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FLEXIBLE APPLICATOR

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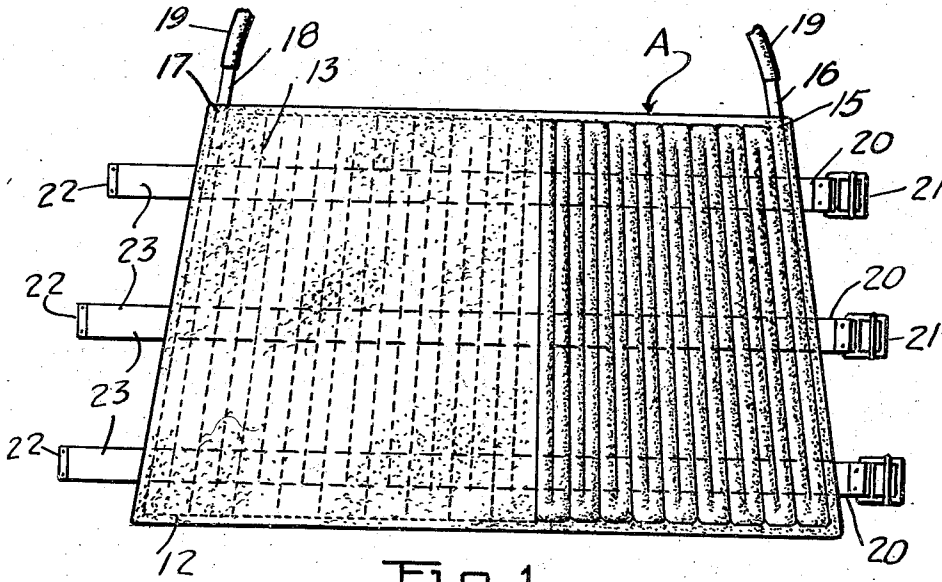


Fig. 1.

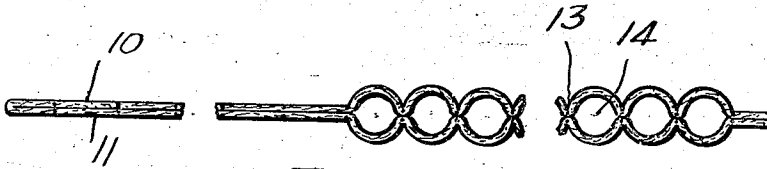


Fig. 2.

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FLEXIBLE APPLICATOR

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4 Claims. (Cl. 257—12)

This invention relates to a therapeutic flexible applicator for refrigeration anaesthesia.

Refrigeration anaesthesia has been lately employed to an increasing extent particularly in the case of amputations and in other purposes. In most cases, however, the cooling or refrigerating process has been carried out by the application of ice packs which is rather cumbersome and difficult to carry out efficiently.

The present invention obviates these difficulties and it is an object of the invention to provide a flexible applicator of simple form which may be readily and efficiently wrapped around a limb, or other part of the body where chilling or refrigeration treatment is required, and through which an even and controlled cooling effect can be obtained.

A further object of the invention is to provide a simple applicator which can be made economically, produced in quantity, and thus made available more widely.

A further object of the invention is to provide an applicator which may be applied and removed quickly.

With these and other objects in view the invention generally comprises an applicator made from a fabric and formed with predetermined refrigerant circulating passages, the said applicator being water-proofed, and preferably including a means attached thereto and for securing an applicator on a limb or other part of the body.

The invention will be clearly understood by reference to the following detailed specification taken in conjunction with the accompanying drawing.

In the drawing,

Fig. 1 is a plan view of a preferred form of applicator according to the present invention, showing a number of the passages of the applicator in the process of being filled with a refrigerant, the remaining passages being unfilled and lying flat and

Fig. 2 is an enlarged transverse section taken through the applicator shown in Fig. 1 more fully to illustrate its construction.

Referring to the drawing, A indicates an applicator according to the present invention which is formed from a suitable close woven fabric and formed in two plies 10 and 11, one overlying the other. The fabric plies are secured together adjacent their margins preferably by stitching 12 and are stitched together preferably in parallel rows as at 13 to form a plurality of fluid circulating channels 14 more clearly illustrated in Fig. 2.

The channels as shown in Fig. 1 are so formed as to provide a continuous tortuous path for the fluid, having an inlet at 15 designed to carry the inlet tube 16 and an outlet at 17 designed to receive the outlet tube 18. The inlet tube 16 and outlet tube 18 form in effect nipples to which suitable tubing 19 may be connected.

Preferably the applicator has connected thereto the applying strap members 20 which may be applied across one side and secured thereto or may be connected merely at the side marginal edges of the applicator. The members 20 are preferably also of the same material as the body of the applicator and are designed subsequently to receive suitable fastening means such as the buckles 21 and suitable edgings such as metal facings 22 may be applied to the tongues 23.

When the applicator is completely formed and preferably including the securing straps, it is coated with a suitable water-proofing agent such as latex, for instance, or any other suitable agent. In this connection it may conveniently be dipped in or sprayed with the water-proofing agent or have the water-proofing agent applied in any practical manner. A close woven fabric is desirable which will receive a coating of the water-proofing agent but which will prevent penetration of such agent therethrough.

The inlet and outlet tubes are preferably inserted in their proper channels before the water-proofing of the applicator and after the water-proofing step has been carried out the tubes likewise are coated with waterproofing material as will also be the case with the straps 20 and tongues 23. The buckles may then be applied to the straps and the metal facings also where desired.

Any suitable circuit or circuits for the refrigerating material may be provided and while a continuous circuit has been shown in Fig. 1 it will be clear that multiple circuits might be employed.

In use the applicator is conveniently applied to and strapped around the contact therewith and refrigerating fluid is passed rapidly through the circuit or circuits in view of the poor conductivity of the rubber-like covering, in order to effect rapid and efficient heat transfer. This, therefore, will permit an intimate contact with the limb or other part being cooled or refrigerated and by reason of the fabric base ballooning of the applicator when under pressure is avoided.

From the foregoing it will be obvious that the applicator provides advantages over the prior art. Not only does it provide a simple and practical unit which may be quickly applied and quickly

removed as well as one easy to locate, but it also provides for controlled chilling of the affected part of the body. Finally, it is apparent that which lends itself to manufacture and which may be made available for wide general use at comparatively low cost.

What we claim as our invention is:

1. A flexible therapeutic applicator comprising a unit formed from two superposed plies of flexible textile material secured together to form a plurality of tube-like passages therein having inlet and outlet openings, for the passage therethrough of a refrigerant, inlet and outlet conduits disposed in and projecting from said inlet and outlet openings, said unit having a water-proof coating applied thereto and having fastening means to secure said unit around a portion of the body for refrigerating selected areas thereof.

2. A flexible therapeutic applicator comprising a unit formed from two superposed plies of flexible textile material secured together to form a plurality of tube-like passages therein having inlet and outlet openings, for the passage therethrough of a refrigerant, inlet and outlet conduits disposed in and projecting from said inlet and outlet openings, securing strap members of similar material to the plies forming the unit secured to the latter, said unit including said conduits and strap members having a water-proof coating applied thereto, said unit being designed to be secured by said strap members around a

portion of the body for refrigerating selected areas thereof.

3. A flexible therapeutic applicator comprising a unit formed from two superposed plies of flexible textile material stitched together adjacent their margins and stitched intermediate their margins to form a plurality of tube-like passages therein having inlet and outlet openings, for the passage therethrough of a refrigerant, said openings designed to receive inlet and outlet conduits, said unit having a water-proof coating applied thereto and being designed to wrap around a portion of the body for refrigerating selected areas thereof.

4. A flexible therapeutic applicator comprising a unit formed from two superposed plies of flexible material stitched together adjacent their marginal edges and stitched between said marginal edges to form a plurality of tube-like passages therein having inlet and outlet openings, for the passage therethrough of a refrigerant, inlet and outlet conduits, disposed within and projecting from said inlet and outlet openings, a plurality of strap members secured to said unit adjacent its margins and projecting outwardly therefrom, said unit including said conduits and strap members having a water-proof coating applied thereto, said unit being designed to be applied to a portion of the body for refrigerating selected areas thereof.

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