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F. G. SENTER

1,754,055

COMPASS

Filed Nov. 5, 1927

FIG. 1.

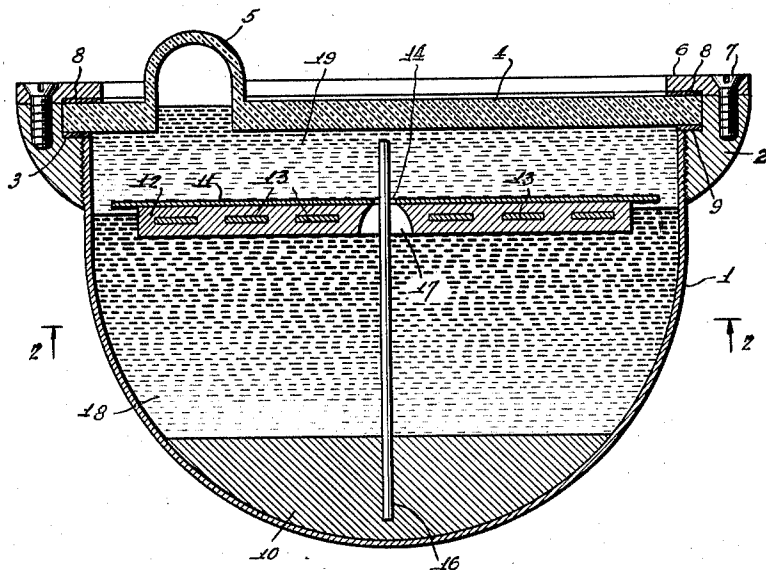
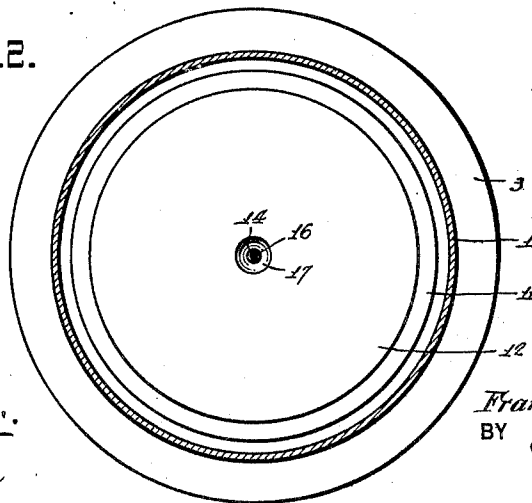


FIG. 2.



WITNESSES
Frank L. Faggiani
W. H. Foster

INVENTOR
Frank G. Senter
BY *Conrad H. Co.*
ATTORNEY

UNITED STATES PATENT OFFICE

FRANK G. SENTER, OF PORTLAND, MAINE

COMPASS

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This invention relates to compasses, an object of the invention being to provide within the bowl of the compass a floating, freely rotating compass card which is supported solely by the buoyancy of the liquid in the bowl of the compass and guided only in the sense of maintaining the card centrally in the bowl.

In the manufacture of compasses heretofore it has been common practice to support the card centrally upon the upper end of a post or pin, providing a jewel bearing to prevent wear, but such a compass does wear at the bearing due to shocks and vibrations of the ship caused by the motion of the ship and the vibration of the engines.

With my improved compass the motion of the ship and vibration of the engine cannot affect the proper position of the card and it will remain at all times floating in place and moving freely and easily so as to operate properly under all conditions.

The invention therefore consists in the provision of a bowl or receptacle containing liquid buoyantly supporting a compass card, the latter guided by a fixed post projecting centrally through an opening in the card so as to hold the card against lateral movement but permitting it free movement in all other directions, and this general idea is capable of a wide range of modification in the structural detail of the compass and I do not therefore restrict myself to the particular details hereinafter set forth.

With these and other objects in view, the invention consists in certain novel features of construction and combinations of parts which will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings—

Figure 1 is a view in vertical section through a compass illustrating my invention;

Figure 2 is a view in horizontal section on the line 2—2 of Figure 1.

1 represents a bowl, 2 a ring screwed onto the bowl and having an annular recess 3 receiving a glass disk or cover 4, preferably equipped with a bubble chamber 5, as indicated.

A ring 6 is secured to the ring 2, preferably

by means of screws 7, and gaskets or packing rings 8 and 9 are located at opposite sides of the glass cover 4 between the rings 2 and 4 to tightly pack the joint.

The lower portion of the bowl 1 is preferably filled with a material constituting a weight 10 and it is of course to be understood that this bowl is supported in any approved manner to maintain the compass in horizontal position regardless of the movement of the ship.

11 represents the compass card, as it is commonly known in the art, containing on its face the points of the compass, and this card is secured upon a float 12 containing any desired number of magnetic needles 13.

The card 11 is formed with a central opening 14 of a size just sufficient to receive a post 16 secured in the weight 10 or other portion of the bottom of the bowl and located centrally in the bowl, and the float 12 has a central recessed portion 17 to allow for angular disposal of the card and float relative to the post.

In the art the card and float are ordinarily referred to as merely the card, and in the broader claims hereinafter presented this word "card" will be used in its broad sense.

Within the bowl 1 I preferably employ two different liquids 18, 19 of different specific gravity. The liquid 19 of lighter specific gravity will of course be at the top of the bowl, and the card as a whole will be of such weight as to move downwardly through the lighter liquid and float upon the heavier one.

I of course do not limit myself to any particular liquids. The heavier liquid may constitute alcohol and the lighter liquid gasoline, or any other combination of liquids may be employed which will accomplish the result desired.

While I have illustrated one embodiment of my invention, it is to be distinctly understood that I do not limit myself to such construction but desire to cover broadly the idea of a compass card floating in the bowl and guided against lateral movement but permitted vertical and angular movement without destroying or injuring the functions of the compass, and preventing any possibility

of injury from movement, vibrations, shocks or from any other similar causes which injure compasses such as are ordinarily made.

The compass card floating on pure alcohol underneath the gasoline moves very freely, and in order to prevent a too free movement many things may be resorted to as, for example, the alcohol may be thickened with sugar or gums not soluble in gasoline, or the float or card itself may be structurally made, for example, with fins or other projections which would retard the free turning movement. This of course is well within the scope of my invention and I desire it to be distinctly understood that I may provide any means desired to retard the free turning movement of the card.

Hence various changes and alterations might be made in the general form of the parts described without departing from my invention, and I do not limit myself to the precise details set forth but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

I claim:

1. A marine compass, including a bowl, two liquids of different specific gravity in the bowl, and a compass card having turning movement in the bowl and located approximately at the line of juncture of the two different liquids, said card supported solely by the liquid of heavier specific gravity.

2. A marine compass, including a bowl, two liquids in the bowl of different specific gravity, and a compass card floating on the liquid of heavier specific gravity and covered by the liquid of lighter specific gravity but observable through the last-named liquid, said card supported solely by the liquid of heavier specific gravity.

3. A marine compass, including a bowl, two liquids of different specific gravity in the bowl, a compass card having turning movement in the bowl and located approximately at the line of juncture of the two different liquids, and a central guide in the bowl, said card having a central opening receiving the guide and permitting free turning movement of the card, said card supported solely by the liquid of heavier specific gravity.

4. A compass, including a bowl, a central post in the bowl, two liquids in the bowl of different specific gravity, a compass card having a central opening to receive the post and floating on the liquid of heavier specific gravity and immersed in the liquid of lighter specific gravity, said card supported solely by the liquid of heavier specific gravity.

5. A compass, including a bowl, a ring screwed onto the bowl and having a groove therein, a glass cover located in the groove of the ring, a second ring secured to the first mentioned ring and located over a portion of the cover, gaskets at opposite sides of the

cover and against said rings, said cover having a bubble chamber therein, a central post secured to the lower portion of the bowl, two liquids in the bowl of different specific gravity, and a floating compass card having a central opening therein receiving the post and located adjacent the meeting line of the two liquids, said card supported solely by the liquid of heavier specific gravity.

6. A marine compass, including a bowl, two liquids in the bowl of different specific gravity, a compass card floating on the liquid of heavier specific gravity and covered by the liquid of lighter specific gravity but observable through the last-named liquid, and a central guide in the bowl, said card having a central opening receiving the guide and permitting free turning movement of the card, said card supported solely by the liquid of heavier specific gravity.

Signed this first day of November, A. D. 1927.

FRANK G. SENTER.