

H. HERTZBERG.
MARINE COMPASS.

APPLICATION FILED MAY 31, 1907. RENEWED DEC. 16, 1909.

1,001,593.

Patented Aug. 22, 1911.

Fig. 1.

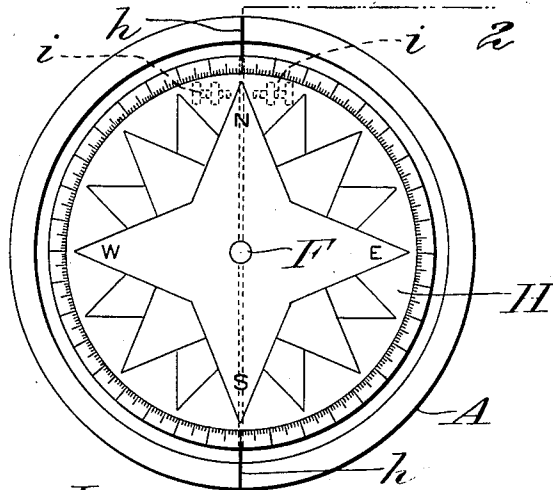


Fig. 2.

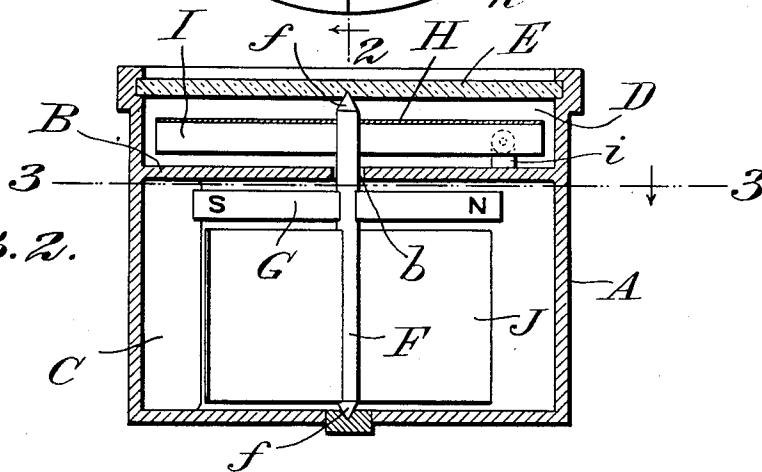
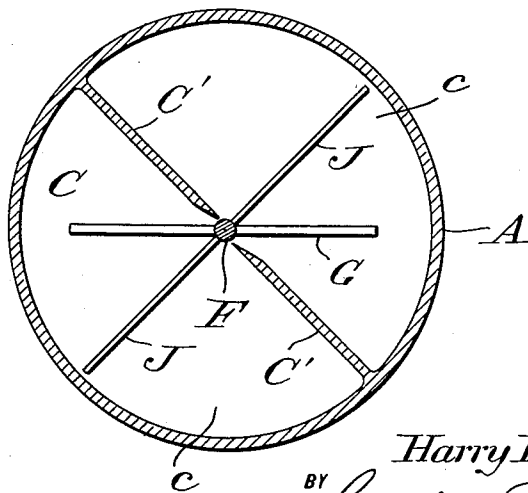


Fig. 3.



WITNESSES

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MARINE COMPASS.

1,001,593.

Specification of Letters Patent.

Patented Aug. 22, 1911.

Original application filed August 14, 1906, Serial No. 330,613. Divided and this application filed May 31, 1907, Serial No. 376,727. Renewed December 16, 1909. Serial No. 533,389.

To all whom it may concern:

Be it known that I, HARRY HERTZBERG, a citizen of the United States, residing in the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented a certain new and useful Marine Compass, of which the following is a specification.

The subject matter of this application is a division of a prior application filed by me on Aug. 14, 1906, Serial No. 330,613, for an invention appertaining to "steering apparatus for marine vessels, torpedoes, and the like".

The invention is a compass for use in connection with, or as a part of, a system for steering marine vessels, torpedoes, and any or all classes of marine craft.

According to this invention, the fluctuations of the magnetic needle, due to the pitching or rolling of the marine craft, are checked and retarded by the resistance of air confined in a chamber of the compass box or casing. It is to be understood, therefore, that the fundamental idea of the present invention is a pneumatic check for the magnetic needle.

The invention may be embodied in various forms of mechanical constructions, but in the example shown in the drawings, the staff which carries the magnetic needle is provided with a switch member adapted to operate between certain electric-circuit terminals, the latter being located, preferably, in the compass box or casing.

In the accompanying drawings I have illustrated one practical embodiment of the invention but the construction shown therein is to be understood as illustrative only, and not as defining the limits of the invention.

Figure 1 is a plan view of the new marine compass. Fig. 2 is a vertical section on the line 2—2 of Fig. 1. Fig. 3 is a horizontal section of the line 3—3 of Fig. 2.

A designates a box or casing which is, preferably, of the cylindrical form shown, although the shape, the size, and the material used may be varied within wide limits. Said box or casing is divided interiorly by a horizontal partition, B, which produces a lower chamber, C, and an upper chamber, D. The box or casing is closed at its bottom

and sides, but the top is open for the reception of a pane, E, of glass or other transparent or translucent material, said pane being mounted in a suitable way in the box, A, to make the same substantially air tight.

F, designates a staff which is mounted centrally in the compass so as to extend through the chambers, C, D, thereof and, also, through an opening, b, in the partition, B. Said staff is supported for axial movement freely in the compass box, and this may be accomplished by fitting the pointed ends, f, of said staff in step-bearings which are provided in the under face of the pane, E, and the upper face of the bottom wall of said box or casing. The staff carries the magnetic needle of the compass which, in this example of the invention, consists of a permanent bar-magnet, G, and a dial or "card", H, said parts being fixed to said staff. As shown, the magnet, G, is secured centrally on the staff, and it is below the partition, B, so as to be in the chamber, C, but the particular location of said magnet is not important.

The dial, H, is composed of metal, paper, or other appropriate material, and it is made fast to the staff, F, for movement with the staff and the magnet. Said dial is located in the chamber, D, so as to lie below the top, E, and the upper face of said dial is provided with the usual compass chart, as shown in Fig. 1. Said chart is inscribed to indicate the cardinal points and degrees in the ordinary manner of compasses, and the dial is adapted to coöperate with suitable index marks, h, provided on the compass box, or on parts adjacent thereto, such index marks being commonly known as the "lubber lines", see Fig. 1.

The staff, F, is provided, also, with means for closing a helm-controlling electrically-operated circuit, and, furthermore, the staff is associated with the pneumatic check, hereinafter mentioned.

As shown, a circuit controller, I, is secured to the staff, F, preferably below the dial, H, in order that said dial may engage with, and be supported by, the circuit controller. Said controller is, preferably, a metallic bar or rod, say of iron, and it is movable with the staff, said metallic bar being within the

chamber, D. Certain conductors (not shown) of a helm-controlling circuit, such as disclosed in my prior application to which reference has been made, extend through the box or casing, A, in an obvious manner. Said conductors are fastened to contacts or terminals, *i, i*, see dotted lines in Fig. 1 and full lines in Fig. 2, said contacts being secured in the chamber, D, so as to lie in the path of the circuit-controlling switch-bar, I. Said switch-bar operates between the terminals or contacts, *i, i*, and when the switch-bar engages one of said contacts, one branch of the helm-controlling circuit is closed, so as to move the helm in one direction, while the engagement of the switch-bar with the other of said terminals closes another branch of said circuit so as to cause the helm to be shifted in an opposite direction, whereby the helm may be controlled intermittently from the compass in order to automatically keep the craft, or the like, on its course.

The pneumatic checking means about to be described, overcomes sudden fluctuations of the magnetic needle and renders the compass practically "dead beat." The lower chamber of the box or casing is subdivided by radial vertically-arranged partitions, C, C', into compartments, *c, c*, said partitions extending from the wall of the casing inwardly to the staff, F. Said staff carries the radial vanes or wings, J, J, which are fixed to the staff for movement therewith and are arranged to travel in the compartments, *c*, whereby the vanes are adapted to have a piston-like movement in the closed compartments. The vanes move sidewise with respect to the partitions, C', C', and in their movement with the staff they are adapted to partially compress the air confined in the lower chamber, C, thus checking the sudden movement of the magnetic needle.

The pneumatic check herein described contemplates the employment of wings or vanes which are movable sidewise relatively

to fixed partitions or abutments, C', within the compass box.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A compass having a box or casing provided with horizontal and vertical partitions adapted to produce substantially fluid tight compartments, a magnetic needle in one of said compartments, a staff supporting said needle, and vanes or wings carried by said staff and arranged in other compartments of said casing.

2. A compass comprising a closed box having a plurality of chambers, a staff, a magnetic needle carried thereby, circuit terminals in one of said chambers of the box, a switch member carried by the staff and coöperating with said terminals, and vanes mounted on the staff and operating in other chambers of said box, said vanes and the chamber in which they operate tending to overcome sudden fluctuations of said magnetic needle.

3. A compass having a box or casing provided with horizontal and vertical partitions adapted to produce two horizontally superposed substantially fluid tight compartments and a plurality of substantially fluid tight radially arranged vertical compartments, a staff extending vertically and centrally of said box into both of said superposed compartments, a needle supported by and movable with said staff in one of said horizontally superposed compartments, and a plurality of vanes carried by said staff in vertical alinement therewith, said vanes extending respectively into said radially arranged compartments.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

HARRY HERTZBERG.

Witnesses:

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JOSEPH F. GARCER.