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J. L. GALLAGHER
FIRST AID PRESSURE DRESSING

2,676,590

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Fig. 1^a.

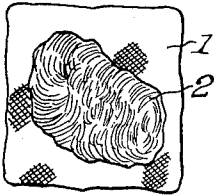


Fig. 1^b.

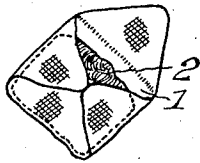


Fig. 1^c.

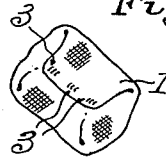


Fig. 2^a.

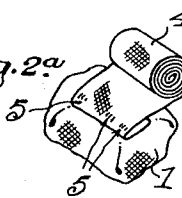


Fig. 2^b.

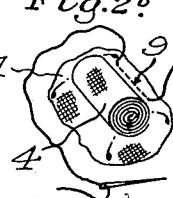


Fig. 2^c.

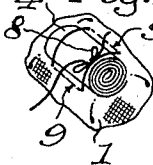


Fig. 3^c.

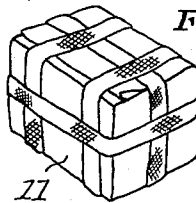


Fig. 3^a.

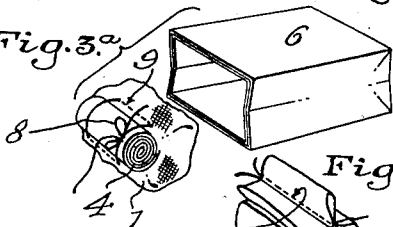


Fig. 3^b.

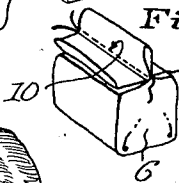


Fig. 4^a.

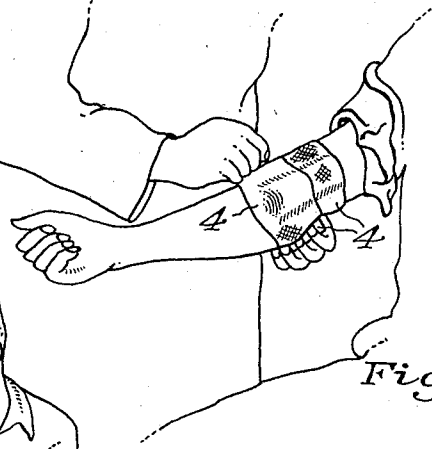


Fig. 4^b.

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UNITED STATES PATENT OFFICE

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FIRST AID PRESSURE DRESSING

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4 Claims. (Cl. 128—156)

(Granted under Title 35, U. S. Code (1952),
sec. 266)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes, without payment to me of any royalty thereon.

This invention relates to surgical dressings, more especially it is directed to a deep, resilient, pressure dressing operatively combined with a roll of bandage for controlling hemorrhage or other purposes.

This application is a continuation in part of abandoned application Serial No. 709,945, filed November 15, 1946, said abandoned application Serial No. 709,945 being a continuation-in-part of abandoned application Serial No. 437,927, filed April 7, 1942.

The task of teaching untrained persons a complicated method of bandaging wounds has proved impractical, since even a well-trained surgeon cannot aseptically bandage a wound at the site of an injury if he must compile his dressings from several packages. It is, therefore, an object of my invention to provide a dressing which will be simple and nearly fool-proof, whereby the ordinary layman can apply the dressing in such a fashion as most to benefit the patient.

It is another object of my invention to provide a deep, resilient pressure dressing which will serve to control external hemorrhage of any type and at any location on the body and which would otherwise be beneficial to the wound by preventing mechanical spreading of infection, alleviating pain and eliminating edema formation in the wound area. The use of a tourniquet has always been hazardous and valuable only in wounds of the extremities. Usually it is left on too long. Very often it slips the fastener just enough to permit the arteries to continue to function while the venous return is stopped thus transforming the extremity into a mechanism which pumps blood from the body through the wound. In shutting off the circulation to the wound, it is deprived of a natural body defense, allowing infection to take hold rapidly. Furthermore, the tourniquet increases pain and adds to shock. I achieve this object by providing an oval-shaped, smooth sponge with the greatest pressure point at the approximate center, and with enough bulk to raise the circular bandage at its sides to allow circulation to pass. Since splinting of the wound and its area adds to comfort and retards spread of infection, the dressing should be large and bulky. Tissue swelling from edema is eliminated by the pressure pad which enhances the return circulation, and practically prevents the spread of infection. Suture cutting and marking and

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hematoma formation are prevented, thus markedly shortening the period of healing.

Another objection of this invention is to provide a deep, resilient, pressure dressing which will practically eliminated edema in post operative wounds and greatly lessen suture cutting and hematoma formation so that the period of healing will be materially shortened.

Still another object of my invention is to provide a pressure dressing which may be made from materials readily available to the layman. In my improved dressing the packing may be made of shredded, clean cotton rags, and sterilized gauze of any thread weave is a good surgical gauze.

The fundamental purpose of the resilient, pressure dressing forming the subject matter of this application is not merely to control hemorrhage but also to furnish a dressing of sufficient bulk in depth and having the requisite inherent resiliency to yield under the pressure exerted by the flow of blood through the uninjured blood vessels and capillaries and permit circulation to continue through said uninjured vessels to the wound and to tissues remote therefrom, while maintaining ample firmness to press the injured blood vessels against the hard bony tissue lying beneath them with sufficient force to cause the collapse of said blood vessels, thereby gaining pressure control of hemorrhage and otherwise beneficially affecting the wound by eliminating, to all effects and purposes, edema formation in the wound area. Moreover, this type of pressure dressing tends to obliterate the spaces and crevices in the wound so as to bring such tissues into close contact with the defense elements of the blood stream. Heretofore, control of hemorrhage under the conditions above specified has been obtained by firmly bandaging over dampened sheep's wool sea sponges, but these are now very expensive and, moreover, are unsuited for Army field use due to the requirements with respect to dampening. Hence the instant pressure dressing provides a cheap, easily produced substitute for dressings of the sheep's wool sponge type, with all of its advantages and none of its defects.

Referring to the accompanying drawings, in which corresponding parts are indicated by similar reference characters:

Figs. 1a, 1b and 1c illustrate the steps in making the pressure dressing;

Figs. 2a, 2b and 2c illustrate a method of fastening the bandage to the dressing;

Figs. 3a, 3b and 3c show the plan of storing and preserving the completed dressings; and

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Figs. 4a and 4b represent the method of applying the dressing to a wound.

The numeral 1 represents a square of sterile gauze. This gauze is preferably of the surgical type but may be made from any gauze-like material that has been made sterile. If the unit is to be made up for individual first aid work, the gauze is cut approximately nine inches square. If ambulance size dressings are being made, the gauze is cut approximately eighteen inches square. For the packing I prefer to use cotton waste, sometimes known as mechanics' waste, which is cheap and readily obtainable. This material has the further advantage that it keeps its resiliency under pressure. If the first aid size dressing is being made, about one ounce of the cotton waste is placed on the gauze square 1 to form the packing 2 as shown in Fig. 1a. If the ambulance size dressing is being made, about four ounces are used. Three corners of the gauze square 1 are then folded over the packing 2, envelope fashion, as is shown in Fig. 1b. The dressing is then completed by folding over the remaining corner and tacking all together at several points 3 as shown in Fig. 1c. When constructed and arranged in this manner, the first aid and ambulance size dressings provide an oval-shaped sponge like mass having bulk in depth in the order of approximately one half inch for the first aid and three inches for ambulance size dressing, these measurements being taken at the point of maximum pressure of the dressings, that is to say, in a vertical plane extending substantially centrally of the dressings.

A roller bandage 4, to be used for holding the dressing in place, is then tacked onto the dressing at several points 5 as shown in Fig. 2a. Standard roller gauze may be used as the bandage 4, or, if available and desirable, stockinette, cut on the bias, may be used. However, since this bandage is used merely to anchor the dressing, any available material may be used should neither of the preferred materials be available. A mattress stitch 9 is used to fasten the rolled bandage 4 to the dressing as shown in Figs. 2b and 2c. The ends of the stitching are tied in a bow-knot 8, leaving a long end so that the bandage may be quickly and easily released. It will be seen that the bandage 4 is not only always available to attach the dressing to the wound but forms a handle whereby the dressing may be maneuvered without fear of contamination. The completed dressing is then sterilized by any desired method.

A consideration of Figs. 3a, 3b and 3c will make clear the method of storing the completed dressings. Using the bandage 4 as a handle, the dressing is placed in an ordinary paper bag 6 as shown in Fig. 3a. If the first aid size dressing is being made, a half-pound bag is used, while for the ambulance size dressing a four-pound bag will be required. If desired, for purposes of strength a doubled bag may be used made of two or more nested bags. The throat of the bag is then folded over and sewn as near to the dressing as practical, as shown in Fig. 3b. The bag is then dipped in melted paraffin to make it air tight. It will be clear that the sewing just described performs a dual function. The accidental opening of the bag is prevented, while the perforations caused by the needle make a tear-off line 10 which will insure the easy opening of the bag. For simplicity in storing and carrying, the dressing may be made up in

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units 11 such as shown in Fig. 3c and kept in an automobile, home, school room, or the like, where their use may be necessary. Twenty-four of the first aid size dressings may thus be placed in a package measuring 8½ inches by 8½ inches by 6½ inches and weighing approximately four pounds. Twelve of the large dressings form a package roughly 14 inches by 10½ inches by 5½ inches, weighing about five and a quarter pounds.

The application of my improved dressing will be clear from a consideration of Figs. 4a and 4b. Referring particularly to Fig. 4a, it will be seen that the bag 6 has been torn open along the perforated line 10 caused by the stitching and, using the roller bandage 4 as a handle, the dressing removed from the bag. This method of procedure insures that the dressing will be untouched and, therefore, free of contact germs. The dressing is then applied directly to the wound and, while in place, the roller bandage 4 released by undoing the bow-knot 8 and pulling out the mattress stitch 9. The bandage 4 is then wrapped about the wound tightly enough to control the bleeding, as shown in Fig. 4b, and the patient taken to a point where he may receive surgical treatment.

It will be seen that I have provided a simply constructed, inexpensive first aid dressing, the use of which, in the manner disclosed, will be of value to first aid workers and the injured; to the former because of the elimination of all equipment save the pressure dressings as disclosed above, pencils, and field tags to label the wound; to the latter in the immediate easing of pain, the elimination of dangers inherent in other methods of bandaging, and the insurance of a more rapid healing.

While I have described a single embodiment of my invention, it is to be understood that I do not wish to be limited to the particular details and assemblies shown since various modifications within the spirit of the invention as defined by the claims will suggest themselves to those skilled in the art.

Having thus described my invention, what I claim as new and wish to secure by Letters Patent is:

1. A deep resilient pressure dressing adapted to be applied under pressure and in an undampened condition to a wound and comprising material having the resilient properties of mechanics' waste within the weight range one to four ounces, a fluid pervious incasing member for said material, said member being dimensioned in the order of nine inches square for one ounce and eighteen inches square for four ounces of said material, folded about the material and stitched in its folded position to form a resilient mass having a bulk in depth in the order of approximately one-half inch for one ounce and three inches for four ounces of the material, whereby when said resilient mass is applied to a hemorrhaging wound with sufficient pressure to reduce bleeding to a mere ooze it will collapse the injured blood vessels without interfering with the circulation of blood through the uninjured blood vessels which pulsate into the confines of said mass and remain therein until automatically ejected by the conjoint action of the bulk and resiliency of the mass which become effective when the pulsations in the uninjured blood vessels subside and means for effecting application of said mass to a wound under sufficient pressure to control hemorrhage, said means including a

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bandage attached to said mass and adapted to encircle a body member.

2. A deep resilient pressure dressing adapted to be applied under pressure and in an undampened condition to a wound and comprising mechanics' waste within the weight range one to four ounces, a fluid pervious incasing member for said mechanics' waste, said member being dimensioned in the order of nine inches square for one ounce and eighteen inches square for four ounces of said waste, folded about the waste and stitched in its folded position to form an oval-shaped resilient mass having bulk in depth in the order of approximately one-half inch for one ounce and three inches for four ounces of mechanics' waste, whereby when said resilient mass is applied to a hemorrhaging wound with sufficient pressure to reduce bleeding to a mere ooze it will collapse the injured blood vessels without interfering with the circulation of blood through the uninjured blood vessels which pulsate into the confines of said mass and remain therein until automatically ejected by the conjoint action of the bulk and resiliency of the mass which become effective when the pulsations in the uninjured blood vessels subside and means for effecting application of said mass to a wound under sufficient pressure to control hemorrhage, said means including a bandage attached to said mass and adapted to encircle a body member.

3. A resilient pressure dressing adapted to be applied under pressure and in an undampened condition to a wound and comprising mechanics' waste within the weight range one to four ounces, a fluid pervious incasing member for said waste, said member being dimensioned in the order of nine inches square for one ounce and eighteen inches square for four ounces of said mechanics' waste and folder about the waste and stitched in its folded position so that the area of the casing is less than the overall surface of the incased material, said casing and the material therein forming a resilient mass having bulk in depth in the order of approximately one-half inch for one ounce and three inches for four ounces of mechanics' waste, whereby when said resilient mass is applied to a hemorrhaging wound with sufficient pressure to reduce bleeding to a mere ooze it will collapse the injured blood vessels without interfering with the circulation of blood through the uninjured blood vessels which pulsate into the confines of said mass and remain there until automatically ejected by the conjoint action of the bulk and resiliency of the mass which become effective when the pulsations in the uninjured blood vessels subside and means

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for effecting application of said mass under sufficient pressure to control hemorrhage, said means including a roller bandage attached to the mass and adapted to encircle a body member.

4. A resilient pressure dressing adapted to be applied under pressure and in an undampened condition to a wound and comprising mechanics' waste within the weight range one to four ounces, a fluid pervious incasing member for said waste, said member being dimensioned in the order of nine inches square for one ounce and eighteen inches square for four ounces of said mechanics' waste folded about the waste and stitched in its folded position so that the area of the casing is less than the overall surface of the incased material, said casing and the material therein forming a sponge-like mass having bulk in depth in the order of approximately one-half inch for one ounce and three inches for four ounces of mechanics' waste, whereby when said resilient mass is applied to a hemorrhaging wound with sufficient pressure to reduce bleeding to a mere ooze it will collapse the injured blood vessels without interfering with the circulation of blood through the uninjured blood vessels which pulsate into the confines of said mass and remain therein until automatically ejected by the conjoint action of the bulk and resiliency of the mass which become effective when the pulsations in the uninjured blood vessels subside and means in connection with said mass for effecting its application to a wound under sufficient pressure to control hemorrhage, permit normal blood circulation and substantially eliminate edema in the wound area, said means including a roller bandage attached to said mass and adapted to encircle a body member.

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