US 20040248483A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2004/0248483 A1**

Bolta (43) **Pub. Date: Dec. 9, 2004**

(54) **RESCUE EQUIPMENT HAVING PHOTO-LUMINESCENT AND REFLECTIVE MARKINGS FOR NIGHT OR LOW LIGHT RECOGNITION**

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(21) Appl. No.: **10/863,787**

(22) Filed: **Jun. 8, 2004**

Related U.S. Application Data

(60) Provisional application No. 60/476,990, filed on Jun. 9, 2003.

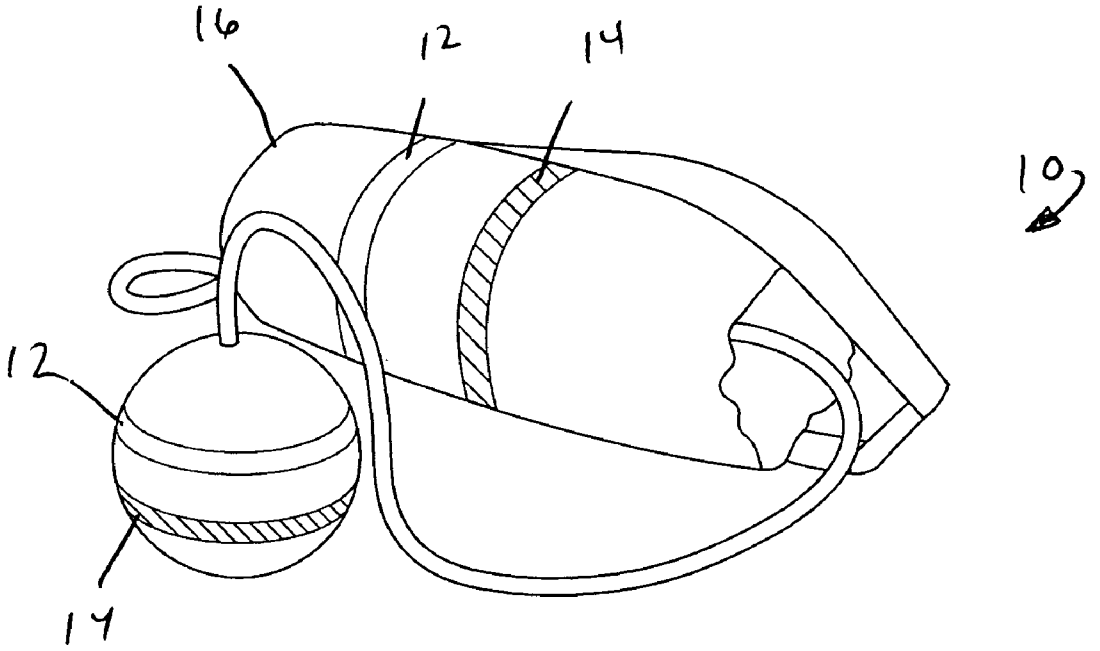
Publication Classification

(51) **Int. Cl.**[7] **B63C 9/00**

(52) **U.S. Cl.** **441/80**

(57) **ABSTRACT**

A rescue device for a distressed person at night or in low light situations is provided. The rescue device comprises at least one piece of rescue equipment, at least one photo-luminescent marking applied to the rescue equipment, and at least one reflective marking applied to the rescue equipment.



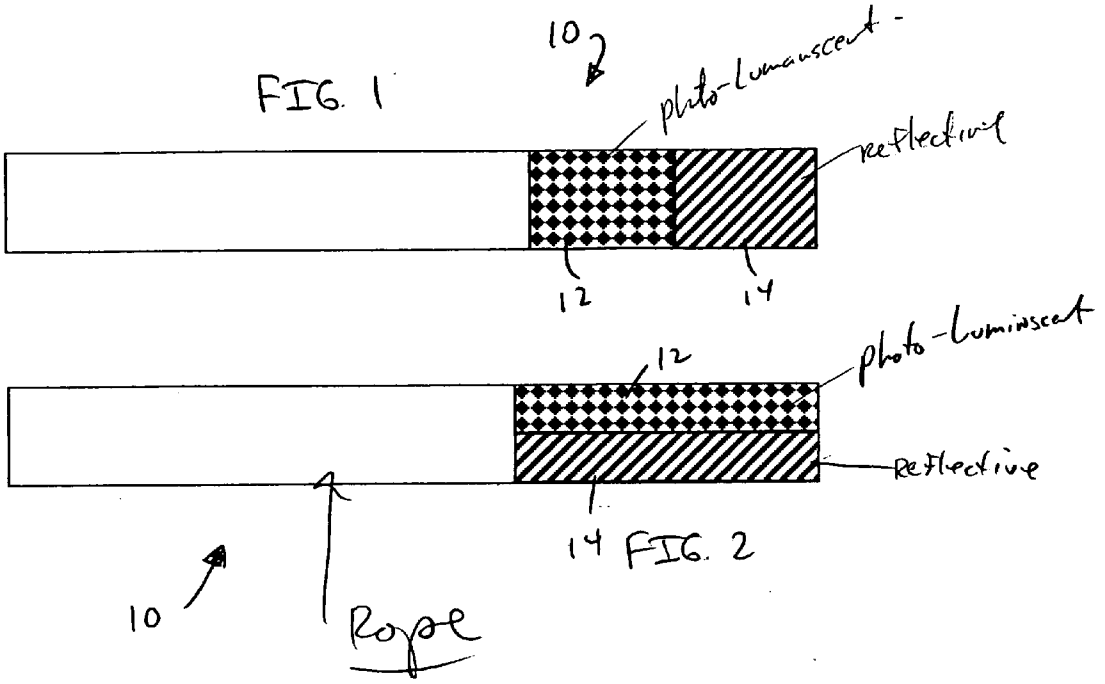


FIG. 1
10
photo-luminescent
reflective
12
14
12
photo-luminescent
reflective
14
FIG. 2
10
Rope

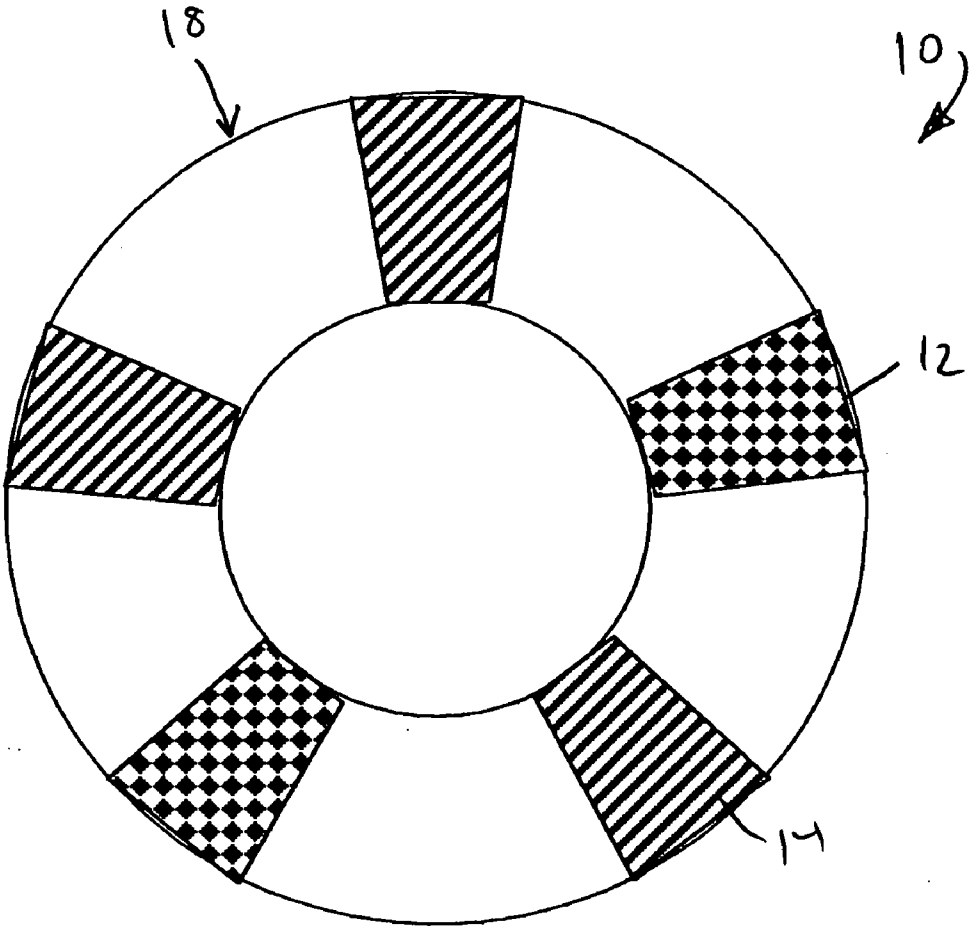


FIG. 3

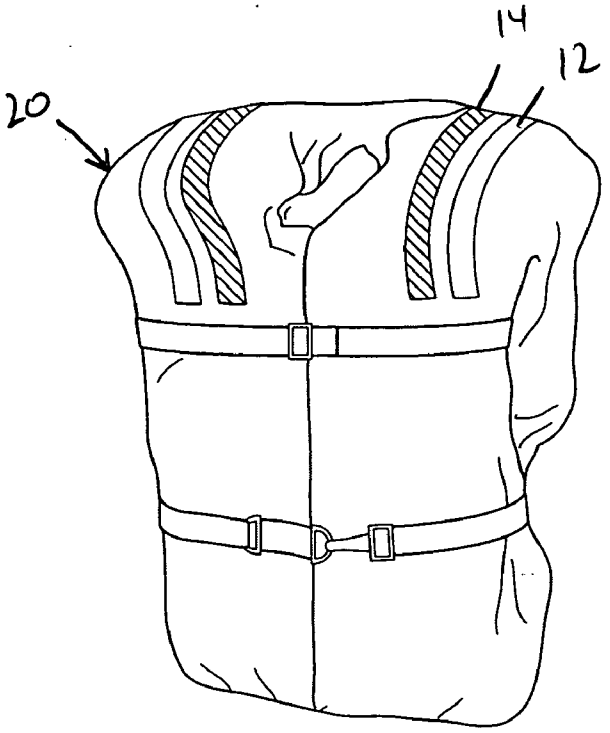


FIG. 4

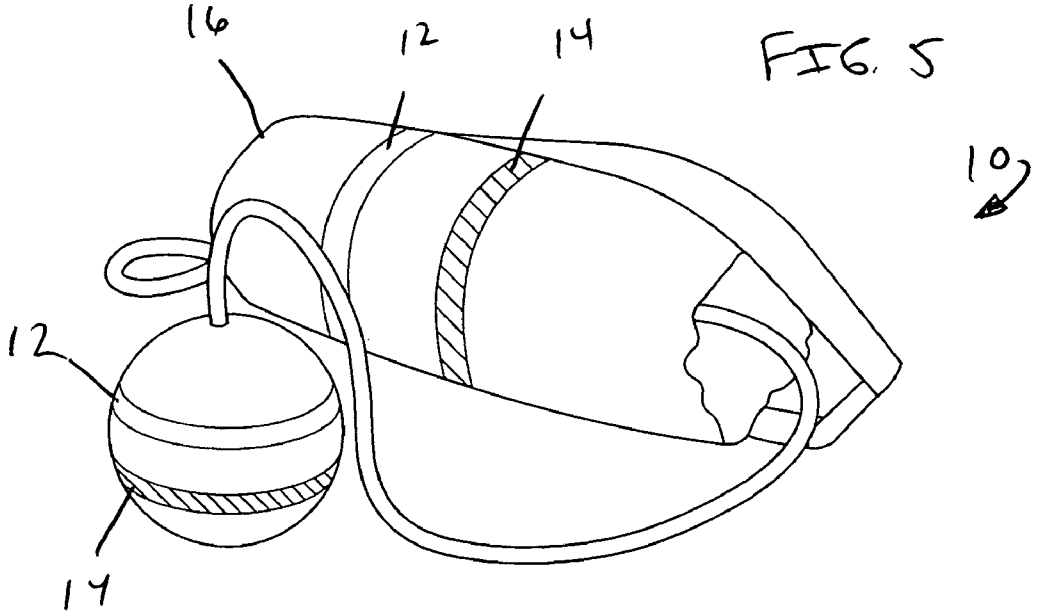


FIG. 5

RESCUE EQUIPMENT HAVING PHOTO-LUMINESCENT AND REFLECTIVE MARKINGS FOR NIGHT OR LOW LIGHT RECOGNITION

[0001] The present application is a continuation of pending provisional patent application Serial No. 60/476,990, filed on Jun. 9, 2003, entitled "Heaving and Mooring Line and Life-Saving Ring or Jacket with Photo-Luminescent and Reflective Marking for Night or Low Light Recognition".

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] This invention relates generally to rescue equipment and, more particularly, the invention relates to rescue equipment having photo-luminescent and reflective markings for night or low light recognition. The present invention further relates to identifying objects and persons in low light situations.

[0004] 2. Description of the Prior Art

[0005] In many emergency sea rescue operations, a lifeline or rope with life-saving ring or jacket is typically thrown out to a person who has fallen overboard into the water or otherwise needs rescuing. In addition, it is not uncommon for rescue operations to take place during the night or when otherwise little light is available. In the past, ordinary rope coiled in a bundle was used in such rescue operations by throwing the coiled bundle in the direction of the person needed to be rescued. It is very difficult for rescuers and distressed persons to see a rope line thrown in dark or darkened conditions, and can lead to the distressed person floundering desperately in search of the thrown rope. Or worse, there is a likelihood that the life-saving ring or jacket could strike the person in the head rendering him or her injured or unconcious. It is, therefore, particularly important in such situations that the distressed person being rescued not only see the thrown rope, but where the rope is being thrown.

[0006] Various rescue devices have been developed and used in an effort to provide a more efficient and reliable water rescue. For example, a lighted rescue lifeline has been devised having a series of illuminated floats placed at intervals along a rescue lifeline. The floats contain lightbulbs which are powered by a conductor passing along the lifeline. This device, however, proves to be complex and expensive to manufacture and produce, requiring a multitude of electrical parts.

[0007] Additionally, a line throw-bag has been developed having straps that are colored. The colored straps, unfortunately, are of little use for sighting the bag or the rope therein during nighttime hours or in low light conditions.

[0008] Finally, an emergency illuminated lifeline exists having a battery powered light at the far end thereof on a buoyant housing for enhancing visibility. However, because the light source is activated only upon the line being fully extended and upon subsequently jerking the line, it would be of little assistance in sighting the trajectory of the lifeline or rescue equipment while in flight.

[0009] Accordingly, there exists a need for rescue equipment having photo-luminescent and reflective markings for night or low light recognition which can be charged from a light source prior to use. Additionally, a need exists for rescue equipment having photo-luminescent and reflective markings for night or low light recognition which increases the visibility of the rescue equipment inhibiting injury and reducing the time for a person to find the rescue equipment in the dark. Furthermore, there exists a need for rescue equipment having photo-luminescent and reflective markings for night or low light recognition which aids the rescuer in positioning the rescue equipment in the proper location adjacent the distressed person.

SUMMARY

[0010] The present invention is a rescue device for a distressed person at night or in low light situations. The rescue device comprises at least one piece of rescue equipment, at least one photo-luminescent marking applied to the rescue equipment, and at least one reflective marking applied to the rescue equipment.

[0011] In addition, the present invention includes an identification device for identifying objects and persons in low light conditions. The identification device comprises an item to be located, a photo-luminescent marking positioned on the item, and reflecting means positioned on the item for reflecting light.

[0012] The present invention further includes a method for identifying objects or persons in low light conditions. The method comprises providing an item to be located, positioning a photo-luminescent marking on the item, and positioning reflecting means on the item for reflecting light.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] **FIG. 1** is a sectional view illustrating a rescue line having photo-luminescent and reflective markings, constructed in accordance with the present invention;

[0014] **FIG. 2** is a sectional view illustrating another embodiment of a rescue line having photo-luminescent and reflective markings, constructed in accordance with the present invention;

[0015] **FIG. 3** is a top plan view illustrating a life saving ring having photo-luminescent and reflective markings, constructed in accordance with the present invention;

[0016] **FIG. 4** is a perspective view illustrating a life jacket having photo-luminescent and reflective markings, constructed in accordance with the present invention; and

[0017] **FIG. 5** is a perspective view illustrating a throw bag having photo-luminescent and reflective markings, constructed in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0018] As illustrated in **FIGS. 1-5**, the present invention is rescue equipment, indicated generally at **10**, having photo-luminescent markings **12** and reflective markings **14** for night or low light recognition of the rescue equipment **10**. The rescue equipment **10** includes, but is not limited to, photo-luminescent marking of heaving or mooring lines (sometimes referred to as Monkey Fist), rescue or throw lines or bags **16**, life saving rings **18**, life jackets **20**, jackets, etc., for visualization in darkness or low light conditions. Before heaving the rescue equipment **10** to a person, vessel

or dock, the rescue equipment is first charged from a light source (not shown) so as to charge the photo-luminescent markings **12**. The photo-luminescent markings **12** can include, but are not limited to, crystals in paint or plastic applied to the rescue equipment.

[**0019**] As described and illustrated herein, the rescue equipment **10** of the present invention uses photo-luminescent markings **12** can use photo-luminescent inks or imbedded photo-luminescent plastic fibers in ropes and lines **16** for securing vessels (not shown) with items such as Monkey Fists or rescue lines for rescue purposes. Photo-luminescent materials **12** and reflective materials **14** can be painted onto the rescue equipment **10** or woven into strands for ropes or lines **16**, and mooring hardware (not shown) for making attachment from vessels to docks, or other vessels. Rescue lines, rescue slings, and rescue hoists for water rescue can be either painted or woven with fibers that contain the photo-luminescent materials **12** and reflective materials **14** to mark the presence of lines for throwing or installed situations such as docking. The implementation of the marking system of the present invention enables the catching of thrown lines by a distressed person in low light situations.

[**0020**] Before use, the photo-luminescent materials **12** on the rescue equipment **10** are charged with a light source and then heaved or otherwise projected to the desired location. The photo-luminescent materials **12** are visible on the moving rescue equipment **10**, or rope or line **16** in low light to assist the rescuer in determining accuracy of the throw and the distressed person in locating the rescue equimpment.

[**0021**] The rescue equipment **10** of the present invention further includes photo-luminescent materials **12** and reflective materials **14** impregnated into jackets, safety jackets, and specialized jackets such as FBI jackets that have a pull down black-out area to hide or expose the insignia, and helmets. Both photo-luminescent materials **12** and reflective materials **14** combined together maximize identification of an item or person.

[**0022**] The rescue equipment **10** of the present invention includes a photo-luminescent markings **12** and reflective markings **14** of lines **16** or life-saving rings **18** visible in low light situations so as to enable the catching person to see the rope or line **16** thrown at them. In addition, the rescue equipment **10** is a photo-luminescent marking system that allows viewing of submerged lines for divers or underwater personnel.

[**0023**] Other uses of the present invention include, but are not limited to, fishing net floats (not shown) marked for low light viewing and fishing nets (not shown) below water makers for attracting or deterring fish or underwater personnel for application specific marking with photo-luminescent paint or removable photo-luminescent fiber segments impregmented for low light viewing. Life jackets **20**, safety jackets, specialized jackets such as FBI identifiction jackets, rescue slings, rescue hoists, and helmets having both reflective materials **14** and photo-luminescent materials **12** combined-together for maximizing identification of an item or person. The marking system of the present invention using photo-luminescent materials **12** to be woven or painted within the rope/line **16** perimeter so light can be observed as coming from the rope/line **16** in low light or no light situations so that the trajectory of the rope/line **16** can be anticipated for this application.

[**0024**] The foregoing exemplary descriptions and the illustrative preferred embodiments of the present invention have been explained in the drawings and described in detail, with varying modifications and alternative embodiments being taught. While the invention has been so shown, described and illustrated, it should be understood by those skilled in the art that equivalent changes in form and detail may be made therein without departing from the true spirit and scope of the invention, and that the scope of the present invention is to be limited only to the claims except as precluded by the prior art. Moreover, the invention as disclosed herein, may be suitably practiced in the absence of the specific elements which are disclosed herein.

What is claimed is:

1. A rescue device for a distressed person at night or in low light situations, the rescue device comprising:

at least one piece of rescue equipment;

at least one photo-luminescent marking applied to the rescue equipment; and

at least one reflective marking applied to the rescue equipment.

2. The rescue device of claim 1 wherein the rescue equipment is selected from the group consisting of mooring lines, rescue lines, rescue bags, life saving rings, life jackets, jackets, and helmets.

3. The rescue device of claim 1 wherein the photo-luminescent markings are selected from the group consisting of photo-luminescent inks, photo-luminescent paint, and imbedded plastic photo-luminescent fibers.

4. The rescue device of claim 1 wherein the reflective markings are selected from the group consisting of reflective inks and reflective imbedded plastic fibers.

5. An identification device for identifying objects and persons in low light conditions, the identification device comprising:

an item to be located;

a photo-luminescent marking positioned on the item; and

reflecting means positioned on the item for reflecting light.

6. The identification device of claim 5 wherein the item to be located is selected from the group consisting of persons, mooring lines, rescue lines, rescue bags, life saving rings, life jackets, jackets, helmets, fishing nets, and fishing net floats.

7. The identification device of claim 5 wherein the photo-luminescent marking is selected from the group consisting of photo-luminescent inks, photo-luminescent paint, and imbedded plastic photo-luminescent fibers.

8. The identification device of claim 5 wherein the reflective means are reflective markings.

9. The identification device of claim 8 wherein the reflective markings are selected from the group consisting of reflective inks and reflective imbedded plastic fibers.

10. A method for identifying objects or persons in low light conditions, the method comprising:

providing an item to be located;

positioning a photo-luminescent marking on the item; and

positioning reflecting means on the item for reflecting light.

11. The method of claim 10 wherein the item to be located is selected from the group consisting of persons, mooring lines, rescue lines, rescue bags, life saving rings, life jackets, jackets, helmets, fishing nets, and fishing net floats.

12. The method of claim 10 wherein the photo-luminescent marking is selected from the group consisting of photo-luminescent inks, photo-luminescent paint, and imbedded plastic photo-luminescent fibers.

13. The method of claim 10 wherein the reflective means are reflective markings.

14. The method of claim 13 wherein the reflective markings are selected from the group consisting of reflective inks and reflective imbedded plastic fibers.

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