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Scesney

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[54] **INFLATABLE PERSONNEL SAFETY MARKER**

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[52] **U.S. Cl.** ..... **9/14;** 9/8 R; 9/9; 9/313; 116/63 P

[51] **Int. Cl.** **B63c 9/16**

[58] **Field of Search** ..... 9/8 R, 9, 11 A, 14, 313; 116/63 P, 63 PR, 124 B, DIG. 8; 135/15 PQ; 52/2

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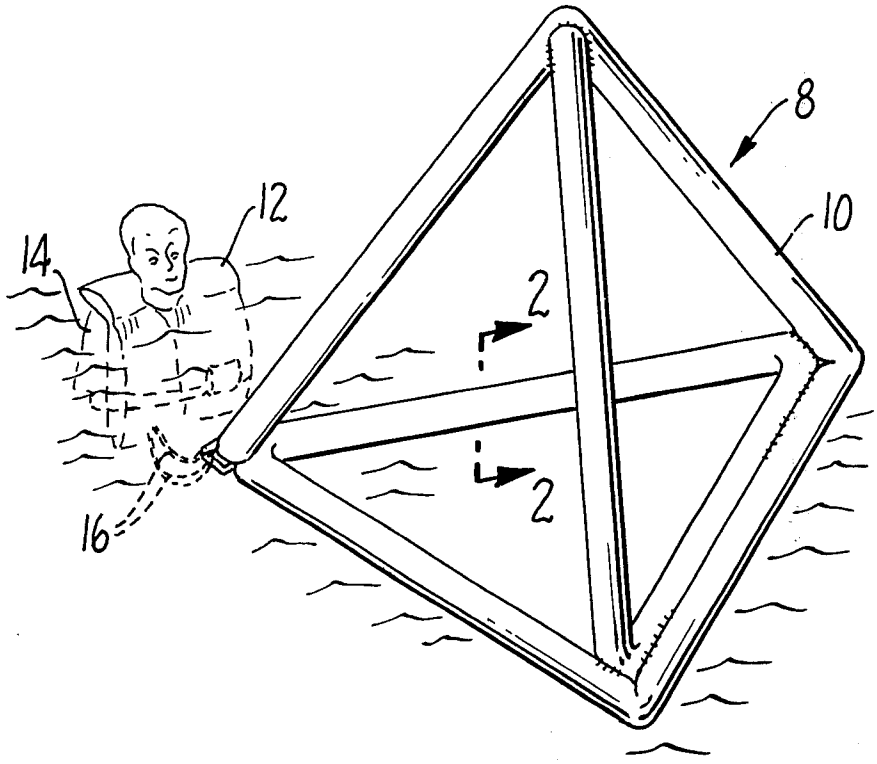
[57] **ABSTRACT**

An inflatable flotation device adapted to provide a large visual target for locating persons in distress is disclosed. The device comprises a long narrow air-tight tube covered with Mylar or other light reflective material. The tube is closed at one end and has valve device at the other end for manual inflation of the tube. The tube is divided into seven segments and folded at the intersections therebetween so that the tube when inflated forms a regular tetrahedral configuration. One tip of the tetrahedron will always project a significant distance out of the water to provide a highly visible marker which can be seen for long distances to assist in spotting a person in distress.

11 Claims, 6 Drawing Figures



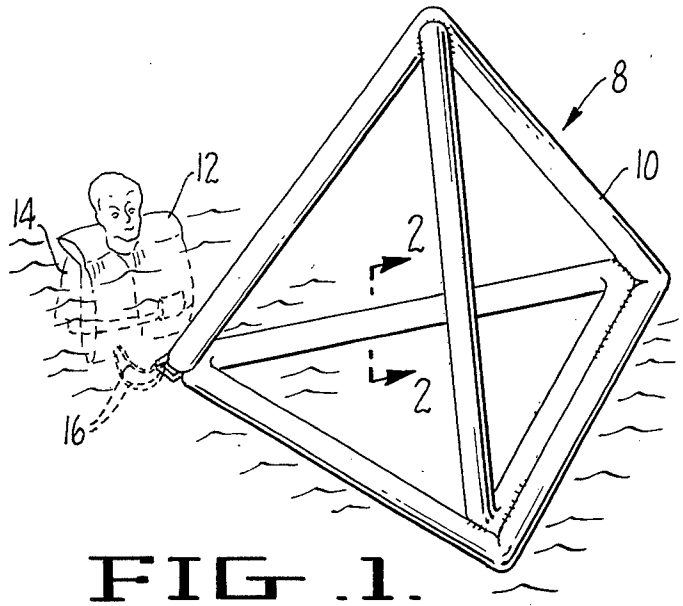


FIG .1.

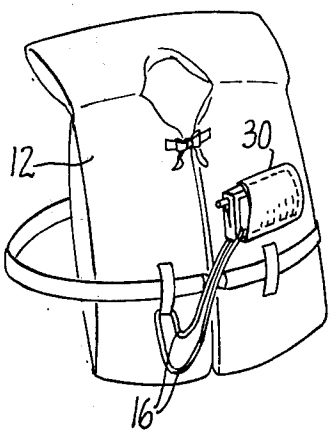


FIG .3.

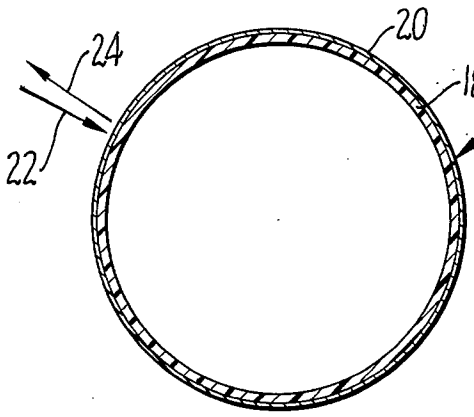


FIG .2.

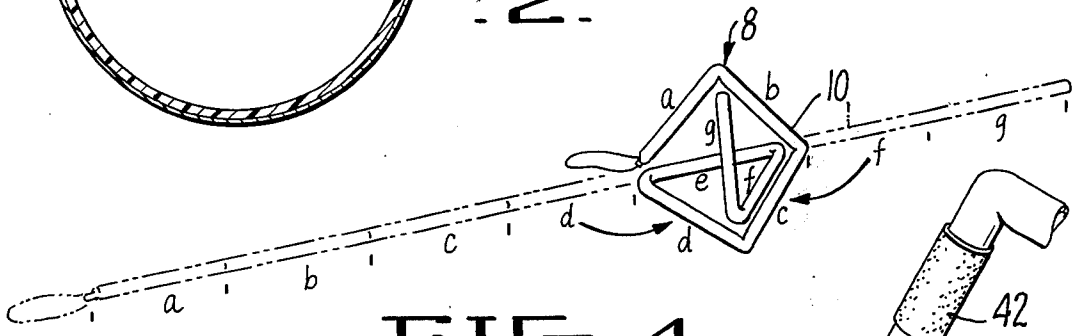


FIG .4.

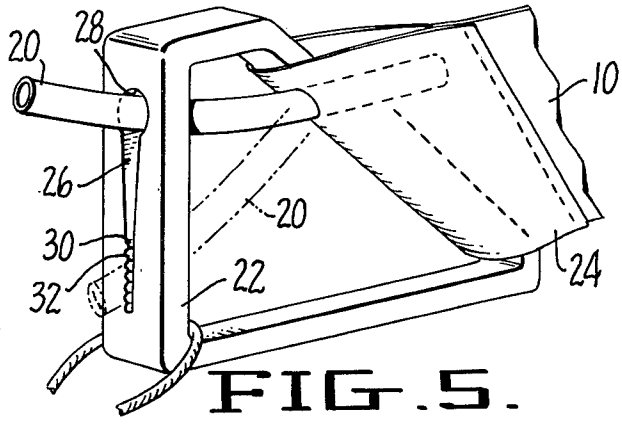


FIG .5.

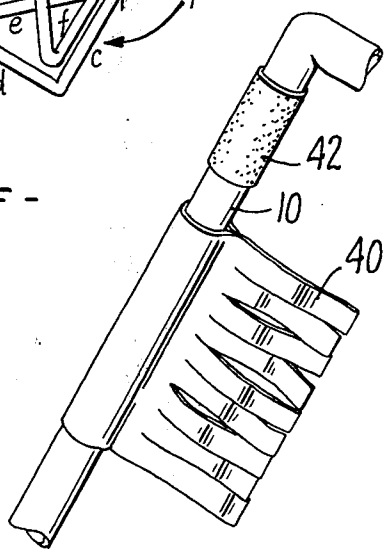


FIG .6.

INFLATABLE PERSONNEL SAFETY MARKER

BACKGROUND OF THE INVENTION

The present invention relates to safety markers, and in particular to a manually inflatable safety marker having a tetrahedral configuration.

One of the difficult problems in water safety is locating the position of a person floating in the water. When a person is floating, only a small part of his body is above the water, and even if he is wearing a bright colored life preserver, the person is very difficult to locate, especially when the surface of the water is not still. Devices do exist for marking the place of a person in distress in the water, but these devices are ordinarily relatively large and expensive, and they are not applicable for use by private boaters and sportsmen. They are too large to be conveniently carried on the person, usually being stored on a life raft, and because of their expense cannot be carried as standard safety gear. Furthermore, such devices are ordinarily relatively complex and require periodic maintenance to prevent a high incidence of failure.

The present invention provides an inflatable safety marker which can conveniently be carried on a person. The device comprises a long, narrow air-tight tube closed at one end and having valve means at the other end for manual inflation of the tube, eliminating the need for automatic inflation mechanisms. The tube is divided into a plurality of segments and folded at the intersections between the respective segments so that the tube when inflated forms a preselected polyhedron. At least one of the segments is attached in parallel to one of the other segments and the opposite ends of the tube are attached to fold at intersections between segments to maintain the inflated tube in the preselected polyhedral configuration.

In the preferred embodiment of the present invention, the tube is divided into seven equal length segments to form a regular tetrahedron. In this configuration, the tube will float in the water on one planar face of the tetrahedron, and one of the apexes thereof will project vertically so that the marker is easily visible. The ability to locate objects at sea is proportional to the height of the object, particularly so in the presence of waves. The peak of the tetrahedral tube will project a significant distance above the water, much greater that the head of the person floating and can be coated with optical and/or radar reflective material so that the person can be easily located to facilitate rescue of that individual. With an optically retro-reflective coating and a tetrahedral tube having four foot sides, it is estimated that the marker would be visible at distances up to 15 to 20 times farther than a person floating in still water, with corresponding increase in likelihood of detection at shorter distances.

The safety marker of the present invention, when uninflated, can easily be stored in a relatively small container which can attach to a life preserver or other garment so that the tube is readily available for use when needed. The safety marker of the present invention is adapted to be manually inflated in the preferred embodiment, reducing the required size of the apparatus and also minimizing the possibility of malfunction. Also, the cost of the device will be relatively low, making it readily affordable for the ordinary sportsman so that he can incorporate it as part of his safety equipment.

The novel features which are believed to be characteristic of the invention, both as to organization and method of operation, together with further objects and advantages thereof will be better understood from the following description considered in connection with the accompanying drawings in which preferred embodiments of the invention are illustrated by way of example. It is to be expressly understood, however, that the drawings are for the purpose of illustration and description only and are not intended as a definition of the limits of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a person floating in the water with the safety marker of the present invention attached;

FIG. **2** is a side cross sectional elevation view of the tube comprising the safety marker;

FIG. **3** is a perspective view of a life jacket employing the safety marker of the present invention;

FIG. **4** is a sequential view showing the assembly of the tetrahedral safety marker;

FIG. **5** is a fragmentary view of the handle attached to the safety marker;

FIG. **6** is a fragmentary view illustrating various additions which can be made to the safety marker of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The proposed use of the safety marker **8** of the present invention is illustrated by way of reference to FIG. **1.** Safety marker **8** has a tube **10** formed in a regular tetrahedral configuration, although other configurations could be used as well. The advantage of the regular tetrahedral configuration is that the marker **8** will always float on one face of the tetrahedron defined by three of the segments of tube **10,** and one apex of the marker will always project directly upwardly. One end of tube **10** is attached to the life jacket **12** of a person **14** floating in the water by means of straps **16.** In this manner, safety marker **8** will float adjacent person **14** floating in the water so that the safety marker locates the spot of the person in distress. Straps **16** can be of any desired length, a length up to **10** feet being preferred to allow safety marker **8** to float independent from the person to whom it is attached.

In the preferred embodiment of safety marker **8,** the inner portion of tube **10** comprises polyurethane impregnated nylon which is air-tight so that the tube can be inflated. Other air-tight materials such as electrostatically sealed vinyl could also be used. Mylar material **20,** more properly termed aluminized cellophane, can be wrapped around nylon **18.** The entire tube could be constructed of Mylar, but at a substantial decrease in strength, and this embodiment is not recommended. Mylar 20 is both highly visually reflective so that incident light or radar beams illustrated by arrow **22** are retro-reflective as illustrated by arrow **24.** It is estimated that the use of visually reflective material will increase the range at which the marker will be spotted by searchlight by a factor of 8 to 10. This, combined with the greater height of the safety marker relative to a person floating in the water, will result in a substantial increase in the distance at which the person can be located.

The safety marker of the present invention can readily be attached to an article of clothing such as life preserver **12** as illustrated in FIG. **3.** A relatively small cylindrical container **30** can be attached to the front of preserver **12.** The tube will be attached by means of strap **16** to the life preserver so that the tube is not lost when pulled from container **30.** The safety marker of the present invention is relatively inexpensive, and since it is manually inflated, it can be stored indefinitely in container **30.** Hence, the safety marker can be stored with the safety gear of a boater or sportsman and form part of his safety gear. When needed, the marker is readily accessible, and since the preferred embodiment thereof is manually inflatable, he need not worry about its deterioration from prolonged non-use and lack of periodic maintenance.

As mentioned above, the preferred embodiment of the safety marker **8** of the present invention comprises a tetrahedral configuration. To attain this configuration, tube **10** is divided into seven segments, labeled *a* through *g* in FIG. **4.** The tube is folded at the intersections between segments as illustrated so that segments *c* and *f* are in parallel. The free end of segment *a* is attached to the intersection between segments *d* and *e*, and the free end of segment *g* is attached to the intersection between segments *a* and *b*. In this manner, a single tube is able to form the complex tetrahedral shape with only two of the segments overlapping. One of the advantages of the tetrahedral configuration is that no more than one tube segment need overlap any other tube segment, thus increasing the efficiency of the device and decreasing the air which must be used to inflate it.

In the preferred embodiment of the present invention, tube **10** is manually inflated by means of a mouthpiece such as **20** illustrated in FIG. **5.** A handle **22** is attached to tube **10** by means of a flap **24,** which circumscribes one portion of handle **22** and is sewn to tube **10.** Mouthpiece **20** projects through an aperture **26** in handle **20.** Aperture **26** has a variable cross section, the upper end **28** having a diameter equal to the diameter of mouthpiece **20,** the lower portion **30** of aperture **26** having a progressively smaller width. In this manner, tube **10** can be readily inflated when mouthpiece **20** is at the upper end **28** of aperture **26.** When the tube is fully inflated, mouthpiece **20** can be pressed downwardly along aperture **26** so that it is pinched together as illustrated in phantom in FIG. **5.** The lower end of aperture **26** can be serrated as illustrated at **32** to insure that the pinched tube is locked at the lower end of the aperture. Hence, tube **10** can easily be manually inflated when necessary, and after inflation can be easily sealed so that it remains in its inflated configuration.

As discussed above, the preferred embodiment of the tube **10** of the safety marker is visually retro-reflective in order to enhance its visibility. In order to increase the visibility of the marker further, a pennant such as **40** can be added to the marker as illustrated in FIG. **6** Pennant **40** has a relatively large planar surface to provide a "glint" or flash much like a mirror to attract the attention of a person looking for the marker. Furthermore, material of a contrasting color such as **42** can be added to **10** to further increase the likelihood of recognizing the safety marker and finding a person floating in the water.

While preferred embodiments of the present invention have been illustrated in detail, it is apparent that modifications and adaptations of those embodiments will occur to those skilled in the art. In particular, it is apparent that a CO_2 cartridge or other apparatus could be included so that the safety marker is self-inflating, which would be a particular advantage in larger markers, such as markers adapted to be used with a large raft. However, it is to be expressly understood that such modifications and adaptations are within the spirit and scope of the present invention, as set forth in the following claims.

What I claim as new is:

1. An inflatable safety marker adapted to provide a large target for locating persons in distress, said marker comprising a long narrow air-tight tube closed at one end and having valve means at the other end for inflation of the tube, said tube being divided into a plurality of segments and folded at the intersections between the respective segments so that the tube when inflated forms a preselected polyhedron, at least one of the segments being attached in parallel to one of the other segments and the opposite ends of the tube being attached to folded intersections between segments to maintain the inflated tube in the preselected polyhedral configuration.

2. A safety marker as recited in claim **1** wherein the tube is divided into a plurality of substantially equal length segments so that the tube when inflated forms a preselected regular polyhedron.

3. A safety marker as recited in claim **2** wherein the tube is divided into seven substantially equal segments and wherein only one of the segments is attached in parallel to one of the other segments so that the tube when inflated forms a regular tetrahedron.

4. A safety marker as recited in claim **1** and additionally comprising a container having a relatively small interior volume, said container adapted to contain the air-tight tube when uninflated, said container being attachable to an article of wearing apparel for convenient storage of the tube prior to use in an emergency.

5. A safety marker as recited in claim **1** wherein the tube comprises air-tight nylon and Mylar material covering said air-tight nylon to provide a highly visually reflective surface.

6. A safety marker as recited in claim **1** wherein the air-tight tube includes radar reflective means along its length to provide a target having a large radar cross section.

7. A safety marker as recited in claim **1** wherein the valve means comprises a mouthpiece for manual inflation of the air-tight tube, and means for preventing escape of air from the inflated tube.

8. An inflatable safety marker adapted to provide a large target for locating persons in distress, said marker comprising a long narrow air-tight tube closed at one end and having valve means at the other end for manual inflation of the tube, said tube being divided into seven equal length segments and folded at the intersections between the respective segments so that the tube when inflated forms a regular tetrahedron, one of the segments being attached in parallel to one of the other segments and the opposite ends of the tubes being attached to intersections between segments to maintain the inflated tube in the regular tetrahedral configuration.

9. A safety marker as recited in claim **8** wherein the tube comprises air-tight nylon, Mylar material covering said air-tight nylon, and a Mylar pennant extending

from said tube, whereby the device has a highly visually and radar reflective surface.

10. An inflatable safety marker adapted to provide a large target for locating persons in distress, said device comprising:

a container having a relatively small interior volume, said container adapted to attach to an article of wearing apparel;

a long narrow air-tight tube closed at one end and having valve means at the other end for manual inflation of the tube, said tube being divided into seven equal-length segments and folded at the intersections between these respective segments so that the tube when inflated forms a regular tetrahedron, one of the segments being attached in parallel to one of the other segments and the opposite ends of the tube being attached to folded intersections between segments to maintain the inflated tube in the preselected tetrahedral configuration; and

handle means attached to the other end of the tube, said handle means adapted to draw the uninflated tube from the container for use and for securing said tube during the inflation thereof.

11. A safety marker as recited in claim **10** wherein the air-tight tube has a mouthpiece for manual inflation of the tube, and wherein the handle includes a tapered aperture, said mouthpiece adapted to fit through said aperture, the larger end of said aperture having a diameter approximately equal to the outer diameter of the mouthpiece, the smaller end of the aperture adapted to pinch the tube so that air cannot escape from said tube so that the tube can be inflated with the mouthpiece at the larger end of the aperture and then sealed by pinching the mouthpiece in the smaller end of the aperture.

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