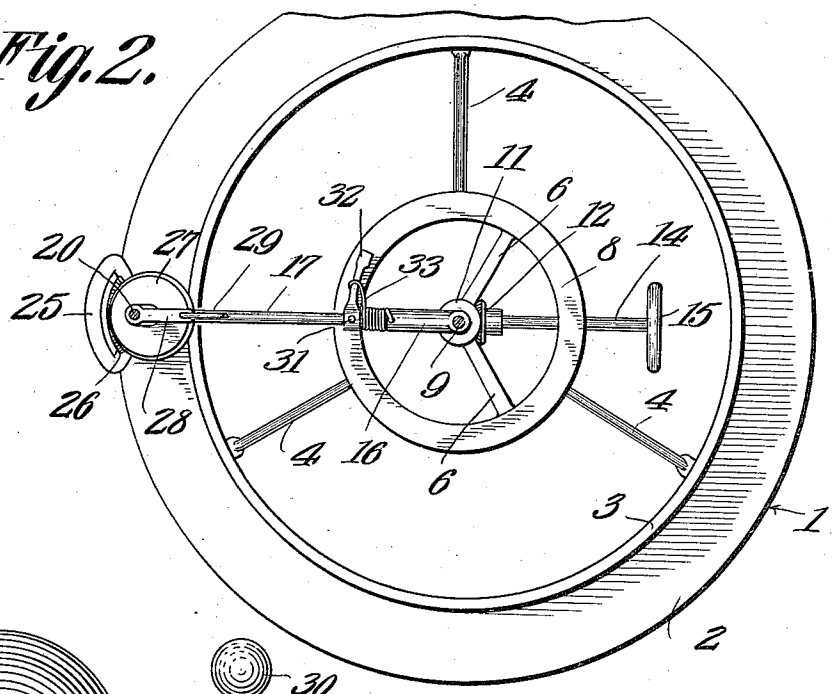
G. T. HUFF.

TELLURIAN.

APPLICATION FILED OCT. 26, 1911.

1,028,355. Patented June 4, 1912.

Fig. 2.



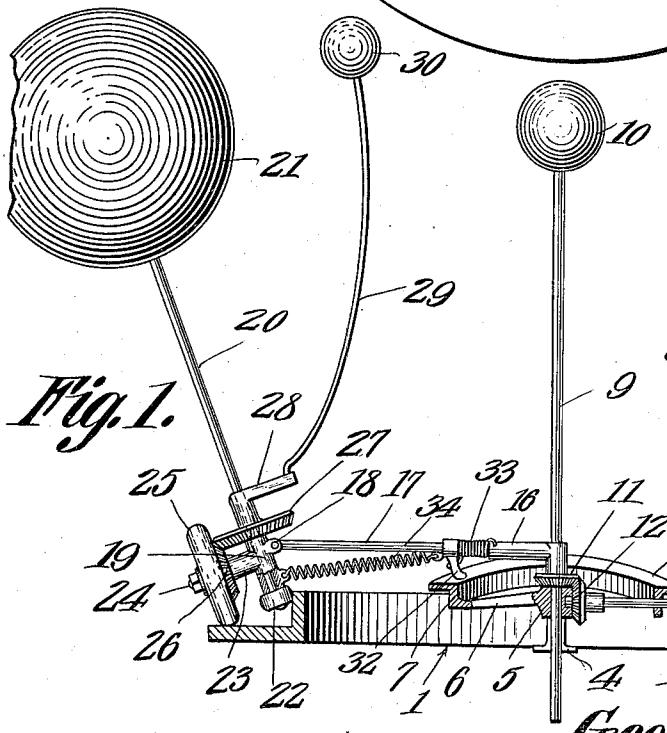


Fig. 1.

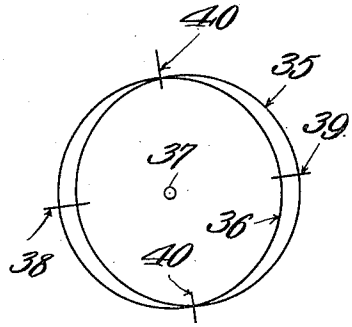


Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE T. HUFF, OF BALTIMORE, MARYLAND.

TELLURIAN.

1,028,355. Specification of Letters Patent. Patented June 4, 1912.

Application filed October 26, 1911. Serial No. 656,888.

To all whom it may concern:

Be it known that I, GEORGE T. HUFF, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented a new and useful Tellurian, of which the following is a specification.

The device forming the subject matter of the present invention, is a tellurian, adapted to illustrate the relative movement between the moon and the earth, and between the moon and the earth upon one hand, and the sun upon the other hand.

The invention aims to provide novel means for securing a rotation of that portion of the device which represents the earth, to provide novel means for securing a revolution of the element representing the moon, about the earth, to provide novel means for securing a revolution of those elements which represent the moon and the earth, about that element which represents the sun, and to provide novel means for maintaining the axis of the element representing the earth, at the proper angle to the plane of the ecliptic.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings,—Figure 1 shows the invention in vertical transverse section, parts appearing in elevation; Fig. 2 is a top plan, wherein sundry parts are removed, for the sake of clearness; and Fig. 3 is a diagram, referred to in connection with the movements of certain of the parts of the device.

In carrying out the invention there is provided a base 1, the same consisting of angularly disposed flanges 2 and 3, the flange 2 being referred to hereinafter as the primary track, and the flange 3 being referred to as the secondary track. The base 1 is equipped with a series of radially disposed, inwardly projecting arms 4, supporting a hub 5. The hub 5 is eccentrically disposed with respect to the center of the circle in which the vertical flange 3 of the base is located. The hub 5 is equipped with a series of radially disposed, outwardly projecting arms 6, connected with the vertical flange 7 of a track 8. The track 8 is inclined at an angle to the flange 2 of the base 1.

Held in the hub 5 is a standard 9, carrying at its upper end, a globe 10, representing the sun. The standard 9 will be referred to hereinafter as the sun standard. Mounted to rotate upon the sun standard 9, and supported by the hub 5, is a beveled pinion 11, meshing into a beveled pinion 12, secured to a shaft 14, the inner end of which is journaled for rotation in the hub 5, the intermediate portion of the shaft 14 being journaled for rotation in the vertical flange 7 of the track 8, the outer end of the shaft 14 carrying a wheel or any other suitable means, indicated at 15, and adapted to be employed for rotating the shaft 14.

Fixed to the pinion 11, to rotate therewith upon the sun standard 9, is a socket member 16, outstanding radially from the standard 9. The inner end of an arm 17 is mounted in the socket 16, the construction being such that, although the arm 17 may rock upon its own axis within the socket 16, and swing with the socket 16, about the sun standard 9, the arm 17 will, nevertheless, be held against longitudinal movement in the socket 16.

Pivoted as shown at 18, to the outer end of the arm 17, is a head 19. The head 19 has pivotal movement only in the plane defined by the head and by the arm 17. Journaled for rotation in the head 19 is a shaft 20, carrying a globe 21, representing the earth. Secured to the lower end of the member 20 is a wheel 22, adapted to engage frictionally with the track 3. The members 20 and 22 will be referred to hereinafter as the earth shaft.

The head 19 is provided with a lateral extension 23, in which is journaled for rotation a shaft 24, provided with a wheel 25, adapted to bear frictionally upon the track 2. The wheel 25 is operatively connected with a beveled pinion 26, meshing into a beveled pinion 27, having a laterally projecting arm 28, the pinion 27 being journaled for rotation upon the earth-shaft 20. An arm 29 upstands from the projection 28, the arm 29 carrying a globe 30, representing the moon. These members 28 and 29 will be referred to hereinafter, for convenience, as the moon bracket.

A finger 32 is held, through the instrumentality of a set screw 31 or the like, upon

the arm 17, the finger 32 being adapted to ride along the track 8. In order to maintain the finger 32 in engagement with the track 8, the spring 33 is coiled about the arm 17 and engaged at one end with the socket 16, the other end of the spring 33 being engaged with the finger 32. In order to maintain the wheel 22 normally in engagement with the track 3, one end of a retractile spring 34 is connected with the head 19, below its pivotal mounting 18, the other end of the spring 34 being connected with the finger 32.

Referring to Figs. 1 and 2, it will be seen that the shaft 20 normally stands at approximately the proper inclination with respect to the ecliptic, the shaft 20 representing the axis of rotation of the earth. If the shaft 14 be rotated, the socket 16 will be revolved about the sun standard 9, through the instrumentality of the intermeshing pinions 11 and 12. The part 16, as it swings around the sun standard 9, will carry with it the arm 17, causing the head 19 and the said shaft 20 to revolve about the sun standard 9. When the head 19 is revolved about the standard 9, the wheel 22, engaging with the track 3, will rotate the shaft 20 and turn the earth globe 21 upon its axis, thereby representing the diurnal rotation of the earth. At the same time, the wheel 25 will engage with the track 2, and through the instrumentality of the intermeshing pinions 26 and 27, the arm 29 will be caused to revolve around the shaft 20, the moon globe 30 thus being made to revolve about the earth globe 21. Owing to the fact that the standard 9 is eccentrically disposed with respect to the track 3, the shape of the orbit of the earth about the sun will be outlined, thereby indicating the cause for the change of seasons, it being obvious that since the standard 9 is eccentrically disposed with respect to the track 3, and since the arm 17 is of a fixed length, the shaft 20 will be tilted as it rotates about the standard 9, thereby advancing the earth globe 20 toward the sun globe 10, and retracting the earth globe from the sun globe, as the seasons successively change.

The operation of the mechanism whereby the shaft 20 is disposed constantly at the proper angle to represent approximately the inclination of the axis of the earth to the plane of ecliptic, will now be described.

In Fig. 3, the numeral 37 indicates the position of the standard 9. The circle 35 represents the path described by the pivotal connection 18, and the circle 36 represents the outer periphery of the track 3. When the arm 17 is in the position indicated by the line 38, and when the arm 17 is in the position indicated by the line 39, the shaft 20 will stand at the angle shown in Fig. 1. When, however, the arm 17 approaches the points 40 where the circles 35 and 36 intersect, the shaft 20 will tend to assume a vertical position, at right angles to the flange 2.

From the foregoing it will be seen that in the absence of some auxiliary mechanism, the eccentric position of the standard 9 with respect to the flange 3 would be insufficient to maintain the shaft 20 at the proper angle with respect to the plane of the ecliptic. This auxiliary means is represented by the track 8 and the finger 32. When the arm 17 approaches the points 40, the finger 32 will be tilted, as it rides along the track 8, and thus the arm 17 will be rocked, tilting the head 19, and of course tilting the shaft 20. Thus, through the coöperation of the mechanisms last above set forth, the shaft 20 will be maintained at a proper angle, at all times, with respect to the plane of the ecliptic.

It will be seen that the device hereinbefore set forth, although of simple construction, and embracing but few parts, will, when operated, represent closely, the relative movements of the earth, the sun and the moon.

Having thus described the invention, what is claimed is:—

1. A tellurian comprising a track; a sun standard held eccentrically with respect to the track; an arm mounted upon the sun standard to swing around the sun standard and to rock upon its own axis; a head pivoted to the arm for movement in a single plane; an earth shaft journaled in the head, and adapted at one end to engage with the track, to secure a rotation of the earth shaft; a moon bracket; rotatable upon the earth shaft; a rotatable member journaled upon the head and adapted to engage the track; means for operatively connecting the rotatable member and the moon bracket; means for swinging the arm about the sun standard; and means for rocking the arm.

2. A tellurian comprising a track; a sun standard held eccentrically with respect to the track; an arm mounted upon the sun standard to swing around the sun standard and to rotate upon its own axis; a head pivoted to the arm for movement in a single plane; an earth shaft journaled for rotation in the head and adapted to engage the track, to secure a rotation of the earth shaft; a moon bracket rotatable upon the earth shaft; a rotatable member journaled upon the head and adapted to engage the track; means for operatively connecting the rotatable member and the moon bracket; a secondary track inclined at an angle to the plane of the first track; and a finger upon the arm, adapted to ride upon the second track, to rotate the arm.

3. A tellurian comprising a track; a sun standard held eccentrically with respect to the track; an arm mounted upon the sun standard to swing around the sun standard and to rotate upon its own axis; a head

pivoted to the arm for movement in a single plane; an earth shaft journaled in the head, and adapted to engage the track, to secure a rotation of the earth shaft; a moon bracket rotatable upon the earth shaft; a rotatable member journaled upon the head and adapted to engage the track; means for operatively connecting the rotatable member and the moon bracket; a second track inclined at an angle to the first track; a finger upon the arm, adapted to ride upon the second track to rotate the arm; spring means for holding the finger upon the second track; and spring means for tilting the head, to hold the earth shaft engaged with the first track.

4. A tellurian comprising a base including angularly disposed primary and secondary tracks; a sun standard held eccentrically with respect to the tracks; an arm mounted upon the sun standard to swing around the sun standard and to rock upon its own axis; a head pivoted to the arm; an earth shaft journaled in the head and adapted at one end to engage with the secondary track to secure a rotation of the earth shaft; a moon bracket rotatable upon the earth shaft; a rotatable member carried by one side of the head, and adapted to move along the primary track; intermeshing pinions upon the rotatable member and upon the moon bracket; and means for rocking the arm automatically, as it swings about the sun standard.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

GEORGE T. HUFF.

Witnesses:
C. L. HARKINS,
P. F. CAVENDER.