No. 864,171. PATENTED AUG. 27, 1907.

J. KEAN.

MARINER'S COMPASS.

APPLICATION FILED AUG. 31, 1905.

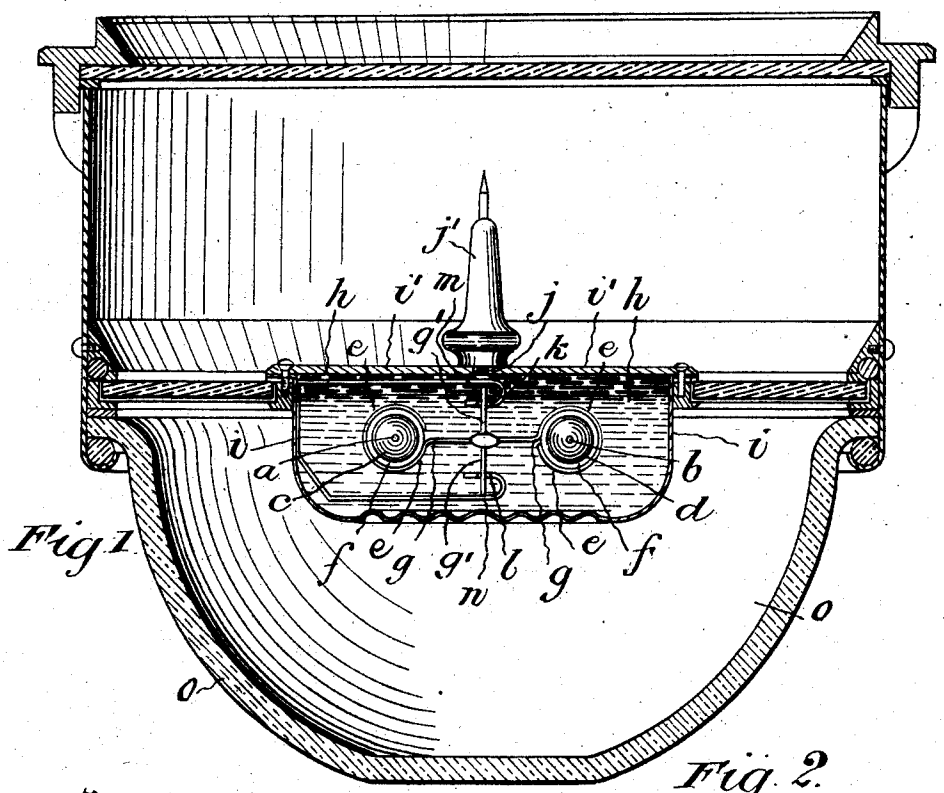
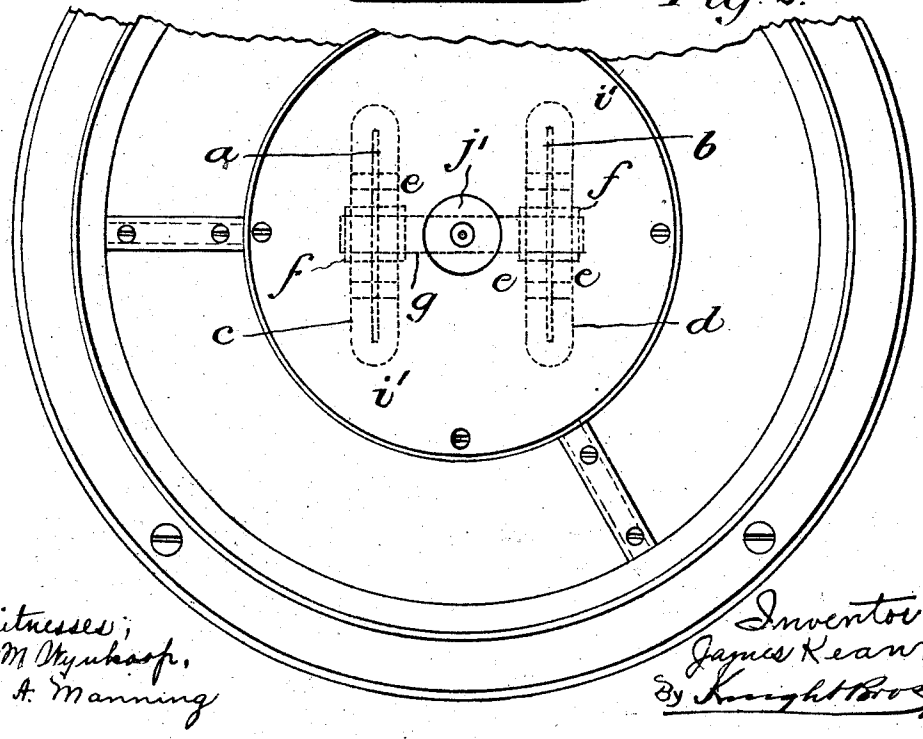


Fig 1.

Fig. 2.



Witnesses;
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UNITED STATES PATENT OFFICE.

JAMES KEAN, OF GLASGOW, SCOTLAND, ASSIGNOR TO KELVIN AND JAMES WHITE, LIMITED, OF GLASGOW, SCOTLAND.

MARINER'S COMPASS.

No. 864,171. Specification of Letters Patent. Patented Aug. 27, 1907.

Application filed August 31, 1905. Serial No. 276,568.

To all whom it may concern:

Be it known that I, JAMES KEAN, foreman, of Kelvin and James White, Limited, 18 Cambridge street, Glasgow, Scotland, scientific-instrument makers, have invented certain new and useful Improvements in the Mariner's Compass, of which the following is a specification.

This invention which relates to improvements in the mariners' compass consists of a device or appliance for damping down the vibrations communicated to a dry compass when disturbed by gun fire or other agitation.

In order that my invention may be properly understood and readily carried into effect, I have hereunto appended one sheet of drawings, of which

Figure 1 is a vertical section of a compass bowl to which the improvements embodying my invention are applied. Fig. 2 is a plan of the same.

The magnetic damper illustrated in the drawings consists of a pair of magnets *a*, *b*, contained each within a pair of empty thin metal or glass tubes *c*, *d*, constituting a part of a pontoon *e* and designed to be parallel with the magnets of the compass card not shown. The two tubes *c*, *d*, are conveniently coated with a thin layer of rubber *f* and are braced together by a bent strip *g* of German silver which holds them firmly at a distance of about 5 centimeters from each other. In the middle of the strip there is fixed at right angles thereto a slight metal rod or bar of German silver wire g^1 about 1 millimeter diameter and 2 centimeters long which serves as a center or vertical pole on which the magnetic system is free to turn. The weight of the above is so proportioned that it will just float in a mixture of spirit and water.

The spirit and water marked *h* is contained within the vessel *i*, which vessel is fitted at or near the bottom of the compass bowl *o* and is about 12 centimeters diameter and 4 centimeters deep. To the cover i^1 of the vessel *i* is mounted the socket *j* for holding the iridium point j^1 for the compass card in the ordinary way. The pontoon *e* is placed inside the vessel *i* with its vertical wire pivot g^1 fitting loosely in conical shaped holes *k*, *l*, formed in the bent ends of the guides *m*, *n*, the guide marked *n* is fixed to the floor of the said vessel *i* and the other marked *m* being fixed to the roof thereof. The cover i^1 is now put on, soldered up, and the mixture of spirit and water *h* filled in. The pontoon *e* now floats easily and without friction, and the magnets *a*, *b*, with the pontoon follow the compass card into any position it may take. Being in the liquid, the magnetic force of the magnets *a*, *b*, tends only to exert a slight but requisite drag on the motions of the compass card, making the card less susceptible to irregular disturbances outside, and causing it to come quickly to rest should it get large swing of deviation away from its proper position.

Claim.

In a dry compass, a closed liquid-containing vessel, an upper and a lower guide secured within the vessel, a vertical rod loosely mounted in said guides, and a pair of magnet containing tubes having a connecting strip pivotally arranged on said rod.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JAMES KEAN.

Witnesses:
JOHN LIDDLE,
CATHERINE HAMILTON.