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(54) **PERSONAL FLOTATION DEVICE**

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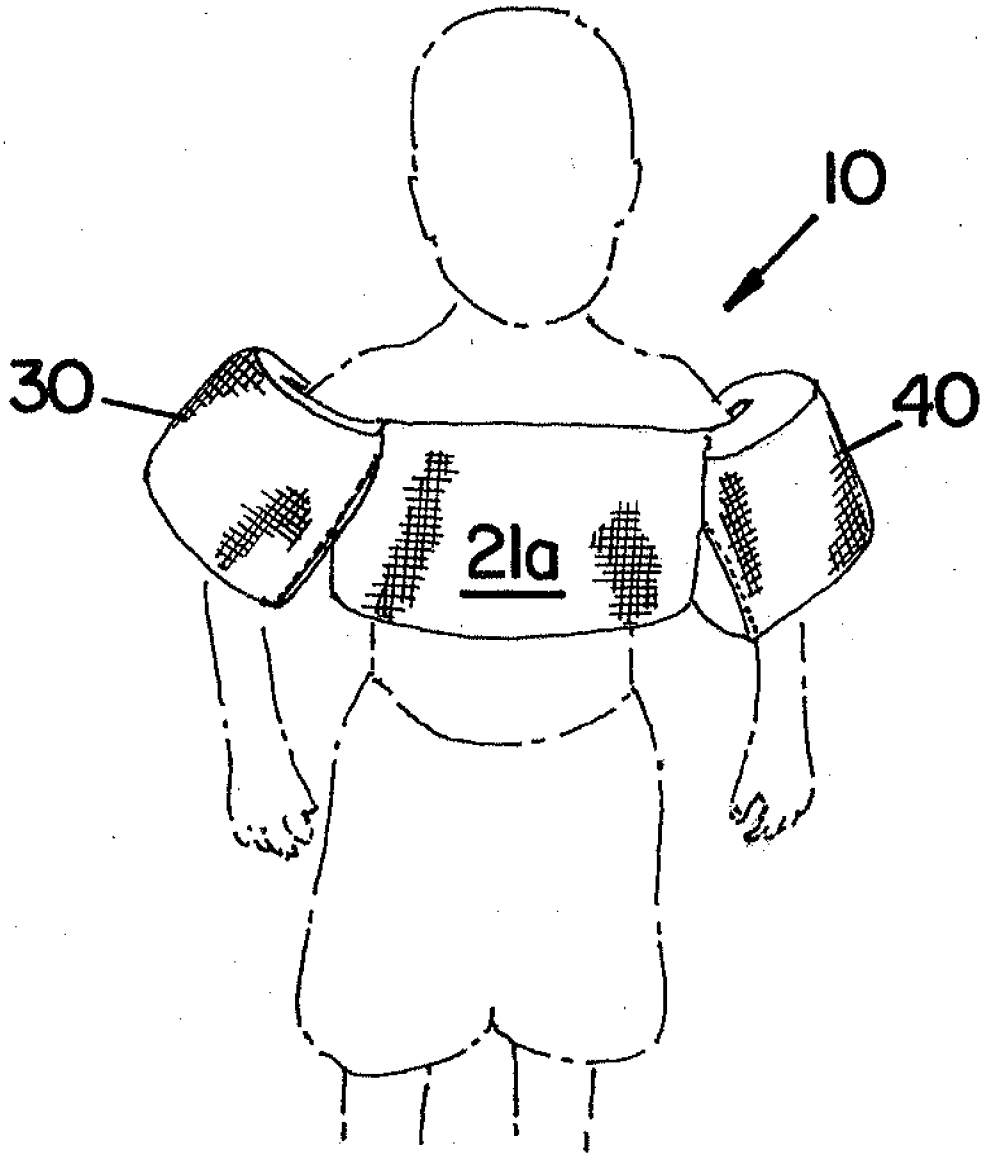
(57) **ABSTRACT**

A personal flotation device (**10**) includes a torso flotation pad (**21**), right armband flotation pad (**31**) and left armband flotation pad (**41**). The right armband flotation pad (**31**) is operatively connected to the torso flotation pad (**21**). The left armband flotation pad (**41**) is operatively connected to the torso flotation pad (**21**).



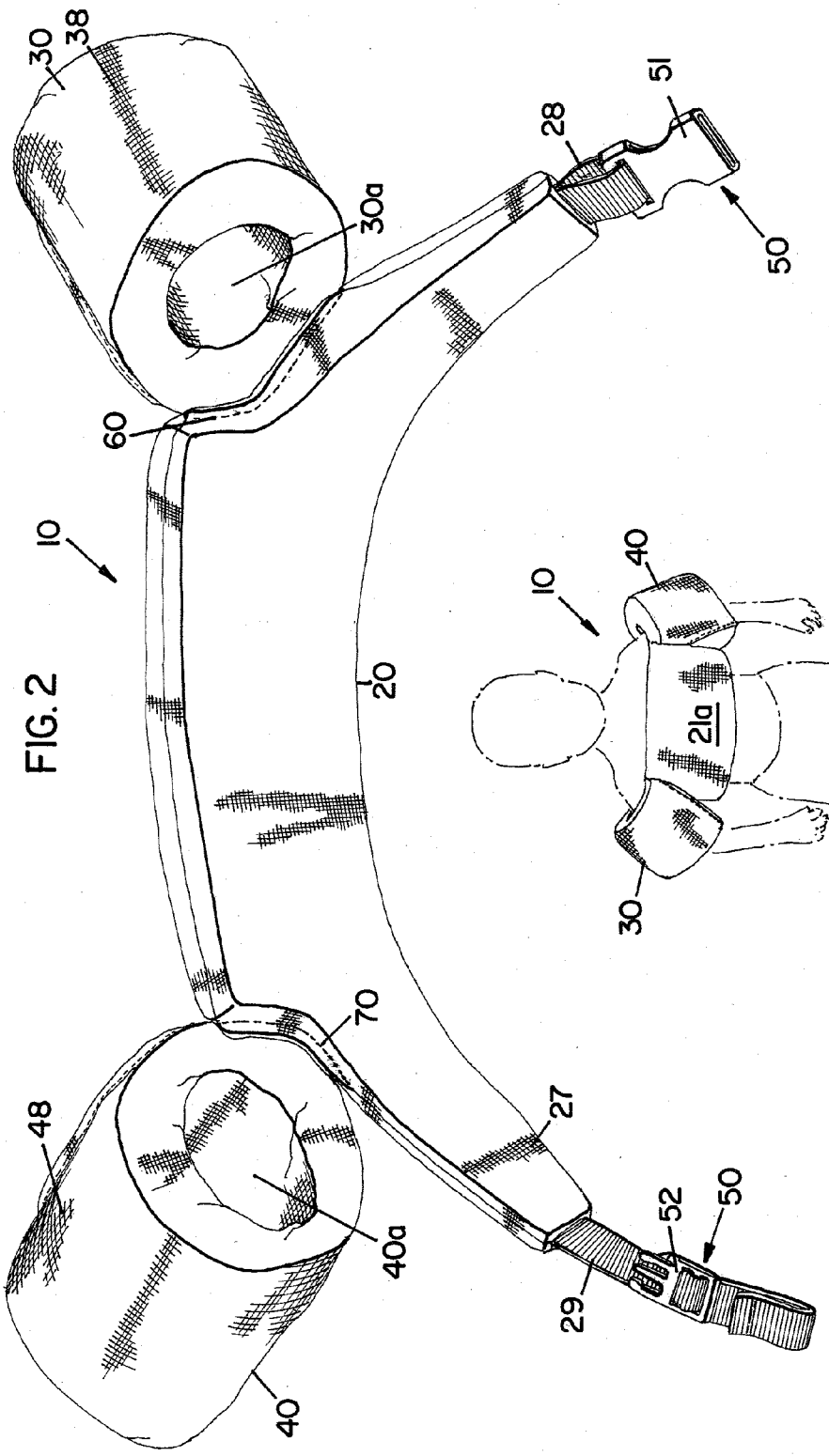


FIG. 2

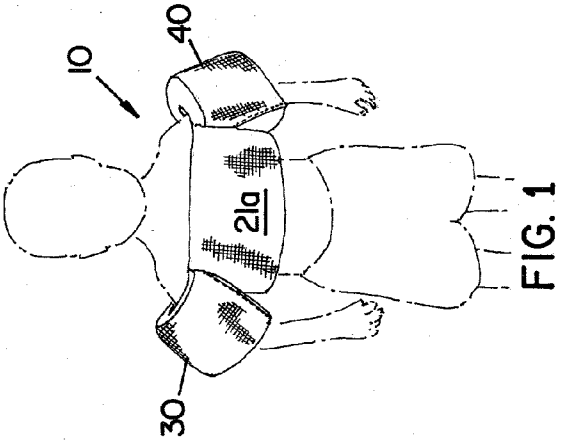


FIG. 1

FIG. 3

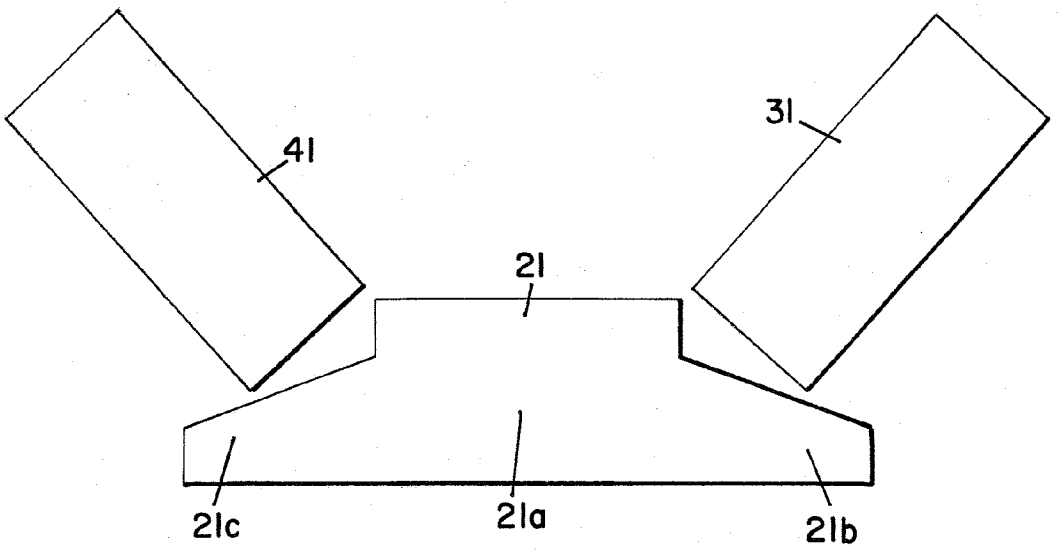

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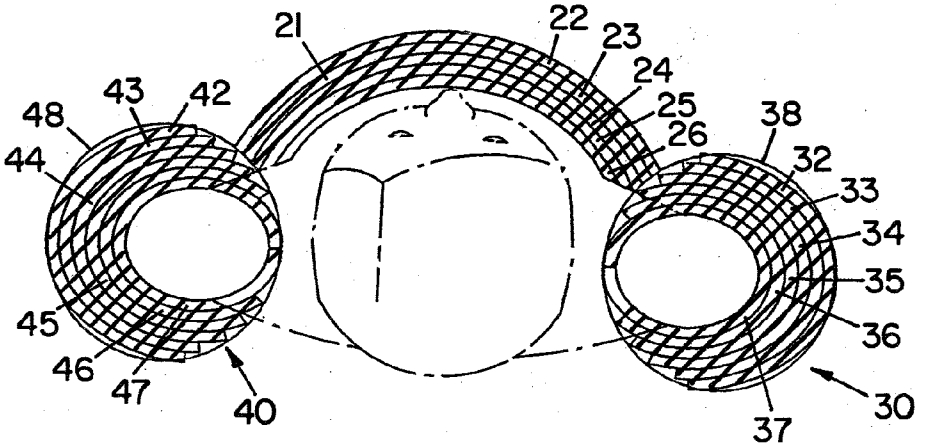
FIG. 4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PERSONAL FLOTATION DEVICE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates generally to a personal flotation device and more particularly to a personal flotation device having armbands.

[0003] 2. Description of the Prior Art

[0004] Swimmers armbands are typically inflatable vinyl film chambers donned by sliding the armbands over a child's upper arms. Most of the designs for armbands are one size fits all. Adjustments can be accomplished by varying the amount of air inside of each chamber in each armband. The armbands have no retention system to keep the armband secured in place other than the friction created by the inflated air pressure around the arms of the child. Such armbands are prone to come off unexpectedly during a child's normal water activity such as when jumping in the water with arms over the head of the child. Also, the armbands are susceptible to easily being removed when the child exits the water to go to the restroom, for example. Then, when returning to the water, the child may unknowingly trade identical armbands with another child who may not have them sized properly. Loose fits may go unnoticed until accidental removal occurs.

[0005] Also, the inflatable material (vinyl film) can be punctured when bit by the wearer causing an air leak that results in loss of internal pressure, decreased friction retention and catastrophic loss of buoyancy.

[0006] Inflatable armbands typically have sufficient buoyancy to keep a child's head above water as long as the child keeps both arms down so as to submerge a significant portion of the armbands. However, when one or both of the arms are raised upward, the armbands may come out of the water to an extent that decreases stability, buoyancy and consequently freeboard. Respiration will be impeded if the child's mouth and nose are submerged.

[0007] Typical U.S. Coast Guard approved Type III personal flotation devices wrap flotation material in various configurations around the torso of the wearer. Only float coat styles provide sleeves with flotation around the arms, but such coat styles are unsuitable for summer wear or recreational swimming. A Type III vest, without sleeves, will maintain a conscious wearer in a vertical or backward position in the water, but will not usually turn an unconscious wearer face up. A wearer may become unconscious from hypothermia, for example, if rescue is delayed. Waves may then cause the head to fall forward. Since head movement changes the center of gravity substantially for a person in the water, proximity of the flotation material to the center of gravity of the wearer can make the device unstable. Forward or sideways movement of the head can shift the center of gravity sufficiently to roll the wearer face down.

[0008] The present invention addresses the problems associated with the prior art devices and provides for a personal flotation device with a retention member for operatively connecting armband flotation pads about the wearer.

SUMMARY OF THE INVENTION

[0009] In one embodiment the invention is a personal flotation device for use by wearer. The personal flotation device includes a torso flotation pad. A right armband flotation pad is operatively connected to the torso flotation pad and has a right opening for receiving a right arm of a wearer. A left armband flotation pad is operatively connected to the torso flotation pad and has a left opening for receiving a left aim of a wearer.

[0010] In another embodiment, the invention is a personal flotation device for use by a wearer. The flotation device includes a torso securing member. A right armband flotation pad is operatively connected to the torso securing member, and has a right opening for receiving a right arm of a wearer. A left armband flotation pad is operatively connected to the torso securing member and has a left opening for receiving a left arm of the wearer. The armband flotation pads each having a varying thickness, the armband flotation pads being thicker on the outside of a wearer's arm than on a wearer's underarm.

[0011] In another embodiment the invention is a personal flotation device for use by a child. The flotation device includes a torso flotation pad constructed from a closed cell foam, the torso flotation pad having first end and a second end and the torso flotation pad has a plurality of planar torso flotation pads that, when folded into an arcuate shape, form a torso flotation pad of tapering thickness. The torso flotation pad has a first end and a second end. An attachment member has a first part operatively connected to the first end and a second part operatively connected to the second end. The first part is adapted and configured to be releasably attached to the second part, wherein the torso flotation pad is securable around the child's torso. A right armband flotation pad is constructed from closed cell foam, the right armband flotation pad is operatively connected to the torso flotation pad, and has a right opening for receiving a right arm of a child. A left armband flotation pad is constructed from closed cell foam. The left armband flotation pad is operatively connected to the torso flotation pad, and has a left opening for receiving a left arm of a child. The armband flotation pads each having a varying thickness, the armband flotation pads being thicker on the outside of the child's arm than on a child's underarm. The torso flotation pad and the armband flotation pads having a fabric cover. The fabric is used to form a retention member to operatively connect the torso flotation pad to the armband flotation pads.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. **1** is a perspective view of a child wearing a personal flotation device according to the principles of the present invention;

[0013] FIG. **2** is an enlarged perspective view of the personal flotation device shown in FIG. **1**;

[0014] FIG. **3** is a layout showing the flotation pads incorporated in the personal flotation device shown in FIG. **1**;

[0015] FIG. **4** is a cross-sectional view of the personal flotation device shown in FIG. **1**.

DETAILED DESCRIPTION OF THE INVENTION

[0016] Referring to the drawing, wherein like numerals represent like parts throughout the several views, there is generally disclosed at **10** a personal flotation device In FIG. **1**, the personal flotation device **10** is shown being worn by a child. The personal flotation device **10** includes a torso flotation pad assembly **20**, a right armband flotation pad assembly **30** and a left armband flotation pad assembly **40**.

[0017] The torso flotation pad assembly includes a torso flotation pad **21**. The torso flotation pad **21** is sized and configured to have an enlarged area **21***a* that is positioned proximate the upper front torso of the wearer and a more

elongate first end **21***b* and elongate second end **21***c* that wrap around the back of the wearer. The torso flotation pad **21** may be constructed of any suitable material such as a closed cell foam, such as a low density polyethylene foam. In addition, the torso flotation pad **21** may be a single pad, or, as shown in FIG. **4**, the torso flotation pad **21** may include multiple layers such as five layers **22-26** that are all similarly sized The torso flotation pad **21** may be wrapped with a fabric, or other cover material, such as polyester. It is understood that other suitable coverings may also be used and alternately the torso flotation pad **21** may not be covered. If the torso flotation pad **21** is made up of multiple layers **22-26**, the layers **22-26** are enclosed and held in place inside of the fabric cover **27**. Then, when bent around the wearer's torso, the torso flotation pad **21** will have a varying thickness. This varying thickness will be described in more detail with respect to the armband flotation assemblies **30**, **40**. The layers **22-26** may be secured to each other or alternately just held in place by the fabric cover **27**. A first strap **28** is secured to the fabric cover **27** by suitable means such as stitching, proximate the first end **21***b*. A second strap **29** is secured by suitable means to the fabric **27**, by suitable means such as stitching, proximate the second end **21***c*. A buckle **50**, well known in the art, includes a receiving member **51** and an insertion member **52** having three prongs. The insertion member **52** is inserted into the receiving member **51** and forms a buckle **50**. It is of course understood that other suitable means of securing the first strap **28** to the second strap **29** may be utilized. The strap is adjustable by adjusting the strap **29** in the insertion member **52**. The torso flotation pad **21** is one example of a torso securing member and, while preferred, it is recognized other torso securing members, such as a shirt, or shirt and shorts member (like a fabric wetsuit) may be used.

[0018] A right armband flotation assembly **30** includes a right armband flotation pad **31**. The right armband flotation pad **31** may be constructed from any suitable material, such as a closed cell foam, similar to the torso flotation pad **21**. In addition, the right armband flotation pad **31** may be a single pad, or as shown in FIG. **4**, the right armband flotation pad **31** may include multiple layers such as six layers **32-37** that are all similarly sized. While shown as six layers **32-37**, it is understood that the number of layers may vary and that the number of layers may vary depending on foam thickness. For example, seven layers may be used with nominal ¼" foam. The right armband flotation pad **31** may be wrapped with fabric, or other cover material, similar to the torso flotation pad **21**. It is understood that other suitable coverings may also be used and alternately the right armband flotation pad **31** may not be covered. If not covered, the pad **31** would be either a single pad or the layers secured to each other. If the right armband flotation pad **31** is made up of multiple layers **32-37**, the layers **32-37** are enclosed and held in place inside of the fabric **38** and the layers are not adhered to adjacent layers. When the layers **32-37** are formed in a circle, the right armband flotation pad **31** will have a varying thickness. When the fabric is joined to enclose the layers **32-37**, the layers **32-37** are held in position by the fabric **38**. As can be seen in FIG. **4**, the ends of layer **37** will be retained adjacent each other. Then each layer, as one progresses outward, is further and further away from its end. This creates a right armband flotation pad **31** that has a varying thickness and is thicker on the outside of the arm than on the inside, proximate the underarm of the wearer. This provides for better movement of the arm of the wearer. The opening **30***a*, through which the arm is inserted, is generally circular, but the center of the opening **30***a* is eccentric from the center of the right armband flotation assembly **30**. The layers **32-37** may be secured to each other or alternately just held in place by the fabric cover **38**.

[0019] A left armband flotation assembly **40** includes a left armband flotation pad **41**, The left armband flotation pad **41** may be constructed from any suitable material, such as a closed cell foam, similar to the torso flotation pad **21**. In addition, the left armband flotation pad **41** may be a single pad, or as shown in FIG. **4**, the left armband flotation pad **41** may include multiple layers such as six layers **42-47** that are all similarly sized. While shown as six layers **42-47**, it is understood that the number of layers may vary and that the number of layers may vary depending on foam thickness. For example, seven layers may be used with nominal ¼" foam. The left armband flotation pad **41** may be wrapped with fabric, or other cover material, similar to the torso flotation pad **21** It is understood that other suitable coverings may also be used and alternately the left armband flotation pad **41** may not be covered. If not covered, the pad **41** would be either a single pad or the layers secured to each other. If the left armband flotation pad **41** is made up of multiple layers **42-47**, the layers **42-47** are enclosed and held in place inside of the fabric **48** and the layers are not adhered to adjacent layers. When the layers **42-47** are formed in a circle, the left armband flotation pad **41** will have a varying thickness. When the fabric is joined to enclose the layers **42-47**, the layers **42-47** are held in position by fabric **48**. As can be seen in FIG. **4**, the ends of layer **47** will be retained adjacent each other. Then each layer, as one progresses outward, is further and further away from its end. This creates a left armband flotation pad **41** that has a varying thickness and is thicker on the outside of the arm than on the inside, proximate the underarm of the wearer. This provides for better movement of the arm of the wearer. The opening **40***a*, through which the arm is inserted, is generally circular, but the center of the opening **40***a* is eccentric from the center of the left armband flotation assembly **40**. The layers **42-47** may be secured to each other or alternately just held in place by the fabric cover **48**.

[0020] The fabric **38** is sewn to the fabric **27**, by suitable means such as stitching **60**. Likewise, the fabric **48** is sewn to the fabric **27** by suitable means such as stitching **70**. The stitching **60** and **70** is proximate the top portion of the torso flotation pad **21** as the torso flotation pad **21** transitions from the enlarged area **21***a* to either the first end **21***b* or second end **21***c*. This will position the armband flotation assemblies **30**, **40** in the proper position as will be described more fully hereafter.

[0021] In operation, the child places his right arm through the opening **30***a* in the right armband flotation assembly **30** and his left arm through the opening **40***a* in the left armband flotation assembly **40**. This places the enlarged area **21***a* proximate the upper portion of the torso of the child. An adult may then secure the receiving member **51** into the insertion member **52** and the strap **29** may be sized for proper tension around the child. This places the buckle **50** in the back of the child, thereby making it more difficult for the child to release the buckle **50**. The tapered configuration, especially in the armband flotation assemblies **30**, **40** allow for enhanced freedom of movement of the child's arms as the thinner section is located under each arm. The torso flotation pad **20** provides buoyancy to the child even when the arms are raised. Locating the flotation around the upper arms of the child, away from the center of gravity of the child maintains stability and maxi-

mizes freeboard so the head movements are less likely to result in unwanted face down positions. The tethering provided by the stitching **60** and **70** places the armband flotation assemblies **30**, **40** high up on the arms of the child and the tethering is proximate or above the armpits of the wearer.

[0022] It is understood that the torso flotation pad **21** can utilize various shapes and closure systems for more or less body coverage. Further, the armband flotation assemblies **30**, **40** can be constructed with alternative materials and shapes of buoyant material.

[0023] The above specification, examples and data provide a complete description of the manufacture and use of the composition of the invention. Since many embodiments of the invention can be made without departing from the spirit and scope of the invention, the invention resides in the claims hereinafter appended.

1. A personal flotation device for use by a wearer, comprising:
- (a) a torso flotation pad;
- (b) a right armband flotation pad operatively connected to the torso flotation pad, and has a right opening for receiving a right arm of a wearer;
- (c) a left armband flotation pad operatively connected to the torso flotation pad and has a left opening for receiving a left arm of the wearer; and
- (d) the armband flotation pads each having a plurality of stacked planar flotation pads that, when folded to proximate a circle, form an armband flotation pad of tapering thickness.

2. The personal flotation device of claim **1**, further comprising:
- (a) the torso flotation pad having a first end and a second end;
- (b) an attachment member having a first part operatively connected to the first end and a second part operatively connected to the second end; and
- (c) the first part adapted and configured to be releaseably attached to the second part, wherein the torso flotation pad is securable around a wearer's torso.

3. The personal flotation device of claim **2**, wherein the attachment member is positioned proximate the wearer's back.

4. The personal flotation device of claim **1**, further comprising the torso flotation pad and the armband pads are constructed from closed cell foam.

5. The personal flotation device of claim **4**, further comprising the torso flotation pad and armband flotation pads having a fabric cover.

6. The personal flotation device of claim **5**, wherein the fabric is used to form a retention member to operatively connect the torso flotation pad to the armband flotation pads.

7. (canceled)

8. The personal flotation device of claim **4**, comprising the torso flotation pad having a plurality of planar torso flotation pads that, when folded into an arcuate shape, form a torso flotation pad of tapering thickness.

9. The personal flotation device of claim **1**, wherein the armband flotation pads are, when worn by the wearer, operatively connected to the torso flotation pad at a position above the wearer's armpits.

10. A personal flotation device for use by a wearer, comprising:
- (a) a torso securing member;
- (b) a right armband flotation pad operatively connected to the torso securing member, and has a right opening for receiving a right arm of a wearer;
- (c) a left armband flotation pad operatively connected to the torso securing member and has a left opening for receiving a left arm of the wearer; and
- (d) the armband flotation pads each having a plurality of stacked planar flotation pads that, when folded to proximate a circle, form an armband flotation pad of tapering thickness, the armband flotation pads being thicker on the outside of a wearer's arm than on a wearer's underarm.

11. The personal flotation device of claim **10**, wherein the torso securing member is a torso flotation pad.

12. The personal flotation device of claim **11**, further comprising:
- (a) the torso flotation pad having a first end and a second end;
- (b) an attachment member having a first part operatively connected to the first end and a second part operatively connected to the second end; and
- (c) the first part adapted and configured to be releaseably attached to the second part, wherein the torso flotation pad is securable around a wearer's torso.

13. The personal flotation device of claim **12**, wherein the attachment member is positioned proximate the wearer's back.

14. The personal flotation device of claim **11**, further comprising the torso flotation pad and the armband pads are constructed from closed cell foam.

15. The personal flotation device of claim **14**, further comprising the torso flotation pad and armband flotation pads having a fabric cover.

16. The personal flotation device of claim **15**, wherein the fabric is used to form a retention member to operatively connect the torso flotation pad to the armband flotation pads.

17. (canceled)

18. The personal flotation device of claim **14**, comprising the torso flotation pad having a plurality of planar torso flotation pads that, when folded into an arcuate shape, form a torso flotation pad of tapering thickness.

19. The personal flotation device of claim **11**, wherein the armband flotation pads are, when worn by the wearer, operatively connected to the torso flotation pad at a position above the wearer's armpits.

20. A personal flotation device for use by a child, comprising:
- (a) a torso flotation pad constructed from closed cell foam, the torso flotation pad having a first end and a second end and having a plurality of planar torso flotation pads that, when folded into an arcuate shape, form a torso flotation pad of tapering thickness;
- (b) an attachment member having a first part operatively connected to the first end and a second part operatively connected to the second end;
- (c) the first part adapted and configured to be releaseably attached to the second part, wherein the torso flotation pad is securable around a child's torso, wherein the attachment member is positioned proximate the child's back;
- (d) a right armband flotation pad constructed from closed cell foam, the right armband flotation pad operatively connected to the torso flotation pad, and has a right opening for receiving a right arm of a child;

(e) a left armband flotation pad constructed from closed cell foam, the left armband flotation pad operatively connected to the torso flotation pad, and has a left opening for receiving a left arm of a child;

(f) the armband flotation pads each having a varying thickness, the armband flotation pads being thicker on the outside of a child's arm than on a child's underarm;

(g) the armband flotation pads each having a plurality of stacked planar flotation pads that are similarly sized and that, when folded to proximate a circle, form an armband flotation pad of tapering thickness;

(h) the torso flotation pad and armband flotation pads having a fabric cover; and

(i) the fabric is used to form a retention member to operatively connect the torso flotation pad to the armband flotation pads.

21. (canceled)

22. The personal flotation device of claim **20** further comprising the torso flotation pad having a plurality of planar torso flotation pads that, when folded into an arcuate shape, form a torso flotation pad of tapering thickness.

23. The personal flotation device of claim **4**, further comprising the armband planar flotation pads are similarly sized.

24. The personal flotation device of claim **10**, further comprising the armband planar flotation pads are similarly sized.

25. An armband for providing buoyancy to a user while in water, the armband comprising:

(a) an armband flotation pad having a plurality of stacked planar flotation pads, each planar flotation pad being similarly sized; and

(b) a fabric cover for retaining the planar flotation pads which, when the planar flotation pads are folded to proximate a circle, form an armband flotation pad of tapering thickness.

26. The armband of claim **24**, further comprising the planar flotation pads are constructed from closed cell foam.

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