G. E. POWELL.

PNEUMATIC STABILIZER FOR VESSELS.

APPLICATION FILED OCT. 13, 1915.

1,220,551. Patented Mar. 27, 1917

Fig. 1.

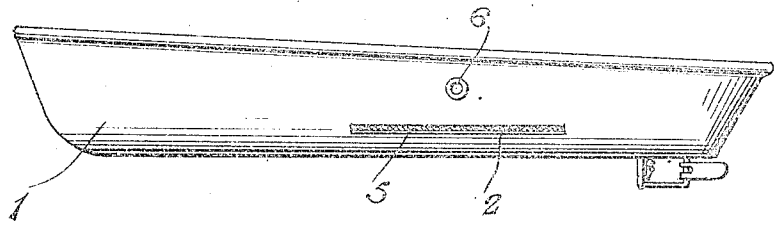


Fig. 2.

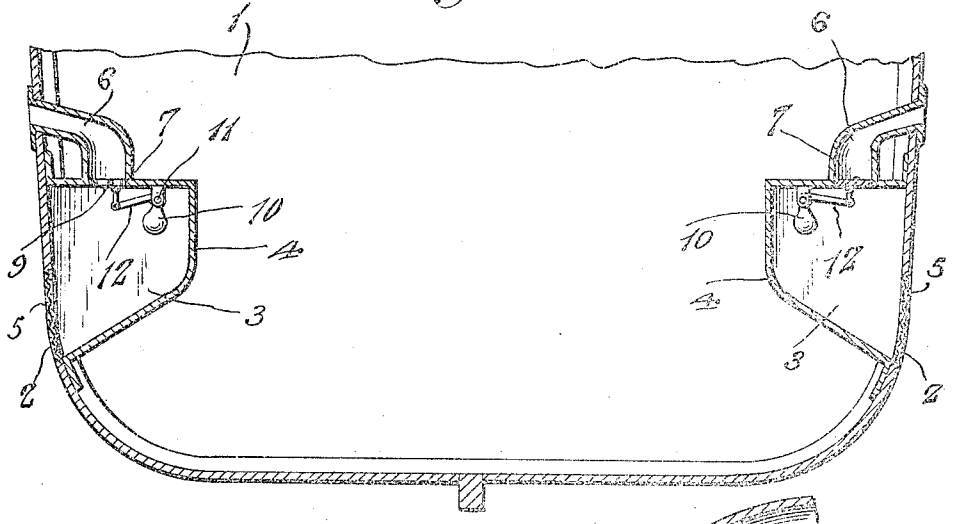


Fig. 3

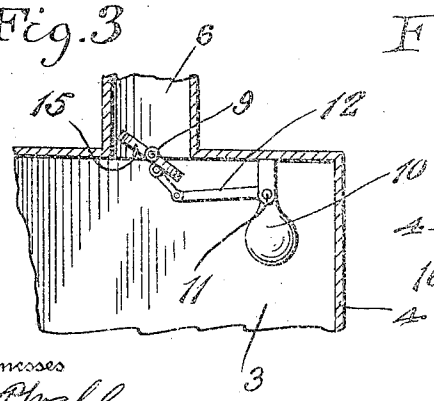
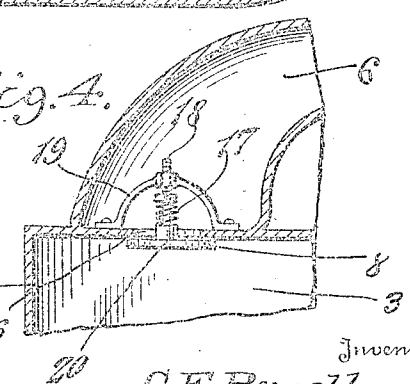


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE E. POWELL, OF CHICAGO HEIGHTS, ILLINOIS, ASSIGNOR OF ONE-FOURTH TO ROY PIERSON, ONE-FOURTH TO PETER PARR, AND ONE-FOURTH TO RAYMOND EBNER, ALL OF CHICAGO HEIGHTS, ILLINOIS.

PNEUMATIC STABILIZER FOR VESSELS.

1,220,551. Specification of Letters Patent. Patented Mar. 27, 1917.

Application filed October 13, 1915. Serial No. 55,676.

To all whom it may concern:

Be it known that I, GEORGE E. POWELL, a citizen of the United States, residing at Chicago Heights, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pneumatic Stabilizers for Vessels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in vessels and especially with reference to pneumatic stabilizers for use on opposite sides of a vessel to prevent the vessel from being rolled excessively by the action of the waves in a sea way, the object of the invention being to provide stabilizing devices of this class which are extremely simple in construction, which may be readily installed in a vessel either after the latter has been built or while the vessel is in course of construction and which act automatically to stabilize the vessel and minimize the rolling thereof by the waves.

The invention consists in the construction, combination and arrangement of devices hereinafter described and claimed.

In the accompanying drawings;—

Figure 1 is a side elevation of a motor boat provided with stabilizers constructed in accordance with my invention.

Fig. 2 is a transverse sectional view of the same.

Fig. 3 is a detail sectional view of one of the stabilizers and showing the valve opened.

Fig. 4 is a detail sectional view of the same on another plane and showing the vent valve and its connections.

My improved stabilizers may be used in a vessel of any size or type. The stabilizers are used on both sides of the boat or vessel. One stabilizer may be used on each side or more than one if desired, according to the size of the boat or vessel and other conditions.

For the purposes of this specification the boat or vessel 1 is shown as provided in its sides at points below the normal water line with openings 2. At each side of the vessel is a stabilizing chamber 3 with a portion of which the opening 2 communicates. The chambers 3 may be formed by the structures 4 or by suitable structures of other appropriate form as desired and the said structures, which constitute the inner and top and bottom walls of the stabilizing chambers may be made of any suitable material, the outer walls of said stabilizing chambers being formed by the sides of the vessel as shown. These stabilizing chambers extend above and below the normal water line, the openings 2 being below the normal water line so that water is permitted to flow freely in and out of the stabilizing chambers through the openings 2. Said openings are here shown as provided with screens 5 to prevent weeds and other substances from entering the stabilizing chambers with the water.

Each stabilizer is provided on its upper side with a vent pipe 6 and the said vent pipes are here shown as having their upper ends outturned and extended through openings in the sides of the vessel. At the lower end of each vent pipe is a butterfly valve 7 and also a vent valve 8. The pivot of each butterfly valve is shown as at 9. Associated with each butterfly valve is a pendulum 10 depending vertically in the stabilizing chamber from a pivot 11 and has an inwardly extended lever 12. Said lever is pivotally connected to a link 13 as at 14 and said link is pivotally connected as at 15 to the butterfly valve at a point near the pivot 9 of the valve.

When the boat is level or substantially so the butterfly valves are kept closed by the pendulums. When one side of the boat is raised by a wave passing under it or striking said side, the pendulum in the stabilizing chamber of the raised or higher side of the boat swings inwardly toward the center of the boat and thereby the arm 12 and the link act to turn the butterfly valve of said chamber on its pivot thus allowing air to escape from the stabilizing chamber past the butterfly valve and out through the vent pipe 6 and permitting the chamber to be entirely or partly filled with water by the valve, so that the weight of the water in said stabilizing chamber will minimize the rolling of the boat.

The vent valves 8 are kept normally closed by springs 17 the said springs being coiled

springs arranged around the valve rods 18 and having their upper ends attached to arches 19 which extend across the valve sides and their lower ends attached as at 20 to said valves. The valves 8 open downwardly under pressure from above so that when the valve 7 of a stabilizing chamber is closed the vent valve 8 of said chamber opens downwardly thus permitting air to freely enter the stabilizing chamber and causing water therein to pass out through the opening 2 while said opening is above water, after a receding wave. Hence when the vessel lists, the stabilizing chamber on the raised side is filled with water and the stabilizing chamber on the lower side is filled with air, retained therein by its valve, so that both of said stabilizing chambers cooperate in minimizing the roll of the vessel.

Having thus described my invention I claim:—

1. A vessel having stabilizing chambers in opposite sides, communicating with the water through openings below the normal water line, each chamber having a valve and a vent controlled by said valve and means to cause said valve to open when said stabilizing chamber rises by a roll of the vessel and permit free ingress of water to said chamber, and to close when said chamber moves downwardly.

2. A vessel having stabilizing chambers at each side communicating with the water through an opening below the normal water line, each stabilizing chamber having a vent and also having a pivotally mounted valve to control said vent, a pendulum having an arm, and a link connecting said pendulum arm to said valve, to cause the pendulum to open said valve when the chamber rises with a roll of the vessel and permit the free ingress of water to said frame and to close said vent under other conditions.

3. A vessel having stabilizing chambers in each side at the water line, each stabilizing chamber having a vent, a valve to control said vent when said chamber rises during the roll of said vessel, to permit the free ingress of water into the chambers, and a spring closing said valve when said chambers move downwardly.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE E. POWELL.

Witnesses:
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