July 9, 1946. M. MODLINSKI 2,403,676

HEAT AND COLD APPLICATOR

Filed Aug. 3, 1944 3 Sheets-Sheet 1

Fig. 1

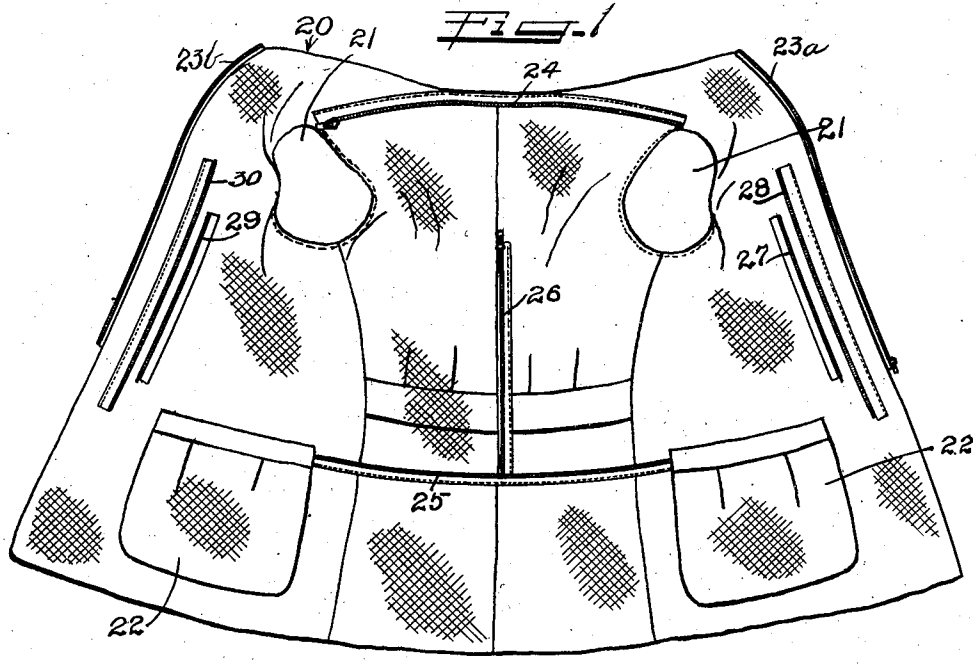


Fig. 2

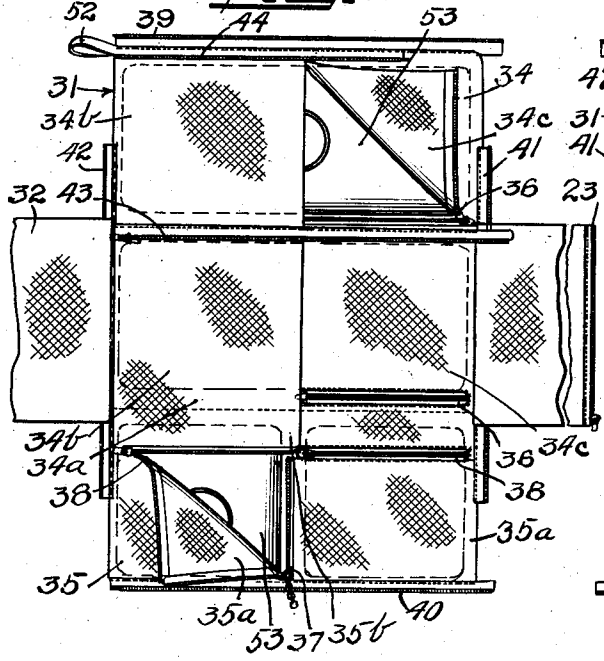
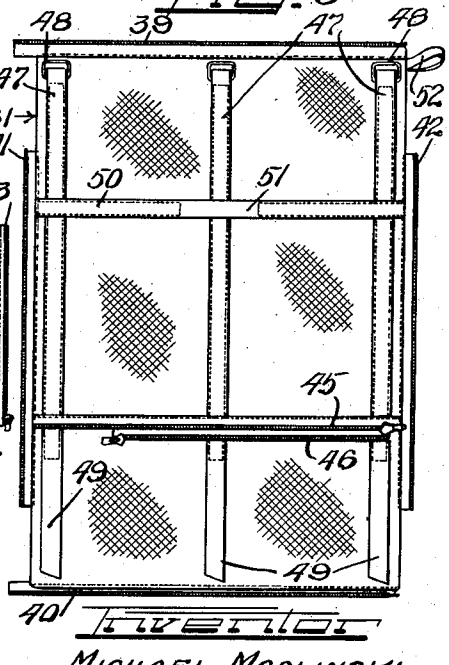


Fig. 3



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BY Charles A. Hield ATTY.

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HEAT AND COLD APPLICATOR

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Fig. 14

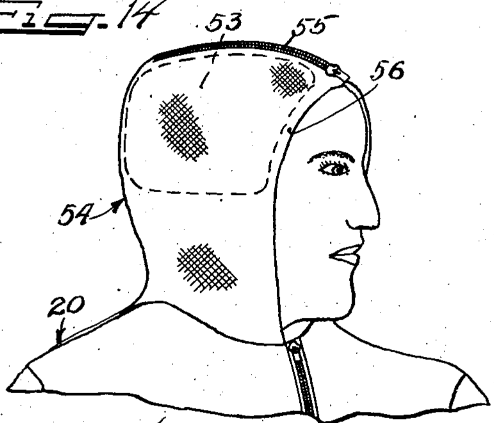

Fig. 7

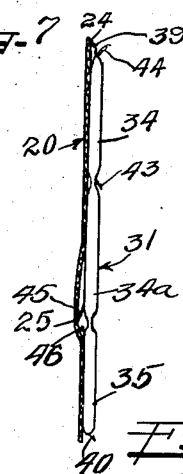

Fig. 4

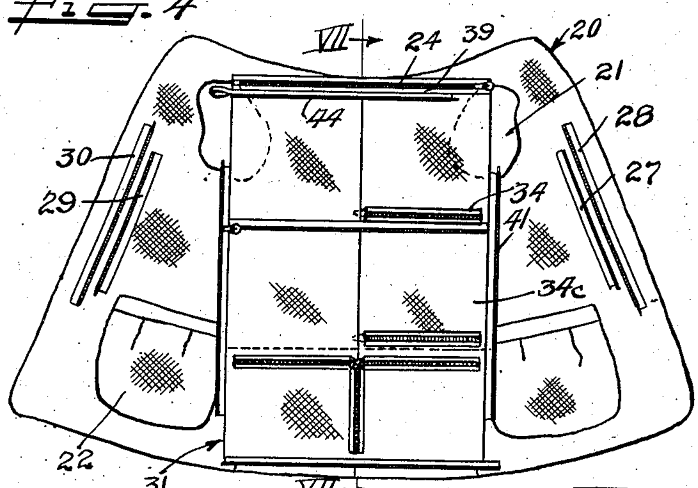

Fig. 8

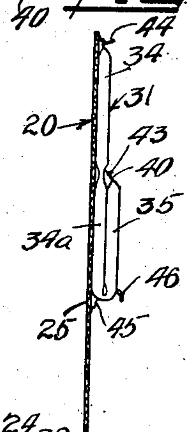

Fig. 5

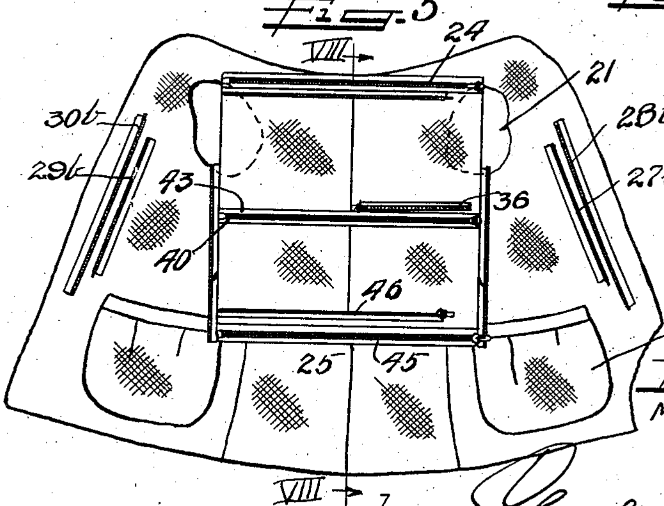

Fig. 9

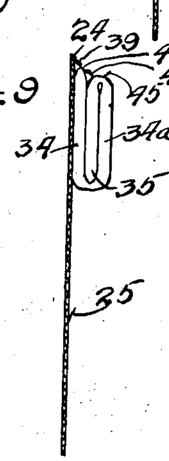

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Fig. 11

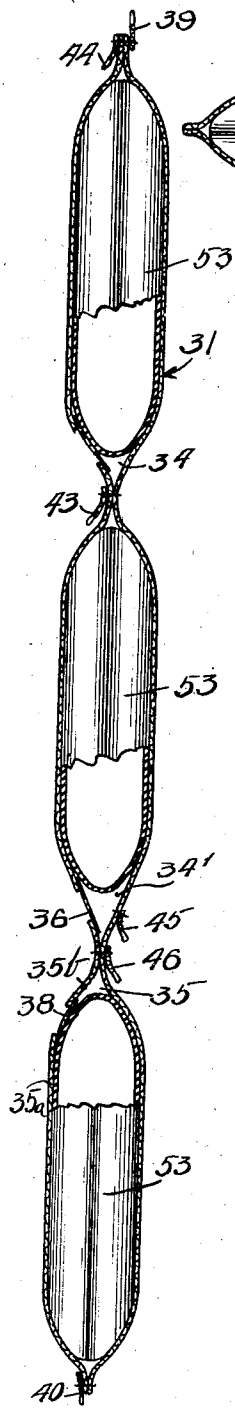


Fig. 12

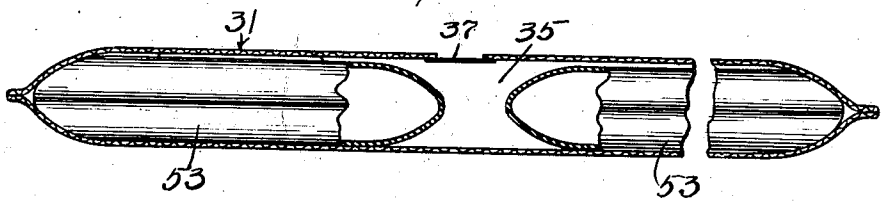


Fig. 6

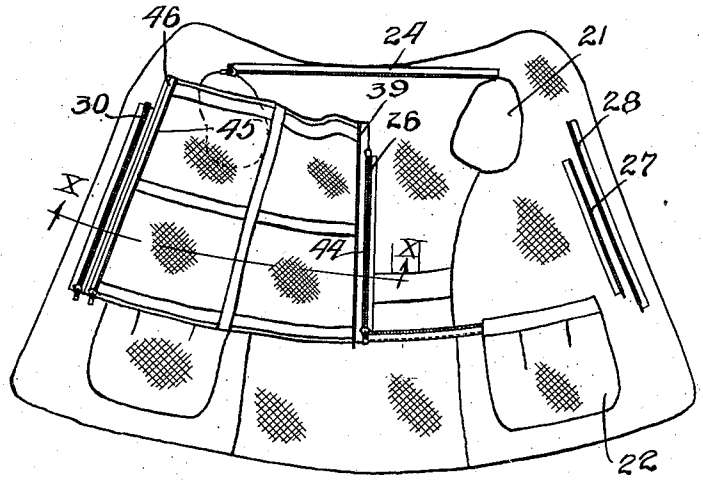


Fig. 10

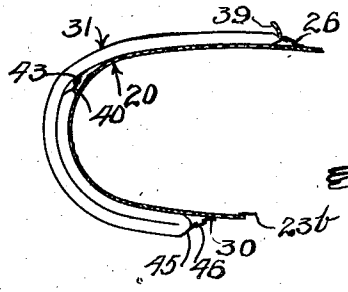
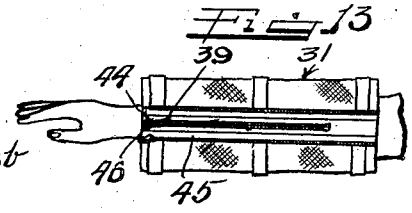


Fig. 13



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UNITED STATES PATENT OFFICE

2,403,676

HEAT AND COLD APPLICATOR

Michael Modlinski, Chicago, Ill.

Application August 3, 1944, Serial No. 547,906

1 Claim. (Cl. 2—94)

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This invention relates to a heat and cold applicator, and more particularly to a device for applying a heat unit such as a hot water bottle, ice pack, or electric heating pad, to the portion of the body where it is desired to apply heat or cold, and for retaining the hot or cold application at that portion of the body regardless of movement thereof.

It has been a common difficulty to apply hot water bottles or other heat units to the body of a sick or hurt person with sufficient security to retain the same in place, since even very slight movements of the body will cause the heat unit to move to a location where it is ineffective or even positively harmful. In many cases, moreover, even when the heat unit can be satisfactorily maintained in place, it is necessary for the patient to assume and maintain an uncomfortable and strained position. Furthermore, in the case of an ambulatory patient, it is necessary to lie or sit quietly during the period of application of the heat unit, often causing inconvenience and fretting or other undesirable emotional effects. A busy hospital nurse may apply a hot water bottle to a patient, only to find upon completion of her rounds that it became dislodged immediately after she left the patient and that no benefit has been gained therefrom.

The present invention overcomes these difficulties, enabling heat or cold to be applied to any portion of the body desired, and maintained at that portion regardless of the position or movements of the patient.

An additional feature of this invention is that it permits multiplying the heating or cooling units applied to any particular portion of the patient's body, thereby increasing the heating or cooling effect and prolonging the effective period of the hot or cold application, as well as permitting variation in the quantity of heat or cold applied.

It is an object of this invention to provide a heat or cold applicator which will hold a heat unit in desired relation to a selected portion of the human body.

It is another object of this invention to provide a heat or cold applicator accommodating heat units in different portions thereof to hold a unit at a desired portion of the body.

It is a further object of this invention to provide a heat or cold applicator having a detachable heat unit carrier which may be secured in various positions on the applicator, so that a heat unit in the carrier may be disposed and

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maintained in any of various locations with respect to the body.

It is also an object of this invention to provide a heat or cold applicator so constructed that heat units carried thereby may be disposed and maintained in multiple at a particular portion of the body to produce an increased heat effect.

It is another object of this invention to provide a heat or cold applicator so constructed as to permit an increased heat effect at a selected body area without the application of heat units beyond the limits of that area.

It is an additional object of this invention to provide a heat or cold applicator for selectively producing a desired heat effect on the body, the applicator being so secured to the body as to prevent shifting of the heat effect from the portion being treated.

Still another object of the invention is to provide a heat or cold applicator so constructed that one or more heat units may be applied to the same or different portions of the body.

A still further object of the invention is to provide a heat or cold applicator having a detachable carrier for heat units which may be separately applied to portions of the body.

Other and further objects and advantages of this invention will be apparent to those skilled in the art from the following description and the appended drawings.

On the drawings:

Figure 1 is a rear elevational view of the applicator of this invention;

Figure 2 is a rear elevational view, with parts broken, of the heat unit carrier;

Figure 3 is a front elevational view of the carrier;

Figure 4 is a rear elevational view of the applicator, with the carrier secured thereto in one relation;

Figure 5 is a view similar to Figure 4, but showing the carrier in another relation;

Figure 6 is a view similar to Figures 4 and 5, but showing the carrier in still another relation on the applicator;

Figure 7 is a cross-sectional view, with the carrier in elevation, taken on the line VII—VII of Figure 4;

Figure 8 is a view similar to Figure 7, taken on the line VIII—VIII of Figure 5;

Figure 9 is a view similar to Figures 7 and 8, but showing the carrier twice folded;

Figure 10 is a horizontal cross-sectional view taken on the line X—X of Figure 6, with the car-

rier in elevation, and showing the applicator and carrier curved as about a body;

Figure 11 is a vertical cross-sectional view of the carrier, with the heat units therein, portions of the heat units being broken away;

Figure 12 is a broken horizontal cross-sectional view similar to Figure 11;

Figure 13 is a view of the carrier alone applied to an arm; and

Figure 14 is an illustration of one modification of this invention.

The invention is illustrated as utilizing a hot water bottle or bag, or an ice pack or bag, as the unit by means of which heat or cold is applied to the body, but it will be understood that the invention is not limited to such means, and that electrical heating units controlled by selective switching means may be employed in this invention. Such electrical units might be integral with the carrier, or might be separate electrical heating pads. The means for heating or cooling the body are referred to herein as heat units, as a matter of convenience.

In the illustrated embodiment of the invention, an applicator 20 is provided in the form of a coat-like garment or jacket having arm holes 21, and if desired, pockets 22. On the rear of the applicator 20 are provided fastener elements secured to the applicator at various portions thereof and hereinafter described. These fastener elements are shown as separable slide fasteners, commonly known as "zippers," but it will be understood that other fasteners may be used, such as buttons and button holes, hooks and eyes, snap fasteners, tying tapes and the like.

Such fastener elements 23*a* and 23*b* may be secured to the front edges of the applicator to close the same when it is being worn. A fastener element 24 is disposed adjacent the neck portion extending between the arm holes 21, and another fastener element 25 is secured centrally of the lower portion of the applicator 20 and substantially parallel to the element 24. Extending vertically at the center of the applicator is another fastener element 26, and spaced at each side thereof and at a slight angle thereto so as to extend substantially parallel to the front edges of the applicator 20 are two parallel fastener elements 27 and 28, and 29 and 30.

A carrier 31 is provided to hold or carry the heat units. Both the carrier 31 and the applicator 20 are made of any suitable material, and are shown as made of fabric. At each side edge of the carrier 31 there is secured a flap 32 with a fastener element 23 at the free edge thereof so that the edges of the flap 32 may be secured together. As shown, the carrier is formed with pockets 34, 34*a*, and 35. The pockets 34 and 34*a* are each formed by cover members 34*b* and 34*c* of substantially half the width of the carrier 31 and secured to the carrier at their top, bottom and outside edges, the inner edges overlapping slightly and providing an opening for the insertion of a heat unit into the pocket. For greater ease and convenience in inserting a heat unit, the bottom edge of the cover member 34*c* is secured to the carrier in a separable manner, as by a fastener 36. The pocket 35 is similar to the pockets 34 and 34*a*, but is formed by two cover members 35*a* and a third cover member 35*b*. Each cover member 35*a* is substantially half the width of the carrier 31, and the cover member 35*b* is of substantially the same width as the carrier. The upper edge and the side edges of the member 35*b* are secured to the carrier, and the outer and lower edges of each cover member 35*a* are also secured to the carrier. The inner or adjacent edges of the cover member 35*a* are separably secured together by a fastener 37, and the upper edge of each member 35*a* is secured to the adjacent portion of the lower edge of the cover member 35*b* by a fastener 38. It will be obvious that if desired the pockets 34 and 34*a* may be constructed in the same manner as the pocket 35, and further that the pockets may each be formed as two pockets, each of half the size of the pockets shown.

The carrier is provided with a fastener element 39 at its upper edge, and another fastener element 40 at its bottom edge. A fastener element 41 is secured to one side edge of the carrier, and another fastener element 42 is secured to the other side edge. A fastener element 43 is also provided extending across the carrier and spaced substantially one-third of the length of the carrier from the top thereof, so as to lie substantially between the two upper pockets 34 and 34*a*. Adjacent the top of the carrier 31 another fastener element 44 is secured extending substantially across the carrier.

As shown in Figure 3, there is secured on the front face of the carrier 31, or in other words, the face opposite that on which the pockets are disposed, a fastener element 45 extending across the carrier and spaced from the bottom thereof approximately one-third of the length of the carrier. Arranged close to and parallel with the fastener element 45 is another fastener element 46 secured to the front face of the carrier 31. Reinforcing strips or tapes 47 extend longitudinally of the carrier, with a clasp, buckle, or the like 48 held in a loop at one end of each tape 47, and with the other end of each tape left free to form a portion 49 which may be secured in the clasp, buckle or the like 48. Another securing tape 50 may be secured across the width of the carrier 31, with a central portion thereof left free or unsecured so as to form a convenient loop or handle 51 for holding the carrier 31. The carrier may also have a loop 52 at one corner thereof, as at the upper left-hand corner as shown in Figure 2, or the upper right-hand corner as shown in Figure 3.

A heat unit 53 is disposed in any of the pockets 34, 34*a*, or 35, or heat units are disposed in two or more of the pockets. In Figure 2, a single heat unit 53 is shown in the upper pockets 34 and 34*a*, this heat unit being of a size and shape to substantially fill the pockets. Two heat units 53 are shown in the lower pocket 35, each being of a size and shape to substantially fill one-half of the pocket. It will be obvious that other sizes, shapes, and kinds of heat units may be used instead of the particular units illustrated, so long as they may be securely retained in the pockets. Figures 11 and 12 also illustrate the carrier with the heat units disposed in the pockets, and Figures 7 to 9 show the carrier in various arrangements with heat units disposed therein.

It will be clear that the carrier 31 may be arranged in various positions relative to the applicator 20 by means of the fastener elements, so as to overlie any desired general area of the torso, and that a heat unit or heat units may be inserted in the pocket or pockets of the carrier so as to overlie a particular portion of the general area of the body. It should also be clear that the carrier may be folded upon itself one or more times along the lines of division between the pockets, and maintained in the folded posi-

tion by means of the fastener elements thereon.

As shown in Figures 4 and 7, if it is desired to produce a heat effect in the region of the back, the carrier 31 is secured to the applicator 20 by engagement of the fastener elements 24 and 39, and also by interengagement of the fastener elements 25 and 45. If heat or cold is to be applied to the portion of the back between the shoulders, a heat unit is inserted in the upper pocket 34, and the other pockets may be left empty. Similarly, if heat or cold is to be applied to the small of the back, or to the lower portion of the back, a heat unit is inserted in the pocket 34a or the pocket 35, respectively. Of course, if heat or cold is to be applied to the entire back, heat units are inserted in all of the pockets.

As shown in Figures 5, 8 and 9, the heat units applied to a particular portion of the body may be doubled or tripled by folding the carrier 31 with the heat units in each of the pockets thereof. Thus, if it is desired to apply more heat or cold to the small of the back than can be supplied by heat units in the pocket 34a, the carrier may be folded on the line between the pocket 34a and the pocket 35, and the fastener elements 40 and 43 interengaged to hold the heat unit or units in the pocket 35 superimposed on the unit or units in the pocket 34a. The upper pocket 34 may or may not have a heat unit or units inserted therein, depending upon whether a heat effect at the upper portion of the back is desired or not. Again, if an unusually concentrated heat effect is desired at a portion of the body, such as at the upper portion of the back, heat units may be inserted in all of the pockets and the carrier first folded to the position shown in Figures 5 and 8 and already described. The carrier is then further folded on the line between the pockets 34 and 34a, with the fastener element 46 interengaged with the fastener element 44, so that the carrier will be in the position illustrated in Figure 9. The fastener elements 25 and 45, of course, are disengaged to permit the second fold. It will be obvious that if only a double instead of a triple application of heat or cold is desired at the upper portion of the back, one of the pockets is left empty, so that although the carrier 31 is folded twice there will be only two and not three heat units superimposed on each other.

In Figures 6 and 10 there is illustrated another position in which the carrier 31 may be secured to the applicator 20, as when a side of the torso is to have heat or cold applied thereto. Assuming that a heat effect is to be produced on the left side of the torso, the fastener element 44 of the carrier 31 is interengaged with the fastener element 26 of the applicator 20, the fastener elements 40 and 43 of the carrier being interengaged as described in connection with Figures 5 and 8, and the fastener element 46 on the carrier is interengaged with the fastener element 30 on the applicator. Heat units may be inserted in the pockets as desired, depending upon the particular portion of the body where a heat effect is desired, and upon how great a heat effect is desired. If the heat effect is to be produced on the right side, the carrier may be folded as before, and secured to the applicator by means of the fastener elements 26 and 44, and the fastener element 46 on the carrier then interengages with the fastener element 28 on the applicator.

It will be understood that the carrier is secured on the outside or back of the applicator, and the applicator then donned by the patient with the front closed by the interengagement of the fastener elements 23a and 23b. When the carrier 31 is secured to the applicator 20 as shown in Figures 4 and 5, the flaps 32 are brought around the body and applicator and secured in front by interengagement of the fastener elements 33 on the free edges thereof. For the sake of clearness, the flaps have been illustrated only in Figure 2, since the structure and operation thereof are readily understood from the description. When the carrier 31 is so positioned that the flaps 32 are not engageable about the body, the flaps may be readily disposed so as not to interfere with the engagement of the fastening elements or the folding of the carrier.

The securing of the carrier 31 to the applicator 20 with the pockets opening at the face of the carrier away from the applicator 20, as in the position illustrated in Figure 4 and in other positions, allows ready access to the pockets for quick and convenient substitution of fresh heat units for units which have lost their effectiveness, without requiring removal of the applicator or otherwise unduly disturbing the patient.

It will also be understood that the carrier and applicator may be made proportionately longer than shown, and that the carrier may have an additional pocket or pockets, so that a heat effect may be produced at other portions of the body than the torso. Of course, the applicator need not be coat-like in form, and might, for example, be in the form of a skirt or trousers, or a trouser leg, or take other shapes and forms.

It is also obvious that the fastener elements on the applicator and on the carrier may be located otherwise than as shown and described, and that additional fastener elements may be provided, as may be desired, and the carrier secured in other relations to the applicator than those shown and described.

The carrier 31 may be used separately to apply heat or cold to a limb. In this case, the carrier is folded and the fastener elements 40 and 43 interengaged, and the carrier then applied about the limb and secured thereon by interengaging the fastener elements 44 and 46. Figure 13 illustrates the carrier applied in this manner to an arm. The carrier might, of course, be similarly applied to a leg. In the case of a leg, the carrier when folded as described might be too small to permit interengagement of the fastener elements 44 and 46. In that event, the carrier may be secured about the leg by interengaging the free portions 49 of the reinforcing tapes 47 with the clasps, buckles, or the like 48 carried by the ends of the tapes 47. In the latter case, also, it might be desirable to wrap the carrier about the leg without any folding thereof. In any case, of course, heat units are carried by the pockets of the carrier as desired.

As shown in Figure 14, the applicator 20 may have a hood portion 54 secured thereto in order that a heat effect may be produced on the head or neck of the patient. If desired, the hood 54 may be separate from the applicator 20, and used as an entirely independent unit, or be adapted to be detachably secured to the applicator 20. The hood 54 has a slit in the top thereof extending from the face opening to the rear of the hood, which slit may be closed by a fastener 55. On each side of the slit a pocket 56 is formed in the hood 54 in which may be inserted a heat unit 53. The pocket 56 may be formed in any suitable manner, as by the provision of a piece of fabric

secured to the inside of the hood with a free edge adjacent the slit so as to provide an opening through which the heat unit **53** may be inserted when the slit is opened by means of the fastener **55**. The pocket **56** may extend downwardly about the neck portion of the hood so that heat units may be applied about the neck of the patient.

If desired fastener elements for the carrier may be duplicated on the front and rear of the jacket or applicator, so that two carrier units may be used simultaneously or one may be applied either front or rear without removing the jacket.

It will, of course, be understood that various details of construction may be varied through a wide range without departing from the principles of this invention and it is, therefore, not the purpose to limit the patent granted herein otherwise than necessitated by the scope of the appended claim.

I claim as my invention:

An applicator jacket comprising a coat-like garment arranged to be worn by a patient, a plurality of fasteners on the outside of the garment, a flexible panel, fastening means on said panel for coacting with the fasteners on the garment to selectively attach the panel across an exterior portion of the garment, said panel having a plurality of pockets for thermal treatment means, said pockets opening on the outer face of the panel, fasteners accessible from the outer face of the panel for closing the pockets, said panel, upon release from the garment of certain of the fastening means, being foldable at one end thereof to provide a plurality of plies each containing one or more pockets and thereby to create a localized stack of pockets on the garment, and means for securing the panel in the desired multi-ply folded form.

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