Sept. 18, 1934. J. C. KARNES 1,973,716

COMPASS

Filed March 7, 1932

Fig. 1.

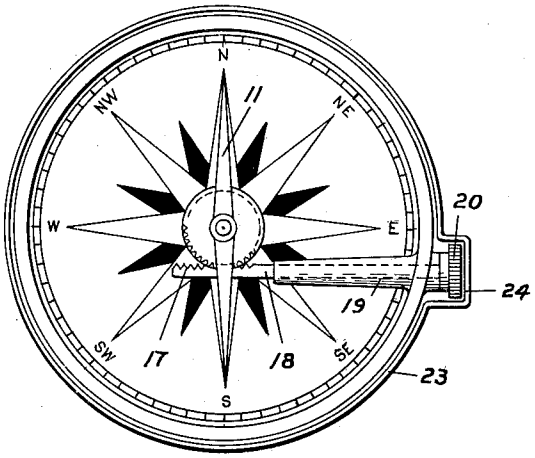


Fig. 2.

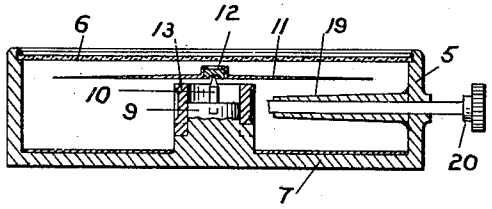


Fig. 3.

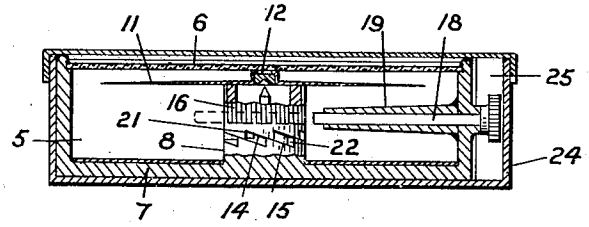


Fig. 4.

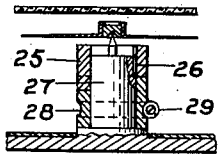


Fig. 5.

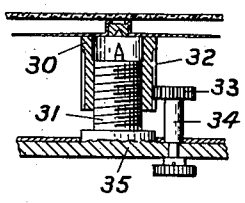
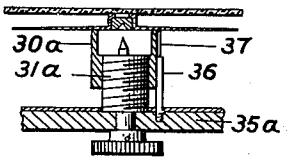


Fig. 5.



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UNITED STATES PATENT OFFICE

1,973,716

COMPASS

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Application March 7, 1932, Serial No. 597,252

4 Claims. (Cl. 33—222)

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

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

The subject of this invention is a compass.

In a compass provision is made for lifting the needle off of its pivot and holding it in a fixed position when the instrument is not in use. The purpose of this feature is to prevent wearing of the pivot and bearing.

The present invention relates to a novel mechanism for removing and holding the needle and is designed with a view to applying a force uniformly and smoothly in order to prevent burring of the pivot and indenting of the bearing.

A further object is to provide an inexpensive construction which will enable the casing to be sealed against the entrance of dust and moisture.

To these and other ends, the invention consists in the construction, arrangement and combination of elements described hereinafter and pointed out in the claims forming a part of this specification.

A practical embodiment of the invention is illustrated in the accompanying drawing, wherein:

Fig. 1 is a plan view of the improved compass.

Fig. 2 is a transverse sectional view with the needle in operative position.

Fig. 3 is a similar view showing the needle in inoperative position.

Figs. 4, 5 and 6 are fragmentary views partly in elevation and partly in section of modifications of the mounting.

Referring to the drawing by characters of reference, the compass comprises a shallow cylindrical container 5 having a transparent cover 6. In the form shown in Figs. 1 to 3, a support positioned centrally on the bottom 7 of the container consists of an annular base or collar 8 and a reduced cylindrical arbor 9 in which the pivot 10 is fixed. The needle 11 has the usual jewelled bearing 12 by which it is supported on the pivot.

A sleeve 13 mounted on the arbor 9 has one or more cam surfaces 14 on its under edge adapted to engage similar cam surfaces 15 on the upper face of the collar 8. As shown in the drawing the cam surfaces are provided by serrating the adjoining faces of the sleeve and collar. The sleeve is further provided externally with teeth 16 adapted to be engaged by a rack 17 on the end of a rod 18. The rod is mounted in an extended bearing 19 fast on the side wall of the container and parallel to the bottom thereof.

Upon reciprocation of the rack 17 the sleeve 13 will be rotated and due to the action of the cooperating cam surfaces 14 and 15 it will also be displayed axially. As shown in Fig. 2 when the sleeve is at the lower limit of its axial movement it is clear of the needle 11. When the sleeve is elevated it comes into engagement with the needle, lifting it from the pivot and securely supporting it against the cover 6. When the sleeve is lowered it restores the needle gently to the pivot, avoiding the possibility of damage.

Inward movement of the rod 18 is limited by engagement of its enlarged outer end 20 with the container. Outward movement is limited by the engagement of stop surfaces 21 and 22 respectively complementary to the adjoining cam surfaces 14 and 15.

A carrying case 23 is formed with a pocket 24 capable of receiving the outer end 20 of the rod only when the rod is in the in position. This insures the movement of the needle to inoperative position when the compass is placed in the case.

In the modification shown in Fig. 4 the sleeve 25 for engaging the needle is constrained against rotation by means of a key 26 fitting in the arbor 27. The axial displacement of the sleeve is accomplished by means of a lower sleeve 28 rotated through worm gearing 29.

In Fig. 5 a nut 30 engageable with the needle is mounted on a threaded stem 31. Spur teeth 32 on the exterior of the nut are engaged by a pinion 33 on a shaft 34 mounted in the bottom 35 of the container. The threaded engagement between the nut and stem supplies a cam action similar to the cam surfaces 14 and 15 in the structure of Figs. 1 and 3.

In Fig. 6 the stem 31*a* is mounted for direct rotation. A pin 36 anchored in the bottom 35*a* is engaged in a slot 37 in the nut 30*a* and constrains the nut to rectilinear displacement upon rotation of the stem.

I claim:

1. In a compass, a container, a support positioned centrally on the floor of the container and having an enlarged base with a serrated face, a pivot carried by the support, a needle mounted on the pivot, a sleeve mounted on the support and surrounding the pivot, said sleeve having a serrated edge engageable with the serrated face of the base for moving the sleeve along the pivot axis when it is rotated thereabout, teeth on the

exterior of the sleeve, a rod extending through the wall of the container and a rack on the rod meshing with the teeth on the sleeve for rotating the same.

2. In a compass, a container, a support positioned centrally on the floor of the container and having an enlarged base with a serrated face, a pivot carried by the support, a needle mounted on the pivot, a sleeve mounted on the support and surrounding the pivot, said sleeve having a serrated edge engageable with the serrated face of the base and means for rotating the sleeve to move the same axially along the pivot axis whereby the needle is raised off its pivot.

3. In a compass, a container, a pivot in the container, a needle mounted on the pivot, members coaxial with the pivot and having cooperating cam surfaces, and means for relatively rotating said members to displace one of them axially into and out of engagement with the needle.

4. The combination with a compass including a container, a pivot in the container, a needle on the pivot, and actuating mechanism projecting through the container and movable in and out in placing the needle off of or onto its pivot, of a casing for receiving the container and having a pocket for receiving the projecting portion of the actuating mechanism in its "in" position and coacting with said projecting portion to deny its entry when in the "out" position.

JAMES C. KARNES.