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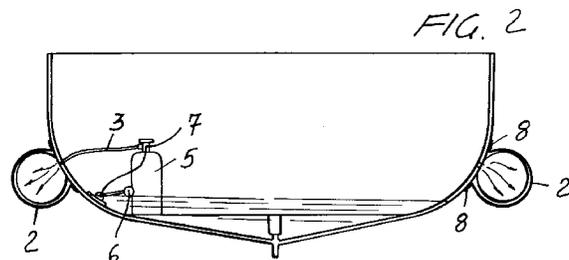
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54 **Inflatable hull protecting device for boats.**

57 An inflatable device for protecting the hull of a boat or the like comprises a holding envelope which can be applied to the hull of a boat and at least a substantially tubular element which can be driven from a start condition, in which it is deflated, to an end condition, in which it is filled with a gas, and means for inflating the tubular element.



BACKGROUND OF THE INVENTION

The present invention relates to an inflatable safety device, which can be applied to boats and the like, and which can be used to provide the boats with a great stability, both in a harbour and in open sea, and specifically designed to protect the hull walls and improve the floating capability thereof.

There are already known protecting devices which are provided to be applied to the walls of a boat hull in order to protect these walls from impacts as the boat is moored in a harbour.

These edge protecting devices usually comprise plastic material elements, filled by air, which conventionally have a spherical or cylindrical shape, and which, as stated, are specifically designed for protecting the sidewalls of boats from possible impacts against other boats or against the mooring dock.

However, it has been found that these prior boat protecting devices are susceptible to be displaced or detached from the hull sidewalls since they are not firmly restrained on the sidewalls.

Moreover, these known protecting devices are susceptible to be deflated and broken.

Also known is the fact that boats are frequently seriously damaged and they can also sink, both in an harbour and as they are driven in open sea, as water enter the hull or a valve connected to a sea outlet is accidentally open.

These drawbacks frequently occur also as a boat is moored in a harbour.

Other possible causes of an accidental penetration of water into a boat hull can be due to the breakage of sleeves or the like, opening through the hull construction.

Moreover, in a rough see condition, the stability of the boat is seriously negatively affected.

Under these conditions, the boat can be tilted or displaced, so that water can enter the hull thereby impairing its floating capabilities.

SUMMARY OF THE INVENTION

Accordingly, the main object of the present invention is to substantially overcome the above mentioned problems, so as to remove the above disclosed drawbacks.

This result can be achieved by using an inflatable safety protecting device for boats, which has been specifically designed to efficiently protect the sidewalls of the hull of a boat.

Another object of the present invention is to provide such a safety inflatable device for boats, which can be applied to any types of boats, independently from the boat size.

Another object of the present invention is to provide such an inflatable hull protecting device which can be easily made and can also be easily used.

According to one aspect of the present invention, the above mentioned objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by an inflatable protecting device for boats characterized in that said device comprises at least a substantially tubular element to be applied to a hull of a boat and adapted to be driven from a start condition in which it is deflated to an end condition in which it is filled with a gas, and inflating means for inflating said tubular elements, said inflating means being designed for manually operation or for automatic operation.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the device according to the present invention will become more apparent hereinafter from the following detailed disclosure of a preferred, though not exclusive, embodiment thereof, which is illustrated, by way of an indicative, but not limitative example, in the figures of the accompanying drawings, where:

Figure 1 illustrates the protecting device according to the present invention applied to a boat hull at the two main sidewalls thereof;

Figures 2 and 3 show the same device as illustrated in Figure 1, respectively during a partial inflating step thereof and an end inflating step thereof; Figures 4 and 5 are two partially cross-sectioned side views of the device according to the present invention, respectively housed in side housing recesses formed in the boat hull, and in a condition withdrawn from the housing recess; and

Figure 6 is a top plan view illustrating a boat provided, on the two sides thereof, with safety self-inflatable devices according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the figures of the accompanying drawings, the protecting device 1 according to the present invention, is characterized in that it comprises inflatable elements 2 which have a preferably cylindrical shape and are anyhow designed so as to fit to the longitudinal extension of the boat hull sidewalls, to which the device must be applied.

The above mentioned inflatable elements 2 are connected to bottles or tanks 5, containing pressurized air or gas, adapted to allow said inflatable elements 2 to be automatically inflated as water enters the hull beyond a given present level.

To that end, the protecting device according to the present invention can be provided with a float element 6, or other like device, adapted to cause the valve 7, applied to the above mentioned bottle 5, to be opened.

As the valve 7 is opened, the pressurized gas or air in the bottle 5 is driven to the floating elements 2 through inlet ducts 3 applied, at one end portion thereof, to the valve 7 and, at the other portion thereof, to said floating elements 2.

In this connection it should be pointed out that the elements 2 can be either directly applied to the boat hull, through anchoring lugs 8, or they can also be glued to the boat hull.

The affixing lugs 8, in particular, will allow said inflatable elements 2 to be firmly connected to the hull at any suitable set position thereof.

Preferably, the inflatable elements 2 are arranged at the two major sidewalls of the boat hull approximately at the floating line thereof, or immediately above or under the floating line.

Thus, the inflatable elements 2 can simultaneously operate as stabilizing elements for the boat to which they are applied, so as to reduce its rolling movements and prevent the boat from being tilted under a rough sea condition.

Thus, the above mentioned stabilizing elements also operate as edge protecting elements and dampers, and are very useful both as the boat is driven or as it is moored in a harbour.

In addition to the above mentioned functions, the inflatable protecting elements 2 prevent the boat from sinking if the hull thereof is broken and water enters the hull.

In this connection it should be also pointed out that, as it is clearly shown in figures 4 and 5, the inflatable pneumatic elements 2 can be also housed in suitable recesses 9 formed along the sidewalls of the boat hull.

In such a case, said elements 2 can be housed in said recesses 9 as the boat is moored in a harbour, and they can be withdrawn and further inflated both during the navigation and during the mooring.

Thus, the mentioned pneumatic protecting elements 2 can provide all of the above disclosed functions.

In the accompanying drawings there has been shown an automatic device designed for automatically inflating the pneumatic protecting elements 2, by using a float driving element.

Alternatively, it is also possible to use other technically equivalent elements, for example of mechanical and electro-mechanical nature, or of an electronic nature, designed for causing the valve assembly 7 applied to the bottle 5 to be opened.

In the several examples shown in the figures of the accompanying drawings, the protecting elements or devices 2 have been shown applied to the outer sidewalls of the boat hull.

In this connection it should also be apparent that the disclosed inflatable elements can be also applied in the hold of the boat and in this case they will provide a floating function so as to prevent the boat from

sinking under rough sea conditions, or if the boat is tilted or water enters the boat hull beyond a given safety level.

From the above disclosure it should be apparent that the invention fully achieves the intended objects.

While the invention has been disclosed with reference to a preferred embodiments thereof, it should be apparent that the disclosed embodiment is susceptible to several modifications and variations, all of which will come within the spirit and scope of the appended claims.

Claims

1. An inflatable protecting device for boats, characterized in that said device comprises one or more inflatable elements, having a substantially cylindrical shape and adapted to fit the sidewalls of a boat to which the device must be applied.
2. An inflatable protecting device for boats, according to Claim 1, characterized in that said inflatable elements are connected to pressurized air or gas bottles or tanks, adapted to allow said inflatable elements to be automatically inflated as water enter the hull of the boat beyond a preset level.
3. An inflatable protecting device for boats, according to Claim 1, characterized in that said device comprises a float element or other equivalent controlling elements, adapted to cause a valve applied to said pressurized air or gas bottle to be opened.
4. An inflatable protecting device for boats, according to Claim 1, characterized in that said device comprises a valve which, as it is opened, allows pressurized air or gas held in said bottle to be conveyed to said floating elements through inlet ducts applied, at one end thereof, to said valve and, at the other end thereof, to said floating elements.
5. An inflatable protecting device for boats, according to Claim 1, characterized in that said floating elements are directly applied to the boat hull through anchoring lugs to be affixed or glued to said hull.
6. An inflatable protecting device for boats, according to Claim 1, characterized in that said affixing lugs provide a firm connection of said inflatable elements to a preset portion of said hull.
7. An inflatable protecting device for boats, according to Claim 1, characterized in that said inflatable

able elements are arranged on the two major sidewalls of the boat hull, approximatively at its floating line or immediately above or under said floating line.

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- 8.** An inflatable protecting device for boats, according to Claim 1, characterized in that said inflatable elements, arranged on the two sidewalls of said boat hull, also operate as stabilizing elements for the boat to which they are applied. 10
- 9.** An inflatable protecting device for boats, according to Claim 1, characterized in that said stabilizing elements are designed for operating as damper and edge protecting elements. 15
- 10.** An inflatable protecting device for boats, according to Claim 1, characterized in that said elements are housed in said recesses, under normal mooring conditions of the boat and can be withdrawn from said recesses and further inflated both during the navigation and during the mooring thereof. 20
- 11.** An inflatable protecting device for boats, according to Claim 1, characterized in that said device further comprises an automatic driving device for driving said elements to be inflated, through a floating driving element. 25 30
- 12.** An inflatable protecting device for boats, according to Claim 1, characterized in that said device further comprises mechanical, electro-mechanical, or electronic driving means for causing said valve assembly applied to said bottle to open. 35
- 13.** An inflatable protecting device for boats, according to Claim 1, characterized in that said safety inflatable devices are applied also inside the boat hold so as to provide a floating function adapted to prevent the boat from sinking under rough sea conditions. 40

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FIG. 1

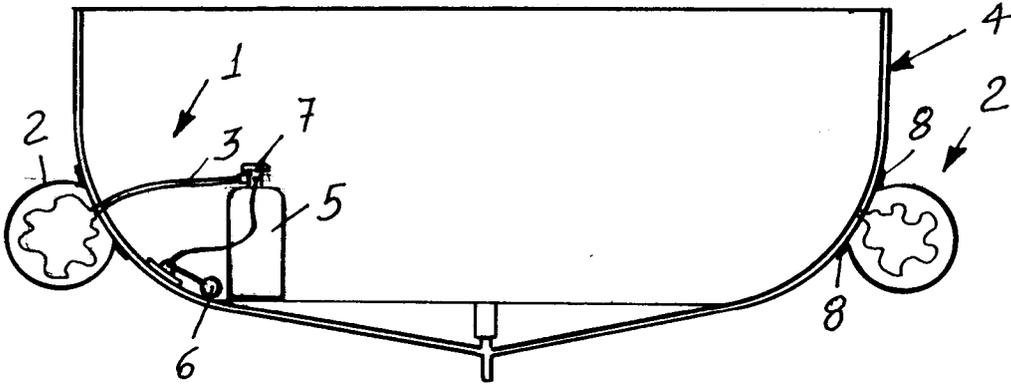


FIG. 2

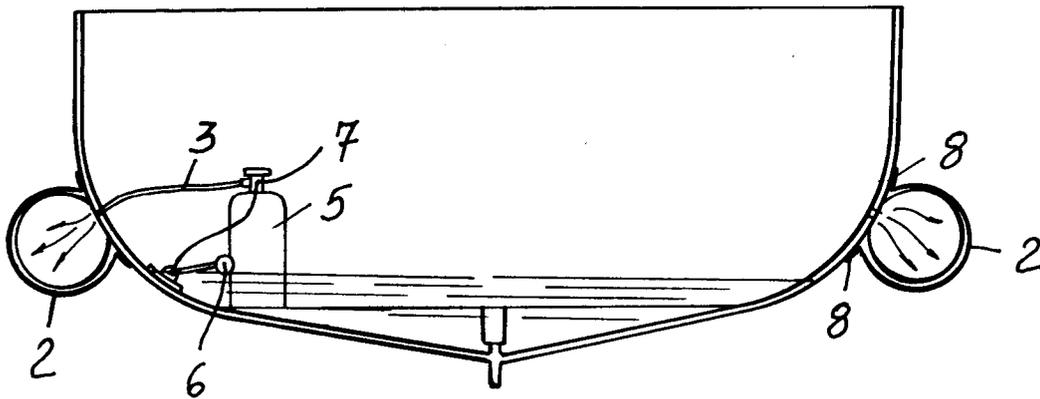
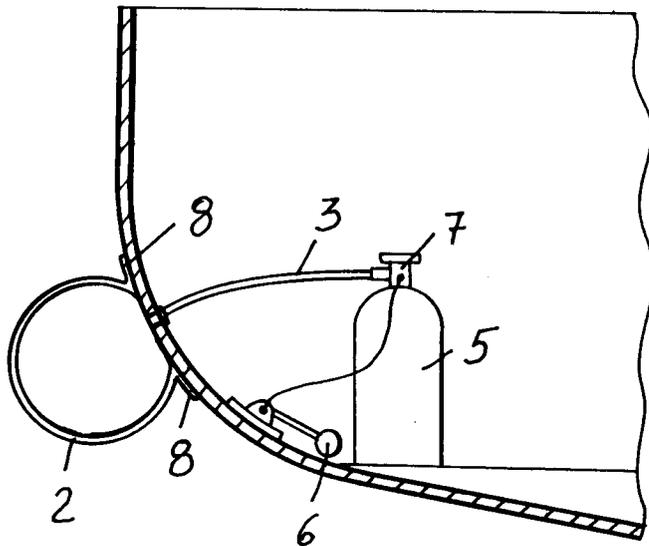


FIG. 3



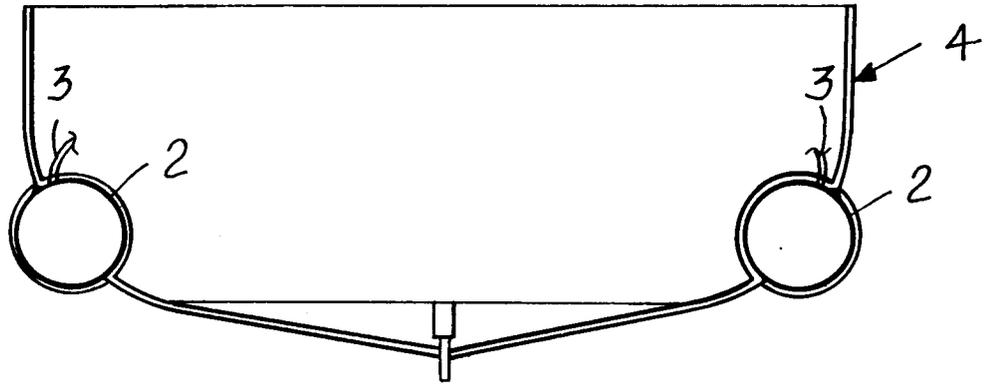


FIG. 4

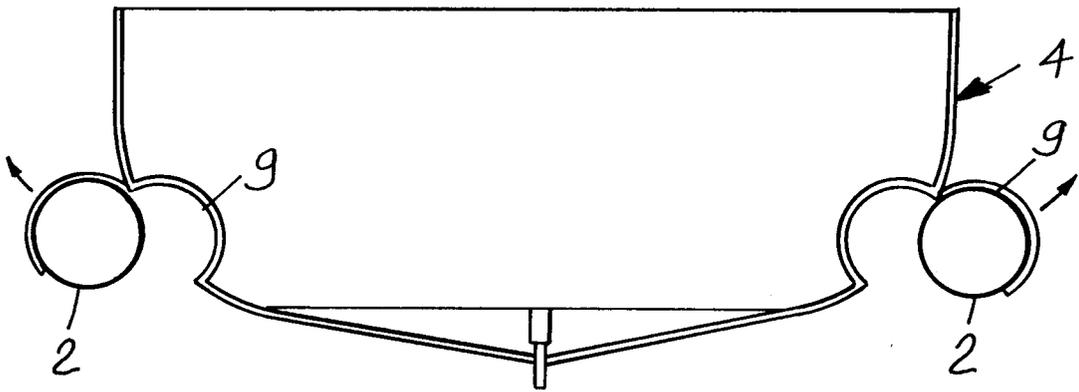


FIG. 5

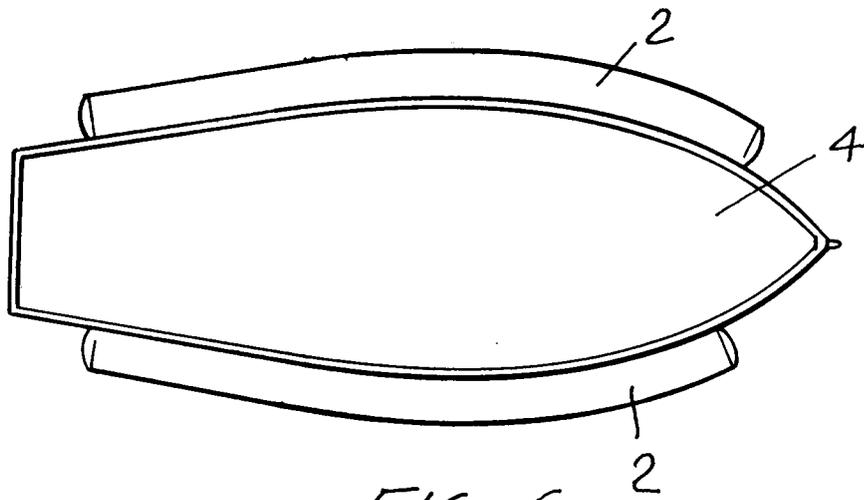


FIG. 6



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 93 83 0123

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	WO-A-9 117 915 (B.WEBSTER) * abstract; figures * ---	1-4, 7-12	B63B43/14 B63B59/02
X	EP-A-0 258 008 (D.BINKS) * abstract; figures * * column 1, line 18 - line 34 * * column 2, line 27 - line 93 * * column 4, line 2 - line 9 * ---	1, 4-10	
X	WO-A-9 008 691 (SEABASS LTD.) * abstract; figures * * page 10, line 10 - line 18 * ---	1-12	
X	US-A-3 100 100 (E.CARPENTER) * column 1, line 9 - line 14; figures * * column 1, line 70 - column 2, line 3 * ---	1, 5-8	
X	DE-A-2 842 962 (B.JUELS) * claims; figures * ---	1, 9	
X	DE-A-3 421 904 (H.JAGUSCH) * page 3; claims; figures * -----	1, 12, 13	TECHNICAL FIELDS SEARCHED (Int. Cl.5) B63B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 29 JULY 1993	Examiner STIERMAN E.J.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	

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