Oct. 17, 1950 L. WOLFE 2,525,848

MAGNETIC COMPASS

Original Filed May 16, 1944

Fig. 1

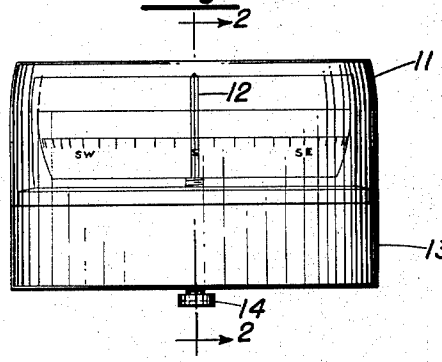


Fig. 2

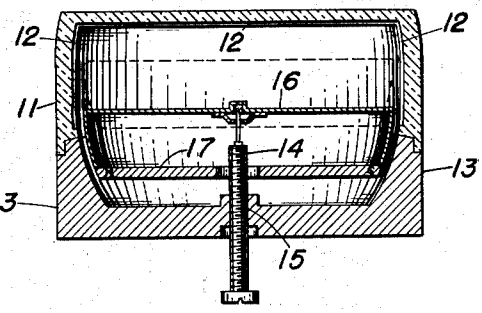


Fig. 4

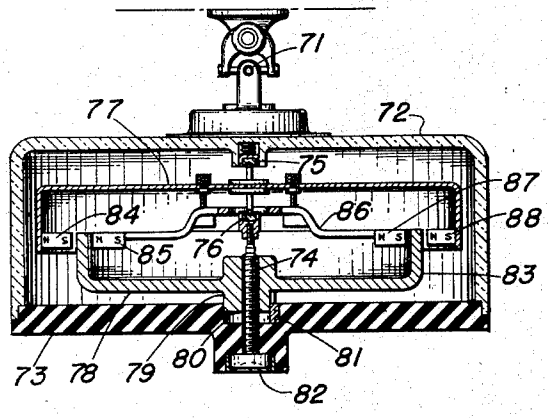
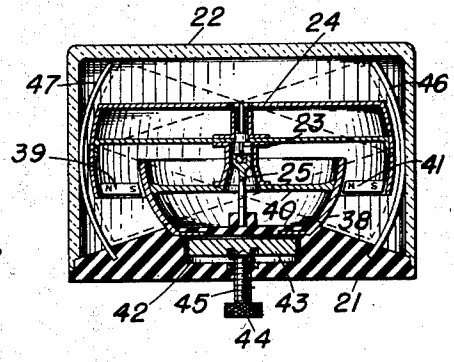


Fig. 3



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Patented Oct. 17, 1950 2,525,848

UNITED STATES PATENT OFFICE

2,525,848

MAGNETIC COMPASS

Lester Wolfe, Harbourton, N. J.

Original application May 16, 1944, Serial No. 535,801. Divided and this application January 10, 1946, Serial No. 640,291

2 Claims. (Cl. 33—222)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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This invention relates to damped magnetic compasses, and in particular to means for varying the damping of eddy current damped compasses, this application being a division of my earlier application for "Magnetic Compass," filed May 16, 1944, Serial No. 535,801, which became Patent No. 2,446,568.

It is therefore the primary object of this invention to provide means for varying the damping characteristics of eddy current damped magnetic compasses.

Other objects will become apparent as the description proceeds in connection with the attached drawings, in which:

Fig. 1 is a side elevation of an embodiment wherein the damping is varied by changing the proximity of the magnetic elements to the conducting damping cup;

Fig. 2 is a sectional view substantially along the line 2—2 of Fig. 1, looking in the direction of the arrows;

Fig. 3 is a side elevation in section of an embodiment wherein the damping is varied by varying the size or length of a gap in the conducting damping cup; and

Fig. 4 is a side elevation in section of an embodiment wherein variable damping is accomplished by moving the damping cup with relation to the magnetic elements of the damping cup.

Figs. 1, 2 and 4 show embodiments of the invention which relate generally to the preferred embodiment and which are described in greater detail in my patent hereinabove mentioned.

Fig. 3 illustrates my preferred method and means for obtaining a variation in the eddy current damping effect. In this case the variation is accomplished by changing the conductance of the metallic damping cup. A base 21 of non-conducting material is fastened at its periphery to the bottom edge of the cup-shaped transparent cover 22. A pivot 23 having a resilient mounting in a top and side reading compass card 24 rests upon a V bearing in the top of a central post 25 upstanding from the base 21. A hemispherical shaped copper cup 38 having an open bottom and top has its open bottom bolted or otherwise fastened to the non-conducting base 21. A magnetic system comprising elements 39, 40 and 41 is fastened to the compass card and located in the same plane, both within and outside the bowl. A second similar set of elements, horizontally spaced and parallel to the elements 39 to 41 are not shown in the sectional view of Fig. 3. As described in my parent application it is preferred that the central element 40 be of magnetized high coercive force material, and 39 and 41 be of material having a high permeability, to reduce the weight of the card.

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Within the base 21 and extending downwards from the bottom edge of the cup 38 is a cylindrical cavity 42 in axial alignment with the cup and post 25. A disc shaped copper element 43 is axially movable towards and away from the bottom edge of the cup 38 and within the cavity. At its uppermost position the disc contacts the bottom edge of the cup, thus forming a bridging element. Axial movement of the disc is accomplished by turning a knurled knob 44 on the outer end of a machine screw 45 fastened to the disc 43 and threaded through the bottom of the base 21. Lubber lines 46 and 47 are fastened to the base at points 180 degrees apart and are curved to lie in close proximity to the compass card. In the embodiment illustrated, the maximum damping effect is obtained when the disc 43 is in its uppermost position and contacting the bottom edge of the cup because then the conductance of the cup and disc is greatest. As the disc is moved downwards from the cup the gap between it and the cup increases and the conductance of the cup and disc decreases.

It will be understood that the above description and accompanying drawing comprehend only the general and preferred embodiment of the invention and that various changes in construction, proportion and arrangement of the parts may be made within the scope of the appended claims without sacrificing any of the advantages of the invention.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

I claim:

1. A magnetic compass comprising a movable element; a pivoted magnetic rod operable to position said element; an annular wall of electrical conducting material adjacent an end of said rod; and means operable to change the eddy current damping effect of said wall on said rod comprising means to vary the conductance of said wall.

2. A magnetic compass as defined in claim 1 wherein the wall conductance varying means includes an electrically conducting bridging element movable in proximity to one end of said wall.

LESTER WOLFE.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
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2,127,878	Martin	Aug. 23, 1938
2,402,638	Krasnow et al.	June 25, 1946