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3,026,874

WOUND SHIELD

Filed Nov. 6, 1959

FIG. 1

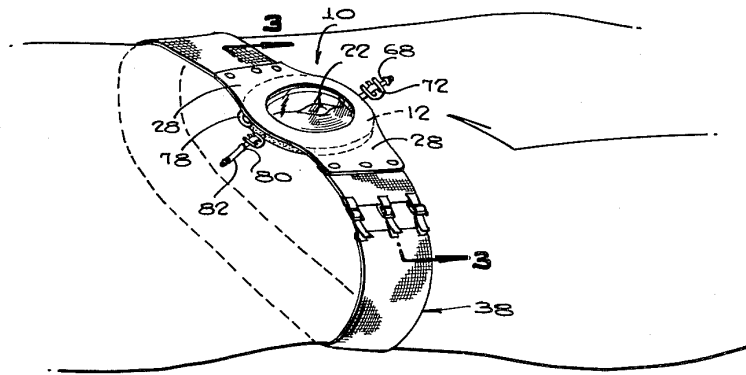


FIG. 2

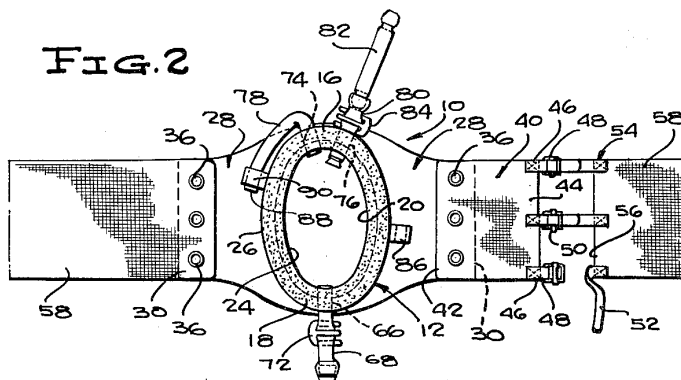


FIG. 3

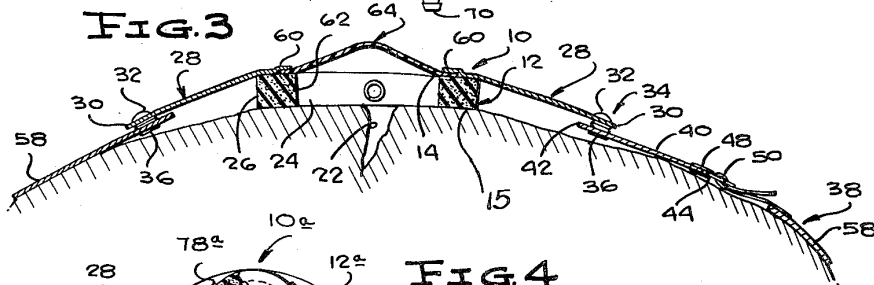
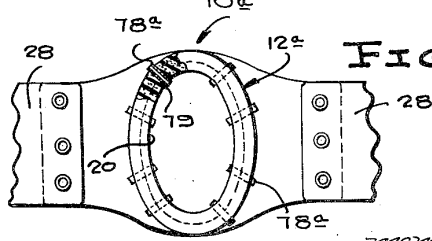


FIG. 4



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WOUND SHIELD

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3 Claims. (Cl. 128-260)

This invention relates to a novel shield for surgically or otherwise produced surface wounds, the primary object of the invention being to provide an efficient and versatile device of this kind which enables and facilitates controlled drainage, either vacuum or gravity, and medication of a wound with the wound unbandaged, and with controlled admission or exclusion of air from the wound; and which surrounds and isolates the wound while avoiding contact with the wound and affording free visual inspection of the wound.

Another object of the invention is the provision of a comfortable and conveniently wearable device of the character indicated above, which is readily applied to different regions of the body of a patient, and which, when so applied is securely installed and can enable unusual freedom of mobility of the patient.

A further object of the invention is to provide a simple, unbulky, and structurally sound device of the character indicated above which is readily adjustable, and which can be easily and efficiently sterilized.

Other important objects and advantageous features of the invention will be apparent from the following description and the accompanying drawings, wherein, for purposes of illustration only, a specific form of the invention is set forth in detail.

In the drawings:

FIGURE 1 is a schematic perspective view showing a device of the invention applied to an abdominal surface wound;

FIGURE 2 is an enlarged bottom plan view of said device;

FIGURE 3 is an enlarged fragmentary vertical longitudinal section taken on the line 3-3 of FIGURE 1; and,

FIGURE 4 is a fragmentary bottom plan view of another form of the invention having a modified form of dam ring.

Referring in detail to the drawings, wherein like and related numerals designate like and related parts throughout the several views, and first to FIGURES 1 to 3, the device therein shown, and generally designated 10, comprises a ring dam 12, of generally circular, but preferably oval shape, and of preferably rectangular cross-section, provided with a preferably flat top surface 14, a preferably flat bottom surface 15, and first and second ends 16 and 18, respectively. The dam 12 is made of soft, non-absorbent, resilient and compressible material which is substantially perfectly conformable to body surfaces without exertion of substantial pressure upon either the dam or the body surface. Dense foam or sponge rubber or inflated rubber or the equivalents in plastic are suitable materials for the dam 12. The dam has a central opening 20, substantially larger than the area of a wound 22 to be surrounded by the dam, which defines an inner edge 24 for the dam, to which its outer edge 26 preferably conforms concentrically.

Suitably fixed upon the top surface 14 of the dam 12, on opposite sides thereof, are similar, clear sheet plastic, highly flexible and outwardly tapered belt anchors 28, which have squared outer ends 30, provided with elements of separable fastening means, such as male members 32 of snap fasteners 34, spaced crosswise of the ends 30, for engagement with female snap fastener elements 36, on the ends of a flexible belt 38.

The primary manner in which the device is held in position is by a belt of soft, non-absorbent, resilient and compressible material. The device may also be held in

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position by any adhesive type cement compatible with the flesh. The latter means may be preferable on a smaller wound or on a relatively flat surface of the body.

For a wide range of adjustability and body conformance, the belt 38 preferably comprises on one end thereof a short end portion 40 having a squared inward end 42 on which female elements 36 are secured, and a squared outer end 44 to which is fixed as indicated at 46, related ends of strap sections 48 which are adjustably connected, by means of buckles 50, to related strap sections 52, which are in turn fixed, as indicated at 54, to the squared free ends 56 of a single flexible belt strap 58.

As shown in FIGURE 3, the anchors 28, at their inner ends, have free edge portions 60 which are clear of and are spaced above the top surface 14 of the dam 12, to provide for retention, by insertion between the top surface 14 and the edge portion 60, of the edges 62 of a conformably shaped, removable clear or transparent window plate 64, which bridges the opening 20 of the dam 12 and, when in place, seals the space between itself, the body surface and wound, and the dam 12, against entrance of outside air, in the absence of other accesses for air. As seen in FIGURE 3, the window plate 64 is preferably convex-concave, so that its edges 62 are tensioned outwardly into the seat between the dam and the anchor edge portions 60.

Extending radially through the second end 18 of the dam 12 is the inner end 66 of a resilient and compressible drainage tube 68, having secured in its outer end a nipple 70, which is adapted to be connected, at times, to a vacuum or suction tube (not shown) when vacuum drainage is used. A shut-off valve or clamp 72 is provided for the drainage tube 68.

Extending radially through the first end 16 of the dam 12, at circumferentially spaced locations, are the inner ends 74 and 76, of a flexible and compressible air vent tube 78 and a flexible and compressible irrigating or medicating tube 80, respectively. As shown in FIGURE 2, the irrigating or medicating tube 80 has secured in its outer end, a rigid nipple 82, for connection to the tube (not shown) of a source of irrigation or medication, and the flexible tube 80 is provided with a suitable shut-off valve or clamp 84. A loop 86 is provided on the adjacent side of the dam 12, through which the rigid tube section or nipple 82 is adapted to be passed, when not in use. A similar loop 88 is provided on the other side of the dam 12 to receive the outer end 90 of the air vent tube 78. It is to be noted that the inner wall of the dam 12 with the adjacent portion of the window or window plate 64 forms an annular space of substantial depth. Also, the bottom surface of the dam 12 sealingly engages the skin of a human when the dam 12 carrying the window 64 and the tubes 68, 78 and 80, is disposed so as to encompass an area surrounding a wound on said human to thereby house said wound within said space completely sealed from the outside air.

It will be appreciated that a variation of the above described device is valuable in the cases of wounds which are antiseptically sealed but not sutured, as in research projects. This type of variation would have no air vents but would be adapted with self-sealing gaskets to admit drugs through the transparent flexible window. This would eliminate suturing and reduce the hazard of infection while still allowing visibility.

The form of the invention shown in FIGURE 4, and generally designated 10a, comprises a covered ring dam 12a, similar to that of FIGURES 1 to 3, having an opening 20 for similar disposal around a wound, and belt anchors 28 secured on its ends. The device 10a is devoid of the single drainage tube, the suction tube, and the single vent tube of FIGURES 1 to 3, and has instead a plurality of circumferentially spaced air vent tubes 78a

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which traverse the dam ring through horizontal bores 79 formed therethrough, for the purpose of supplying maximum controlled and protected flow of and access of air to a wound which the ring dam 12a surrounds.

Although there have been shown and described herein preferred forms of the invention, it is to be understood that any change or changes in the structures of and in the relative arrangements of components thereof are contemplated as being within the scope of the invention as defined by the claims appended hereto.

What is claimed is:

1. A wound shield comprising an annular dam having a central opening, said dam being fabricated wholly of soft, resilient and compressible non-absorbent material and having a top surface and a body-engaging bottom surface, a transparent and flexible window extending over and bridging the opening in said dam and sealingly secured to and carried by the top surface of said dam, the inner wall of said dam with the adjacent portion of said window forming an annular space of substantial depth, a first tube extending through said dam between the top and bottom surfaces of said dam and having one end in communication with said space and having the other end adapted for connection to a source of suction, and a second tube spaced from said first tube and extending through said dam between the top and bottom surfaces of said dam and having one end in communication with said space and having the other end adapted for connection

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tion to a source of medicament, the bottom surface of said dam sealingly engaging the skin of a human when the dam carrying the window and tubes is disposed so as to encompass an area surrounding a wound on said human to thereby house said wound within said space completely sealed from the outside air.

2. The wound shield according to claim 1 which includes in addition a flexible belt having the ends operatively connected to said dam for holding the dam carrying the window and tubes in mounted position upon said human.

3. The wound shield according to claim 1 which includes in addition a venting tube spaced from said first and second tubes and extending through said dam between the top and bottom surfaces and having one end in communication with said space and having the other end in communication with the atmosphere.

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