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(54) Title: SHELTER DEVICE

(57) Abstract: A shelter (10), comprising two side twist-fold panels (11), which are hinged together along their upper edges; and a crumpleable material (12) interconnecting the lower edges of the two side panels (11) to limit the separation of the side panels (11) when the shelter (10) is erect.

SHELTER DEVICE

The invention is concerned with shelter devices which can be quickly and easily erected and which can be used to protect one or more persons from adverse weather conditions, such as excessive ultraviolet radiation in sunlight, and also from unpleasant elements such as rain and wind.

Conventional shelters are time consuming to erect and put away and/or bulky and heavy and, if of the simpler twist-fold construction, as hereinafter defined, consist of panels, usually four or more, which are hinged together in a generally vertical manner making an igloo type shape, which neither provide ideal protection from sun rays, as they tend to be hot and closed-in, nor provide a weight/bulk to size economic shelter and are not very suitable for fishing, bird watching etc. If the shelters are of the four horizontally hinged panel type, they may require guy ropes.

According to the present invention, there is provided a shelter, comprising two side twist-fold panels, which are hinged together along their upper edges; and a crumpleable material interconnecting the lower edges of the two side panels to limit the separation of the side panels when the shelter is erect.

The shelter may further comprise a twist-fold base panel, which is hinged along one edge to the lower edge of one of the side panels, whereby the base panel can be swung between a raised position, in which it is substantially coplanar with the side panel to which it is hinged and can be twist-folded with the two side panels, and a lowered position in which the bottom panel holds the lower edges of the side panels apart.

The side panels and the base panel may preferably be arranged such that, when the base panel is in the lowered position the panels are at substantially 60° to one another. The three panels may be arranged so that they are all substantially the same shape. Alternatively, the side panels may be the same shape, with the base panel having a different shape. In this latter case the front of the base panel may be outwardly curved. The side panels may be coated with a reflective material. The hinge between the two side panels may be provided with an additional waterproof hood which is held in position by velcro (RTM), glueing or other means.

The side panels may be generally triangular with curved corners. One edge of the side panels is, in use, horizontal and rests on the ground. A second edge preferably slopes rearwardly and downwardly and forms the edge which is hinged to

that of the other side panel. The third edge may extend upwardly, substantially vertically. When required for sun ray protection or fishing, the third edge preferably extends with a slight forward inclination to the perpendicular in order to provide a large shaded area and/or good protection from the wind and rain while allowing people to be very much in the open; ideal on a beach or for line casting when fishing.

When the shelter device is made for sun ray protection or fishing, the top edge, where the side panels are hinged together, is preferably sloping rearwardly and downwardly at a substantial angle to the ground of less than 50°, as this will provide extra width at the front of the shelter.

A rigid stay may be provided at the front of the shelter between upper portions of the side panels to ensure that the side panels are kept apart and the increase the rigidity of the shelter.

The size of such shelters can be made to protect a family or in smaller versions for children and pets.

The base panel effectively acts as a ground sheet and may be made of a waterproof material, such as a plastics fabric. It may also be provided with an integral additional ground sheet or sheets extending forwardly and/or rearwardly and which can also act as closure members.

When the shelter is made with three panels the inherent rigidity of the shelter is such that it is not necessary to use guy ropes to ensure that the shelter remains upright. Further, when a person is inside the shelter or when storing equipment, the shelter is resistant to being moved. The shelter may also be provided with toggles or other means for holding down the lower edges of the device with pegs. Preferably, a peg may be connected to the rear of the shelter, preferably by a short link, to prevent the shelter from tipping forward or being blown away. This rear peg also increases the rigidity of the shelter, especially in windy conditions.

When the device consists of only two side panels and no base panel it will be necessary to provide means for holding the side panels apart by pegs, stays, wire or other means in order to achieve a stable structure. In either case pockets for filling with sand or stones could be provided at the base of the side panels to fix the position of the side panels.

A convenient shape is created for the device if the side and base wall panels are generally trapezoidal with increasing width from rear to front. Thus the height and width of the interior space will increase forwardly.

In another embodiment, each side twist-fold panel may have a further twist-fold panel associated therewith, the associated twist-fold panels also being hinged together along their upper edge and connected to their associated side twist-fold panels so as to provide a shelter of extended length using the twist-fold system. In this arrangement, the twist-fold side panels may have a generally rectangular shape with rounded corners.

With this arrangement any twist-fold base panel may also have an additional twist-fold panel associated therewith. All of the twist-fold panels may have the same or similar dimensions, although the base panel and its associated panel may have different dimensions.

The side twist-fold panels and their associated twist-fold panels may be connected by the same or similar material used for the twist-fold panels themselves or may be partly of netting, so that, in fine weather for example, the upper connecting material could be netting, thus providing a good air inlet. When raining, a hood may be provided to cover the shelter and, in particular, the netting if provided. The hood may be used even when netting is not provided. The hood may be a flysheet which could be used to cover the whole of each side panel to increase further the waterproofing of the shelter. The fly sheet may be provided with additional means for fixing it to the ground. The hinged top edge of the side twist-fold panels may be connected by elasticated ribbon to hold up the upper edge of the connecting material.

On each side panel, the edge which forms part of the opening may be substantially vertical or, more preferably, may be slightly inclined forwardly.

When waterproofed, the device may also be used as a shelter for e.g. military personnel, cyclists or walkers who require a light and small "instant" tent-like shelter device which is substantially fully enclosed, ideally for one or two people. In this regard, the front and/or rear opening of the shelter device may be provided with a closure member or members for repeatedly opening and closing the shelter to the outside. The closure member(s) may be attached to the base panel.

The front and/or rear closure member(s) may also be made with perforate netting so that the device can be made fly/mosquito proof.

The closure member may be fixed in its closed position by any fastening means such as velcro (RTM), zips, toggles, ribbons, sliding clasp fasteners or any combination of these devices.

In the present context a twist-fold panel is defined as being formed by a flexible sheet which is normally held taut in a spread position by a loop of spring wire which extends around the periphery of the sheet, the panel being collapsible by grasping the peripheral wire at spaced positions and twisting the wire in the same direction out of the plane of the loop, whereupon the wire folds into three smaller overlapping, almost coplanar loops. Subsequently, slight twisting of the smaller overlapping loops out of the overlapping configuration causes the panel to spring open to its spread position.

Although it could be round, the cross-section of the spring wire usually has a major dimension and a minor dimension, with the major dimension substantially perpendicular to the plane of the panel when in the spread position. The spring wire is preferably flat, but may have an oval or any other suitable cross-section. The wire may be made of a resilient plastic material but will more usually be made of metal.

When the shelter device is collapsed, the twist-fold panels are folded down overlapping one another, whereupon, provided that the loops of wire have a sufficiently similar size, shape and relative disposition, the panels can be collapsed together by grasping and twisting the overlying wire loops simultaneously. The advantage of the construction is that, with the twist-fold panels collapsed, the whole device may be carried in a small flat bag, but readily erected simply by starting to untwist the smaller overlapping wire loops.

Although the sizes and the shapes of the twist-fold panels provided by the side and base wall panels need not be the same shape, their wires must be of sufficiently similar lengths to enable the simultaneous twist-folding.

The rear end of the device could be open, which is ideal when the shelter is used for sun ray protection as the breeze is drawn through by a venturi type effect, partly closed or closed by a rear wall of flexible fabric and any of the side panels and rear wall may be perforate, e.g. made wholly or partly from netting or having openings for ventilation and to provide an open aspect. When for use, e.g. as a fishing shelter or as a shelter in extreme weathers, fewer, if any, openings will be needed and those which are may be provided with closure flaps held in place by e.g. velcro (RTM) or sliding clasp fasteners.

Some examples of devices constructed in accordance with the present invention are illustrated in the accompanying drawings, in which:

Fig. 1 is a front perspective view of a shelter according to the present invention;

Fig. 2 is a rear perspective view of the shelter of Fig. 1;

Fig. 3 is an underside plan of a shelter according to the present invention;

5 Fig. 4 is a front perspective view of an alternative shelter according to the present invention; and

Fig. 5 is an end view of the shelter of Fig 4.

As shown in Figs. 1 to 3, a shelter 10, intended for use as a sunshade device,
10 comprises two side wall panels 11 which are twist fold panels having a peripheral seam containing a loop of spring wire of elongate cross-section. The wall panels are made primarily of a tight woven lightweight nylon fabric which is held substantially taut by the peripheral spring wire when the panels are unfolded. A lower tie member 12 (shown in Fig. 3) interconnects the lower edges of the side panels 11. The tie member
15 12 acts to limit the separation of the side panels and may also act as a ground sheet. In this example, the tie member 12 does not extend over substantially the whole length of the shelter 10, but in other examples (not shown) if it did, it would offer protection to a user from the effects of the ground. It is envisaged however that the tie member 12 may be a narrow strip of fabric or the tie member may completely cover the base
20 of the shelter to provide full protection from the ground.

The tie member and the side wall panels 11 are made of material which is, or is treated to make it, waterproof and the side walls may still be coated to provide reflection of solar radiation. The fabric at the adjacent edges of adjacent wall panels is however continuous or sewn together to provide hinges about which the adjacent
25 panels can rotate relative to one another.

An upper tie section 13 interconnects the upper portions of the front edges of each side panel 11 and an elongate stay 14 is provided between the upper portions and is located in holes 15 to keep the upper parts of the side panels apart a predetermined distance.

30 A peg 16a is attached to rear tie section 13a to prevent the shelter tipping forward and hold it in position. Pegs 16 (shown in Figs 1 and 2) can be attached to the side panels 11 by cords or may be separate from the shelter. These side pegs are primarily required under windy conditions. When connected to the side panels and inserted into the ground, pegs 16 additionally prevent the side panels 11 collapsing

inwardly into the shelter when windy. Additionally or alternatively if desired the shelter 10 can be fixed to the ground by inserting pegs (not shown) through tabs 17 (shown in Fig. 3) located on the lower edges of the side panels. These various fixing means ensure that the shelter is held in an erect position and cannot be blown away by the wind.

The shelter device 10 also comprises a base panel 18 which is also a twist fold panel. The base panel 18 is connected to and hinged with the lower edge of one of the side panels 11. The base panel 18 can be moved from a raised position in which it is substantially coplanar with the side panel to which it is connected, and a lowered position in which its edge, remote from the hinge, is substantially adjacent of the lower edge of the other side panel. In this position, the base panel 18 provides additional rigidity to the shelter 10. Further more, the base panel 18 is above the lower tie member 12.

The base panel 18 is constructed in the same manner as the side panels 11 and may also be waterproofed, so providing additional protection from adverse weather.

The shelter 10 is shown with the base panel 18 in the fully lowered position and it can be seen that the three panels form a generally triangular structure with the based panel being rounded at the front.

The shelter can be used as either a sunshade or for fishing or other outdoor activities. The side panels 11 are substantially the same shape and are approximately triangular with rounded apices. The base panel 18 is of a different shape but the circumference of the side panels 11 and the base panel 18 are sufficiently similar so that they are of similar sizes when twist folded.

The front edges of the side panels 11 are inclined forwardly to increase the area to which protection is offered by the shelter 10. A ground sheet 19 extends forwardly from the shelter to provide an area on which people can sit. Alternatively, the ground sheet 19 can be folded upwards and fastened, for example by means of ribbons 20, to the front edges of the side panels 11. By fixing the ground sheet 19 in this way, a greater degree of protection is afforded to persons within the shelter. Other fixing means such as zips, velcro (RTM) and toggles could also be used.

Figure 3 shows the underside of shelter 10 and the optional tabs 17 can be seen located on each side of the shelter.

In Figure 3, the lower tie member 12 can be easily seen. The ground sheet 19 extends forward of the front portion of the base panel 18 and can be folded along the dotted line 21. Fixing holes 22 are provided at the front of the ground sheet such that the ground sheet can be fixed to the ground through the use of pegs or, when the ground sheet is in its raised position, ribbons 20 attached to the front edge of the side panels can be tied therethrough.

Figures 4 and 5 show a further embodiment of the invention in which components corresponding to those in previous embodiment are numbered identically.

In this embodiment, each side panel 11 has a further side panel 23 associated therewith and connected thereto by stitching and/or fabric 24 and 25. Each of the additional associated side panels 23 are also of the twist-fold type and are connected at their upper edges to form a hinge which is continuous with that of the side panels 11, and attached thereto by fabric and/or perforate cloth 24 and a supporting elasticated ribbon (not shown).

In Figures 4 and 5 base panels 18 are provided, each being associated with respective side panels 11 and 23 and having similar dimensions to the side panels. It may, however, be desirable to have different base panel configurations. Tabs 17 may be provided to enable retaining pegs to be employed, and the end sections of the shelter may have any configuration of the type described above and ideally also incorporates some netting which can be covered over with the fabric in a conventional way so that one can be protected from insects whilst allowing air to flow through. This two-ended construction with both nettings uncovered will provide an excellent air flow. Having a full opening at each end is also useful as people can be at one end and storage at the other or one or more people at each end.

To fold this new type of tent shelter away one first folds the whole device flat and then folds the associated panels 23 180° over the panels 11 and twist-folds the tent shelter away in the conventional way.

In practice it has been determined that, in some of the examples shown in the above-mentioned application, the end of the side panels 11,23 can be forwardly inclined from the vertical in order to provide additional protection and the angle to the vertical is about 5°.

In Figure 4, closure members 26 can be clearly seen. The closure members can be attached to the edges of the side panels 11,23 by any suitable fixing means but preferably by zips 27, and to upper tie section 13 by velcro (RTM). When the

closure members are in their closed position, the shelter is fully enclosed from the elements.

5 Figure 5 shows the provision of a flysheet 28 which is placed over the upper edges of the side panels 11,23 and attached, by means of velcro (RTM), to the upper tie section 13. The flysheet 28 extends down to the ground and can be fixed thereto by pegs (not shown) inserted through tabs 17. A ground sheet 19, attached to both sets of associated side panels 11,23, is provided beneath both base panels 18 extending along the whole length of the shelter and, together with the flysheet 28, make the shelter fully waterproof.

CLAIMS

1. A shelter, comprising two side twist-fold panels, which are hinged together
5 along their upper edges; and
a crumpleable material interconnecting the lower edges of the two side panels
to limit the separation of the side panels when the shelter is erect.
2. A shelter according to claim 1, further comprising a twist-fold base panel, which
10 is hinged along one edge to the lower edge of one of the side panels, whereby the
base panel can be swung between a raised position, in which it is substantially
coplanar with the side panel to which it is hinged and can be twist-folded with the two
side panels, and a lowered position in which the bottom panel holds the lower edges
of the side panels apart.
15
3. A shelter according to claim 2, wherein the base panel is above the
crumpleable material when the shelter is erect.
4. A shelter according to either claim 2 or claim 3, wherein the side panels and
20 the base panel are arranged such that, when the base panel is in the lowered position
the panels are at substantially 60° to one another.
5. A shelter according to any one of the preceding claims, wherein the hinge
between the two side panels is provided with an additional hood which is held in
25 position by velcro (RTM), glueing or other means.
6. A shelter according to claim 5, wherein the hood is a flysheet.
7. A shelter according to any one of the preceding claims, further comprising a
30 rigid stay connected between the front upper portions of the side panels.
8. A shelter according to any one of the preceding claims, further comprising a
peg connected to the rear of the shelter.

9. A shelter according to any one of the preceding claims, further comprising one or more pegs connected to each side panel.

5 10. A shelter according to any one of the preceding claims, wherein one edge of the side panels is, in use, horizontal and rests on the ground and a second edge slopes rearwardly and downwardly and forms the edge which is hinged to that of the other side panel.

10 11. A shelter according to claim 10, wherein a third edge extends upwardly, substantially vertically.

12. A shelter according to claim 10, wherein a third edge extends with a forward inclination.

15 13. A shelter according to any one of the preceding claims, wherein the hinge between the side panels slopes rearwardly and substantially downwardly at an angle to the ground of less than 50°.

20 14. A shelter according to any one of the preceding claims, further comprising a closure member for opening and substantially closing the shelter to the outside.

15. A shelter according to any one of the preceding claims, wherein the rear end of the shelter is substantially open.

25 16. A shelter according to any one of the preceding claims, further comprising an integral additional ground sheet or sheets extending forwardly and/or rearwardly.

17. A shelter according to claim 16, wherein the additional groundsheet or sheets can also act as closure members.

30

18. A shelter according to any of claims 2 to 17, wherein the base panel extends forwardly and has a forward portion which is outwardly curved.

19. A shelter according to any of the preceding claims, wherein each side twist-fold panel has a further twist-fold panel associated therewith, the associated twist-fold panels also being hinged together along their upper edge, and being connected to their associated side twist-fold panels.

5

20. A shelter according to claim 19, wherein the twist-fold panels are generally rectangular.

21. A shelter according to any one of the preceding claims, wherein any twist-fold
10 base panel has an additional twist-fold base panel associated therewith.

22. A shelter according to any one of the preceding claims, wherein a ground sheet extends over the full length of the shelter.

1/3

Fig.1.

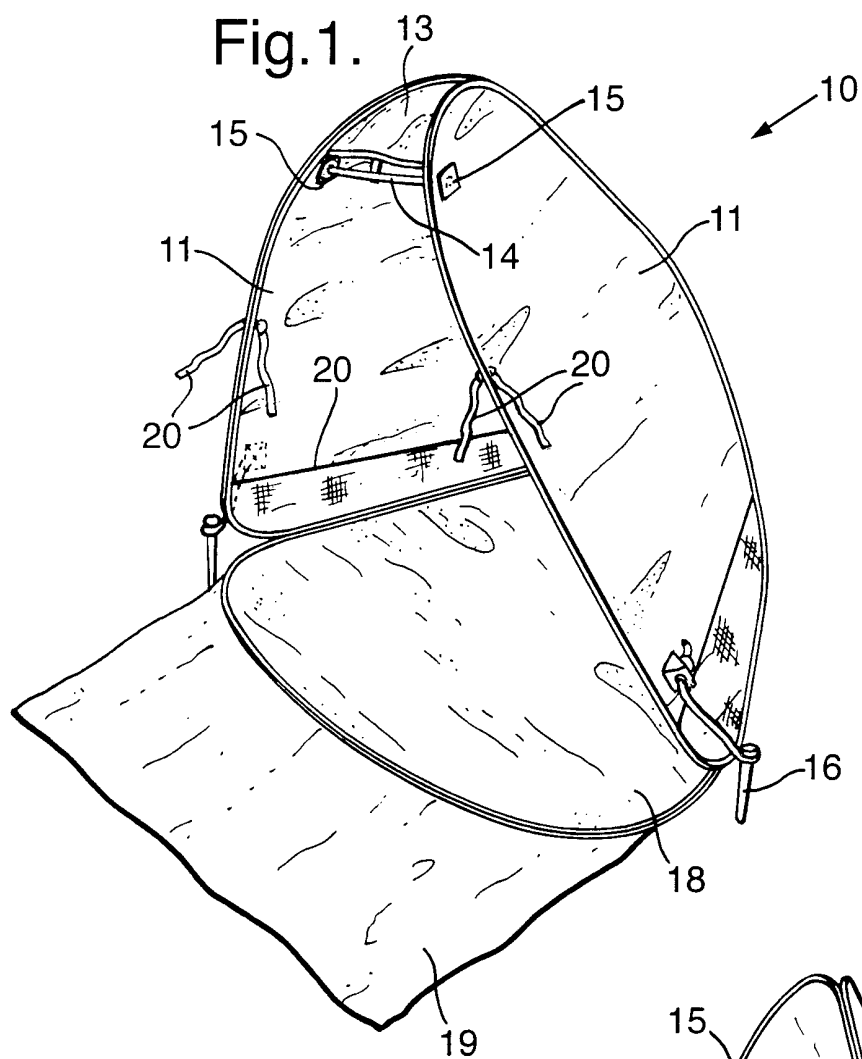


Fig.2.

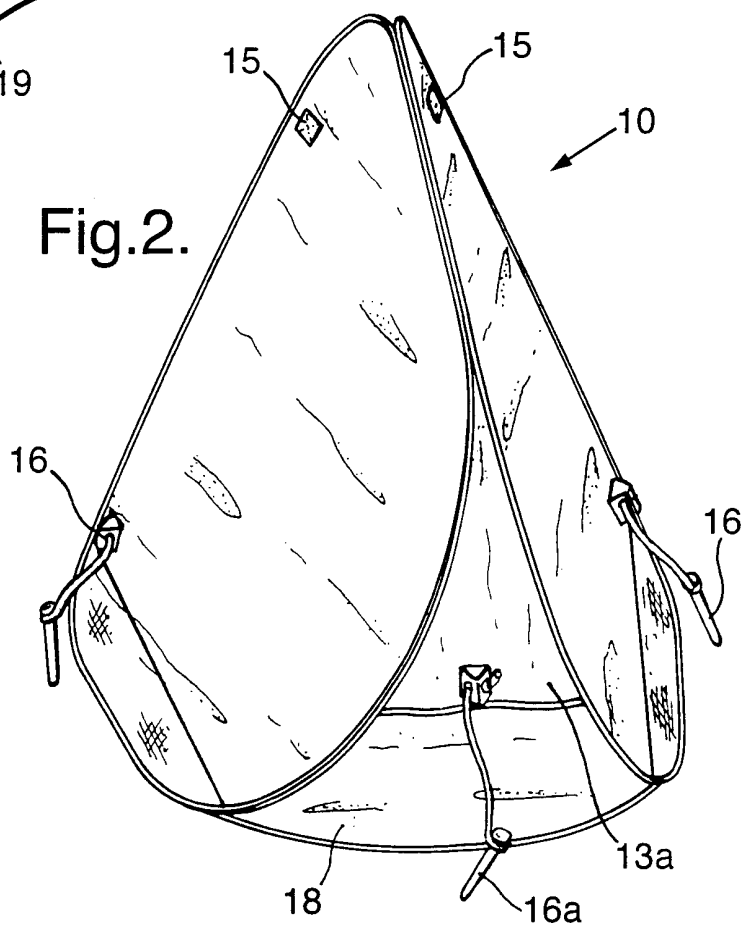


Fig.3.

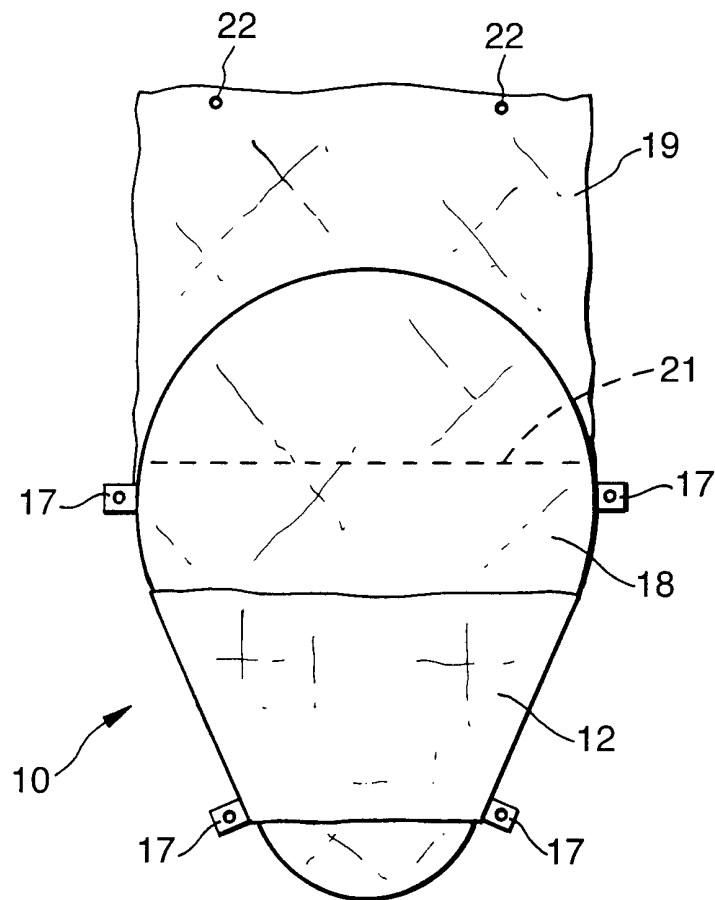


Fig.4.

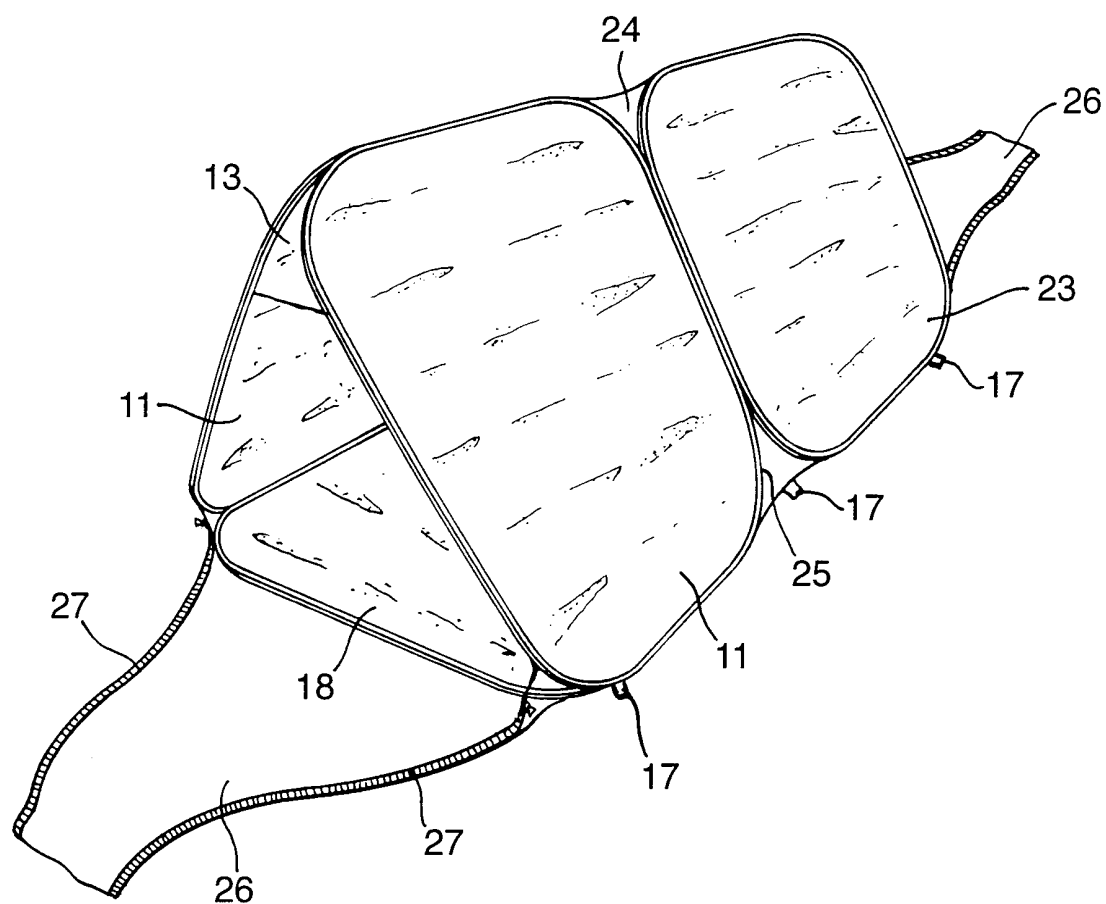


Fig.5.

