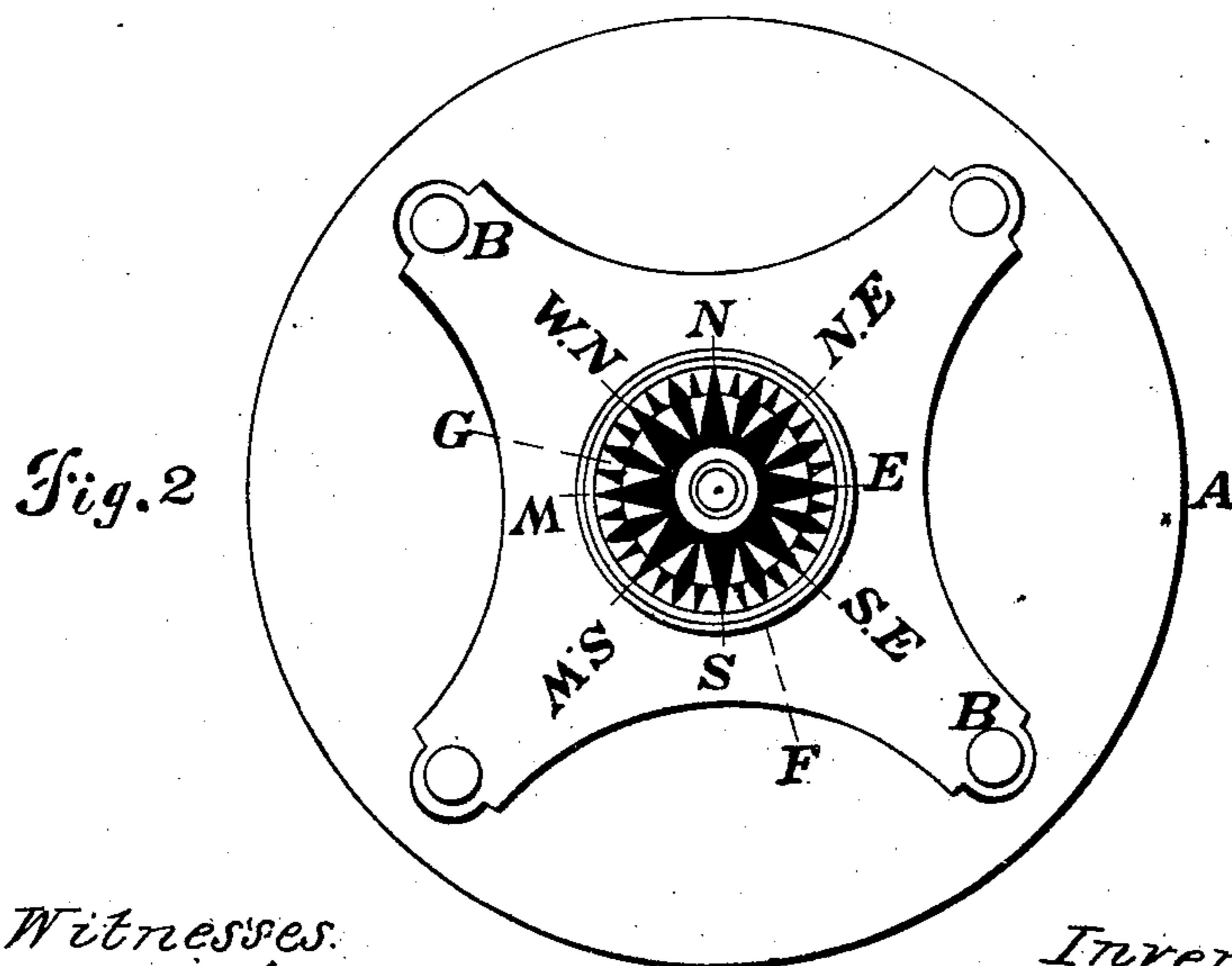
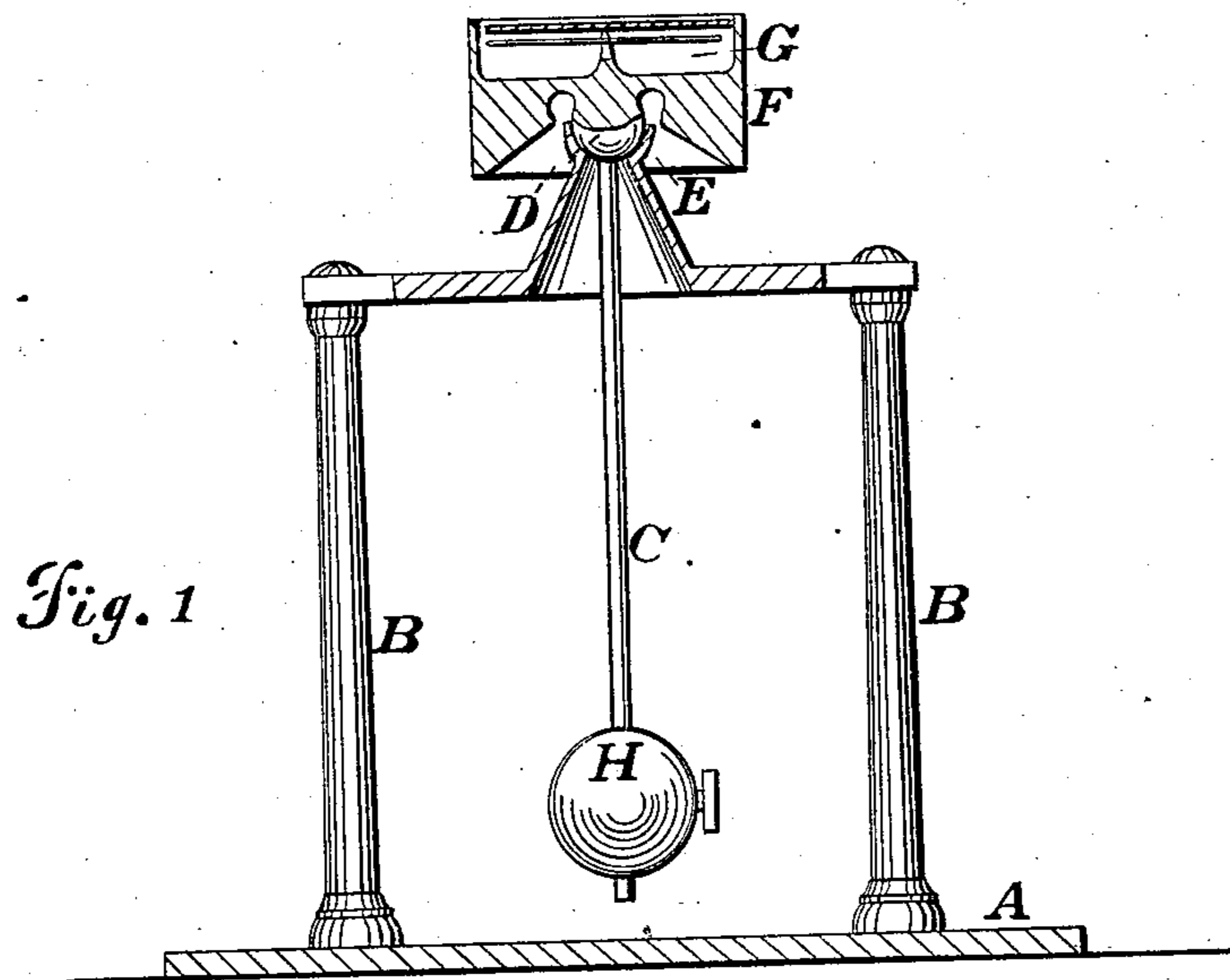


JAMES (Earl of Caithness.)

Compass.

No. 70,520.

Patented Nov. 5, 1867.



Witnesses:  
*Wm. Albert Stal*  
*John Parker*

Inventor  
*Caithness*  
By his Atty  
*H. Houston*

# United States Patent Office.

JAMES, EARL OF CAITHNESS, OF MIDDLESEX COUNTY, ENGLAND.

*Letters Patent No. 70,520, dated November 5, 1867.*

## IMPROVEMENT IN SHIPS' COMPASSES.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, JAMES, EARL OF CAITHNESS, of Middlesex county, England, have invented an Improvement in Ships' Compasses; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to a mode of suspending ships' compasses with a view to prevent undue oscillation in heavy seas, and consists essentially in attaching to the compass-box, or case containing the card or needle, a weighted rod or pendulum, which is allowed to swing freely in a ball-and-socket joint situated as close as possible to the compass. The socket for the ball-joint is contained in the upper part of a "binnacle," or other convenient frame or support, which will allow the free play or swing of the pendulum. The bob or weight of the pendulum is made adjustable along the rod by a set-screw, or other convenient contrivance, so as to admit of alteration or adjustment. By this contrivance the compass is constantly maintained in a horizontal position, as whatever may be the motion of the ship the pendulum will always remain perpendicular.

In order to enable others skilled in the art to make and apply my invention, I will now describe its construction and operation, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figure 1 is a vertical section of a compass with my improvement, and

Figure 2 a plan view.

A is the deck, bridge, or other part of a ship, to which is secured the binnacle or frame B, the latter being so constructed that the weighted pendulum C may swing freely in the roughest weather. Near the upper end of the rod of the pendulum there is a ball, D, which turns freely in any direction in a socket, E, carried by and secured to the top of the "binnacle" or support in any convenient or suitable manner. This socket may be made in two halves, screwed together, so that one half may be removed for the facility of introducing the ball into its seat. Above this ball-and-socket joint, and to the extremity of the pendulum-rod C, I secure in any convenient manner the compass-box F, of any desired form, containing the ordinary pivoted card or needle G, protected by a glass in the usual manner. The pendulum may be made of any length, but I have found a length of about two feet six inches from the centre of oscillation to the centre of the weight or pendulum-bob H to answer well in practice, and I prefer to make such weight adjustable along the pendulum-rod, and to secure it at any desired height by means of a set-screw, I, or equivalent device.

I claim as my invention, and desire to secure by Letters Patent—

The combination of a mariner's compass and a weighted pendulum secured to the compass-box, and having near the upper end a ball which fits in a stationary socket, all substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CAITHNESS.

Witnesses:

W. GORTON, Clerk to M. Johnson, 47 Lincoln's Inn Fields, London.

J. J. VIDLER.