament is absorbed by the self-adhering silicone elastomer after which the solvent is evaporated.
4. The method as recited in claim 1 wherein the surface of said band is treated with a medicament and including the further step of thereafter wrapping a second band of a self-adhering silicone elastomer over the first band of self-adhering silicone elastomer so that the said second band of self-adhering silicone elastomer is in self-adhering contact with itself.
5. The method as recited in claim 4 wherein the bands of self-adhering silicone elastomer are transparent.

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