No. 699,231. Patented May 6, 1902.

J. P. POOL.

BOAT.

(Application filed Aug. 19, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

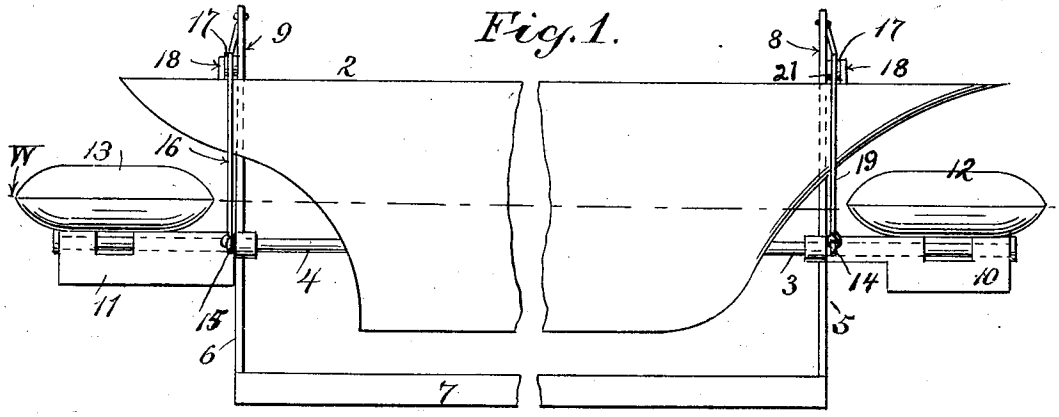


Fig. 2.

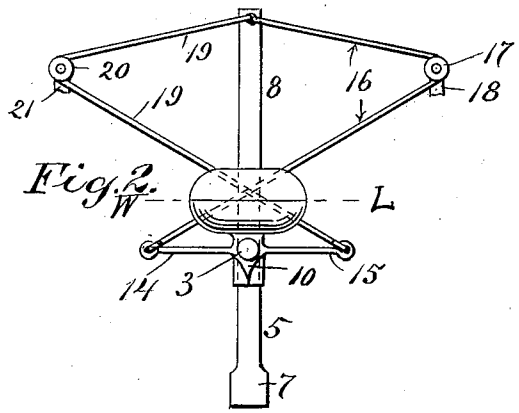


Fig. 3.

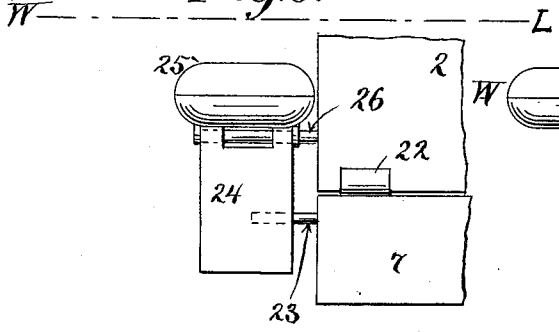
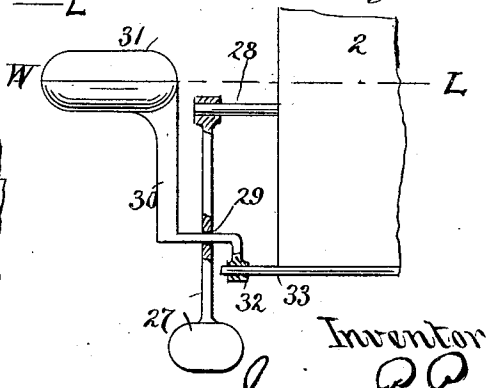


Fig. 4.



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(No Model.) 2 Sheets—Sheet 2.

Fig. 5.

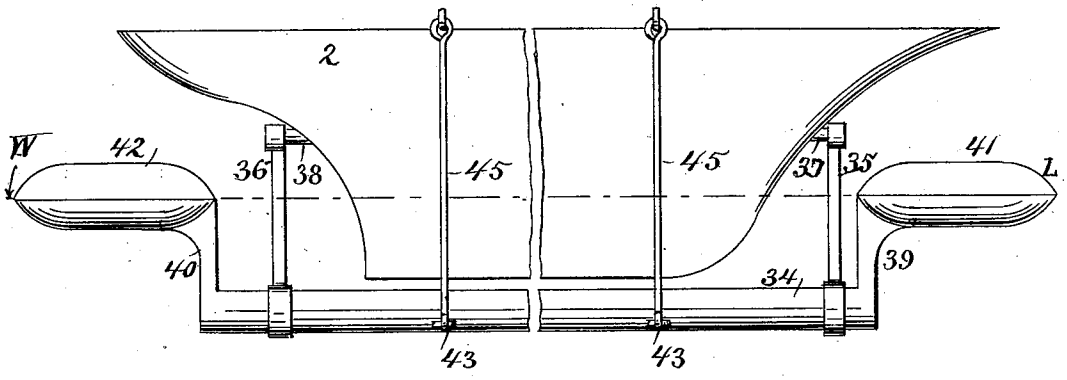
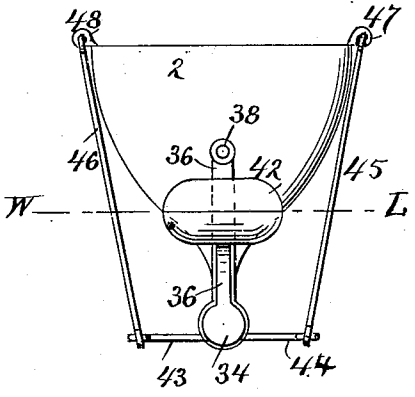


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES P. POOL, OF BROOKLYN, NEW YORK.

BOAT.

SPECIFICATION forming part of Letters Patent No. 699,231, dated May 6, 1902.

Application filed August 19, 1901. Serial No. 72,477. (No model.)

To all whom it may concern:

Be it known that I, JAMES P. POOL, a citizen of the United States, residing in the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Boats, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a boat; and the objects of the invention are to maintain the hull of the boat in upright position and to prevent the boat from being capsized, and the improvements may be applied to ordinary pleasure or working boats and likewise to lifeboats.

To these ends my invention consists in the various novel and peculiar arrangements and combinations of the several parts of the apparatus, all as hereinafter fully described and then pointed out in the claims.

I have illustrated several types of my invention in the accompanying drawings, wherein—

Figure 1 is a side view of one form of my improved boat, with the parts thereof standing in normal position, the hull of the boat and the keel being shown as broken away at the center in order to make the size of the figure more compact. Fig. 2 is an end view of the apparatus shown in Fig. 1, with the hull of the boat omitted. Figs. 3 and 4 are side elevations of two different forms of modifications of my invention as hereinafter described. Each of these views shows but a portion of the hull of the boat and the keel. Fig. 5 is a side view of another modification of my invention, the hull of the boat and the keel being broken away at the center in order to reduce the size of the figure. Fig. 6 is an end view of the modified form of the apparatus shown in Fig. 5.

Referring to the drawings, in which like characters of reference designate like parts throughout, the water-level is indicated in the different forms by the dotted line W L.

Having reference to Figs. 1 and 2, 2 designates the hull of the boat, from the bow and stern of which project horizontally on the central line of the boat a fixed cylindrical bar 3 and 4, respectively, each of which serves as a pivotal shaft for the hangers 5 and 6, which carry between them the keel 7. This keel is of heavy weight and swinging upon the pivotal bars 3 and 4 tends to assume a vertical position in the water. From above each of the swinging members 5 and 6 there projects upwardly a rigid lever-arm 8 and 9, respectively, which in the construction shown passes through suitable vertical openings in the boat, the openings, however, being located a considerable distance above the water-line W L, and these openings are sufficiently wide to permit of the upright lever-arms 8 and 9 being swung sidewise on their pivotal points 3 and 4.

The pivot-bars 3 and 4 are extended sufficiently in length to accommodate the swinging members or brackets 10 and 11, respectively, which carry upon their upper sides the floats 12 and 13, and the relative locations of these several parts are such that the natural floating position of each of the floats comes about on the level of the water-line. The member or bracket 10, carrying the float 12, has projecting from opposite sides thereof the rigid arms 14 and 15, which are shown extending in horizontal position, and the member 11, carrying the float 13, is likewise provided with a pair of arms 14 and 15. A flexible connection 16 extends from the outer end of the float lever-arm 14 and crossing the boat passes around a guide-pulley 17, secured to a fixed point 18 on the hull 2 of the boat and passes thence to the upper end of the keel lever-arm 8, to which it is made fast. A similar flexible connection 19 extends from the outer end of the float lever-arm 15 across the boat and passes around a pulley 20 on a fixed piece 21 on the hull 2 of the boat and has its other end secured to the same point on the lever-arm 8 as the connection 16. The rigid arms extending from the pivoted member 11 of the float 13 at the stern are also connected with the upper end of the keel lever-arm 8 by similar flexible connections 16 and 19, which pass around the pulleys 17 and 20, secured to fixed points on the boat, as just described in reference to the float at the bow. The swinging keel and the floats at each end are thus pivoted concentrically, and they are discon-

nected except through the medium of the flexible connections 16 and 19. With this arrangement should the boat tend to careen—say to the starboard side, which in Fig. 2 may be considered as the left-hand side of the figure, since that view is supposed to be looking bow on—the action of the heavily-weighted keel 7 to swing into vertical position pulls upon the cord 19 through the lever-arm 8, and this drawing upon the lever 15 of the float throws the float toward the left-hand side of said figure—that is, toward the side to which the boat tends to careen. This forcing of the float into the water to submerge it being resisted by the float, such resistance serves to move the boat into upright position to counteract the tendency to careen. By virtue of this arrangement both the action of the weighted swinging keel and the buoyancy of the float combine to right the boat.

Fig. 3 shows a modification of the invention and in which the swinging keel-board 7 is hinged at 22 directly beneath the boat 2 and carries a longitudinally-projecting bar or pin 23, which takes into a socket in the weighted member or bracket 24, which depends from the under side of the float 25 and is itself pivoted on a bar 26, projecting out from the end of the boat. In this construction the float is normally submerged, so that in its swinging action it is constantly submerged, the water-line being indicated at W L. In this form of the invention when the hull 2 of the boat careens to one side the swinging weighted member 24, carrying the float 25, tends to maintain its vertical position, so that the pivot-bar 23 swings the keel-board upon its hinge as a center and over toward the side to which the boat tends to careen, so that the resistance of the float and the keel-board are brought into play to right the boat.

In Fig. 4 I show a modification in which a member 27 is hinged on a horizontal pin 28, projecting from the hull 2 of the boat, and is flattened and weighted at its lower end, which depends beneath the bottom of the boat. This swinging member is the equivalent of a false keel. This pendulum-like member 27 is formed with an eye 29, through which loosely extends the bent arm 30, which carries on its upper end a float 31, which is maintained at the water-level while the other end of this rigid arm 30 is hinged at 32 to a fixed bar 33, projecting from the boat. This permits both the false keel 27 and the float 31 to swing from side to side. In this construction when the hull of the boat 2 careens to one side the tendency of the weighted keel member 27 to assume a vertical position throws the arm 30 of the float around on its pivotal point 32 in such direction that the float 31 is forced over toward the lower side of the boat, and its resistance serves to right the boat.

In the modified form of construction shown in Figs. 5 and 6 the weighted keel 34 is mounted so as to turn in the pair of swinging arms 35 and 36, which are mounted, respectively, at the bow and stern of the boat and are pivoted upon fixed bars 37 and 38. Fixed arms 39 and 40 project upwardly from the respective ends of the weighted keel 34, and the former carries a float 41, while the latter carries a similar float 42, each of these floats normally assuming a natural position at the water-level. From two points at opposite sides on the keel-piece 34 project horizontally in opposite directions rigid arms 43 and 44, to the respective ends of which are attached links or ropes 45 upon one side of the boat and 46 upon the other, and these extend upwardly to fixed points 47 and 48 upon the upper part of the boat. The heavy keel-piece 34 turns freely in the lower ends of the swinging arms 35 and 36, so that when the boat careens the right side pulling upon its cords draws up the rigid arms connected with the piece 34 upon that side and turns slightly the keel-piece 34 on its axis, and this serves to throw the floats to one side or the other of the center line of the boat. Assuming that the boat careens over to starboard, so that the right-hand side (shown, for instance, in Fig. 6) is lowered while the other side is raised, the raising of the port side pulls upon the connections 46 and relaxes the connections 45 on the other side, so that the rigid arms 44, extending from the rotary keel-piece 34, are drawn upwardly and serve to turn the keel on its longitudinal axis in the direction in which the hands of a watch turn, and thereby throws the floats over to the starboard side, and the resistance of these floats has the effect of restoring the boat to its upright position and so counteracts the careening tendency. In this construction, as well as in the others, the heavy weight of the keel, which is, in fact, a false keel, lends its aid to keeping the boat in equilibrium, so as to prevent careening the same as the floats.

I wish to be understood as not limiting my invention to the particular forms of construction herewith shown, as it is evident that the same may be variously modified without, however, departing from the spirit of the invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of a boat, a swinging weighted keel pivoted to the hull of the boat and a swinging float tending to assume a position above the point from which it is swung, connections between said float and said keel whereby when the boat careens to one side the weight of the keel forces the float toward the said side and its resistance acts to move the boat into upright position, substantially as and for the purpose set forth.

2. The combination of a boat having a weighted keel pivoted thereto and tending to assume a vertical position, a float pivoted eccentrically upon the boat and tending to assume a position above its pivotal point, a member or arm connected rigidly with said

float, and connections between said member or arm and the swinging keel, whereby when the boat careens to one side the weight of the keel forces the float toward said side and its resistance tends to move the boat into upright position, substantially as and for the purpose set forth.

3. The combination of a boat, a weighted keel pivoted to the boat and tending to swing into vertical position one or more levers projecting upwardly from said keel to a point a considerable distance above the same, one or more floats pivoted upon the boat and adapted to assume normally a substantially floating position, one or more lever-arms connected rigidly with each of said floats, a flexible connection extending from each of said float lever-arms and passing loosely around a fixed point on the boat and connected with the said keel-lever, whereby when the boat careens to one side the tendency of the weighted keel to swing in a vertical position forces the float toward said side and the resistance of the float to the water tends to move the boat into upright position, substantially as and for the purpose set forth.

4. The combination of a boat, a weighted keel swung beneath the boat and provided with an upwardly-projecting lever-arm, a float pivoted at its under side to the boat and adapted to normally assume substantially a floating position, a rigid arm projecting laterally from each side of the float beneath the same, a flexible connection extending from each of said arms across to the opposite side of the boat and passing around a fixed point on the boat and having its other end connected with a point on the lever-arm of the keel, substantially as and for the purpose set forth.

5. The combination of a boat, a weighted keel extending beneath the boat and pivoted thereto on the bow and stern of the boat, a lever-arm projecting upwardly from each end of the keel above the pivotal point thereof, a float arranged at each end of the boat and each having a depending bracket pivoted concentrically with said keel, and each provided with two laterally-projecting rigid arms extending in opposite directions, and flexible connections between the end of each of said rigid arms of the float and crossing the boat and passing around a fixed point thereon and having its other end connected with the lever-arm of said keel, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of the two subscribing witnesses.

JAMES P. POOL.

Witnesses:
A. R. COONS,
SAMUEL M. CHESNUT.