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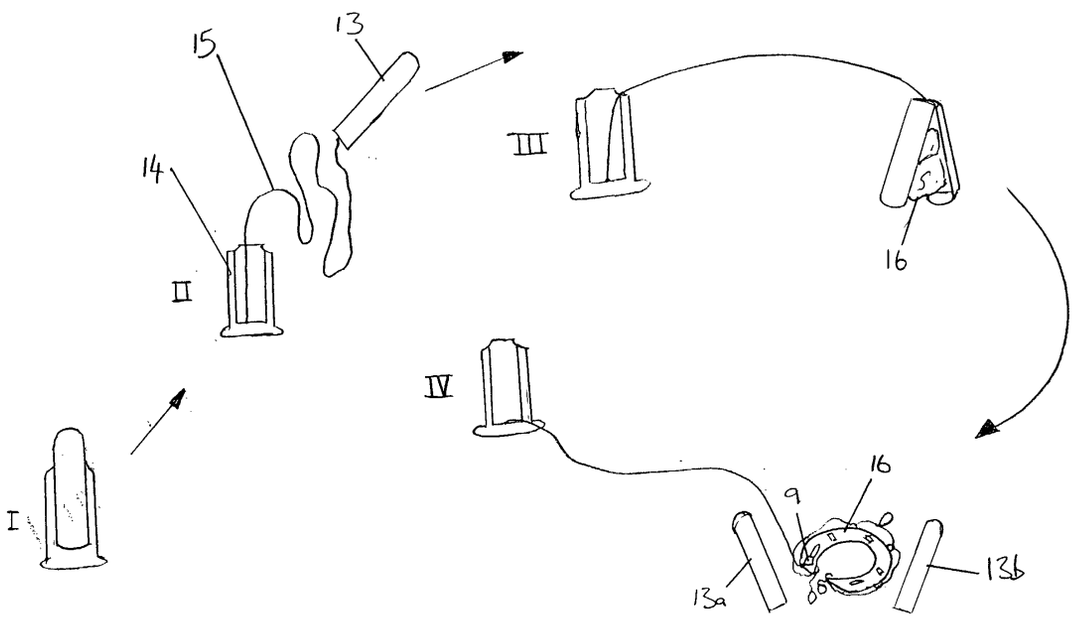
Amended claims in accordance with Rule 86 (2) EPC.

## (54) A horseshoe lifebuoy

(57) A horseshoe life buoy (16) comprises an air tight and waterproof shell (1,2,3) of flexible plastics material and means (9, 10, 15) for automatically inflating the shell for launch in a man overboard situation. Optionally, the life buoy is provided contained, deflated and folded or rolled, in a two piece container (13), the container (13) being mountable in a fixed bracket (14) and optionally, the means (9, 10, 15) for automatically inflating the shell comprises a static line (15) which is fixed to the bracket (14).

Fig 2

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## Description

**[0001]** This invention relates to horseshoe life buoys commonly carried by sailing boats as a safety aid. In particular, the invention relates to A horseshoe buoy which is relatively more compact and lightweight than existing horseshoe buoys.

**[0002]** Horseshoe life buoys are generally arranged around the boat and are launched over the side in a man overboard situation. The man overboard wraps the horseshoe around his body and is kept afloat until he can be rescued. Conventionally, such life buoys are made from a fairly inflexible, dense foam material moulded into a horseshoe shape. These buoys are hung on hooks around the boat for easy deployment in the event of an emergency.

**[0003]** The present invention provides a horseshoe life buoy comprising an air tight and waterproof shell of flexible plastics material and means for automatically inflating the shell for deployment in a man overboard situation.

**[0004]** The means for automatically inflating the shell may be conveniently provided in the form of a small cannister of compressed gas or gas generating material which is activated to release the gas into the shell when a cord, extending externally of the shell is pulled or tensed.

**[0005]** The shell itself is preferably provided in one or more bright colours so that the buoy may be easily seen from a distance. Suitable colours include the primary colours red and yellow. Optionally, one or more of the colours in the shell may be designed to fluoresce. Visibility may be further improved by the provision of portions of reflective material on the outer surface of the shell. In case of deflation or incomplete inflation of the buoy, a tube or mouthpiece may optionally be provided to permit the wearer or a rescuer to manually inflate the buoy. The buoy may also be provided with a small light and/or a whistle or other noise making device for attracting the attention of passers by.

**[0006]** The buoy is preferably provided with a cord or rope threaded about its periphery and fastenable around a wearer of the buoy. This assists in keeping the buoy attached to the wearer should he be injured or lose consciousness. The cord or rope may also be attachable to a line to permit the buoy, carrying the wearer to be towed to safety.

**[0007]** In a preferred embodiment, a horseshoe buoy according to the invention is provided compactly folded or rolled into a two part container for storage on the sailing boat. The container is conveniently carried in a mounted bracket and is also provided in a bright and/or fluorescent colour for increased visibility. The material from which the container is manufactured is preferably lightweight and waterproof and capable of floating in water. Suitable materials include plastics and fibreglass resins. The two parts of the container are configured to push fit together. When the buoy, still in the container, is deployed and the gas generating means activated, the buoy inflates causing the two parts of the container to separate. Thus, the position of the man overboard can be located not only by the bright colours of the horseshoe buoy but also by the floating, brightly coloured container.

**[0008]** A static line may be attached to the mounted bracket at one end and the gas generating means of the horseshoe life buoy at the other, whereby, once the container carrying the life buoy is flung a sufficient distance from the boat, the tension in the static line is sufficient to activate the gas generating means and cause inflation of the buoy. The man overboard acquiring the inflated life buoy may then be kept adjacent the boat via the static line until rescued.

**[0009]** The life buoy of the present invention may conveniently be manufactured from two pieces of similarly proportioned, horseshoe shaped material which are bonded together by a high frequency welding process. Suitable materials for this type of manufacture include vinyls and nylons. Other suitable thin sheet flexible, thermoplastics materials will no doubt occur to the skilled addressee.

**[0010]** For the purposes of exemplification, one embodiment of the invention will now be further described with reference to the following Figures in which:

Figure 1 shows a perspective view of a horseshoe life buoy according to the present invention after it has been inflated.

Figure 2 shows schematically a horseshoe buoy and container according to the invention at various stages during deployment.

**[0011]** As can be seen in Figure 1, the embodiment of the invention comprises upper and lower, substantially horseshoe shaped, thin sheets (1,2) of a lightweight, waterproof material. The two sheets are joined along a weld seam (3) by a high frequency welding process. The sheets (1,2) extend to provide a plurality of tabs about the periphery of the buoy into which are punched holes (4). The holes (4) are finished by metal rings and receive a length of rope (5) which is threaded and tied through each hole (4). To the open end of the horseshoe, the rope (5) terminates at one end with a loop (6) and at the other with a clip (7) which can be simply operated to fasten with the loop (6), thereby securing the buoy to a body.

**[0012]** One arm of the horseshoe is equipped with a compressed $CO_2$ cannister (8) which is connected to a gas activating device (9). The gas activating device (9) is itself activated by applying tension to a static line (15) (shown only in Figure 2) which is attached to the gas activating device (9). A cover (10) of the lightweight, waterproof material surrounds the gas cannister (8) to prevent corrosion of the cannister in hostile environments.

**[0013]** The second arm of the horseshoe is equipped

with a manual inflation device (11). The device essentially comprises a tube with a one-way valve opening to allow air into the buoy. The tube is provided with a tightly fitting cap to prevent any deflation by air escaping from the one way valve.

**[0014]** On the upper surface (1) of the buoy, there is provided a plurality of strips of light-reflective material (12) to aid visibility of the buoy in conditions of poor visibility.

**[0015]** Figure 2 shows schematically how the life buoy of the invention may be stored, launched and activated in a man overboard situation. The buoy (16) when not in use is stored in a two part, elongate, tubular container (13) which is conveniently mounted in a bracket (14) which may be fixed to any surface on the boat. Passing from the buoy (16) through a slot or hole in the container (13) is a static line (15) which may optionally, be fixed to the bracket (14) as shown in the Figure or may be held by any person when launching the container (13).

**[0016]** The Figure shows four phases from storage to deployment of the life buoy. In Phase I, the container (13), containing the deflated and rolled up life buoy (16) is seated securely in the bracket (14). At Phase II, the container (13) is launched free from the bracket (14) towards a man overboard, causing static line (15) to unravel. In Phase III, as static line (15) unravels and becomes tense, the gas activating device (9) is triggered and gas is released from cannister (8) thereby inflating the buoy(16). As the buoy (16) inflates, it expands pushing the two parts (13a and 13b) of the container (13) apart. In phase IV, as the buoy (16) reaches its target, the container (13) completely separates acting as a marker for the body to which the buoy (16) is directed. If capable, the body under rescue then wraps the horseshoe buoy around his body and secures it by fastening the clip (7) through the loop (6). The body is then assisted by the buoy (16) to float in the water and is held within a fixed radius of the boat by static line (15) until he can be rescued.

## Claims

1. A horseshoe life buoy (16) comprising an air tight and waterproof shell (1,2,3) of flexible plastics material and means (9,10, 15) for automatically inflating the shell for launch in a man overboard situation.

2. A horseshoe life buoy as claimed in claim 1 **characterised in that** the means for automatically inflating the shell (1,2, 3) is provided in the form of a small cannister of compressed gas (8) which is activated to release the gas into the shell (1,2,3) when a cord (15), extending externally of the shell (1,2,3) is tensed.

3. A horseshoe life buoy as claimed in claim 1 or claim 2 **characterised in that** the shell (1,2,3) is provided in one or more bright colours so that the buoy may be easily seen from a distance.

4. A horseshoe life buoy as claimed in claim 3 **characterised in that** one or more of the colours in the shell is fluorescent.

5. A horseshoe life buoy as claimed in any preceding claim **characterised by** the provision of portions of reflective material (12) on the outer surface (2) of the shell.

6. A horseshoe life buoy as claimed in any preceding claim **characterised by** a manual inflation device provided adjacent one arm of the horseshoe.

7. A horseshoe life buoy as claimed in any preceding claim **characterised by** a small light and/or a whistle or other manually activated noise making device attached to the surface of the buoy.

8. A horseshoe life buoy as claimed in claim 7 **characterised in that** the light is activated by contact with water.

9. A maritime life saving aid comprising a horseshoe life buoy (16) as claimed in any preceding claim contained, deflated and folded or rolled, in a two piece container (13).

10. A maritime life saving aid as claimed in claim 9 wherein the container (13) is mountable in a fixed bracket (14) and optionally, the means (9,10, 15) for automatically inflating the shell comprises a static line (15) which is fixed to the bracket (14).

**Amended claims in accordance with Rule 86(2) EPC.**

**1.** A maritime life saving aid comprising a horseshoe buoy (16) provided in one or more bright colours including an air tight and waterproof shell (1,2,3) of flexible plastics material and means (9, 10, 15) for automatically inflating the shell (1, 2, 3) for launch in a man overboard situation, which is deflated and folded or rolled in a brightly coloured two piece container (13) able to separate on deployment of the buoy (16), each piece capable of floating in water thus locating the position of the man overboard.

**2.** A maritime life saving aid as claimed in claim 1 wherein the container (13) is mountable in a fixed bracket (14) and optionally, the means (9, 10, 15) for automatically inflating the shell comprises a static line (15) which is fixed to the bracket (14).

**3.** A maritime life saving aid as claimed in claim 1 **characterised in that** the container (13) is provided

with a fluorescent colour.

**4.** A maritime life saving aid as claimed in claim 1 wherein the horseshoe life buoy is **characterised in that** the means for automatically inflating the shell (1, 2, 3) is provided in the form of a small cannister of compressed gas (8) which is activated to release the gas into the shell (1, 2, 3) when a cord (15), extending externally of the shell (1, 2, 3) is tensed.

**5.** A maritime life saving aid as claimed in claim 4 wherein the horseshoe life buoy is **characterised in that** one or more of the colours in the shell is fluorescent.

**6.** A maritime life saving aid as claimed in any preceding claim wherein the horseshoe life buoy is **characterised by** the provision of portions of reflective material (12) on the outer surface (2) of the shell.

**7.** A maritime life saving aid as claimed in any preceding claim wherein the horseshoe life buoy is **characterised by** a manual inflation device provided adjacent one arm of the horseshoe.

**8.** A maritime life saving aid as claimed in any preceding claim wherein the horseshoe life buoy is **characterised by** a small light and/or a whistle or other manually activated noise making device attached to the surface of the buoy.

**9.** A maritime life saving aid as claimed in any preceding claim wherein the horseshoe life buoy is **characterised in that** the light is activated by contact with water.

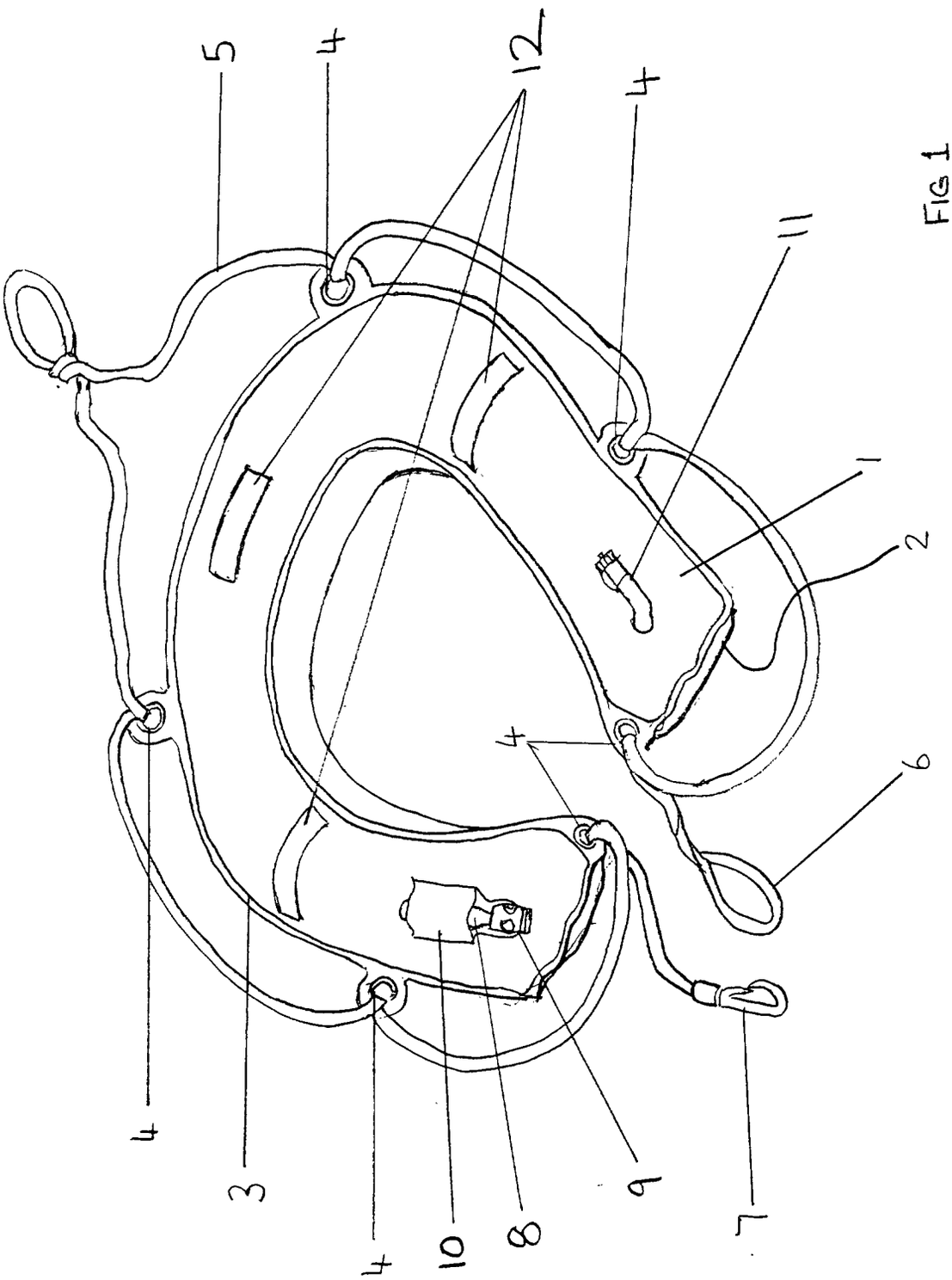
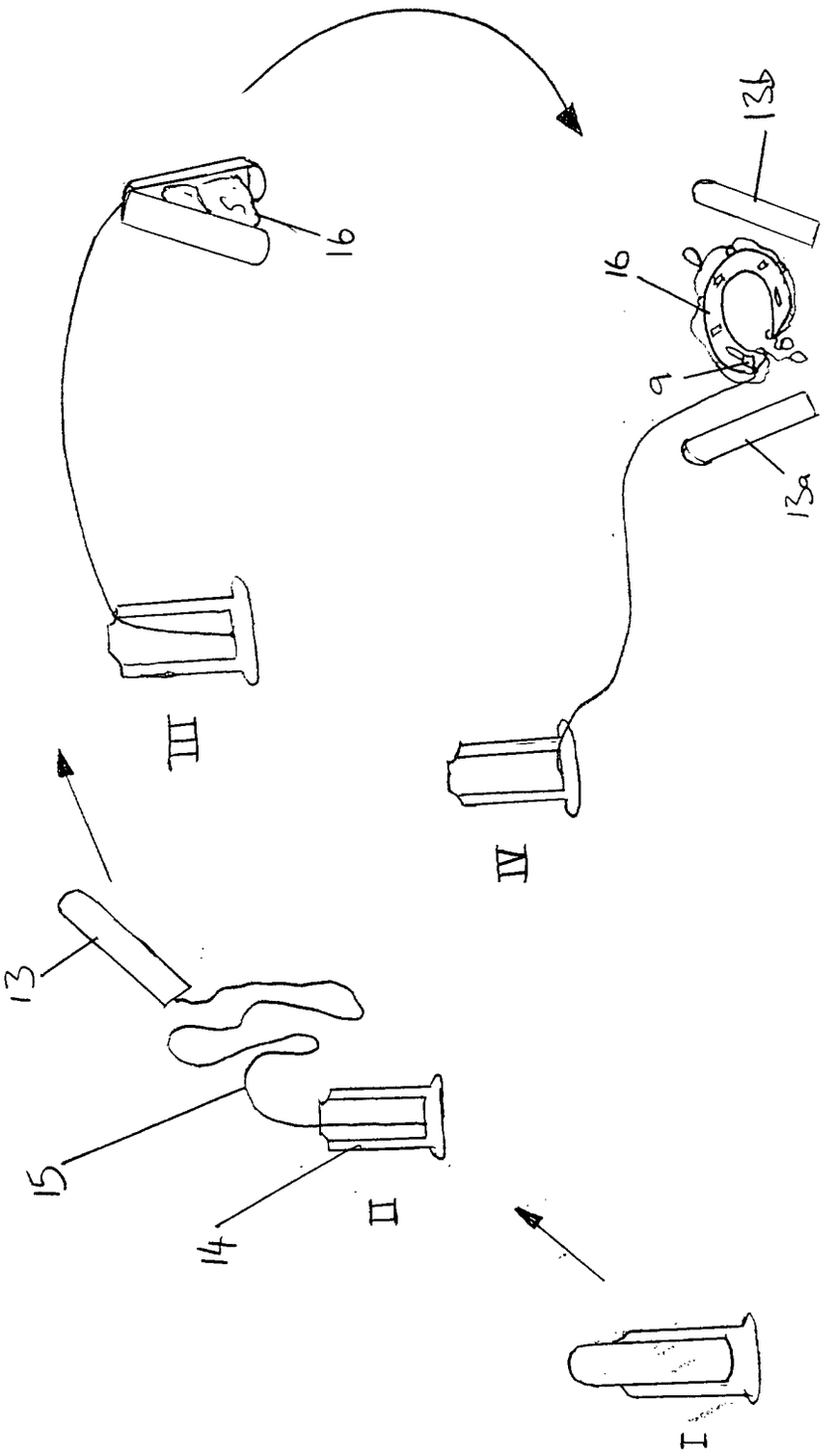



Fig 1

FIG 2



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Application Number
EP 00 31 1500

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| Place of search | Date of completion of the search | Examiner |
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| THE HAGUE | 25 May 2001 | Häusler, F.U. |

CATEGORY OF CITED DOCUMENTS

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## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 00 31 1500

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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