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(54) **SYSTEM FOR EVACUATION OF PERSONNEL FROM A CAPSIZED VESSEL**

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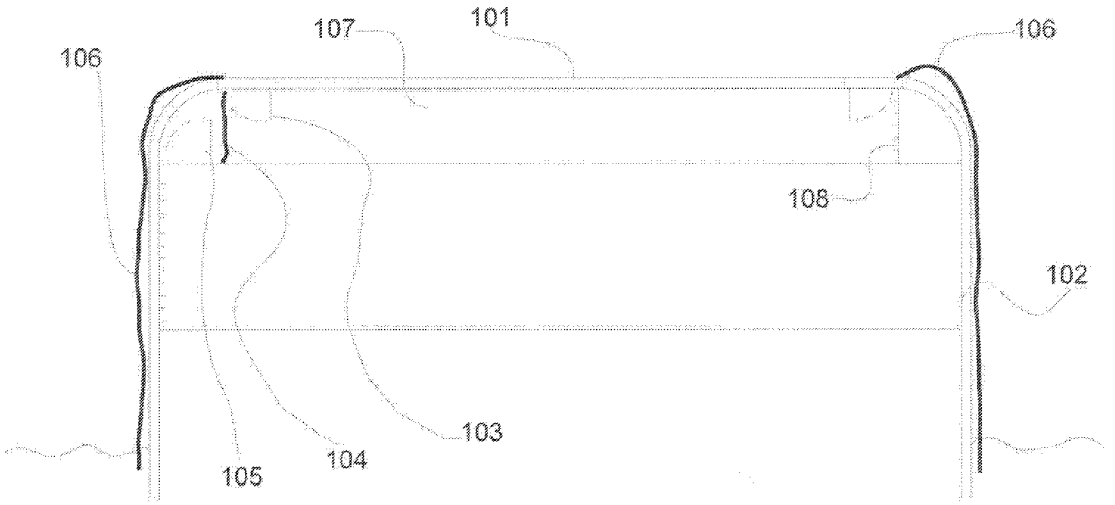
(57) **ABSTRACT**

System for evacuation of personnel from a capsized vessel via a lockable escape hatch (**103**) in the bottom of said vessel, characterized in that the system comprises a first lockable escape hatch (**105**), said first lockable escape hatch (**105**) leads to an evacuation room (**107**), said room (**107**) is provided with a second lockable escape hatch (**103**), said room (**107**) is illuminated by lamps (**201**) receiving energy from a battery pack (**202**) not connected to the said vessel's energy system, said first and second lockable escape hatch (**103**, **105**) cannot be opened simultaneously, in relation to said first lockable escape hatch (**105**) it is connected a device (**106**) for climbing, said climbing device (**106**) unfolds when the said vessel has a lopsidedness in excess of a pre-determined number of degrees.



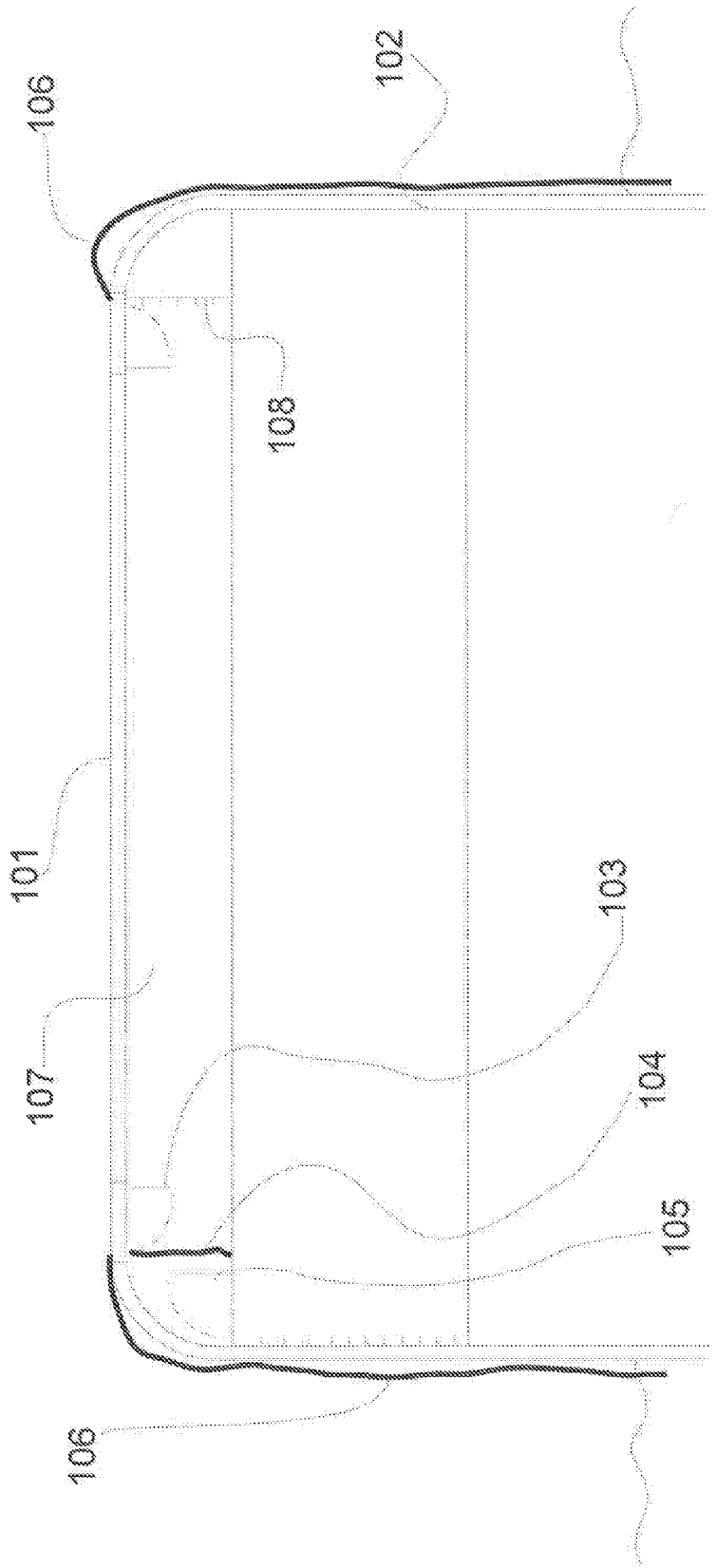


Fig. 1

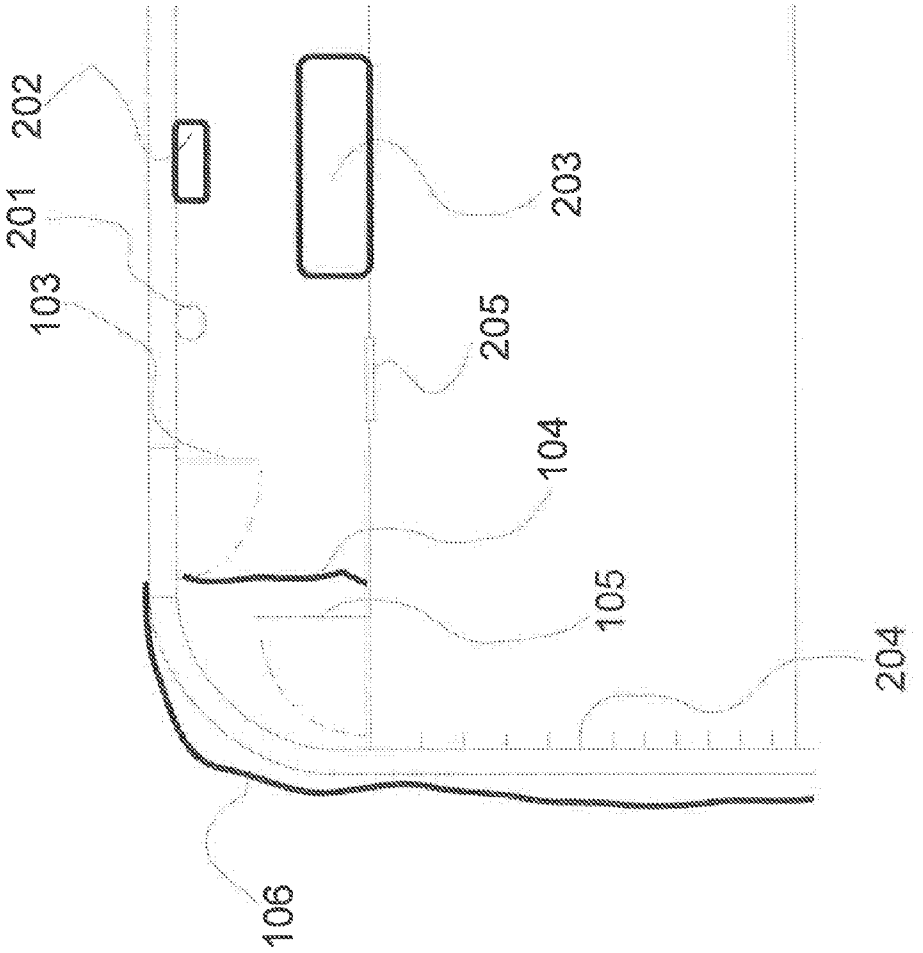


Fig. 2.

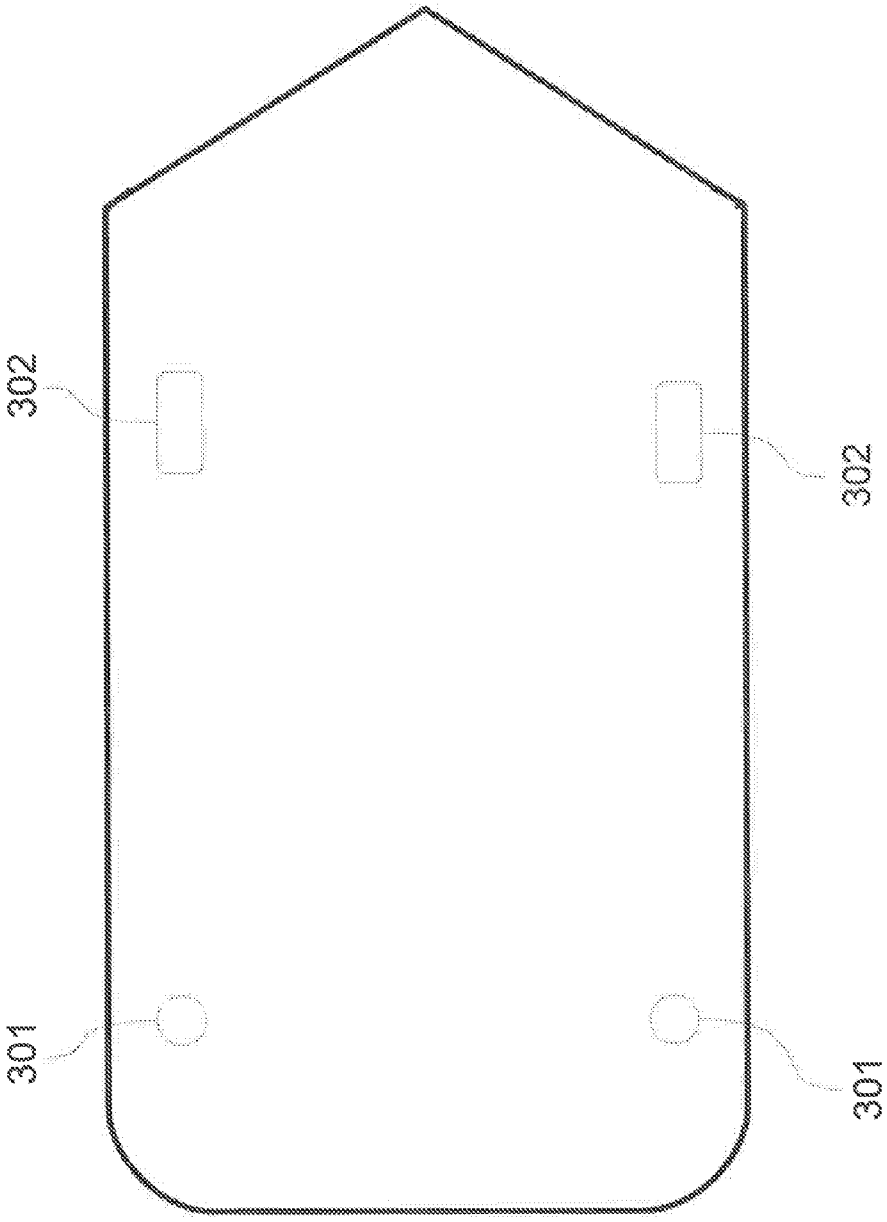


Fig. 3

SYSTEM FOR EVACUATION OF PERSONNEL FROM A CAPSIZED VESSEL

TECHNICAL FIELD

[0001] The present invention regards a device and a procedure for the evacuation of a vessel, and especially the evacuation of a capsized vessel and where the remaining escape routes for various reasons cannot be used.

BACKGROUND OF THE INVENTION

[0002] When a vessel capsizes the problem arises that the people on board cannot take advantage of the common emergency exits in a ship. This is because they are either under water or are difficult to use due to the fact that they are upside down. In addition, there arises a problem that people who are in the bottom of the vessel, such as the engine room, must find his way out of the vessel when it is upside down and out through escape routes that might be filled with water.

[0003] Furthermore, it is important that the watertight bulkheads are closed as quickly as possible to prevent the vessel filling up with water in order to prevent it from sinking. There is thus a danger in a capsize that people are trapped inside the boat, and must be cut out.

[0004] There is at the present time no effective solution for evacuation of a capsized vessel and in the report "Risk Estimates for domestic ferry traffic 2008", conducted by the Norwegian Maritime Directorate, the Norwegian Public Roads Administration and the National Association for Shipping Companies, it is concluded that the "capsize is an accident type with low probability but potentially major consequences."

[0005] There are many examples of these consequences from the recent years from Norwegian ships alone.

[0006] MS "Bourbon Dolphin" was an anchor handling vessels owned by shipping company Bourbon Offshore Norway in Fosnavåg. It was built at Ulstein Yard in 2006 and was of the type "Ulstein A102." The ship capsized while moving the anchor for the semi-submersible drilling rig Transocean Rather about 75 nautical mile west of Shetland, at 18.20 on 12 Apr. 2007. Seven of the 15 crew were rescued alive, eight were found dead.

[0007] MS "Rocknes" was a specialized vessel for dumping of rocks on the seabed. In the afternoon, 19 Jan. 2004 the ship was southbound in the Vatle Stream, south of Bergen. After having run aground on an unmarked nine meter shallow MS "Rocknes" got stability problems and started tilting towards starboard. After a short time she capsized and remained upside down. Of the 30 who were on board, 18 was killed.

[0008] U.S. Pat. No. 1,130,301 describes a solution where there is a hatch that can be opened in the bottom of a rescue vessel. The invention describes a solution that will make it possible to get out of the rescue vessels if they were to be washed ashore up/down and you do not have the ability to open the main escape hatch at the top of the vessel.

[0009] This solution is designed for relatively small vessels and only if it is washed ashore.

SUMMARY OF INVENTION

[0010] It is therefore an objective of the present invention, as described in the set of claims solve the problems mentioned above. This is done by implementing emergency exits in the bottom of the vessel which can be opened from the inside in case of capsize.

[0011] The solution consists in a shaft or the like, e.g. from the control room to get to the inner escape hatch in the bottom of the boat. Furthermore, the inner escape hatch is opened and then it is possible to climb into an evacuation room in the bottom of the vessel. When everyone is inside the room the first escape hatch is closed before the outer escape hatch is opened. Finally, e.g. a rope ladder or similar is folded out in order to make the descent into the water easier, and lifeboats are inflated.

BRIEF DESCRIPTION OF FIGURES

[0012] FIG. **1** is a cross section of the hull of a vessel with an embodiment of the invention implemented.

[0013] FIG. **2** is a more detailed picture of the invention according to the embodiment shown in FIG. **1**

[0014] FIG. **3** shows the hull of a vessel as seen from the outside with the present invention implemented.

DETAILED DESCRIPTION

[0015] FIG. **1** is an embodiment of the present invention. It is shown a cross section of the fuselage **101** of a vessel. It can be seen that the hull comprises an inner **102** and an outer part **101** with a layer of air in between. This is a common solution in large vessels and is called watertight bulkheads. This is to prevent water from entering the vessel if the outer hull **101** is damaged and has sprung a leak.

[0016] Furthermore, we see that there is an escape hatch **103** in the outer hull, which opens into the evacuation room **107**. This is in order to ensure that it is possible to open the escape hatch **103** when the ship lies heavily in the sea and the hatch **103** is partially under water.

[0017] The escape hatch **103** is not opened until everybody has put on the rescue equipment that is stored in the evacuation room **107**. Everybody will therefore be prepared for the challenges that one may encounter. The point is that anyone who stands in the evacuation room **107** must be prepared for the intrusion of water when the hatch **103** is opened.

[0018] Attached to the escape hatch **103** is, for example, either a rope ladder **104**, or a ladder **108** in order to let the crew in the evacuation room **107** climb up and out of the escape hatch **103**.

[0019] In the bottom of the evacuation room **107**, there are a further **105** escape hatch. The escape hatch **105** should turn inwards into the evacuation room **107**. This is because in the event of damage to the hull and water in the evacuation room **107** it will not be possible to open the escape hatch **105**, which can have disastrous consequences and even accelerate the sinking of the vessel.

[0020] The escape hatch **105** gives access to the sealed escape room **107**.

[0021] Similar to the outer escape hatch **103**, it is connected steps **204**, in order to make it possible for people who are in the boat to get to the evacuation room **107** between the two escape hatches **105**, **103**.

[0022] Furthermore, the automatic emergency light in the control room, shaft and evacuation room is activated if the vessel would end upside down.

[0023] An air vent ensures ventilation in the evacuation room. This air vent closes before the last escape hatch is opened. The valve can also be closed from the engine by, in case of damage to the hull.

[0024] All the rope ladders are released automatically if the ship should capsize. Furthermore, the emergency lights will be activated in order to make it possible to navigate if the power goes off.

[0025] The emergency hatches can advantageously have a solution that makes it impossible to open the outer escape hatch **103** if the inner escape hatch **105** is open. This is in order to prevent that the opening of the outer escape hatch **103** will affect the buoyancy of the vessel. If both escape hatches are opened, the air that keeps the boat floating will escape when the vessel is evacuated.

[0026] It is therefore formed a watertight gate that everybody that wants to be evacuated has to pass through.

[0027] In FIG. **2** we see the solution from FIG. **1** in further detail. Here it can be seen a shaft with a ladder **204** leading to the inner escape hatch and into the evacuation room. Furthermore, it is mounted emergency lights around the escape hatch in order to make it possible for those in the evacuation room to find the escape hatch if the electrical system in the vessel does not work during the evacuation.

[0028] The light from these lamps **201** is connected to a battery pack **202** that is activated when the vessel has a bias of a certain number of farms.

[0029] Inside the evacuation space **107** between the two escape hatches **103**, **105**, there is also emergency lighting that is powered by the same battery pack. Further there are containers **203** with emergency equipment that the crew can use in an evacuation. An example of this equipment is survival suits, life jackets, inflatable life rafts, flares, oxygen and the like.

[0030] Further, the evacuation room **107** is equipped with a vent **205** regardless of the condition the ship is in. This is because the area is classified as a moist and damp area. In order to prevent the emergency equipment and the like from being destroyed, there must be some form of ventilation. The air valve can easily be closed before evacuating the ship. Should the ship hit the bottom, and that the hull damaged, the valve can also be closed, e.g. from the engine room.

[0031] When entering the sluice, the crew puts on the survival suits, close the inner escape hatch **105** and climb out of the outer escape hatch **103**. The system of escape hatches can be arranged so that it is not possible to have both doors open simultaneously.

[0032] Further, in relation to the outer escape hatch **103**, it is attached a rope ladder **106** or the like in order to safely take to the escaping personnel into the water.

[0033] The life rafts inflate when in water and the escaping people can get away from the ship and wait to be picked up by rescue personnel.

[0034] In FIG. **3** it is shown a perspective view of the bottom of a vessel. The number of escape hatches **301** and escape routes **302** has to be specially adapted to each ship in order to make all rooms located in the bottom of the vessel evacuate able thru the hull of the vessel. Examples of such spaces may be cabins, control rooms and engine rooms.

1. System for evacuation of personnel from a capsized vessel via a lockable escape hatch (**103**) in the bottom of said vessel, characterized in that the system comprises

a first lockable escape hatch (**105**),

said first lockable escape hatch (**105**) leads to an evacuation room (**107**),

said room (**107**) is provided with a second lockable escape hatch (**103**),

said room (**107**) is illuminated by lamps (**201**) receiving energy from a battery pack (**202**) not connected to the said vessel's energy system,

said first and second lockable escape hatch (**103**, **105**) cannot be opened simultaneously,

in relation to said first lockable escape hatch (**105**) it is connected a device (**106**) for climbing,

said climbing device (**106**) unfolds when the said vessel has a lopsidedness in excess of a predetermined number of degrees.

2. System according to claim **1** wherein said climbing device (**106**) is preferably a rope ladder.

3. System according to claim **1** wherein said first lockable escape hatch (**105**) is illuminated by lamps (**201**) that receive energy from the battery pack (**202**) is not connected to the said vessel's energy system.

4. System according to claim **1** wherein said evacuation room (**107**) is equipped with aeration (**205**) that can be closed from both sides.

5. System according to claim **2** wherein said second lockable escape hatch (**103**) is associated with a climbing device (**204**).

6. System according to claim **5** wherein said climbing device (**204**) can either be a set of steps or a rope ladder.

7. System according to claim **1** where the number of escape hatches (**301**, **302**) for evacuation of personnel is specially adapted to each vessel's needs.

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