June 19, 1928. 1,674,161

P. DE BOGORY

TIME MEASURING DEVICE

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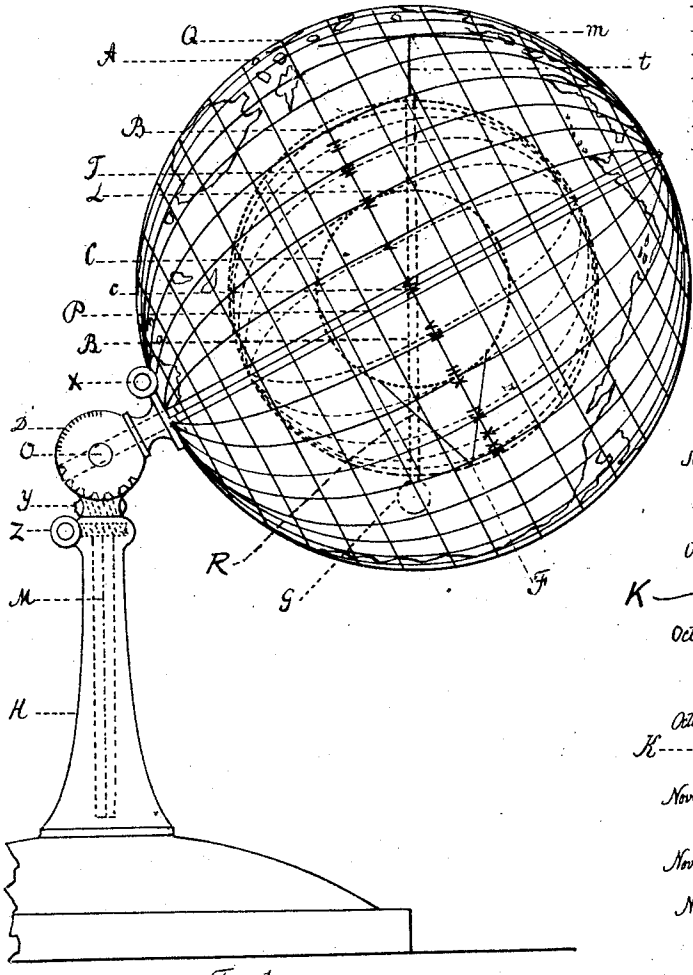


Fig. 1

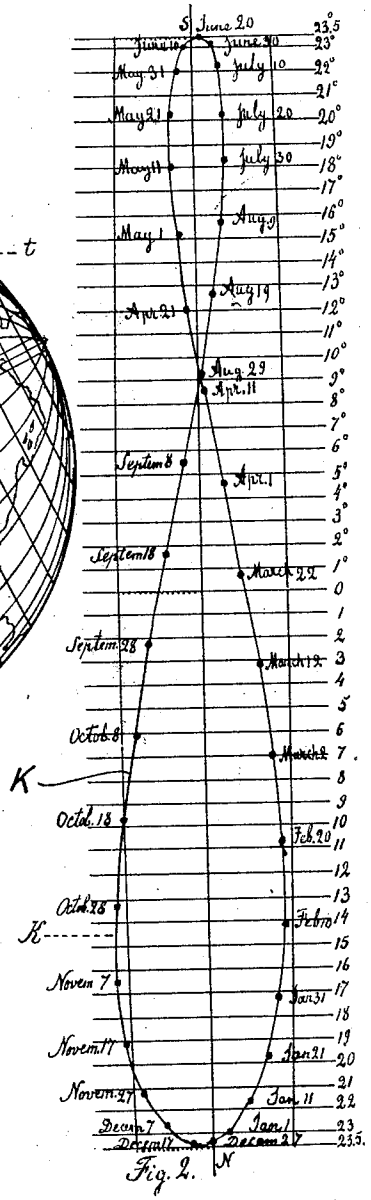


Fig. 2.

Witnesses
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TIME-MEASURING DEVICE.

Application filed May 24, 1920. Serial No. 383,929.

This application is a continuation in part of a prior application filed August 26, 1919, Serial Number 319,902.

This invention relates to improvements in the construction of instruments which determine the time of the day by the sun's rays as sun-dials, etc., and the objects of the invention are:

1st. To construct an instrument, which will show not only sun time, but local time; besides that, being provided with the means to be set to show one desirable time like daylight saving time, or any other time and also to indicate not only time of the day, but month of the year, and to a certain extent days of the month.

2nd. To have a time piece which can be used in any latitude of the globe.

3rd. To have not only an ornamental and correct sun time piece, but a highly instructive object lesson in astronomical, physical, and political geography, useful on school grounds, parks, etc.

4th. To fulfill a common desire to look on a world map on receipt of news coming from all parts of the world.

These objects are attained by the combination of three spheres of different diameters, having a common center, as illustrated in the accompanying drawings, in which Fig. 1 is a perspective view of a sun globe, and Fig. 2 is a diagram showing curved line to indicate time of a day.

A, B, and C are three spheres of different diameters, having a common center. C, Fig. 1, and secured to the pipe P, which passes through the center, C, projects at S through the outside sphere A, and at O is pivotally secured to the support H.

A, is a hollow transparent, or semi-transparent sphere of perforated metal, or metallic screen, or some other transparent, or semi-transparent, durable material, constructed of two hemispheres. Outside appearance of this sphere A, resembles a terrestrial globe with the world map, parallel circles, meridians and magnetic meridians drawn on it.

The magnetic meridians with the magnetic needle M inside of the globe are the means to set sun globe in the right position in different parts of the world, and the geographical meridians will tell the difference of the time in different parts of the world.

Pipe P, represents the axis of the terrestrial globe around which said globe can be moved and set in any desirable position.

Sphere C is a transparent body of a glass or some other transparent material capable of concentrating sun beams to one point or focus. A hollow glass filled with water or some other transparent liquid could be used. In this case an air bulb which is always on the top level portion of the sphere in combination with the plummet suspended from observation point of the terrestrial globe, will serve as a means to set sun globe in right position to show the correct time.

B is a hollow sphere of metallic screen or some other semitransparent or transparent material, the radius of which is equal to the distance between the common center C of the three spheres and focus F, Fig. 1, where the sun's beams meet, after passing through the transparent sphere C. Evidently if the sun globe be set so that its axis, pipe P, is parallel with the axis of the earth, the apparent movement of the sun around the sun globe will be precisely the same as around the earth; it will go around once in twenty-four hours, and it will travel between tropics six months from one to the other and six months back again. As the focus, F, is always on the opposite side of the transparent sphere C from the sun, and is projected on inside surface of sphere B, it will also go around sphere B once in twenty-four hours, and move from one tropic circle to another in six months and back again in six months, so, if the part of the sphere B lying between tropic circles be divided into twenty-four equal parts by meridian lines evidently it will take focus F to move from one division to the other just one hour, and divisions will represent one hour scale, and if that scale will be set in such a position that twelve o'clock lines will be in the same vertical plane passing through the zenith of the place the scale will show sun time which very seldom agrees with local time, being either too fast or too slow. To correct this, a curved line K, Fig. 2, is introduced which is drawn by marking declinations of the sun of every ten days in the year on the meridian S—N, Fig. 2, and adding or subtracting from the sun time the difference between the sun time and local time on each corresponding day. By placing curved line K over meridian lines on inside surface of sphere B, the focus F will show

correct watch time on curved lines K, as well as sun time on meridian lines; and if curved line K will be movably attached over the scale of sun time, the sun globe could be set to show daylight saving, or any other time like an ordinary watch. Evidently, when the curved lines K are placed on each hour, half an hour and quarter of an hour, the said lines K will intersect each other. To overcome this, a thin perforated plate in the shape of a letter S, is placed over the said curved line K to cover and uncover one-half the said line K alternately for the first and last six months of each year.

The ring R, Fig. 1, is pivotally attached to the axis of the terrestrial globe P. The weight G attached to the lowest portion of ring R keeps it in a vertical position, so that spindle *t* on the upper portion of the ring R, supporting magnetic needle M will always coincide with the zenith.

D, is a pivotal disk, on the lowest portion of which is a worm gear engaged with the worm screw Y, by which the axis of the terrestrial globe P may be moved around a pivotal joint O to the required latitude indicated by the scale on the upper portion of the disk D, where one-fourth of its outside circle is divided into ninety degrees. Z is a worm screw, to move sun globe around vertical line M.

X is a worm screw to adjust curve K, and its scale to show required time.

To set the sun globe so that it will show correct time, the support of the globe H must be placed on a horizontal surface, so that the central line M, spindle *t*, and both meridians with twelve o'clock marks on them will be on the line of the zenith, then by operating on worm screws Z and Y, and revolving the terrestrial globe A, around its axis P, it may be brought in such a position that the spindle *t* will be right under observation point and magnetic needle M coincides with the magnetic meridian of that point, then the axis of the sun globe, P, will be parallel to the axis of the earth, and the sun globe will show correct time.

It also could be set by directing pipe P, toward the north pole, or by focus F and dial T.

What is claimed is:

1. The combination of three concentric spheres having a hollow rod connecting them and passing through their common center, the outer and intermediate spheres being semi-transparent, the inner sphere being a spherical lens having is focus on the inner surface of the intermediate sphere and means adjustably connected to said hollow rod for supporting the said spheres in the desired position.

2. The combination of three concentric spheres, a rod connecting them and passing through their common center, a ring pivotally mounted on said rod and a magnetic needle pivoted to said ring.

3. The combination of three concentric spheres, means mounting said spheres for rotation about a common axis, the inner sphere comprising a lens having its focus substantially adjacent the surface of the intermediate sphere, said last named sphere having its surface divided into meridian and longitudinal lines whereby the focus of light rays thereon may be used to tell time of day, day of month, and month of the year.

4. The combination as in claim 3 wherein the outer sphere is semi-transparent and has delineated thereon a map of the world.

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