

E. S. RITCHIE.  
Mariner's Compasses.

No. 36,422.

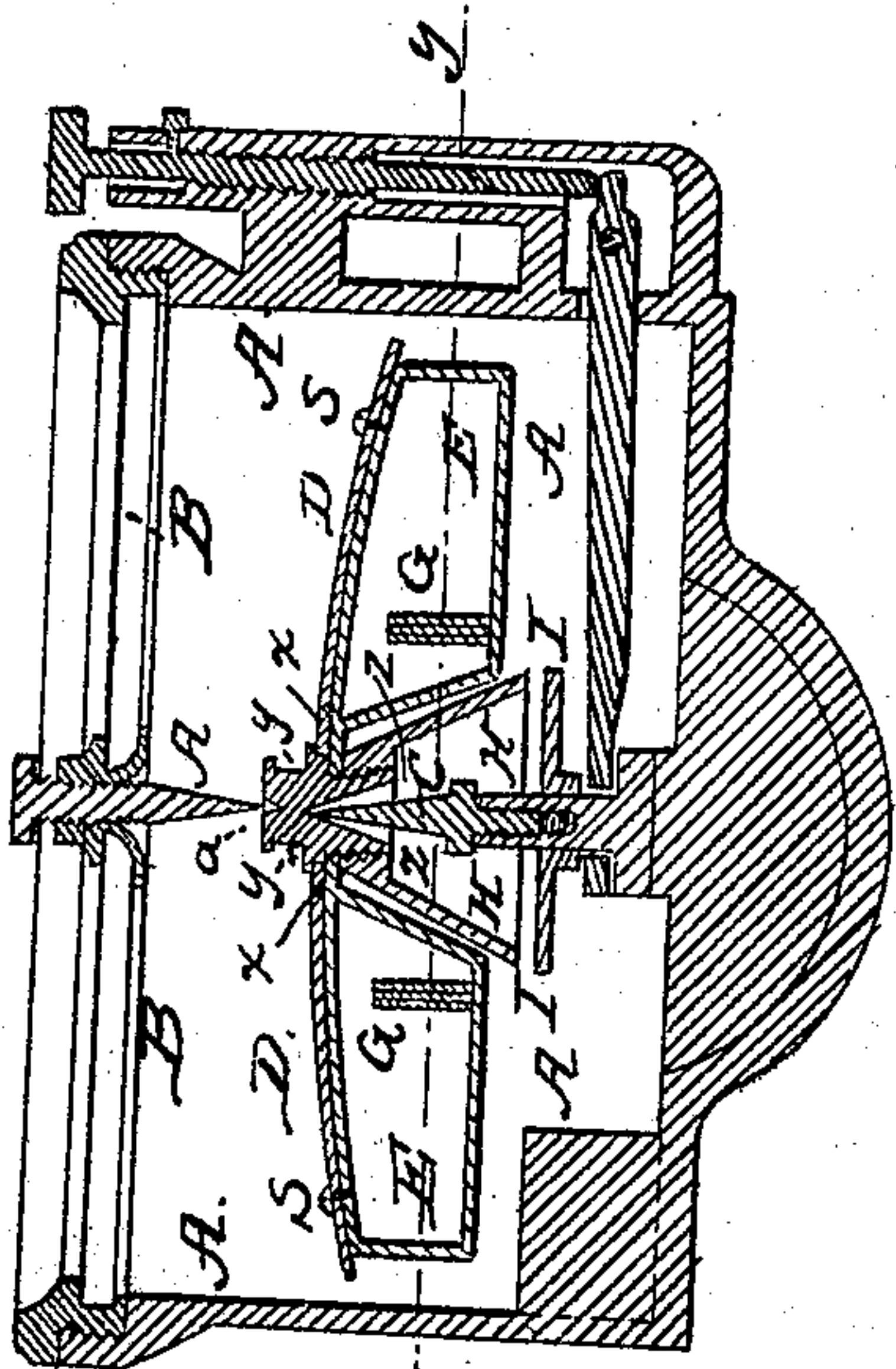
Patented Sept. 9, 1862.

Side Elevation of  
magnet. full size.

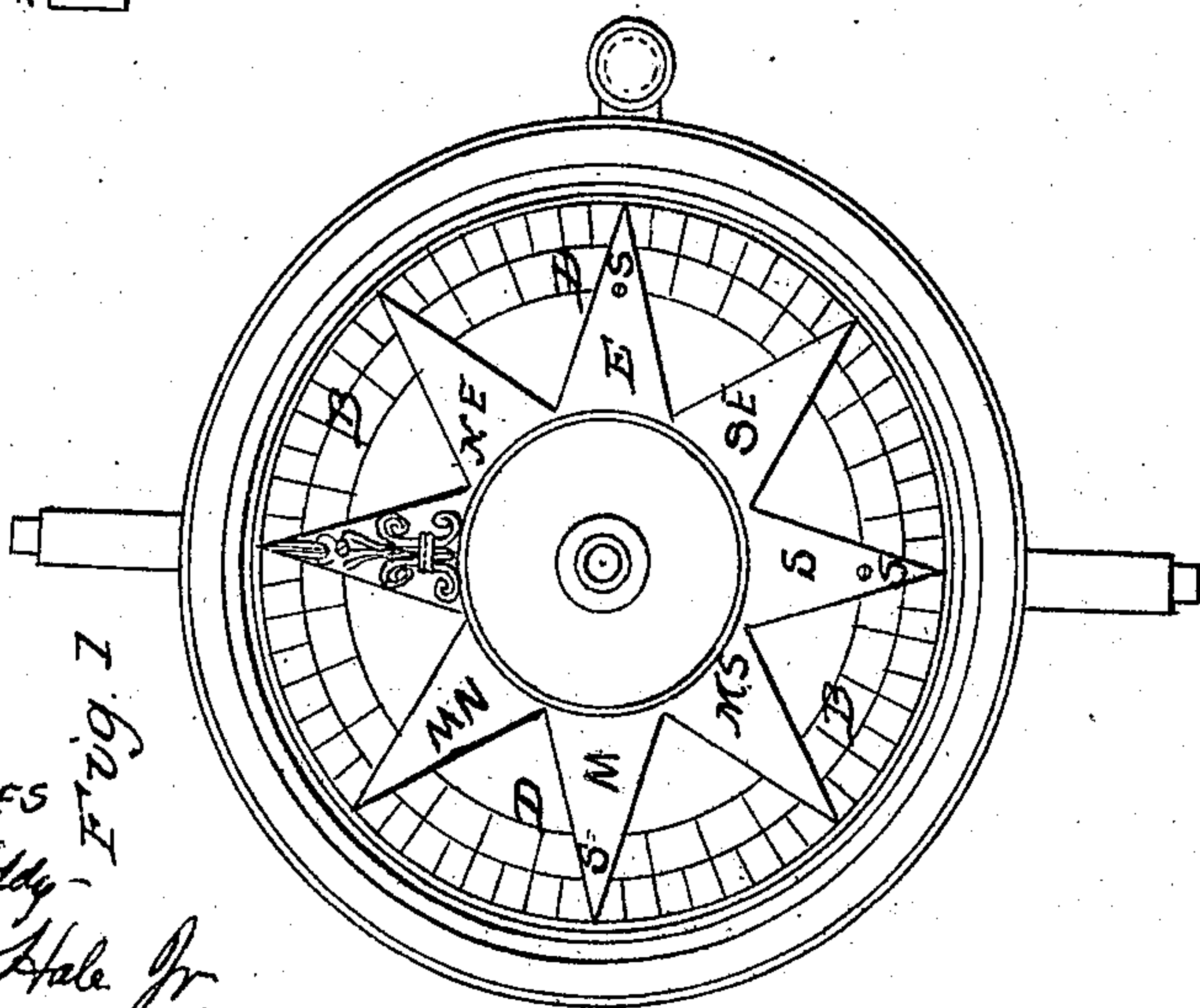
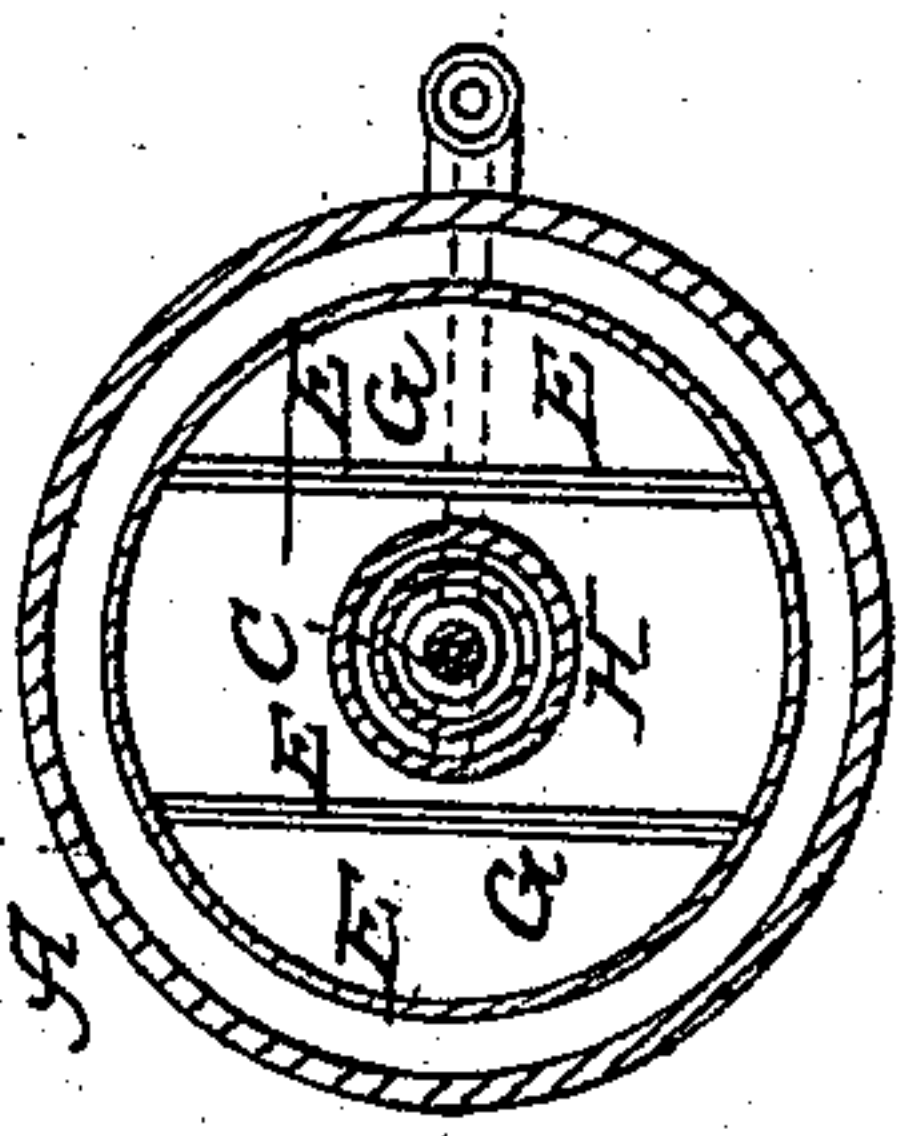


a

Fig. 2



Horizontal section  
on x-y. of Fig. 2  
scale 1/2 size of Fig. 2



WITNESSES

R. H. Eddy  
J. P. Hale Jr.

INVENTOR

E. S. Ritchie



# UNITED STATES PATENT OFFICE.

EDWARD S. RITCHIE, OF BROOKLINE, MASSACHUSETTS.

## MARINER'S COMPASS.

Specification of Letters Patent No. 36,422, dated September 9, 1862.

*To all whom it may concern:*

Be it known that I, EDWARD S. RITCHIE, a citizen of the United States of America, and a resident of Brookline, in the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Mariners' Compasses; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1, is a top plan view, and Fig. 2, a vertical section of a mariner's compass, provided with my invention, which has reference to those marine compasses whose cards are immersed in a liquid contained within a bowl or case.

The nature of the said invention consists in the arrangement and combination of an air-vessel with the magnet or with the same and its card, in a manner and so as not only to encompass the magnet or magnets and completely insulate the same from the surrounding liquid, but also to buoy up the card and magnet or the magnet or magnets, or remove more or less of the weight thereof from the pivot.

My improvement not only prevents the magnet or magnets from becoming oxidized by the liquid but also operates to lessen in a great degree the friction and wear of the pivot and bearing or cap.

In the drawings, A denotes the liquid reservoir or bowl, whose top (B) is a transparent or glass plate. This reservoir is, when in use to contain or be filled with a liquid (such as water or a mixture of water and alcohol) and has a pivot, C, projecting upward from the central part of its bottom. On this pivot, the compass card, D, is to rest and turn. To the underside of the said card, D, (it being a plate of metal suitably painted or enameled with the usual compass points and designating letters) an air-tight vessel or chamber, E, is affixed, the magnet or magnets, G, being inclosed therein. The said air-vessel is perforated, so as to permit the pivot (C,) to pass through it to the cap, *a*, and is provided with a flange, H, about its center, on its upper side, as shown in the drawings. The cap (*a*) has a flange (*y*), extending over the card, and a screw, *z*, which passes through the card and the said flange of the air-vessel, upon which is

screwed a hollow frustum of a cone, H, which serves to secure the cap and card and the air-vessel together. Additional means or screws may be used, when necessary to secure the card to the air-vessel, such being exhibited at *s, s*, in the drawings.

An elevator (I,) is placed below the conic frustum H, for the purpose of lifting the cap from the pivot when the compass is not in use.

The vessel E, should not only be air tight but its buoyant power should be such as to cause it to nearly lift the card D, with the magnet or magnets, the pressure remaining on the pivot, C, being graduated so as to be of as small an amount as will suffice to cause the card bearing or cap to remain in contact with the pivot, and turn thereon with a trifling amount of friction.

From the above, it will be seen that my invention is not only a protection to the magnet or magnets against oxidation, but, as a means of buoying nearly all of the weight of the card, and its magnet or magnets relatively to the point of the pivot on which the card is supported and traverses while the compass may be in use.

When the air vessel E, is constructed entirely separate from the card, and in other respects substantially as described, we have the means of applying my invention to any common liquid compass. The card may constitute the cover of the air vessel, and thus make part of the same. So also the conic frustum may constitute a portion of the air vessel. I prefer however, that the air vessel, the card and the conic frustum, be made separate from one another, and be provided with means of connection as explained.

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

1. I claim the arrangement and combination of the air vessel (E,) with the magnet or magnets (G).

2. I also claim the combination of the said air vessel and magnet or magnets with the card (D,) the same being for the purposes as specified.

E. S. RITCHIE.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.