



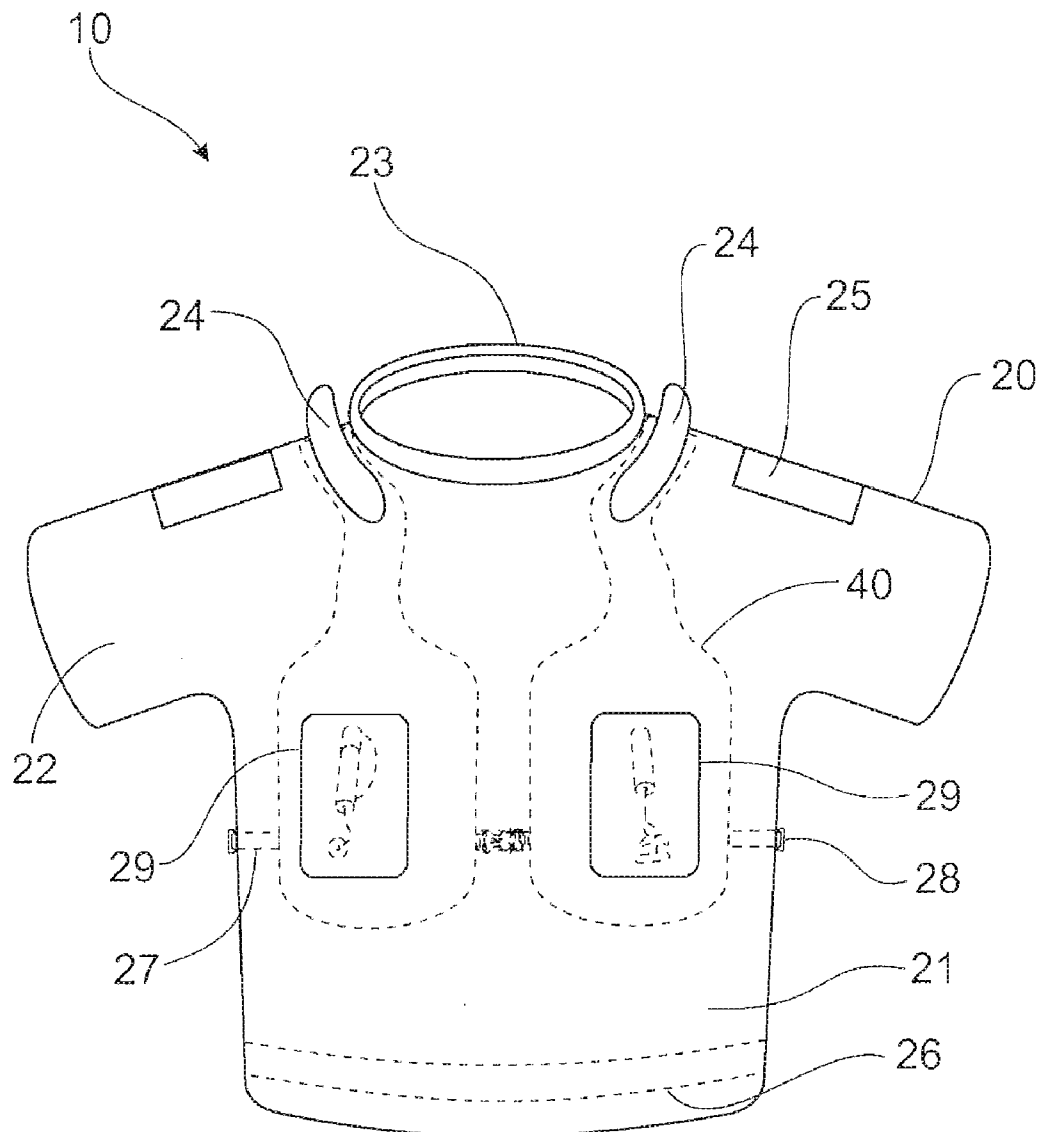
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Withers et al.(10) **Pub. No.: US 2011/0009020 A1**(43) **Pub. Date: Jan. 13, 2011**(54) **FLOTATION DEVICE**(30) **Foreign Application Priority Data**

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SYOSSET, NY 11791 (US)(51) **Int. Cl.**
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B63C 9/08 (2006.01)(52) **U.S. Cl.** **441/118**(57) **ABSTRACT**

A flotation device comprising an outer garment and an inflatable bladder comprising a neck region and at least one chest region, the inflatable bladder located adjacent an inner surface of the outer garment and wherein, in use, the inflatable bladder comprises one or more raised support chambers disposed around the neck region.

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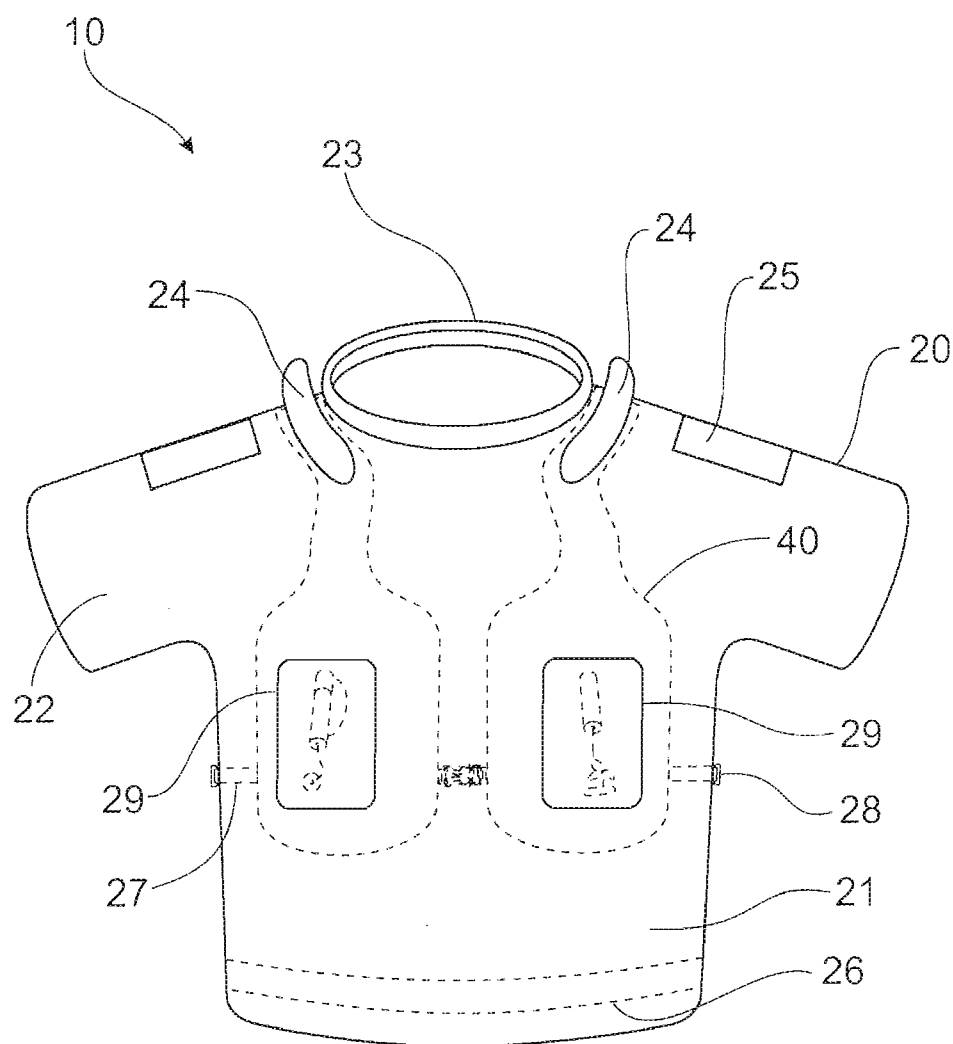


FIG. 1

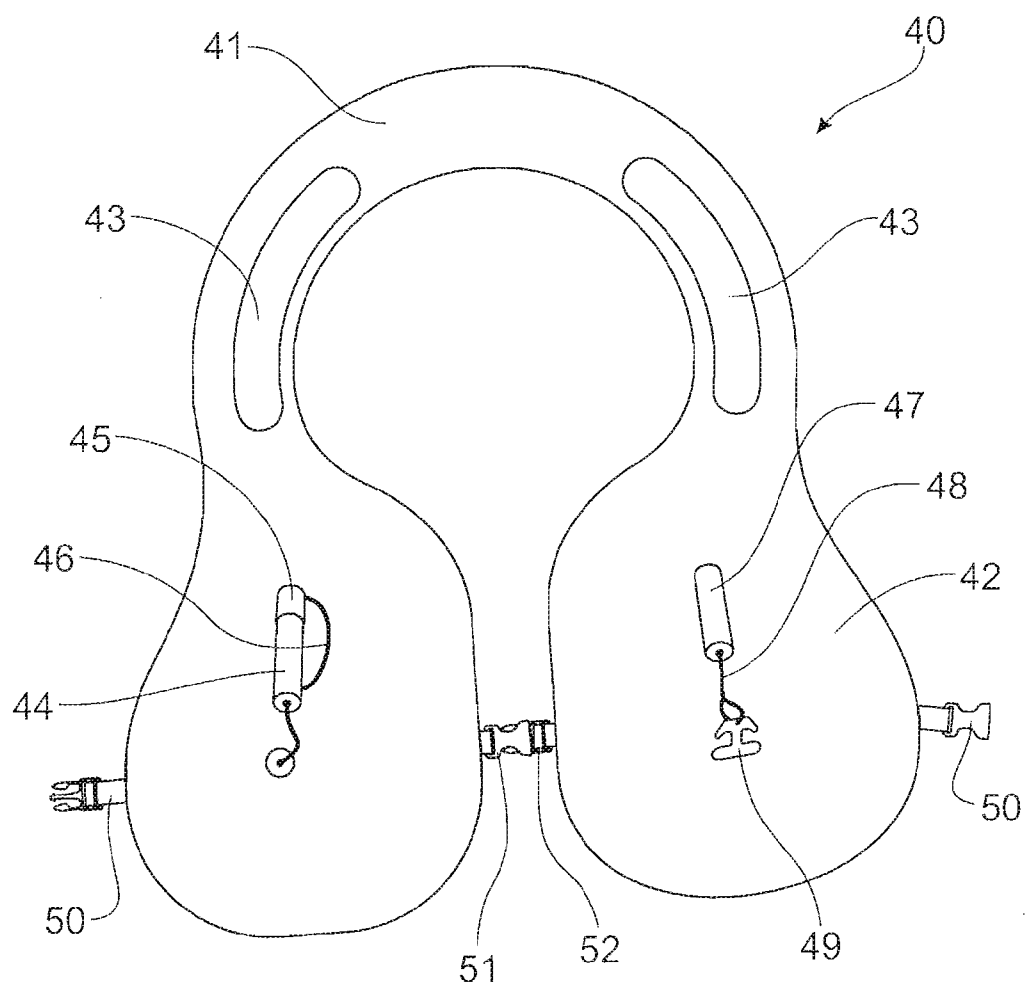


FIG. 2

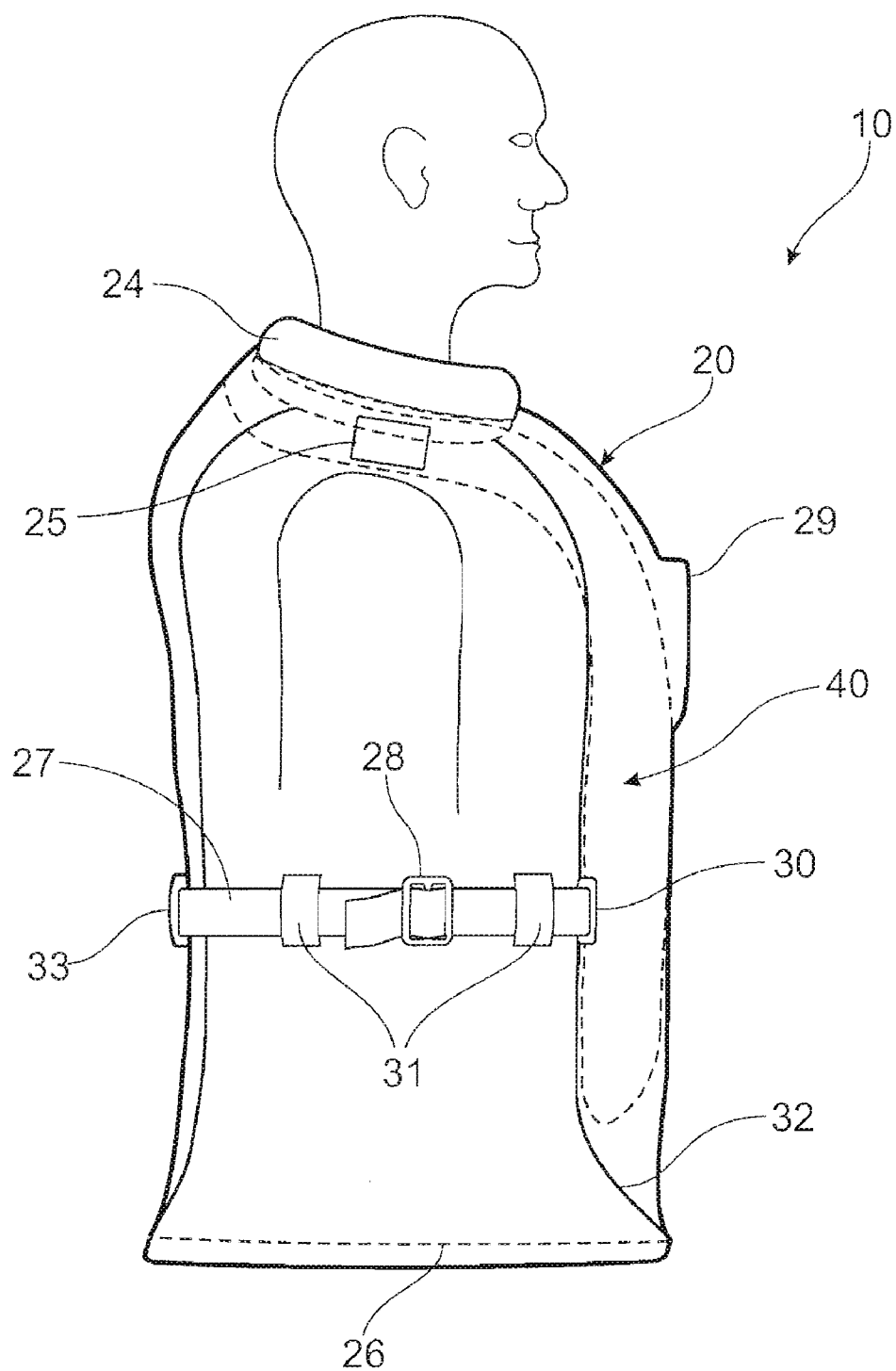


FIG. 3

FLOTATION DEVICE

FIELD OF THE INVENTION

[0001] The present invention relates to the field of safety devices for use in water sports and activities. More particularly, this invention relates to a flotation garment.

BACKGROUND OF THE INVENTION

[0002] Water sports and activities such as surfing, sailing and canoeing are extremely popular but participants run an inherent risk of drowning which comes with being in the water. Those who are not confident swimmers are particularly at risk but even strong swimmers can find themselves in danger due to rough ocean conditions, strong currents and the possibility of becoming too tired to swim or even having been rendered unconscious. While participating in water based activities it is therefore important to lower this risk as much as possible.

[0003] One means of decreasing the risk of drowning is to wear a safety device such as a life jacket or an equivalent buoyancy aid. One problem with such devices is that they are relatively bulky making them impractical for certain activities such as surfing where a certain amount of freedom around the torso is essential.

[0004] There is the further problem that many users do not want to draw attention to themselves by wearing such large garments. Certain water activity cultures seem to afford great importance to image and young people in particular do not want to compromise their appearance by wearing bulky, functional buoyancy aids.

[0005] One possible solution to this problem was presented in PCT application WO 03/075692 which disclosed the use of a shirt having an inflatable device concealed within a compartment of the shirt. The inflatable device could be inflated when required allowing the garment to maintain a relatively normal appearance up until that time.

[0006] Whilst generally suitable for its intended purpose, when inflated, the inflatable device of WO 03/075692 can ride up around the users head and upper torso which can cause panic because the user's freedom of movement and vision are severely restricted. This problem can also be quite dangerous if the wearer cannot see in which direction they should be swimming or signaling to alert rescuers. Further, depending on how loosely the shirt is secured and how buoyant the inflatable device is, the wearers head, and particularly their mouth may still remain close to the water level and so drowning is still a possibility. This is particularly so if the wearer has been rendered unconscious by a trauma.

[0007] Although useful, there is scope to improve the safety profile of the device disclosed in WO 03/075692 and/or otherwise provide the consumer with a useful and/or commercial choice.

SUMMARY OF THE INVENTION

[0008] In one form, although it need not be the only or indeed the broadest form, the invention resides in a flotation device comprising:

[0009] (a) an outer garment; and

[0010] (b) an inflatable bladder comprising a neck region and at least one chest region, the inflatable bladder located adjacent an inner surface of the outer garment,

[0011] wherein, in use, the inflatable bladder comprises one or more raised support chambers disposed around the neck region.

[0012] If required, the one or more raised support chambers may be permanently raised structures.

[0013] Suitably, the at least one chest region of the inflatable bladder is provided with a bladder locating strap.

[0014] Preferably, the bladder locating strap extends between opposite lateral surfaces of the at least one chest region of the inflatable bladder.

[0015] In use, the bladder locating strap extends around a torso of the wearer and, when tensioned, secures the at least one chest region of the inflatable bladder adjacent the torso

[0016] Preferably, said inflatable bladder comprises two chest regions.

[0017] Adjacent areas of the two chest regions may be prevented from separating laterally by means of a connector.

[0018] In one embodiment, the connector is a releasable connector.

[0019] If required, the flotation device may further comprise an inner lining located within the outer garment and attached thereto.

[0020] Suitably, the inflatable bladder is located between the inner lining and the outer garment.

[0021] The outer garment may comprise one or more shoulder flaps to provide access to the inflatable bladder.

[0022] Preferably, the at least one chest region comprises a manual inflation tube and/or an inflation cylinder to inflate the inflatable bladder.

[0023] In another broad form the invention resides in a method of assisting a person to remain buoyant when in a body of water, the method comprising:

[0024] a) placing a flotation device on the person's body before entering the water, the flotation device comprising an outer garment, an inflatable bladder having a neck region and at least one chest region, the inflatable bladder located adjacent an inner surface of the outer garment wherein, in use, the inflatable bladder comprises one or more raised support chambers disposed around the neck region;

[0025] b) entering the body of water; and

[0026] c) inflating the inflatable bladder,

to thereby assist the person to remain buoyant when in the body of water.

[0027] Further features of the present invention will become apparent from the following detailed description.

[0028] Throughout this specification, unless the context requires otherwise, the words "comprise", "comprises" and "comprising" will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

BRIEF DESCRIPTION OF THE FIGURES

[0029] In order that the invention may be readily understood and put into practical effect, preferred embodiments will now be described by way of example with reference to the accompanying figures wherein like reference numerals refer to like parts and wherein:

[0030] FIG. 1 shows a front view of a flotation device according to an embodiment of the invention;

[0031] FIG. 2 shows a plan view of an inflatable bladder, being part of the flotation device shown in FIG. 1; and

[0032] FIG. 3 shows a side view of the flotation device shown in FIG. 1.

DETAILED DESCRIPTION OF THE INVENTION

[0033] FIG. 1 shows a front view of a flotation device 10 according to an embodiment of the invention. Flotation device 10 comprises outer garment 20 and inflatable bladder 40.

[0034] The term “outer garment” as used herein typically refers to shirts such as sun shirts, rash shirts, rash vests, wetsuit shirts and vests but may also apply to garments which do not end with a lower open portion around the waist such as girls and ladies bathing suits, full length wetsuits, three quarter length garments and the like.

[0035] Outer garment 20 includes a torso 21, sleeves 22 and neck 23. One or more pouches 24 are formed in the fabric of outer garment 20 adjacent neck 23 in which to accommodate a portion of inflatable bladder 40 which will be discussed hereinafter. One or more shoulder flaps 25 are present on the exterior surface of outer garment 20, in the embodiment shown, to allow access to inflatable bladder 40 and may be held in the closed position by Velcro, studs, a zipper or like fastening means.

[0036] Tensioning strap 26 is located substantially within the fabric of the lower extent of outer garment 20, apart from an exposed portion (not shown) by which to manually tension and loosen said tensioning strap 26, and so is indicated by dashed lines. Tensioning strap 26 can be tightened by means of a Velcro fastener, sliding buckle or the like which causes the lower extent of outer garment 20 to sit against the users lower torso and lessens the risk of it ballooning up around the arms of the user when in the water. Tensioning strap 26 may be replaced with or accompanied by one or more rubber inserts in the lower extent of outer garment 20 or a strong elastic strip, again to prevent it from riding up around the upper torso of the user.

[0037] Bladder locating strap 27 is located in the vicinity of the lower chest region of the wearer and, at the front of outer garment 20, is located within the fabric of outer garment 20. Bladder locating strap 27 is attached at each end to inflatable bladder 40. As will be seen in more detail later, bladder locating strap 27 exits the material of outer garment 20 at one or both of the sides of said outer garment 20. One or more fasteners 28 are present to enable bladder locating strap 27 to be tensioned and preferably employ Velcro although other fastening means well known in the art, such as a sliding buckle or belt arrangement, may be suitable. Importantly, when bladder locating strap 27 is tensioned it results in inflatable bladder 40 being located to or held in place at its intended operational position adjacent the torso of the wearer.

[0038] Outer garment 20 also includes pockets 29 which are placed in the chest region of the wearer and which may be used to house and/or disguise underlying components of inflatable bladder 40. Depending on which of those components of inflatable bladder 40 are present only one pocket 29 may be provided on either side of the garment or both may be present, as shown in FIG. 1.

[0039] Outer garment 20 may be manufactured from a range of materials known to be suitable for use in and out of water. UV resistant materials are to be preferred and some non-limiting examples of suitable materials include lycra, polyester, cotton, wool, polyurethane, rubber and rubber composites, polyamide/elastane blends and other synthetic materials.

[0040] It is foreseen that outer garment 20 may be manufactured in a short sleeve, long sleeve or even sleeveless design. When manufactured in a long sleeve style the end of the sleeves may be provided with integral gloves for additional warmth. Alternatively the gloves may be removable and can be held in place by Velcro or other attachment means. Similarly, a hood may be provided at the rear of neck 23 which again may be integrally made or may be detachable. Likewise, short sleeve and sleeveless garments may be provided with detachable sleeves to allow simple conversion for increased comfort on both warmer and cooler days. Further, neck 23 may be a simple T-garment rounded neck style as shown in FIG. 1 or may be collared or have a V-neck design.

[0041] In an alternative embodiment to that shown in FIG. 1, outer garment 20 may not be of a pullover or classic T-garment design. For example, outer garment 20 may be designed to be entirely opened at the front or back, such as with a wetsuit jacket or all-in-one wetsuit garment. A full open back design would be of particular benefit to persons with disability. The opening may be fastened with a zip, studs, Velcro or other common fastening means. A full length opening may, alternatively, be provided on the front or sides of the flotation device. The features described herein may also be included within a standard jacket design that would normally be worn primarily for warmth on, for example, a sailing trip. It is often difficult to wear such a jacket over traditional bulky life jackets and even when possible it can be dangerous to do so as the wearer must first remove the jacket before inflation of the device can be safely achieved. The present invention allows inflatable bladder 40 to be incorporated into a relatively slim design of jacket which does not require removal upon bladder inflation.

[0042] It will be appreciated that a number of other design features can be incorporated into outer garment 20 so long as the necessary safety features are maintained. For example, the exterior surface of outer garment 20 may be furnished with a wide variety of designs to make it more attractive and acceptable in terms of image to the various water sports cultures. Further, bright high visibility colours or even fluorescent or reflective material may be used on all or a portion of outer garment 20, such as on any logos or designs, to make it easier for rescuers to spot a user when in the water and in distress. Outer garment 20 may also be provided with air vents to aid in keeping the wearer cool and improving airflow around their body. The vents may take the form of slits or cut outs provided within outer garment 20 or inserts of netting or other relatively porous material.

[0043] In one embodiment, outer garment 20 may be provided with a light, preferably an LED light, which can be activated manually or automatically upon contact with water. The light may be constant or may be a pulsing light to attract attention to the user in conditions of low light or otherwise poor visibility. The light may be battery powered or a small solar panel may even be present on the surface of outer garment 20 to enable the light to be powered for longer periods of time.

[0044] Further safety devices may be included on outer garment 20 including an electronic positioning emergency radio beacon (EPERB), satellite navigation and other ‘locator’ type devices to make location of a user by emergency services easier and more expedient. These devices may be exposed on the surface of outer garment 20 or may be hidden within a pocket or opening provided therein.

[0045] The lack of bulk in flotation device 10 and flexibility in terms of its appearance will allow it to be accepted to a greater degree than more traditional buoyancy aids and so lessen the inherent risk of water sports for those who would not otherwise use such devices.

[0046] FIG. 2 shows a plan view of an inflatable bladder 40, being part of flotation device 10 shown in FIG. 1. Inflatable bladder 40 comprises a relatively narrow neck region 41 which connects two expanded chest regions 42. In the embodiment shown in FIG. 2, two separate raised support chambers 43 are each shown curving around a portion of neck region 41. Support chambers 43 may be made from the same material as inflatable bladder 40 and so may themselves be inflatable or they may be made of a different material which is permanently raised, i.e. does not deflate, such as hollow plastic or solid foam. In alternative embodiments there may be a single support chamber 43 encircling a substantial portion of neck region 23 or there may be more than two support chambers 43 dispersed around said neck region 43.

[0047] When a user is in distress, in the water, the provision of one or more support chambers 43 are extremely important in ensuring the users head remains above the level of the water. This is especially so if the person is unconscious but even in a conscious state can allow them to relax and conserve energy to an extent that is not possible with prior art flotation garments.

[0048] One of the chest regions 42 of inflatable bladder 40 is provided with manual inflation tube 44 which, in the embodiment shown, can also act as a whistle to draw attention and assistance to the user during the inflation process. To inflate inflatable bladder 40 the user will put their mouth over manual inflation tube 44 to such an extent that the whistle air outlet is covered. In this way air cannot escape and is all directed into inflatable bladder 40. When inflatable bladder 40 is fully inflated and the user wishes to use the whistle they merely draw their lips back so as to expose the whistle air outlet. Further blowing action will generate a noise through the whistle to attract rescuers. Manual inflation tube 44 is provided with a cap 45 to prevent water from entering through the mouthpiece. Cap 45 is connected to manual inflation tube 44 by link 46 to prevent it from being lost, particularly once removed to initiate manual inflation.

[0049] The other chest region 42 of inflatable bladder 40, shown in FIG. 2, is provided with an inflation cylinder 47 which contains a sufficient quantity of a fluid to fully inflate inflatable bladder 40. The inflation fluid may be any suitable fluid known in the art such as carbon dioxide, nitrogen or the like. Preferably the inflation fluid is a non-flammable fluid. Inflation cylinder 47 is actuated by tensioning cord 48 upon pulling handle 49. A push button, switch or similar activation means are also considered appropriate. Inflation cylinder 47 may be attached via a threaded receiver (not shown in the figures) such that, once it has been discharged, it can be unscrewed and discarded and a new inflation cylinder 47 put in its place. In this manner the entire inflatable bladder 40 does not need to be replaced after inflation by inflation cylinder 47 but rather a replacement inflatable cylinder 47 can be purchased and located in place of the used one.

[0050] More than one threaded receiver may be present on a chest region 42 of inflatable bladder 40 to enable the attachment of more than one inflation cylinder 47. This can be useful if the user will not have easy access to a source of replacement inflation cylinders 47, such as when on a long

boat trip. It also provides an alternative inflation point should the other threaded receiver become blocked.

[0051] Although not shown in the figures, inflatable bladder 40 may be provided with a further inflation valve. This valve may be provided instead of or in addition to manual inflation tube 44 and inflation cylinder 47. This valve may be capable of being compressed to sit within the border of inflatable bladder 40 much in the manner of a beach ball valve or be permanently located internally in the manner of a soccer ball valve. The valve will receive a standard bicycle/sports ball pump and can be inflated with same. This embodiment will be particularly useful for young children and those who lack confidence in the water.

[0052] A flotation garment 10 of this kind allows them to disguise the fact they are wearing a water safety device and gives them full freedom of movement out of the water. When they are ready to enter the water, however, they will immediately want the security of the inflated bladder and so, rather than having to inflate inflatable bladder 40 orally by manual inflation tube 44 or discharge an inflation cylinder 47, they or a guardian can quickly achieve inflation using the pump referred to. This additional inflation valve may be provided on chest regions 42 but, preferably, will be provided on neck region 41 such that it can be easily accessed via shoulder flaps 25 of outer garment 20 by a parent or guardian. This makes it relatively difficult for a young child wearing such a flotation device 10 to tamper with the valve thereby ensuring they do not unintentionally deflate inflatable bladder 40. A plug, such as a styrene plug, may also be provided to plug the valve referred to thereby ensuring long term inflation of inflatable bladder 40.

[0053] Both manual inflation tube 44 and handle 49 are connected to inflatable bladder 40 in such a way that they pass through the body of outer garment 20 and sit within the confines of pockets 29 to allow easy access to both. It will be appreciated that either manual inflation tube 44 or inflation cylinder 47 alone may be provided on inflatable bladder 40 but, preferably, both are present.

[0054] As discussed previously, opposite lateral surfaces of chest regions 42 of inflatable bladder 40 are connected to bladder locating strap 27. This may be achieved via strap fasteners 50 which connect with complimentary fittings on the ends of bladder locating strap 27 to bind them together and which can, therefore, be considered to be part of or integral with bladder locating strap 27. Strap fasteners 50 are releasable to allow removal of inflatable bladder 40. Alternatively, bladder locating strap 27 may be joined directly to opposite lateral positions on chest regions 42 instead of having strap fasteners 50 in those positions. A connector, if required, to open bladder locating strap 27 may be provided at another position along its length.

[0055] When bladder locating strap 27 is tensioned the force will be transmitted to strap fasteners 50 and the two chest regions 42 of inflatable bladder 40 will tend to be pulled in opposite directions. To prevent the unwanted separation of chest regions 42 a bladder connector 51 and associated bladder connector fastener 52 are placed on opposite adjacent surfaces of chest regions 42 so as to limit their lateral movement with respect to one another. Bladder connector fastener 52 is releasable to allow the separation of chest regions 42 if this should be necessary for removal of inflatable bladder 40 from outer garment 20.

[0056] In one embodiment of the present invention wherein chest regions 42 do not need to be separable to remove inflat-

able bladder **40** from outer garment **20** then bladder connector **51** and bladder connector fastener **52** may be replaced by webbing or fabric of some kind which permanently connects the two chest regions and prevents their lateral movement with respect to one another after tensioning of bladder locating strap **27**. Alternatively, only one large chest region may be provided and so separation of chest regions is not a concern.

[0057] Inflatable bladder **40** may be manufactured from a range of materials which are well known in the art. Some non-limiting examples include nylon, plastics, neoprene, canvas, polymeric blends and various UV resistant fabrics.

[0058] FIG. 3 shows a side view of the flotation device shown in FIG. 1. In the embodiment shown, inflatable bladder **40** is fully inflated and so a pouch **24**, formed in outer garment **20**, is seen to be filled by a raised support chamber **43** of inflatable bladder **40** and sits adjacent the neck region of the user. In use, support chambers **43** provide support for the users head and maintain it above water even when unconscious. This is an important advance upon prior art devices and provides an improved safety profile without noticeably increasing the overall size or bulk of flotation device **10**.

[0059] Bladder locating strap **27** is seen to emerge from the front interior of outer garment **20** at first slit **30** and pass through one or more loops **31** formed on the exterior of said outer garment **20**. Bladder locating strap **27** is external to outer garment **20** in this area to enable its easy adjustment via fastener **28** which may employ a buckle or Velcro fastening means. Bladder locating strap **27** is seen to pass in to the back interior of outer garment **20** via second slit **33**. The external portion of bladder locating strap **27** may be present on one or both sides of outer garment **20**.

[0060] Inflatable bladder **40** may be located between the interior surface of outer garment **20** and an inner lining **32** which, in the embodiment shown in FIG. 3, runs from the rear of outer garment **20** around to the front and substantially down to tensioning strap **26**. Inner lining **32** provides softer skin contact than inflatable bladder **40** may provide and, if required, may provide support for the lower extent of inflatable bladder **40**. In some embodiments inflatable bladder **40** may be substantially encapsulated by inner lining **32** but it will be appreciated that it is still located between at least a portion of inner lining **32** and outer garment **20**. Inner lining **32** may be manufactured from the same range of materials already mentioned in relation to outer garment **20** and may include a perforated or mesh-like material design.

[0061] As mentioned previously, in the embodiment shown, shoulder flaps **25** provide access to this compartment formed between the interior surface of outer garment **20** and inner lining **32**. To remove inflatable bladder **40**, through a shoulder flap **25**, its chest regions will need to be separable and the inflatable bladder will be pushed back towards the rear of outer garment **20** until one of the chest regions can conveniently be pulled through one of shoulder flaps **25**. Clearly, this will be more easily achieved when inflatable bladder **40** is deflated. Optionally, the lower front extent of inner lining **32** can be made detachable from the interior surface of outer garment **20** and the inflatable bladder **40** can be removed via this opening, once again, assuming the chest regions **42** are separable.

[0062] In an alternative embodiment, inner lining **32** completely encapsulates inflatable bladder **40** and is attached to the interior surface of outer garment **20** by Velcro, studs, zip fastenings or the like. In this way the entire inner lining **32** and encapsulated inflatable bladder **40** can be removed from flo-

tation device **10** without the user having to remove outer garment **20**. An opening will be provided within inner lining **32** to allow removal of the inflatable bladder **40**. In this embodiment shoulder flaps **25** would not be required.

[0063] In yet another alternative embodiment, inner lining **32** may be absent altogether. In this embodiment inflatable bladder **40** would be integral with or attached to the inner surface of outer garment **20**. Inner lining **32** is generally provided for the comfort of the user but if the surface of inflatable bladder **40** which contacts the users body is made from a relatively soft material or is provided with such a layer then inner lining **32** may not be necessary. This simplifies the manufacture of the flotation device and uses less material in its construction.

[0064] Although all of the embodiments described herein have been discussed in relation to a human user it will be appreciated that the invention may be equally applicable, with some minor alterations in material design, to other mammals. Accordingly, in one embodiment of the present invention a flotation device **10** is provided for use on animals, particularly pets such as dogs.

[0065] The flotation device **10** would be shaped to slip over a dog's body and accommodate four legs. The outer garment **20** may be provided with an opening in the top or bottom to allow it to be fitted to the dog. Such a design of outer garment is already well known for dog body warmers and it can be modified to contain an inflatable bladder **40** which would be shaped to fit around a dog's body. The support chambers **43** may be provided under the neck region of the animal and bladder locating strap **27** would extend around their torso. In one embodiment two bladder locating straps **27** are provided for use with a dog to further ensure a close fit of inflatable bladder **40**.

[0066] In use, a user will prepare for their water activity by slipping flotation device **10**, which may be in the form of an inflatable rash shirt, over their head. Preferably, they will tighten both tensioning strap **26** and bladder locating strap **27** to prevent both the lower extent of outer garment **20** and inflatable bladder **40** from riding up when in the water. At this point they are ready to enter the water. If the person should subsequently become distressed in the water they have the option of inflating inflatable bladder **40** using the manual inflation tube **44** if they feel they are not in immediate danger. This will also result in a noise from the whistle component of manual inflation tube **44** which will help in attracting assistance. If the person feels they are in more immediate danger they can simply reach into a pocket **29** and pull on handle **49** to actuate inflation cylinder **47** which will result in almost instantaneous inflation of inflatable bladder **40**.

[0067] The user will then be kept buoyant in the water by flotation device **10** and can adjust bladder locating strap **27**, if necessary, to ensure that inflatable bladder **40** remains in an appropriate location relative to the user's torso, which may be referred to as the operational position, and does not slide up around the user's head. This is a substantial improvement over prior art devices which have a bladder contained only within a compartment in the outer garment. Once the bladder is inflated in such prior art devices it exerts a strong upwards force on the garment and will result in the device sitting up around the user's neck and head which makes it difficult for them to swim or indeed see which direction they should be swimming in or looking to for help. The use of a bladder locating strap **27** in the present invention allows the user to

remain buoyant but much more in control of the situation and less likely to panic due to improved freedom of movement and visibility.

[0068] If the user is in the water for a long time and tires or is even unconscious then they will not be at risk of drowning as support chambers **43** are adapted to provide support to the head and/or neck and maintain the user's mouth above the water line. Once again, this represents an improvement over the prior art and will be particularly important in sports such as surfing, sailing and windsailing where there is a relatively high chance of sustaining a blow to the user's head due to contact with the board or boat.

[0069] As indicated above, the present invention provides a number of advantages over prior art flotation devices. Firstly, the buoyancy aid is itself incorporated into and substantially disguised by outer garment **20** which may have a fashionable appearance meaning it is more likely to be embraced by a wider range of the population. Secondly the incorporation of the buoyancy device in a deflated state within the confines of an over garment means the device **10** is considerably reduced in bulk compared to many buoyancy aids. Once again this makes it more likely to be worn by the general public, particularly those who require good freedom of movement while participating in their water sport.

[0070] Most importantly, however, are the provision of support chambers **43** and bladder locating strap **27** which make the present flotation device **10** considerably more convenient, comfortable and, most importantly, safer for the user when they are in distress in the water and have inflated inflatable bladder **40**.

[0071] Prior art flotation garments have inflation bladders which must be limited in their size, to an extent, by the size of the garment itself and the need to disguise the bladder and make the garment as 'normal' looking as possible. This is not taken into account when considering whether or not the neck region of the inflatable bladder is then adequate, when inflated, to support a user's head, particularly when unconscious, and maintain their mouth and nose above water level. This is a serious oversight as the consequences can clearly be fatal. The present invention recognises this need which has not been discussed or adequately addressed in the prior art and presents a surprisingly effective and simple solution in the provision of one or more support chambers **43**. Support chambers **43** are not bulky and do not negatively impact upon the aesthetics of the flotation device but, when inflated, become sufficient to provide support to a user's head such that their risk of drowning is greatly reduced.

[0072] The other major defect of prior art flotation garments is the ability of the inflatable bladders described therein to move freely in relation to the user's body. If an inflatable bladder is merely placed within a compartment of the garment and thereby sits around the user's neck then when fully inflated the lower chest regions of the inflatable bladder will try to rise up to the surface of the water. The only means to prevent this provided by the prior art is, typically, the provision of a tie cord or like means around the hem of the lower extent of the garment. This may be adequate to maintain the lower extent of the garment itself in place when the user is in the water and the bladder is not inflated but is insufficient when the garment is also being forced upwards by the buoyancy of the inflated bladder.

[0073] The result is that the garment will be forced up around the user's upper torso and so the inflatable bladder is free to rest along most of its length on the surface of the water.

This means it is offering the user inadequate buoyancy to maintain them above the water's surface. It also means the user's head is more likely to slip down into the neck hole of the garment since their body weight is dragging them downwards between the neck region and chest regions of the inflatable bladder. The risk of drowning is thereby increased. The positioning of the inflatable bladder at the water's surface also makes it very difficult for the user to swim or to see where assistance may be located.

[0074] Once again this problem is not discussed or resolved in any way in the prior art. The present invention provides a bladder locating strap **27** and corresponding attachment points on the outer extents of chest regions **42** to enable the user to securely locate inflatable bladder **40** in the operational position, being substantially adjacent the user's upper and lower torso. Bladder connector **51** and bladder connector fastener **52** or like connecting means located between chest regions **42** prevents lateral movement of said chest regions **42** upon tensioning of bladder locating strap **27**. This holds inflatable bladder in place on the user's body directly rather than relying on outer garment **20** and/or inner lining **32** to achieve this. This prevents or at least greatly reduces the likelihood of inflatable bladder **40** riding up around the user's upper torso and head. The result is greater buoyancy transmitted directly to the wearer, their freedom of movement and vision are not limited and the likelihood of drowning is greatly reduced.

[0075] Throughout the specification the aim has been to describe the preferred embodiments of the invention without limiting the invention to any one embodiment or specific collection of features. It will therefore be appreciated by those of skill in the art that, in light of the instant disclosure, various modifications and changes can be made in the particular embodiments exemplified without departing from the scope of the present invention.

1. A flotation device comprising:

- a) an outer garment; and
- b) an inflatable bladder comprising a neck region and at least one chest region, the inflatable bladder located adjacent an inner surface of the outer garment wherein, in use, the inflatable bladder comprises one or more raised support chambers disposed around the neck region.

2. The flotation device of claim 1 wherein the one or more raised support chambers are permanently raised structures.

3. The flotation device of claim 2 wherein the one or more raised support chambers are constructed from hollow plastic or solid foam.

4. The flotation device of claim 1 wherein the at least one chest region of the inflatable bladder is provided with a bladder locating strap.

5. The flotation device of claim 4 wherein the bladder locating strap extends between opposite lateral surfaces of the at least one chest region of the inflatable bladder.

6. The flotation device of claim 5 wherein, in use, the bladder locating strap extends around a torso of the wearer and, when tensioned, secures the at least one chest region of the inflatable bladder adjacent the wearer's torso.

7. The flotation device of claim 1 wherein the inflatable bladder comprises two chest regions.

8. The flotation device of claim 7 wherein the two chest regions are prevented from separating laterally by means of a connector.

9. The flotation device of claim **8** wherein the connector is a releasable connector.

10. The flotation device of claim **1** further comprising an inner lining located within the outer garment and attached thereto.

11. The flotation device of claim **10** wherein the inflatable bladder is located between the inner lining and the outer garment.

12. The flotation device of claim **11** wherein the outer garment comprises one or more shoulder flaps to provide access to the inflatable bladder.

13. The flotation device of claim **11** wherein the inner lining can be opened at a lower extent to access the inflatable bladder.

14. The flotation device of claim **10** wherein the inflatable bladder is encapsulated within the inner lining.

15. The flotation device of claim **14** wherein the inner lining is removable.

16. The flotation device of claim **1** further comprising a tensioning strap located at a lower extent of the outer garment.

17. The flotation device of claim **1** wherein the at least one chest region comprises a manual inflation tube and/or an inflation cylinder to inflate the inflatable bladder.

18. The flotation device of claim **1** wherein the neck region comprises an inflation valve.

19. A method of assisting a person to remain buoyant when in a body of water, the method comprising:

a) placing a flotation device on the person's body before entering the water, the flotation device comprising an outer garment, an inflatable bladder having a neck region and at least one chest region, the inflatable bladder located adjacent an inner surface of the outer garment wherein, in use, the inflatable bladder comprises one or more raised support chambers disposed around the neck region;

b) entering the body of water; and

c) inflating the inflatable bladder,

to thereby assist the person to remain buoyant when in the body of water.

20. The method of claim **19** further comprising the step of tensioning a bladder locating strap to secure the at least one chest region of the inflatable bladder adjacent a torso of the person's body.

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