

G. P. TINDALL.  
Tellurians.

No. 156,319.

Patented Oct. 27, 1874.

Fig. 1.

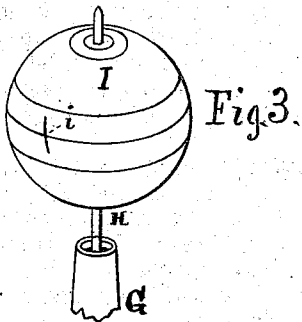
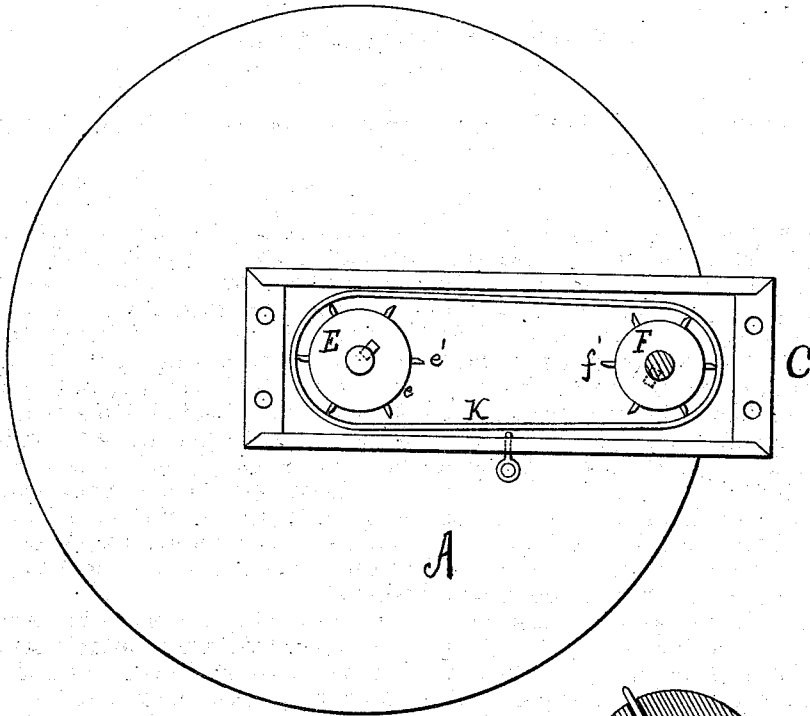


Fig. 3.

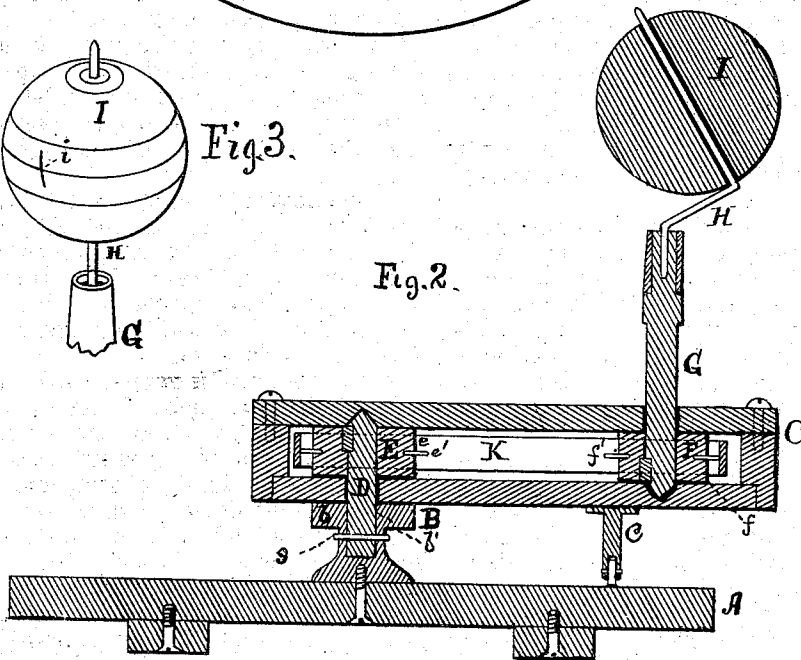


Fig. 2.

WITNESSES

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# UNITED STATES PATENT OFFICE.

GEORGE P. TINDALL, OF YPSILANTI, MICHIGAN.

## IMPROVEMENT IN TELLURIANS.

Specification forming part of Letters Patent No. **156,319**, dated October 27, 1874; application filed June 6, 1874.

*To all whom it may concern:*

Be it known that I, GEORGE P. TINDALL, of Ypsilanti, in the county of Calhoun and State of Michigan, have invented a new and valuable Improvement in Tellurians; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a plan view of my tellurian, and Fig. 2 is a sectional view. Fig. 3 is a detail view.

This invention has relation to tellurians; and it consists in the construction and novel arrangement, in connection with a revolving arm, bearing the shaft of the earth-globe at its free end, and pivoted to a center post bearing the sun-globe, of pulleys or wheels of unequal diameters, connected by suitable means for communicating rotary motion, whereby the gyratory motion of the earth's axis, which accompanies the precession of the equinoxes, may be illustrated in a clear and familiar manner.

In the annexed drawings, A designates a platform, which may be circular in form, upon which is centrally erected a vertical standard, B, having at its upper end a bearing-surface, *b*, perforated, as to its center, to a suitable depth. I have designated this perforation in the drawings by the letter *b'*. C designates an oblong rectangular box or arm, which is supported in a horizontal position by the bearing-surface *b* at one end, and by the rod *c*, having an anti-friction pulley-wheel on its end, at the other. Through this box C, at the end thereof resting upon the bearing-surface *b*, is a perforation, *d*, through which is vertically passed a shaft, D, into the perforation *b'* of bearing *b*, to which bearing the said shaft is rigidly attached by passing a bolt, *g*, through registering perforations, which extend horizontally through the said standard and shaft. Upon this shaft, at that portion thereof which is within the box C, a band-wheel, E, is suitably keyed, the periphery of which is supplied with a rough coating, *e*, and teeth *e'*, which serve to prevent an endless belt, of which the application will be herein-

after explained, from slipping thereon. F designates a band-wheel of smaller diameter, which is, in like manner, and for a like purpose, provided with a roughened surface, *f*, and teeth *f'*, and which is keyed upon a shaft, G, having its bearing in the top and bottom of said box, and which passes upward above the said box a suitable distance. K designates an endless belt, which is applied around the band-wheels F and E, and which serves to actuate the shaft-bearing band-wheel E when the box C is rotated about the shaft D.

In lieu of the endless belt K, and the band-wheels F and E, I may, in practice, use geared wheels.

H designates a bent metal wire, which is rigidly secured, in any suitable manner, to the free end of shaft G, the free end portion of which wire is bent to represent the inclination of the earth's axis to the plane of the ecliptic. I designates an earth-globe, having constructed through it a perforation in the line of its axis from pole to pole, which perforation permits the earth-globe to be mounted on said wire.

In connection with this earth I may use a circle, or a segment thereof, to indicate the boundary between the enlightened and unenlightened hemispheres of the earth, and I may have represented, by means of lines thereon, the equatorial line and the boundary-lines between the various zones.

When the box C is rotated about its pivotal point, the earth-globe I having been first marked at a point, *i*, upon the equator, it will be observed that the gyratory motion of the earth's axis is clearly shown, and that the point *i*, having started from a given point opposite the eye, will arrive at its starting-point before a complete revolution of the earth around the sun shall have been completed, thereby clearly exemplifying what is known in science as the "precession of the equinoxes."

For convenience of observation of the movements of the band-wheels F and E, I have hinged one of the sides of said box to the bottom thereof, whereby said side may be open or shut, as is desired.

What I claim as new, and desire to secure by Letters Patent, is—

In a tellurian, the combination, with the re-

volving arm C, of the stationary sun-wheel E, the revolving earth-wheel F, and the endless belt K, for communicating motion to the earth-globe I, the wheel F being of less diameter than the wheel E for the purpose of showing the phenomenon of the precession of the equinoxes, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

GEORGE P. TINDALL.

Witnesses:

HENRY H. BROWN,  
CHARLES S. MARR.