

No. 753,445.

PATENTED MAR. 1, 1904.

J. M. STRATTON.

ARTIFICIAL HORIZON FOR USE OF MARINERS.

APPLICATION FILED DEC. 31, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

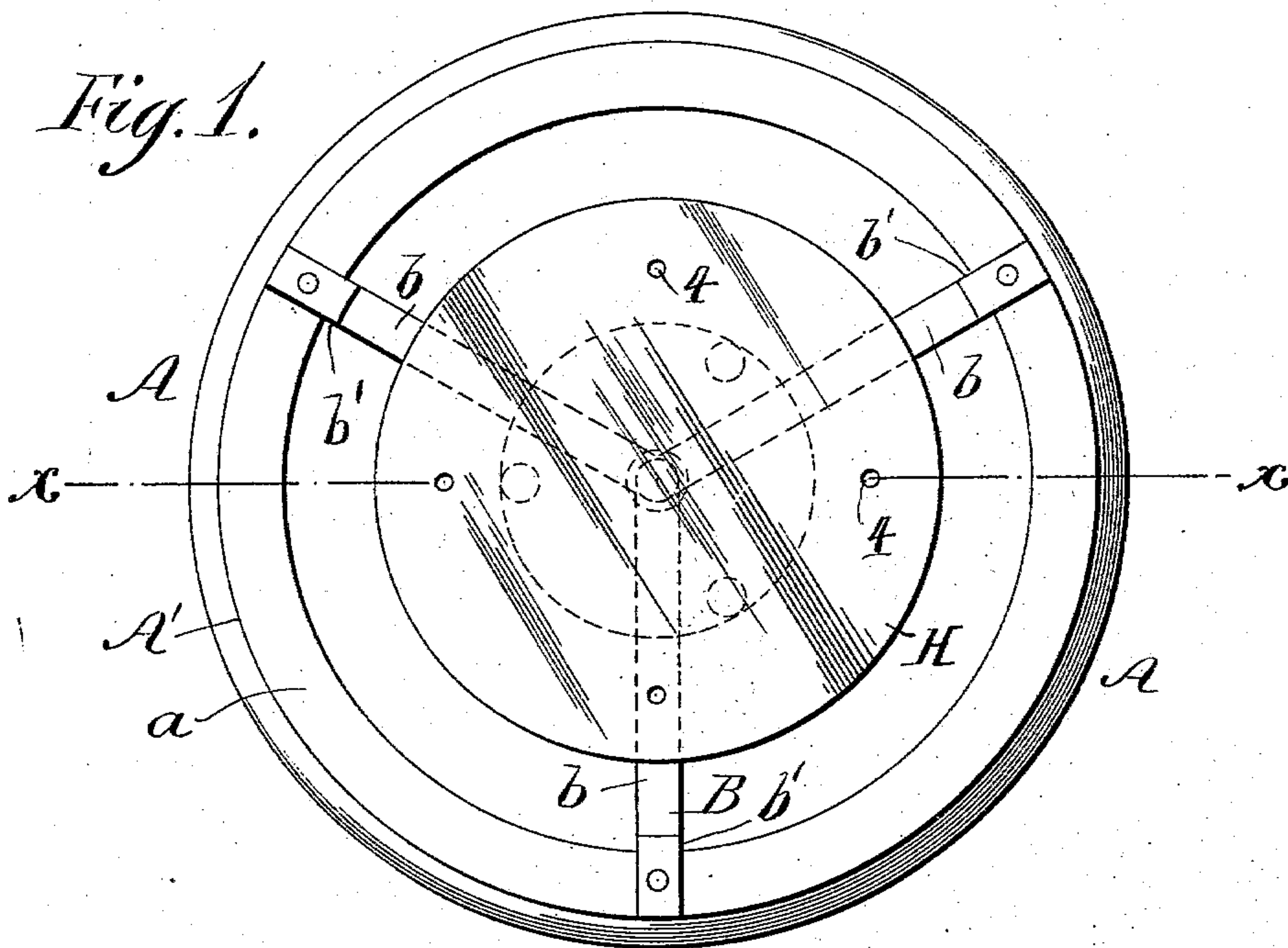
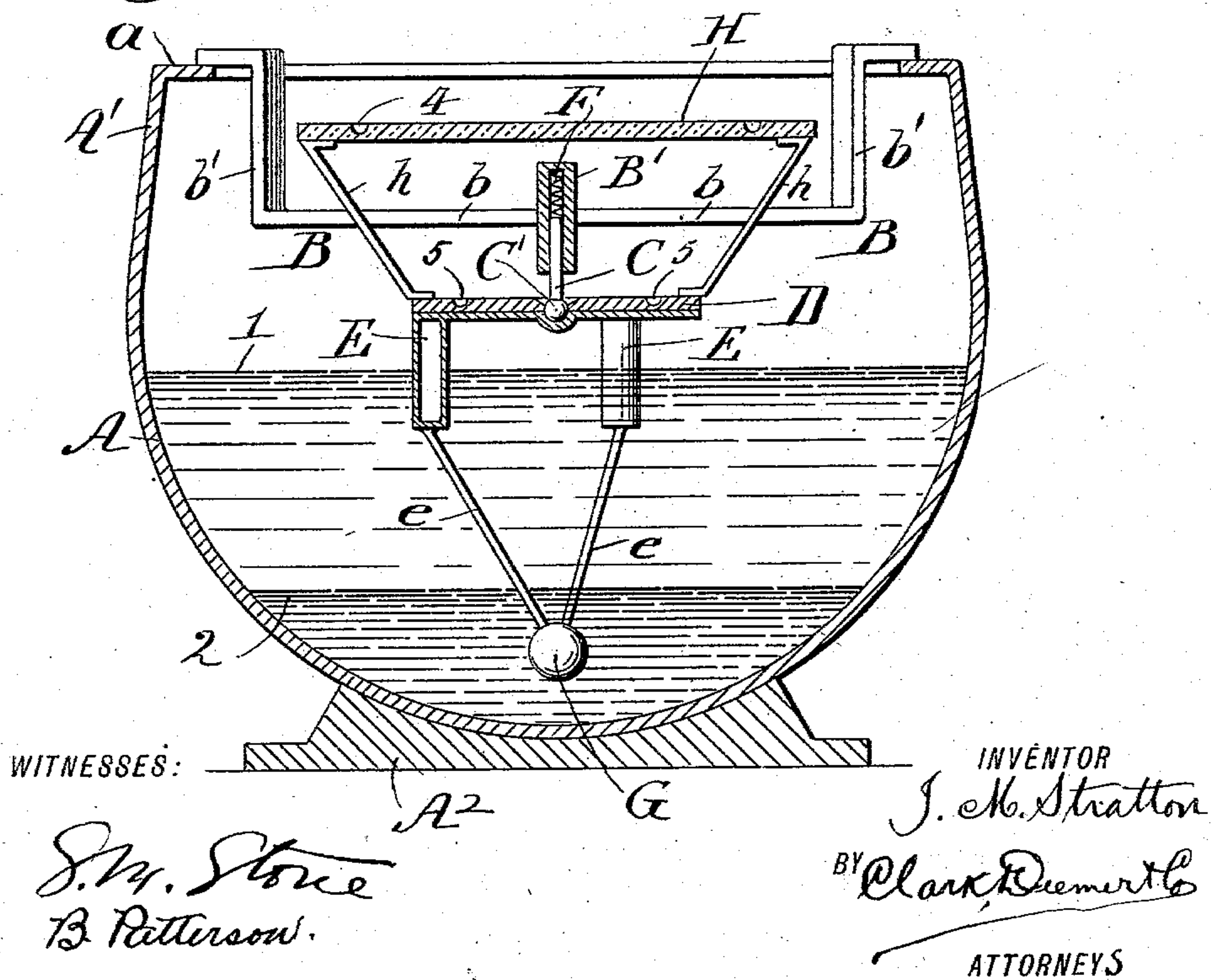


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

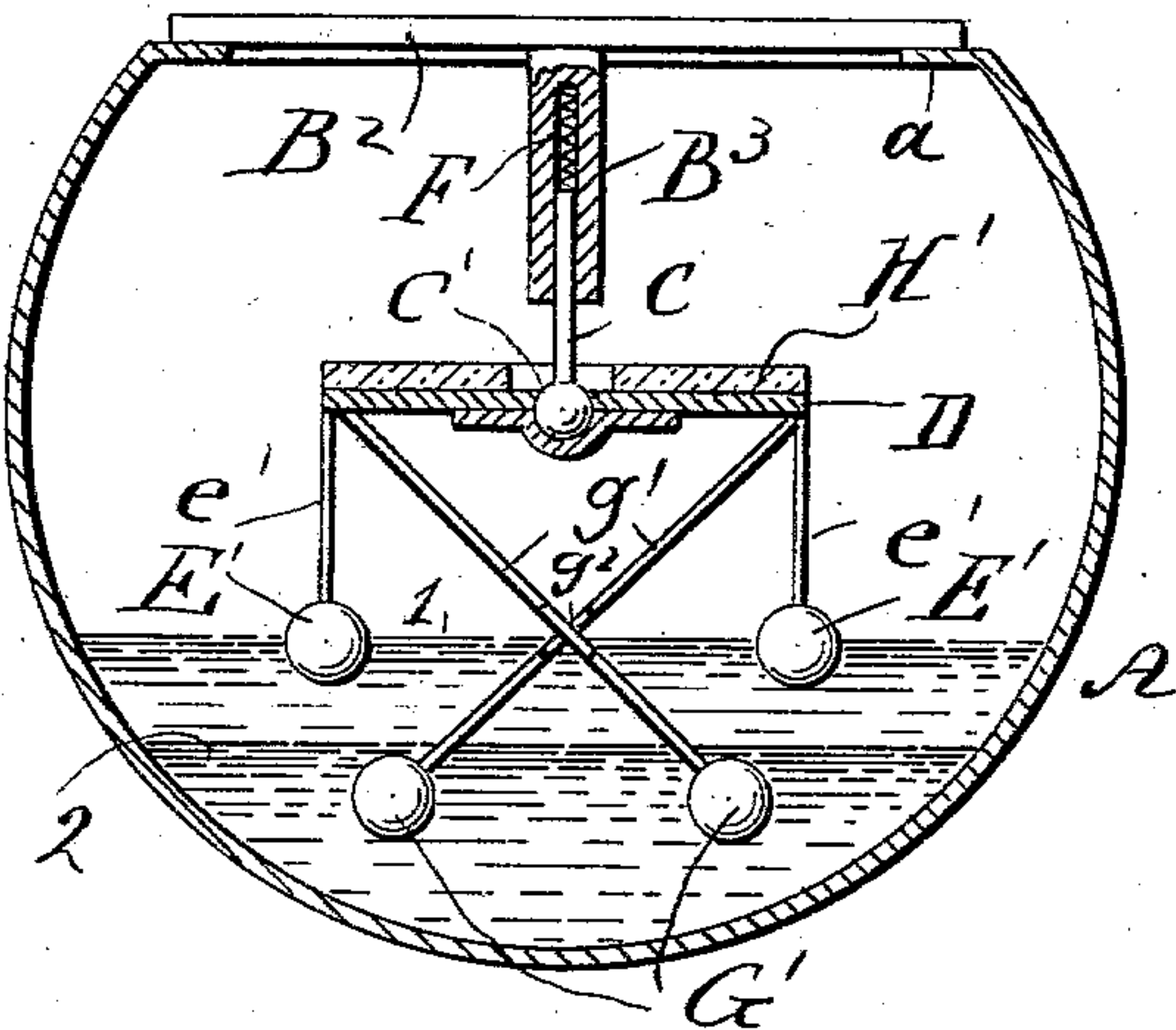


Fig. 4.

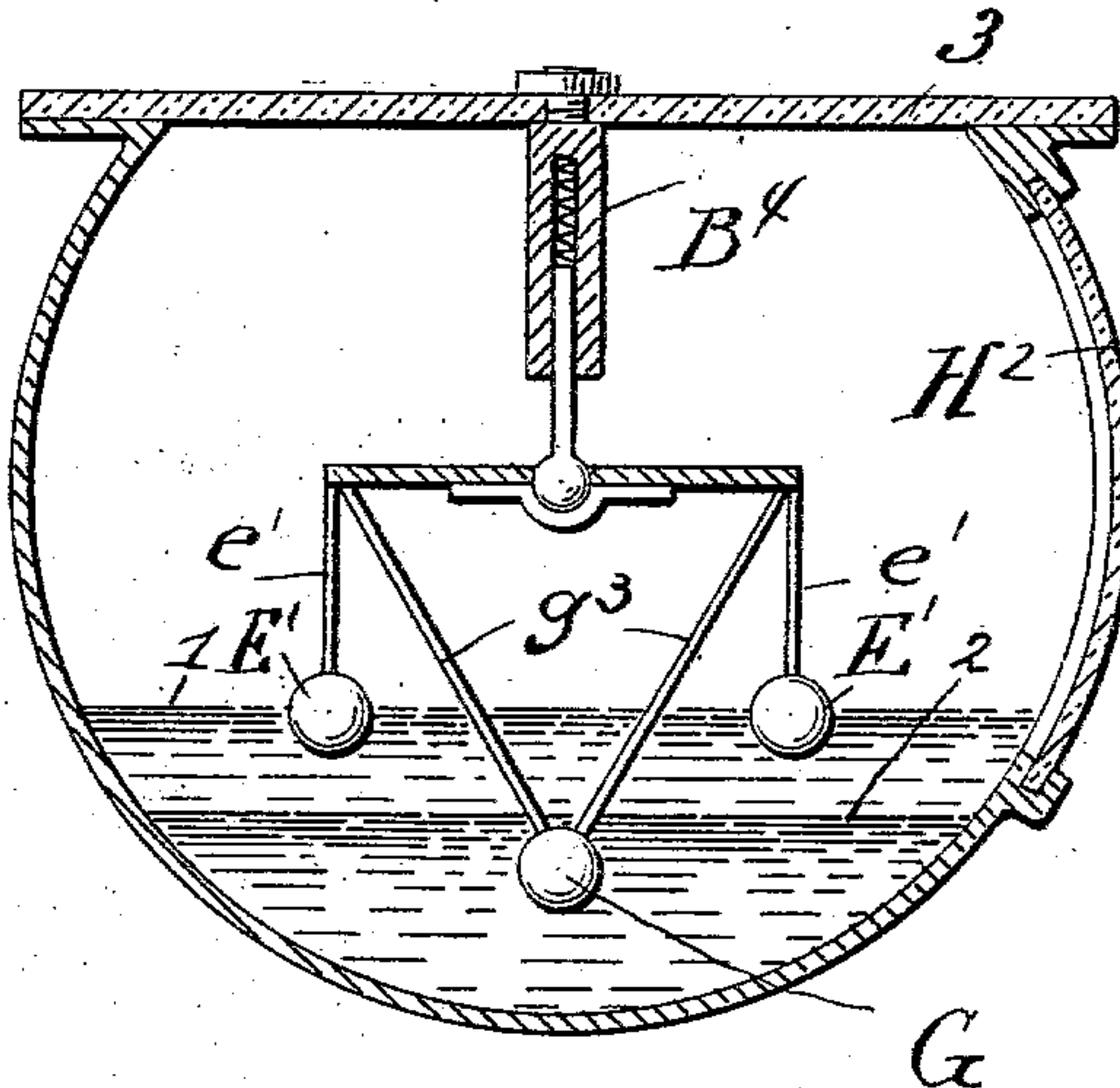


Fig. 5.

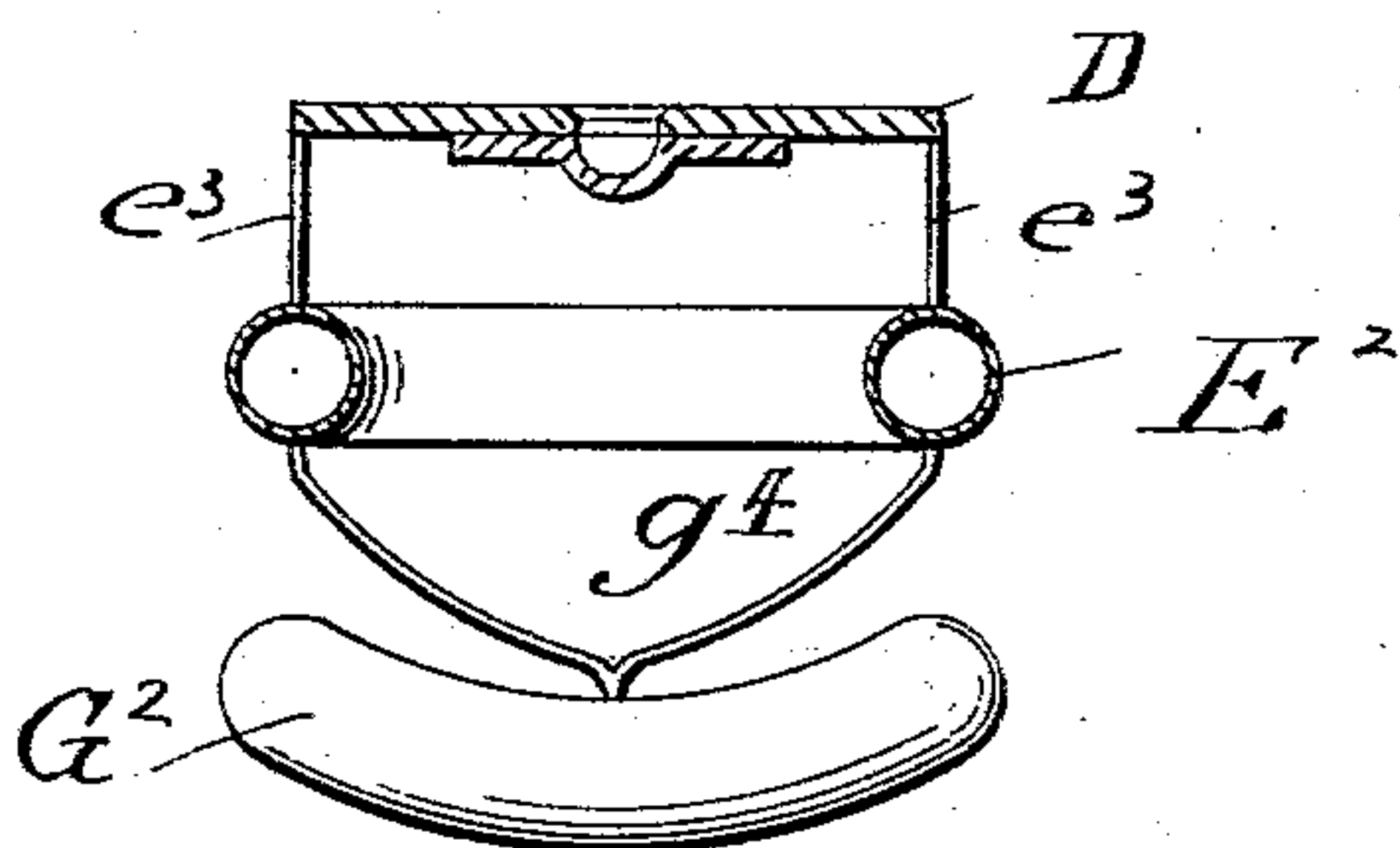
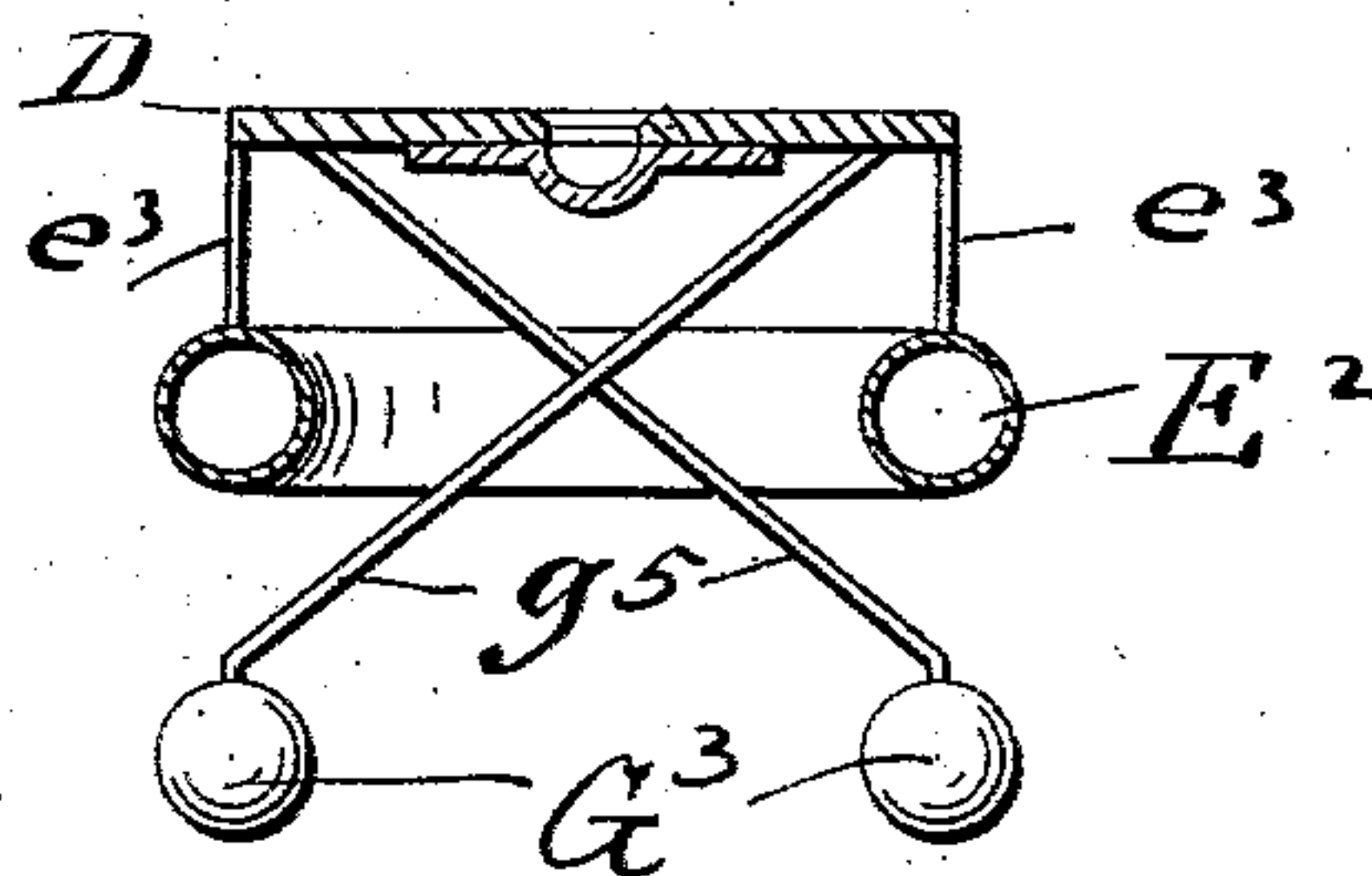


Fig. 6.



WITNESSES:

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JAMES MACDONALD STRATTON, OF BROOKLYN, NEW YORK.

ARTIFICIAL HORIZON FOR USE OF MARINERS.

SPECIFICATION forming part of Letters Patent No. 753,445, dated March 1, 1904.

Application filed December 31, 1902. Serial No. 137,261. (No model.)

To all whom it may concern:

Be it known that I, JAMES MACDONALD STRATTON, a subject of the King of Great Britain, and a resident of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Artificial Horizons for Use of Mariners, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar characters of reference indicate corresponding parts.

This invention relates to an artificial horizon for use of mariners, the object thereof being to provide an efficient device of this character embodying an improved apparatus which is simple in construction, durable, and effective in general operation.

The invention will be hereinafter fully described, and specifically set forth in the annexed claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of my improved apparatus; Fig. 2, a cross-sectional elevation taken on the line xx of Fig. 1. Figs. 3 and 4 are cross-sectional elevations illustrating modifications, and Figs. 5 and 6 are detailed vertical sectional elevations illustrating further modifications.

In the construction illustrated by Figs. 1 and 2 of the drawings I employ a semispherical bowl A, having a tapering dome A' extended therefrom, which is provided with an inwardly-extended annular flange a . Mounted upon the flange a is a spider or bracket B, embodying arms b and a vertical hanger or box B', said arms being radially extended from the vertical box or hanger B' and provided with upward extensions or bends b' , which are secured to the flange a of the bowl A.

Depending from a vertical central opening in the hanger B' is a spindle C, which has a ball C' upon its lower end. This ball is connected by means of a socket-joint to a disk or table D, the joint being exactly in the center of said table. Extended downwardly from the bottom of the table D, near the periphery thereof, is a plurality of air-cells or floats E. These floats buoyantly support the disk D over the surface of the body of liquid 1, contained

within the bowl A. A spring F is placed within the hanger B' over the spindle to properly balance the table.

Located below the center of the table D and below the floats E and connected thereto by means of rods e is a balance-weight G, which may be hollow or solid, as desired. This weight is adapted to act as a checking or governing means to effect the successful operation of the device.

The liquid within the bowl preferably comprises two bodies 1 and 2 of different densities, the heavier body 2, in which the balance-weight is placed, being at the bottom. This heavy liquid acts to retard or check the motion of the lighter liquid to maintain its surface in smooth condition to effectively float the table D and prevent undue vibrations thereof.

Supported over the table D and arranged upon a horizontal line parallel therewith is a mirror H, having downwardly-extended legs h , which are secured at their lower ends to the table D near the edge thereof.

As shown by Fig. 3 of the drawings, the mirror, as H', may embody a ring attached directly to the table D. In this view I have shown the floats E' arranged thereto by rods e' , and instead of a single centrally-located weight I have shown a plurality of weights G, which are connected to the lower ends of angularly-extended rods g' , which are extended from the bottom of the table D. In cases where these weights are arranged diametrically opposite each other at their crossing-point they may have bends, as shown at g'' , whereby they do not contact and are independent of each other. In this structure the supporting-bracket embodies a single strip B², extended diametrically across the top of the bowl and connected at its ends to the flange a thereof, the hanger B³ being extended downwardly from the center of said strip.

In Fig. 4 of the drawings the bowl is provided with a transparent disk or cover 3, having the hanger B⁴ extended downwardly and centrally therefrom. In this construction the mirror H² is arranged and secured by watertight joints over an opening in the side of the bowl. The floats E' are in this figure connect-

ed to rods e' , the same as in Fig. 3, and a single balance-weight G is connected to the table by means of rods g^3 .

In Fig. 5 the table D is floated by means of a hollow ring E^2 , which is connected to the bottom of the table D by means of the rods e^3 . The weight in this case embodies the hollow curved body G^2 , which is connected to the ring E^2 by the rods g^4 .

In Fig. 6 I use a float E^2 and connecting-rods e^3 and a plurality of weights G^3 , which are connected to the table by means of angularly-extended rods g^5 .

In operation and use the device may be connected to a sextant, if desired, or it may be placed in a separate stand, as A^2 , Fig. 2 of the drawings. If it is found desirable, the mirror H and table D may be provided with small recesses 4 and 5, adapted to contain leaden weights to nicely adjust the device, whereby the mirror and table may be set normally perfectly level and parallel with the surface of the supporting fluid, thus permitting the navigator to take accurate readings from the stars reflected upon the mirror's surface.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. As an artificial horizon, the combination with a spherical bowl having two fluids of different densities therein, and a central hanger supported by said bowl, of a table axially con-

nected to said hanger, a mirror mounted above said table, means for connecting said mirror and table, a float swimming on the lighter and upper one of said fluids and upholding said table and mirror above the surface of said lighter fluid and a balance-weight below said float in the lower and denser fluid.

2. As an artificial horizon, the combination with a spherical bowl, having two fluids of different densities, and a centrally-located tubular hanger supported by said bowl, of a table, having a central spherical recess, within said bowl, a spindle having a ball on one end, engaging said spherical recess with said ball, and extending upward into the cavity of said tubular hanger, a spring in said cavity above said spindle, a mirror mounted in said bowl above said table, means for connecting said mirror and table, a float swimming in the lighter and upper fluid and upholding said table and mirror above the surface of said lighter fluid, and a balance-weight below said float connected thereto and extending into the denser and lower fluid.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 23d day of December, 1902.

JAMES MACDONALD STRATTON.

Witnesses:

B. PATTERSON,
S. M. STONE.