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(54) **VEST FOR COOLING OR WARMING THE USER**

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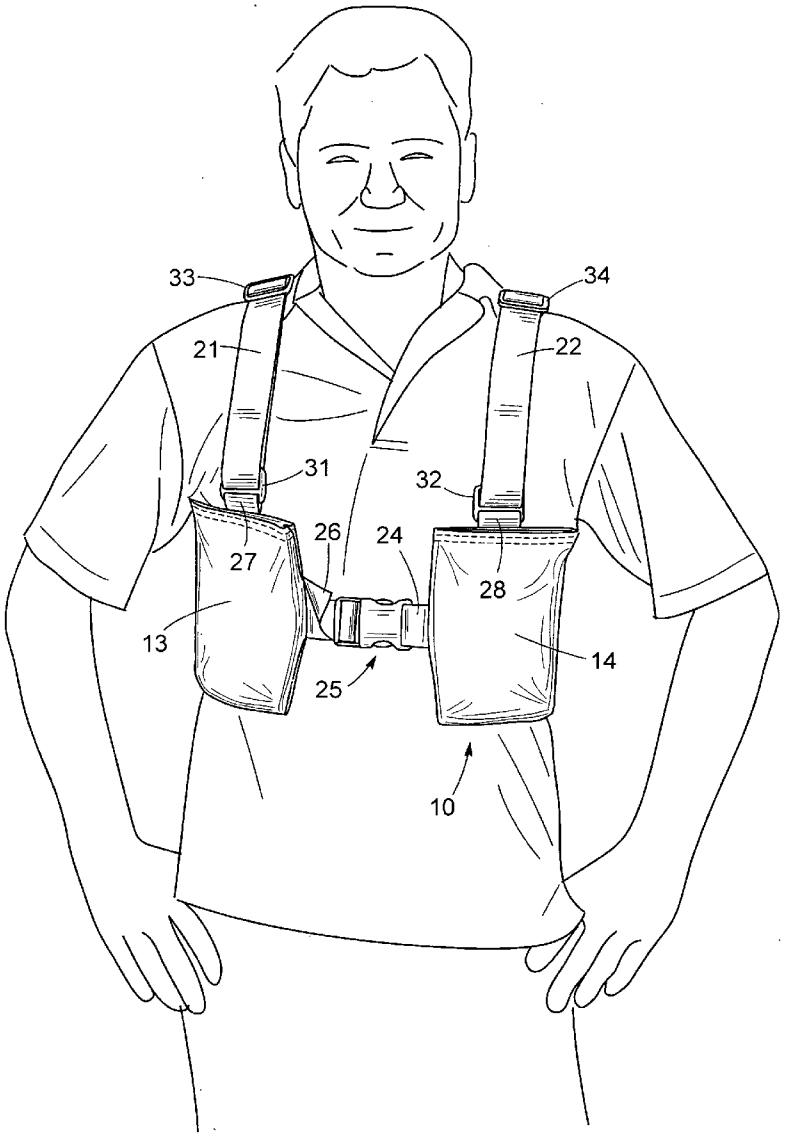
(57) **ABSTRACT**

A body temperature-adjusting vest which includes a plurality of generally rectangular pockets in each of which is housed at least one cooling and/or warming gel pack capable, when activated, of transferring heat between its contents and the wearer's body. The pockets themselves are part of a wide, belt-like, generally symmetrical array worn snugly about the torso. Side-by-side pockets form the array's mid-section where the vest's gel packs are concentrated. Additional pockets are connected to, but spaced apart from, the mid-section by elasticized side bands which pass under the armpits and can be stretched slightly, pressing each pocket against the torso. Reversible in that the array and shoulder straps supporting it can be quickly repositioned and worn with the mid-section in front or back, the vest can reduce a wearer's exposure to changing wind directions and the like.



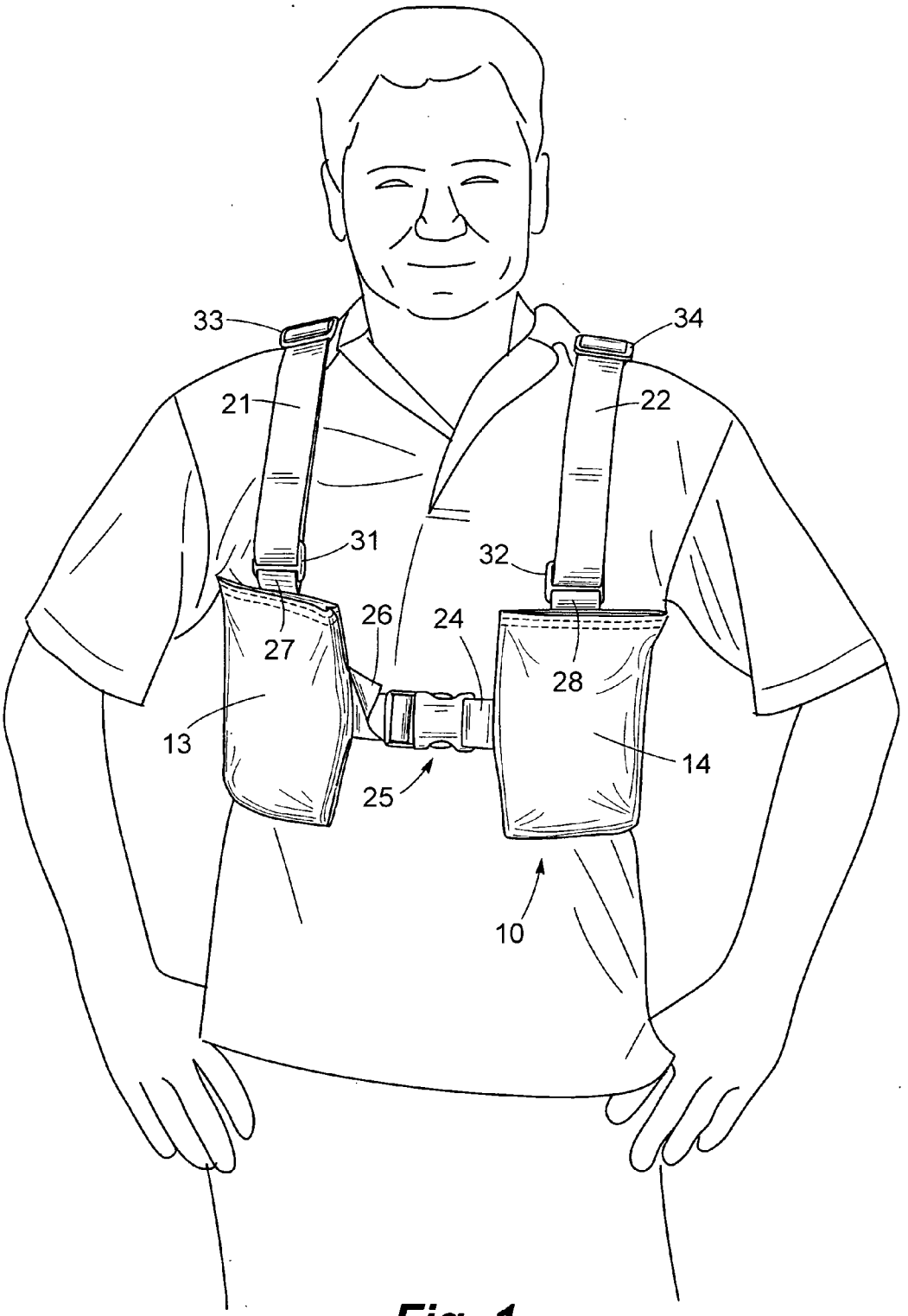


Fig. 1

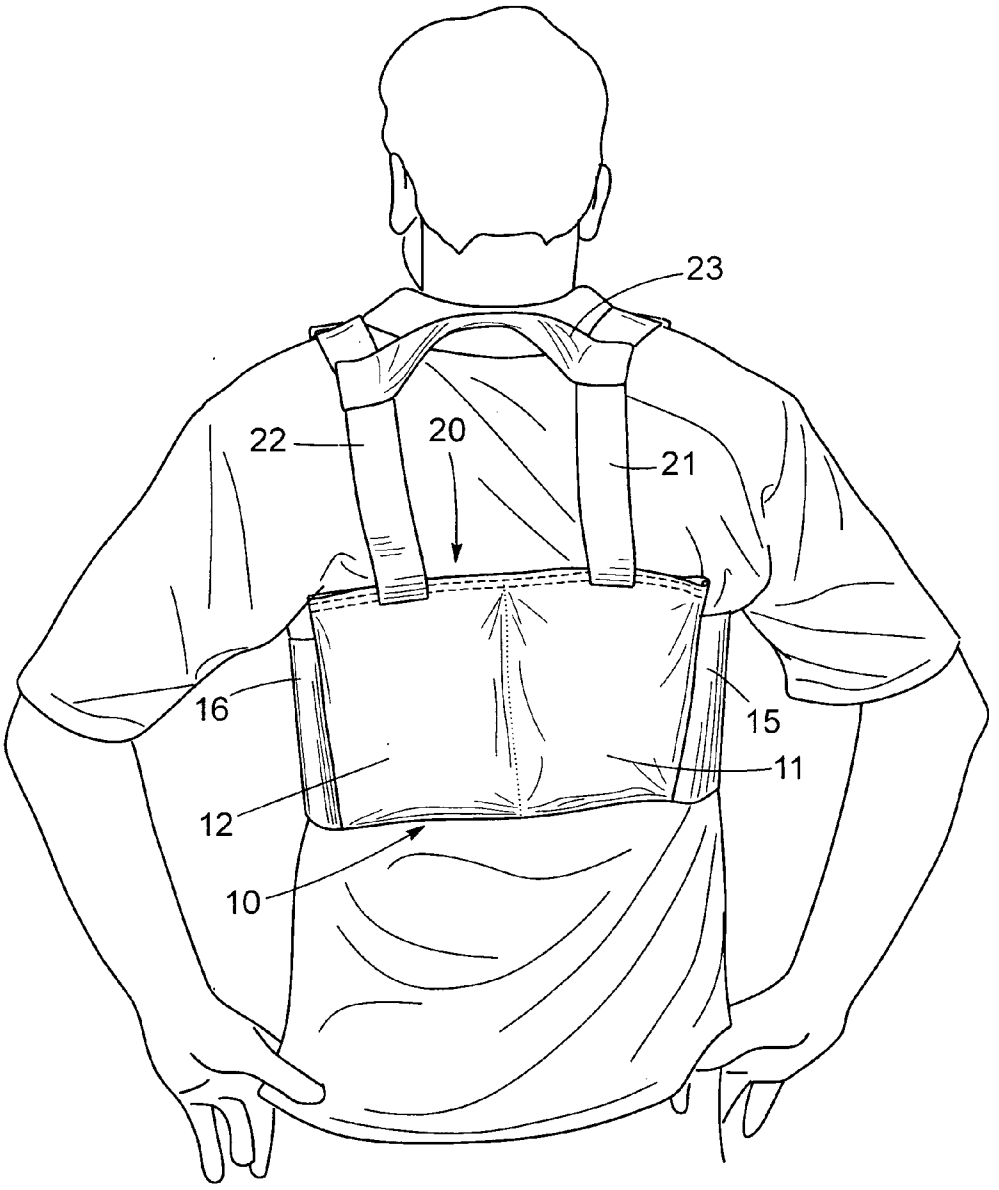


Fig. 2

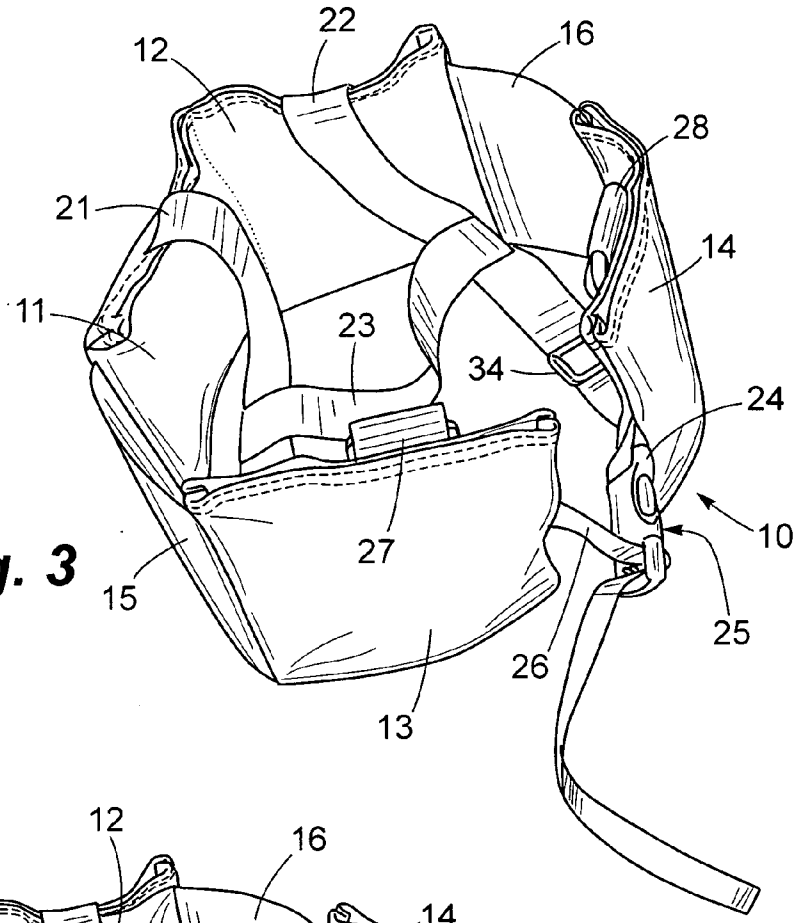

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Fig. 3

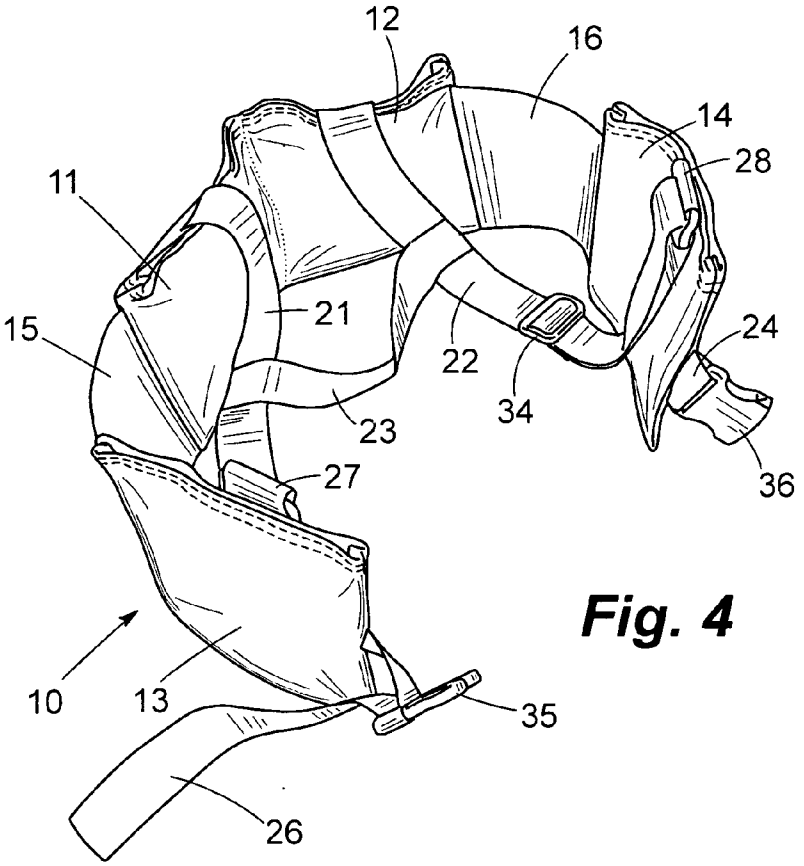
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Fig. 4

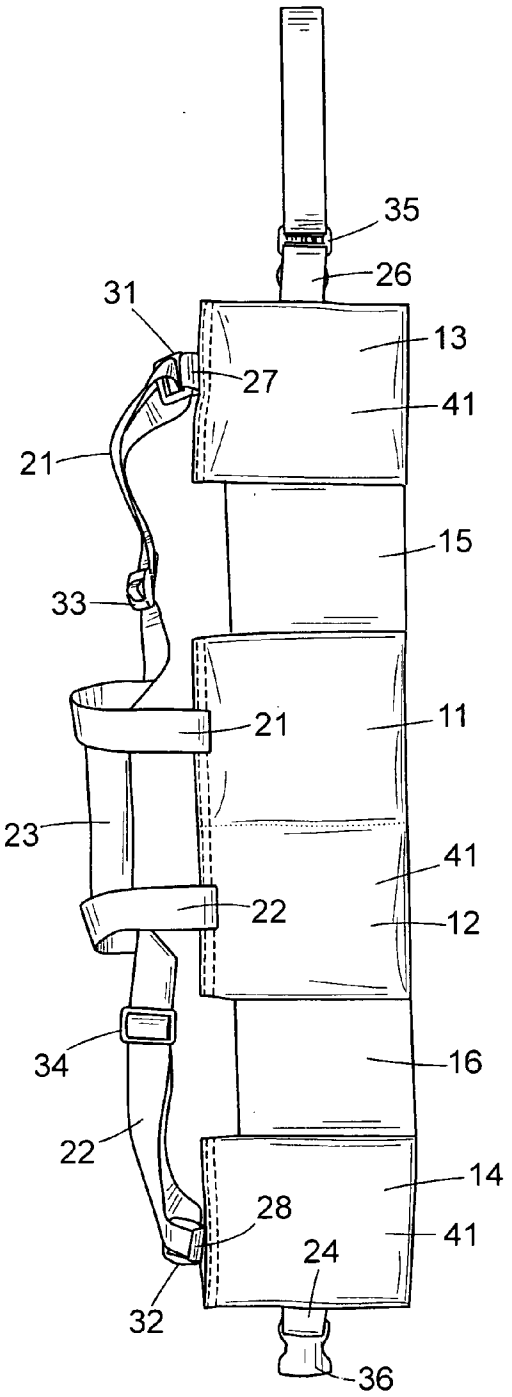
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Fig. 5

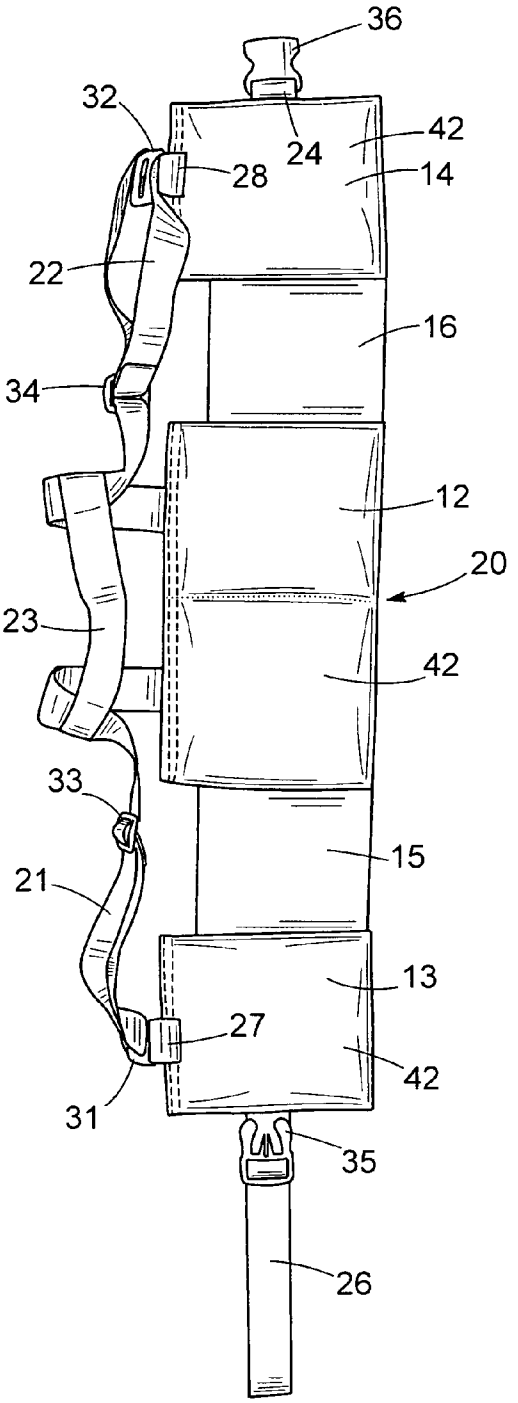
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Fig. 6

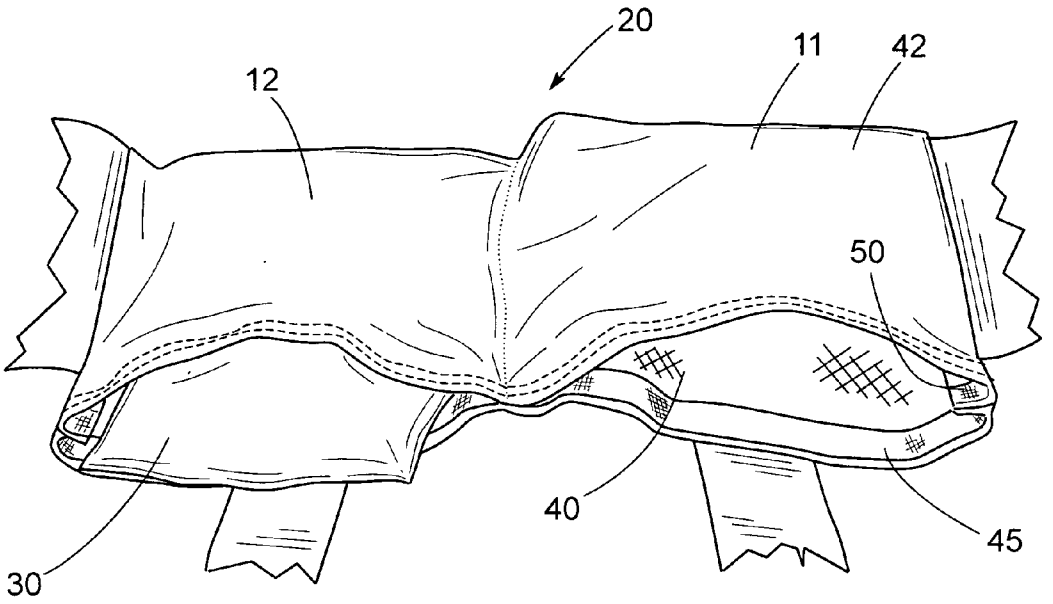

Fig. 7

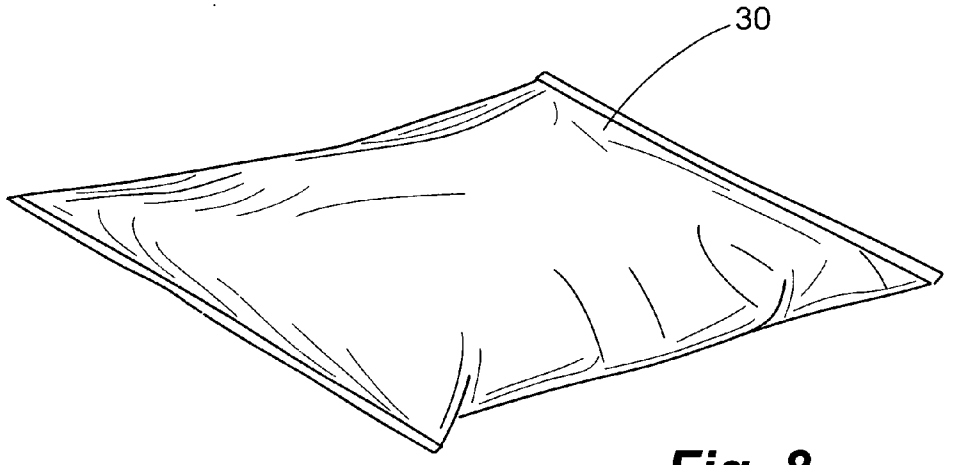

Fig. 8

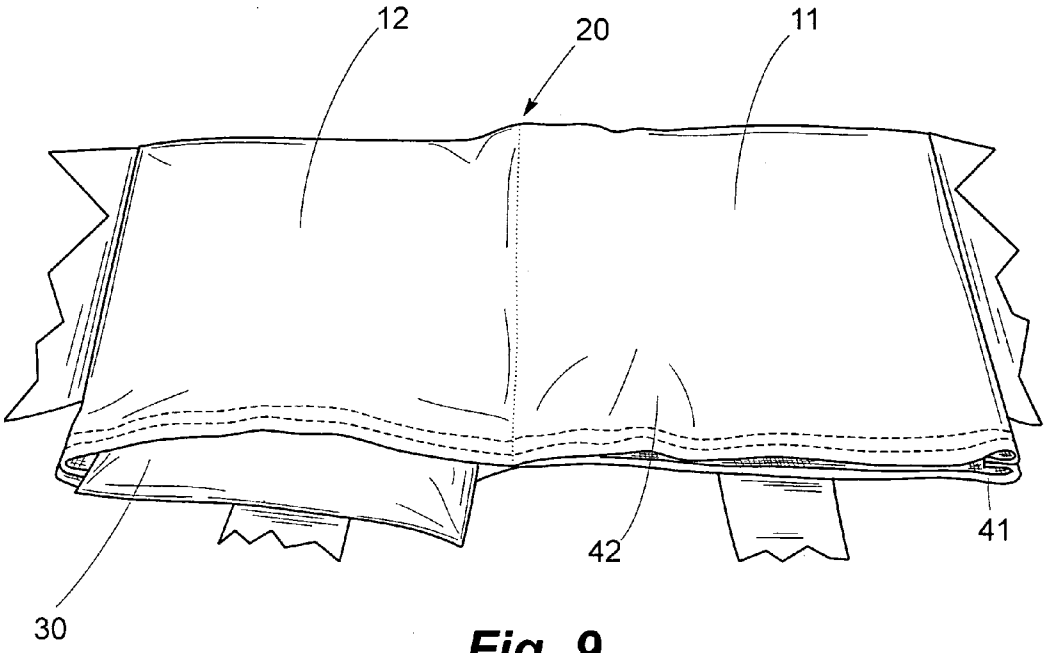

Fig. 9

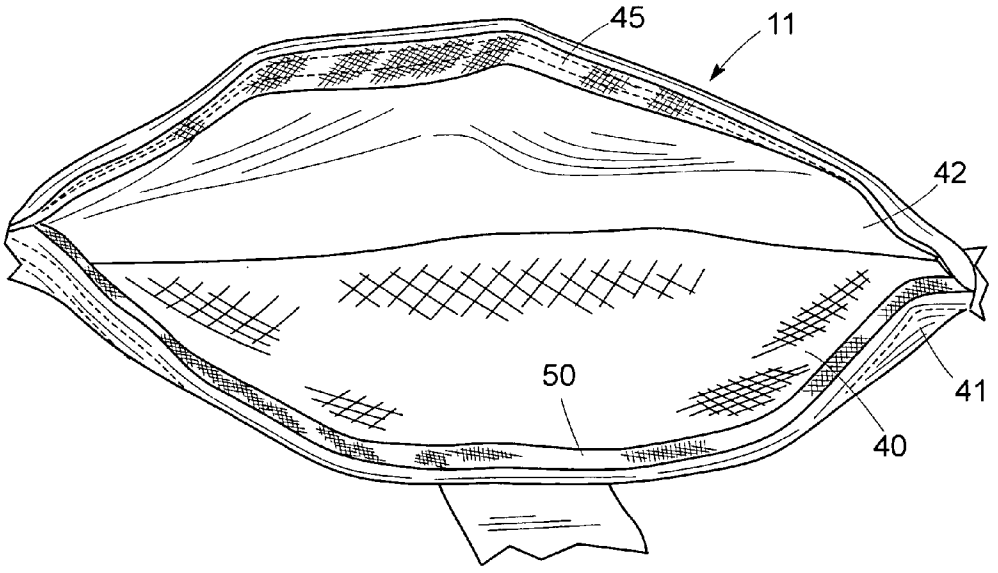

Fig. 10

VEST FOR COOLING OR WARMING THE USER

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application is a non-provisional application of the earlier filed provisional application, Ser. No. 61/630,362, filed Dec. 9, 2011, and claims the benefit of the priority of the filing date of Dec. 9, 2011, pursuant to 35 U.S.C. Sec. 119(e).

FIELD OF THE INVENTION

[0002] This invention relates generally to articles of clothing and more specifically to such articles which a person can wear to keep himself cool in hot weather and warm in winter.

SUMMARY OF THE INVENTION

[0003] The object of the present invention is to provide, in combination, a vest with large pockets and a plurality of gel packs, at least one of which is housed within each of the pockets during use, each gel pack, when activated, absorbing heat energy for hours or, alternately, releasing heat energy over comparable time intervals, thereby helping the vest wearer to cool off in hot weather and warm up in winter.

[0004] A further object is to provide such a combination in which cooling gel packs, when the vest is used for cooling, can be activated by placing them in a freezer. Alternately, when the vest is used for warming, warming gel packs can be activated by heating them in a microwave oven or the like.

[0005] A still further object is to provide such a combination in which warming gel packs, rather than being activated by warming them in a microwave oven or the like, can be activated just by opening the gel pack's outer packaging wrapper and then shaking the gel pack itself and its contents.

[0006] The improved vest, which, in use, is fitted snugly about a wearer's upper torso, includes a plurality of generally rectangular pockets and first and second elasticized side bands. The pockets and the side bands are interconnected in such a way as to form an elongated, generally symmetrical array, the mid-section of which is spanned by at least two pockets, each contiguous pair of pockets in the mid-section being aligned side-by-side and perpendicularly to the array's center-line. Distal ends of the first and second side bands are connected to the mid-section and to first and second pockets, respectively, which, in use, are spaced apart from the mid-section. Moreover, in the preferred embodiment, the first and second pockets themselves are also spaced apart in use, preferably interconnected by a safety release buckle or the like and a pair of straps attached thereto and to the first and second pockets, respectively.

[0007] The pockets in the vest are dimensioned so that each of them can be fitted with at least one gel pack selected from a wide variety of heating and/or cooling gel packs. In those embodiments in which the pockets are sufficiently large that individual pockets can be fitted with more than one gel pack at a time, the wearer can augment the heat transfer capacity of those gel pack(s) initially fitted into such a pocket with additional gel pack(s) activated hours later, thereby sustaining the vest's capacity to transfer heat energy over longer time intervals than would otherwise be possible.

[0008] Closure of each pocket is preferably achieved with the use of a Velcro® fastener or equivalent such as a zipper, buttons or snaps. Alternately, one can fit an individual pocket initially with its capacity of gel pack(s) and sew the pocket closed.

[0009] All exposed layers of the vest's pockets are preferably fabricated from a water resistant cloth, such as a treated cotton, polyester, nylon or the like. Contiguous with the vest's outer cloth layer is a liner, which functions as an insulator. Formed of a heat-reflective material such as that described in U.S. Pat. No. 7,452,833, the liner is employed to conserve some of the stored energy in the gel packs.

[0010] In addition to the straps which attach the safety release buckle or the like to the first and second pockets, the vest preferably also includes first and second shoulder straps connected by a combination dual-slotted fastener and short strap loop to the center of the upper edge of the first and second pockets, respectively. Sized to go over the shoulder of the user, the first and second straps terminate proximate with the upper edge of the mid-section and are connected thereto at spaced apart locations, separated by a distance comparable to the width of one of the mid-section's individual pockets.

[0011] The vest, in the preferred embodiment, is also provided with means for adjusting the respective lengths of both the first and second shoulder straps as well as of at least one of the straps employed to attach the safety release buckle to the first and second pockets, so that not only can the vest be secured snugly about the user's upper torso but also the wearer can move the vest up and down, as needed, over a substantial distance to warm or, alternately, to cool selected areas of his body.

[0012] Further enhancing the usefulness of the vest is the fact that it can be worn with the mid-section held either next to the wearer's back or in front of his chest, so that a user can can reposition the vest to adjust for changing wind directions and temperatures which be may experience while he is engaged in such outdoor activities as running a foot race, sitting in a deer stand and the like.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. **1** shows a frontal view of the improved vest as it is being worn buckled together across a wearer's chest.

[0014] FIG. **2** shows a back view of the vest according to FIG. **1** as the vest is being worn with its mid-section held next to the wearer's back.

[0015] FIG. **3** shows a top view of the vest with the clasp elements of its safety release buckle fully engaged, fastening it together.

[0016] FIG. **4** shows a top view of the vest with its safety release buckle unfastened.

[0017] FIG. **5** shows the vest laid flat, as on a table, with the outer cloth layer of the vest's pockets in an up position.

[0018] FIG. **6** shows the vest laid flat, as on a table, with the inner cloth layer of the vest's pockets in an up position.

[0019] FIG. **7** is a closeup view, on an enlarged scale, of a fragmentary portion of the vest according to FIG. **1**, in which each of the mid-section's pockets has been opened to receive a gel pack, with a gel pack being shown partially inserted into one of the open pockets.

[0020] FIG. **8** is a closeup view, on a further enlarged scale, of a conventional gel pack.

[0021] FIG. **9** is a closeup view, on an enlarged scale, of a fragmentary portion of the vest according to FIG. **1**, in which one of the mid-section's pockets has been opened to receive a gel pack and the other pocket has been sealed, with the gel pack being shown partially inserted into the open pocket.

[0022] FIG. **10** is a closeup view, on a further enlarged scale, of a fragmentary portion of the vest according to FIG. **1**, in which are shown interior surfaces of one of the vest's pockets as well as the placement of the insulator liner contiguous with the vest's outer cloth layer.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0023] In the drawings, the improved vest is indicated generally by the reference numeral **10**. Included in the vest **10** are a plurality of generally rectangular pockets **11-14** and a pair of elasticized side bands **15**, **16**, which are interconnected so as to form an elongated, generally symmetrical array (FIGS. **5** and **6**). Pockets **11**, **12** form a contiguous pair defined by the vest's mid-section **20** and are disposed side-by-side with each other, spanning the mid-section **20** longitudinally. Side bands **15**, **16**, which are attached to the pockets **11**, **12**, respectively, both connect the mid-section **20** to the pockets **13**, **14** and space it apart from them. The pockets **13**, **14**, each of which is situated proximate with one of the array's terminal ends, are preferably interconnected in use by a safety release buckle **25** with clasp elements **35**,**36** attached to them by an adjustable strap **26** and a strap loop **24**, respectively (FIGS. **3** and **4**).

[0024] Each pocket **11-14** is sized so that at least one of any one of a wide variety of heating and/or cooling gel packs **30** can be housed within it. To accommodate a side-by-side alignment of the two pockets **11**, **12** in the mid-section **20**, into each pocket of which at least one such gel pack **30** can be fitted, the mid-section itself, in the preferred embodiment, measures about 12 inches in length by about 7 inches in width, with each of the pockets **11**, **12** measuring about 7 inches by 6 inches. In addition, each pocket **13**, **14** preferably also has approximately the same overall dimensions as does the individual pocket **11** or **12**.

[0025] Examples of heating gel packs **30** which can be housed, more than one at a time, within a pocket **11-14** include the products known as HotHands and Model HH2, both of which are manufactured by HeatMax Inc. of Dalton, Ga. 30733. The model HH2 gel pack **30** comes with an outer packaging wrapper (not shown) and is of special interest because of the ease with which it can be activated and the fact that it has been found to perform well for hours in the vest **10**. Indeed, this gel pack **30** is activated just by removing its outer packaging wrapper and then shaking the gel pack itself and its contents. Each HotHands gel pack, on the other hand, needs to be heated in a microwave oven or the like in order to activate it.

[0026] Examples of cooling gel packs **30** which can be readily fitted into the pockets **11-14** include the Ice-Brik Model IB3, which measures 5 inches long by 2.5 inches wide by 0.5 inch thick, and which is manufactured by Polar Industries, Inc. Activation of this cooling gel pack **30** entails placing it in a freezer.

[0027] An example of a gel pack (not shown) which, depending upon whether it is activated by freezing or, alternately, by being warmed in a microwave oven or the like, can be used either for cooling or warming, respectively, is available commercially in the form of hot and cold multi-purpose compresses.

[0028] Generally, the gel packs must be charged just prior to each use, whether or not they are removably housed in the pockets **11-14** of a vest **10**.

[0029] As is best illustrated in FIGS. **7**, **9** and **10**, each pocket **11-14** preferably includes two water resistant cloth layers **41**, **42** and a liner **40** of heat-reflective insulation material which is disposed contiguous with the inside surface of the pocket's outer layer **41**. The liner **40**, so deployed, reduces heat energy transfer between gel pack(s) **30** housed within a pocket **11-14** and the environment in general. The inner cloth layer **42**, on the other hand, is free of any such insulating liner and, in use, is preferably held snugly against the user's torso, separated therefrom by at most a thin layer of clothing, thus allowing a relatively high rate of heat energy transfer through the inner cloth layer to be achieved.

[0030] Means for pressing the pockets **11-14** against the user's torso includes the elasticized side bands **15**, **16** and the strap **26** which, in the preferred embodiment, is adjustably mounted within a dual-slotted appendage of the safety release buckle's clasp element **35** (FIGS. **3** through **6**). So that the side bands **15**, **16** which, by way of example, measure about 6 inches in width can be utilized, in combination with the strap **26**, to provide for a snug fit but also, at the same time, are sufficiently flexible to allow for ease of motion on the part of the vest wearer, the side bands are preferably fabricated from Lycra® or another spandex fabric commonly utilized in athletic apparel. The length of each band **15**, **16** depends upon whether the vest **10** is small, medium or large in size, with 3 inch long side bands preferably being utilized in the small size vest, 6 inch long in the medium size and 12 inch long in the large size.

[0031] In use, the vest **10** is held in position relative to the wearer's shoulders by a pair of shoulder straps **21**, **22** (FIGS. **1** and **2**). Each strap **21**, **22** is permanently attached to the mid-section **20** proximate with the upper edge of the pocket **11**, **12**, respectively. Distal from the mid-section **20**, each strap **21**, **22**, once it has been threaded through both slots of a dual-slotted fastener **33**, **34**, respectively, is next slideably looped through the upper half of a dual-slotted anchor **31**, **32**, the lower half of which is connected by a short, looped strap **27**, **28** to the center of the upper edge of the pocket **13**, **14** (FIGS. **1** through **6**). Thus, the shoulders straps **21**, **22** can be adjusted, by increasing or, alternately, decreasing the lengths of the looped portions of the shoulder straps, so as to reposition the vest **10** over a substantial distance, downwardly or upwardly, relative to the wearer's shoulders or midriff. The extent to which the looped portions of the straps **21**, **22** can be elongated is limited by a connecting strap **23** attached to both of these straps to keep them from slipping off of the wearer's shoulders (FIG. **2**) Nevertheless, the adjustability in the straps **21**, **22** facilitates the wearer's positioning the vest **10** in such a way as to concentrate the transfer of heat energy to or, alternately, from specific regions within the central core of the wearer's body which otherwise tend to be too cold in winter and/or too warm in hot weather.

[0032] For best results, each of the straps **21**, **22**, **26** should be adjusted so as to provide a firm fit about the user's torso and, in the process, stretch the elasticized side bands **15**, **16** slightly. Also, clothing should be worn over the vest **10** to enhance its performance. Because the heat-reflective liner **40** is placed on the inside of the outer cloth layer **41** of each pocket **11-14**, one can achieve a longer use lifetime for the gel packs **30** than would otherwise be possible.

[0033] Except for the placement of the heat-reflective liner **40** which is to be always worn on the inside of the outer cloth layer **41** of each pocket **11-14**, the vest **10** is reversible in character. As a consequence, a user can wear the vest **10** in such a way that its mid-section **20** is held in front of his chest rather than behind his back. This feature offers special advan-

tages for marathon runners and other athletes engaged for hours at a time in strenuous outdoor activities during which they may encounter abrupt reversals in wind direction and/or 180 degree changes in the direction they must run relative to the wind, sometimes forcing them to run against a cold wind after they have built up a sweat running before the wind, for example—with all such changes potentially giving rise to adverse physiological effects on an athlete and his performance, but which the vest **10**, quickly reversed and worn back to front or vice versa, can help to ameliorate.

1. A vest which a person can wear to keep himself cool in summer, which comprises:

(a) first and second elasticized side bands and a plurality of generally rectangular pockets which are interconnected in such a way as to form an elongated, generally symmetrical array, the array including a mid-section which is spanned by at least two of the pockets, each contiguous pair of pockets in the mid-section being aligned side-by-side, distal ends of the first and second elasticized side bands being attached to the mid-section and to first and second pockets, respectively, which are disposed proximate with the array's first and second terminal ends and which, in use, are spaced apart from the mid-section;

(b) a releasable fastener and a pair of straps connecting the releasable fastener to the first and second pockets at points thereon which, in the case of the first pocket, are spaced apart from its juncture with the first elasticized side band by approximately the first pocket's width and which, in the case of the second pocket, are spaced apart from its juncture with the second elasticized side band by approximately the second pocket's width;

(c) a plurality of gel packs, the gel packs containing a gel which can absorb heat energy for up to hours at a time once the gel has been activated, at least one gel pack being mounted within each of the pockets which are then sealed closed prior to use; and

(d) means for stretching the first and second elasticized side bands slightly when the vest is held in place about a user's torso and, in the process, pressing each of the pockets against his body, so that heat energy can be transferred efficiently from it to the gel packs mounted within the pockets.

2. The vest according to claim **1**, wherein each of the pockets includes two layers formed of a water-resistant cloth and a heat-reflective liner, the liner being juxtaposed between the two water-resistant layers and disposed contiguous with the inside surface of the water-resistant cloth layer which is directed away from the wearer's torso in use, the liner functioning as an insulator to conserve some of the heat-absorbent capacity of the gel contained within each gel pack sealed within each of the individual pockets.

3. The vest according to claim **2**, which is further characterized as being reversible in that the generally symmetrical array can be quickly rotated about the wearer's torso and then worn with the array's mid-section held in front of his chest rather than behind his back, all the while keeping the heat-reflective liner within each pocket contiguous with the inside of the pocket's outer cloth layer, so that a user can reposition the vest to adjust for changing wind directions and temperatures which he may experience while he is engaged in hours-long outdoor activities.

4. The vest according to claim **1**, which further comprises means, including a pair of shoulder straps connected to the mid-section and to the first and second pockets, respectively, for adjusting, in a vertical direction relative to the wearer's shoulders, the position of the elongated, generally symmetrical array when it is held in place about the torso during use, so that by repositioning the array, the user can concentrate the transfer of heat energy away from specific regions within the central core of his body which otherwise tend to be too warm in hot weather.

5. A vest which a person can wear to keep himself warm in winter, which comprises:

(a) first and second elasticized side bands and a plurality of generally rectangular pockets which are interconnected in such a way as to form an elongated, generally symmetrical array, the array including a mid-section which is spanned by at least two of the pockets, each contiguous pair of pockets in the mid-section being aligned side-by-side, distal ends of the first and second elasticized side bands being attached to the mid-section and to first and second pockets, respectively, which are disposed proximate with the array's first and second terminal ends and which, in use, are spaced apart from the mid-section;

(b) a releasable fastener and a pair of straps connecting the releasable fastener to the first and second pockets at points thereon which, in the case of the first pocket, are spaced apart from its juncture with the first elasticized side band by approximately the first pocket's width and which, in the case of the second pocket, are spaced apart from its juncture with the second elasticized side band by approximately the second pocket's width;

(c) a plurality of gel packs, the gel packs containing a gel which can release heat energy for up to hours at a time once the gel has been activated, at least one gel pack being mounted within each of the pockets which are then sealed closed prior to use; and

(d) means for stretching the first and second elasticized side bands slightly when the vest is held in place about a user's torso and, in the process, pressing each of the pockets against his body, so that heat energy can be transferred efficiently to it from the gel packs mounted within the pockets.

6. The vest according to claim **5**, wherein each of the pockets includes two layers formed of a water-resistant cloth and a heat-reflective liner, the liner being juxtaposed between the two water-resistant cloth layers and disposed contiguous with the inside surface of the water-resistant cloth layer which is directed away from the wearer's torso in use, the liner functioning as an insulator to conserve some of the heat energy stored in the gel contained within each gel pack sealed within each of the individual pockets.

7. The vest according to claim **6**, which is further characterized as being reversible in that the generally symmetrical array can be quickly rotated about the wearer's torso and then worn with the array's mid-section held in front of his chest rather than behind his back, all the while keeping the heat-reflective liner within each pocket contiguous with the inside of the pocket's outer cloth layer, so that a user can reposition the vest to adjust for changing wind directions and temperatures which he may experience while he is engaged in hours-long outdoor activities.

8. The vest according to claim **5**, which further comprises means, including a pair of shoulder straps connected to the mid-section and to the first and second pockets, respectively, for adjusting, in a vertical direction relative to the wearer's

shoulders, the position of the elongated, generally symmetrical array when it is held in place about the torso during use, so that by repositioning the array, the user can concentrate the transfer of heat energy towards specific regions within the central core of his body which otherwise tend to be too cold in winter weather.

* * * * *