

No. 647,252.

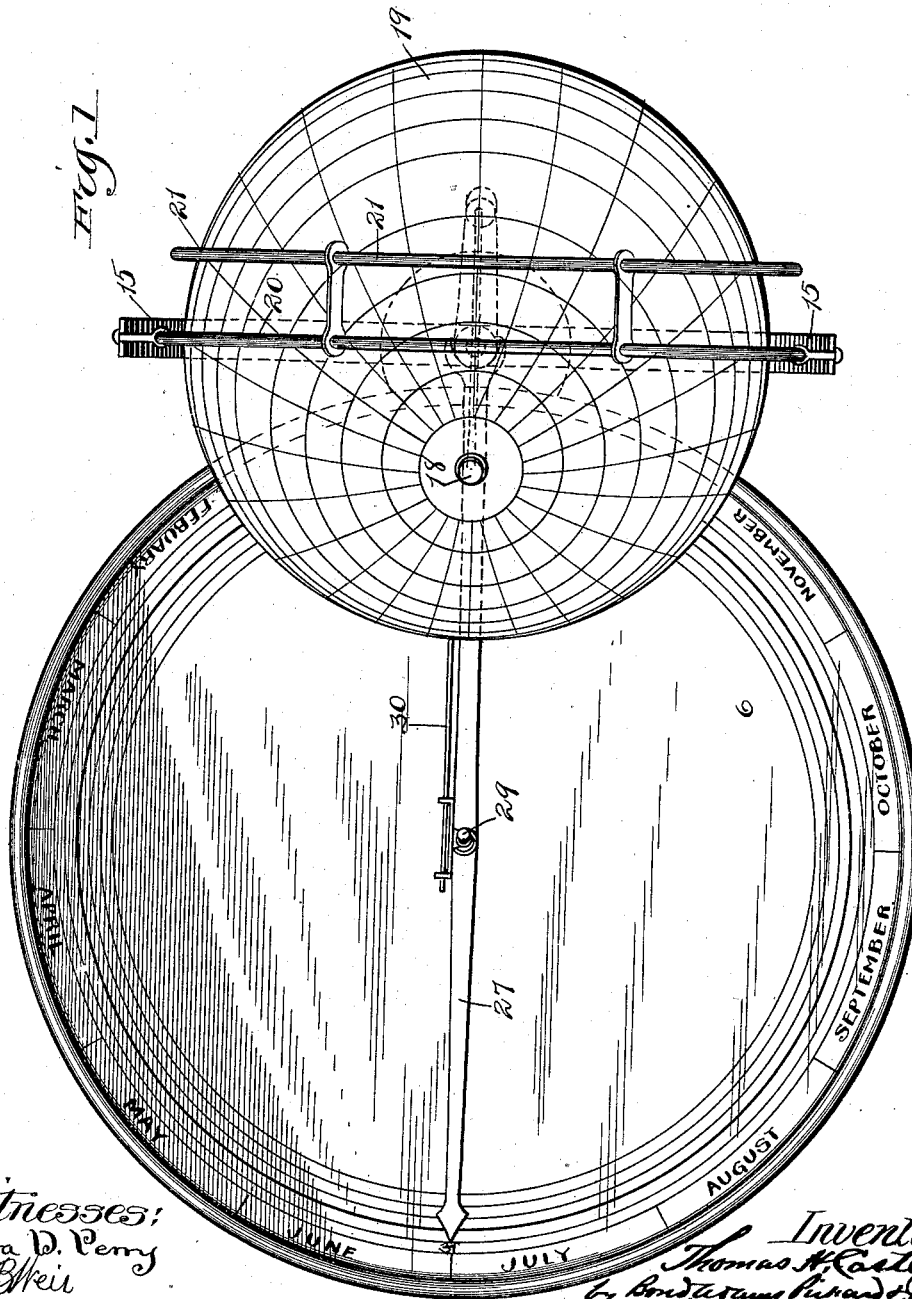
T. H. COSTELLO.  
TELLURIAN.

Patented Apr. 10, 1900.

(No Model.)

(Application filed May 22, 1899.)

3 Sheets—Sheet 1.



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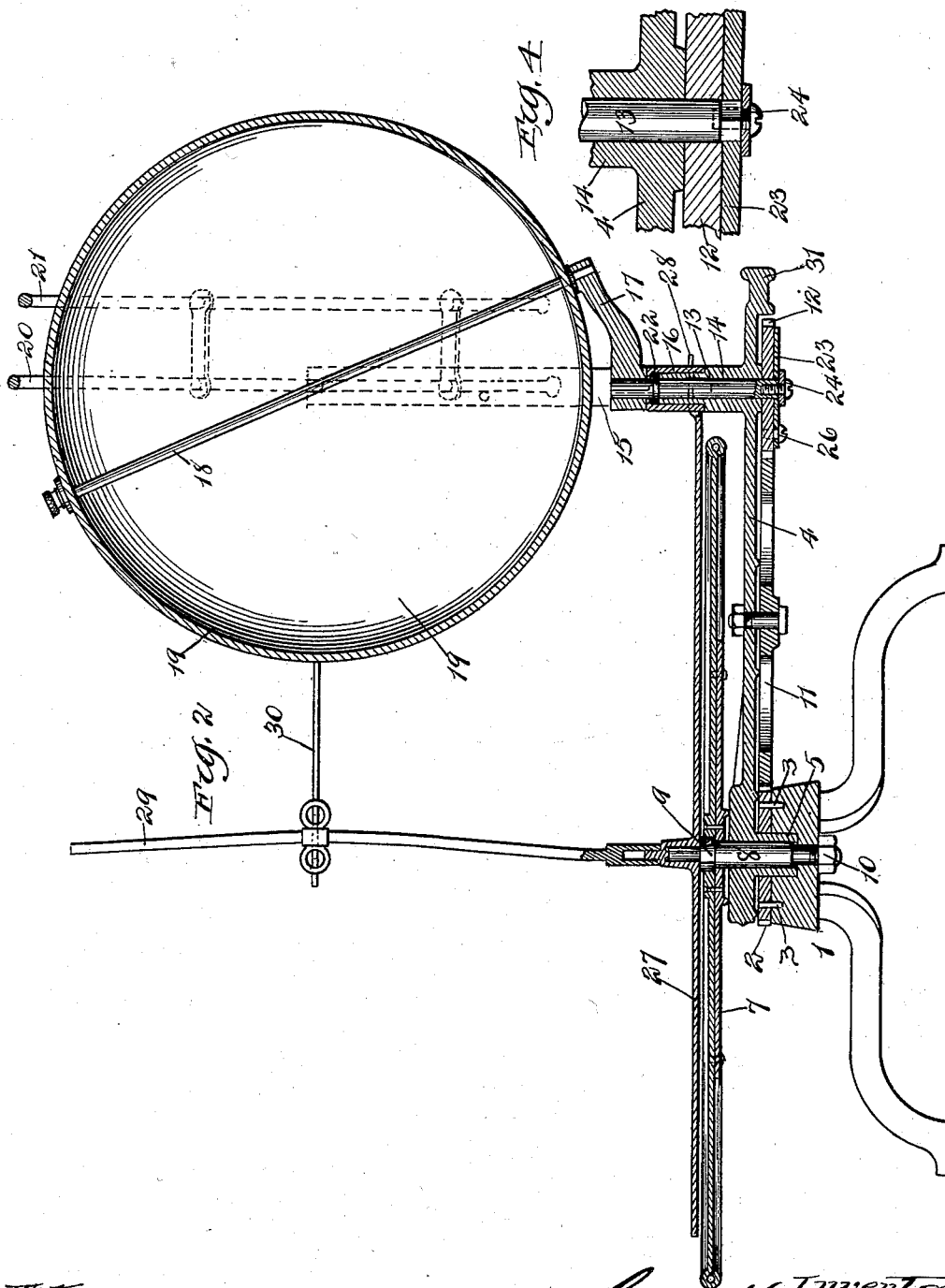
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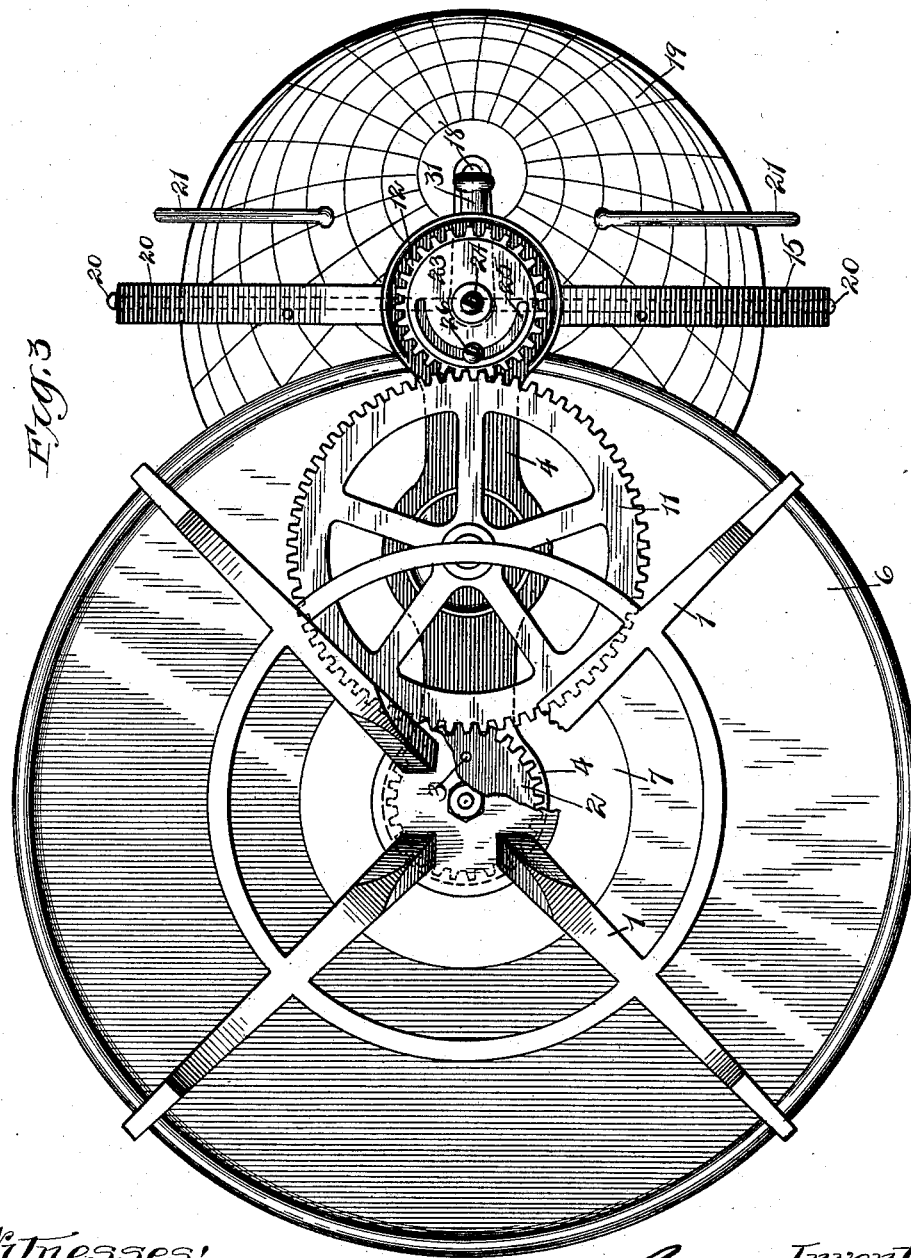
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# UNITED STATES PATENT OFFICE.

THOMAS H. COSTELLO, OF CHICAGO, ILLINOIS.

## TELLURIAN.

SPECIFICATION forming part of Letters Patent No. 647,252, dated April 10, 1900.

Application filed May 22, 1899. Serial No. 717,710. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS H. COSTELLO, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tellurians, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to tellurians, and has for its object to provide improved means for actuating the terrestrial globe, to provide an improved combination of devices for securing and holding the calendar-zodiac plate and means for pointing to the appropriate characters thereon as the globe is moved around such plate, and to improve generally the construction, operation, and arrangements of devices of this character, all of which I accomplish as illustrated in the drawings and hereinafter specifically described.

In the accompanying drawings, Figure 1 is a top or plan view. Fig. 2 is a central vertical section. Fig. 3 is a bottom view, a small portion of the base being broken away; and Fig. 4 is an enlarged detail of the lower end of the stud upon which the globe-supporting arm is mounted, showing also in section the parts through which such lower end passes.

In each of the figures the same reference-numerals indicate corresponding parts.

1 indicates a suitable base, the form shown being of the kind known as a "spider."

2 indicates a gear-wheel secured by pins 3 or in any suitable manner to the upper face of the central portion of the base.

4 indicates a long arm, the inner end of which rests on the gear 2 and having a hollow projection 5, that passes through the gear 2 and into a socket in the base 1.

6 indicates a calendar-zodiac, which is made of a disk or plate of light sheet metal and a strengthening-plate 7 of cast metal secured to it. The disk 6 is centrally located over the inner end of the arm 4 and is provided with a central opening, through which passes a pin 8, having a head 9, that engages the disk. This pin 8 passes down through the parts 1, 2, 4, and 5 and is secured in place by a nut 10 on its lower end. The lower end of the pin in the construction shown is very slightly tapered, so that when the nut 10 is screwed

up such pin is held fast, and as the head 9 firmly engages the disk or plate 6 rotation of such disk is prevented, but at the same time the arm 4 is free to be turned as desired.

11 indicates a gear-wheel suitably mounted on the under side of the arm and about midway of the length of said arm and meshing with the stationary gear 2. 12 indicates another gear on the under side and near the outer end of said arm 4 and also meshing with the gear 11. It is pivoted on a stud 13, passing through the arm 4 and through an upwardly-projecting sleeve 14, formed on or secured to said arm.

15 indicates a semicircular support having a central hollow boss 16, that fits over a narrow portion of the sleeve 14, the two parts 14 and 16 being removably locked together in any suitable manner.

17 indicates an arm secured in any suitable manner against turning on the upper end of the stud 13 and supporting at its outer end the axis 18, suitably inclined, on which is rotatably secured the globe 19.

20 indicates the circle of illumination and has secured to it a twilight circle 21, as usual, the circle 20 being pivotally attached to the upper ends of the support 15, as usual. The stud 13 is prevented from dropping out by the collar 22, formed thereon, that rests against the upper end of the sleeve 14, and it has its lower end suitably squared, as shown in Fig. 4, which squared portion fits into a correspondingly-shaped opening in a plate 23, that is held against the under face of the gear 12 by a screw 24, passing through such plate and into a screw-threaded hole in the end of said stud 13. As shown, this plate 23 is provided with a semicircular slot 25, registering with a screw-threaded hole in the under face of the gear 12, through which slot and into which hole passes a screw 26. When this screw 26 is loosened, it is evident that the plate 23 can be turned independently of the gear 12, which will also turn the stud 13, enabling a very fine adjustment to be made to vary the inclination of the globe's axis to bring the ecliptic circle delineated on the globe directly opposite the device that serves to represent the central ray of the sun. After such adjustment has been so made the screw

26 is to be tightened, which will prevent rotation of such stud independently of the gear 12 and necessarily prevent the inclination of the axis 18 from being disturbed.

5 On that portion of the pin 8 that is shown as extending above the head 9 is loosely pivoted a pointer 27, one end of which is forked, as indicated at 28, to embrace the stud 13 on the outer end of the arm 4, such fork portion, 10 in fact, being in contact with the boss 16, that surrounds said stud.

29 indicates a rod suitably secured to the center of the pointer 27 and of course turning with it. Its front is the arc of a circle of 15 a proper size to represent the size of the sun relatively to the globe 19.

30 indicates a sliding pointer intended to represent the sun's central ray.

31 indicates a handle on the outer end of 20 the arm 4, by which such arm can be conveniently turned on its pivot-pin 8.

With the parts assembled in proper position, as shown, the arm 4 can be swung on its pivot-pin 8 around the periphery of the 25 disk 6, during which operation the gear 11 turns around the fixed gear 2, and as it meshes with the gear 12 will of course turn such gear 12. Inasmuch as such gear 12 has firmly screwed to it the plate 23 and as such 30 plate fits on a squared end of the stud 13, it is evident that such stud will be rotated, and thus cause the constant parallelism of the globe's axis to be maintained as such globe is moved around, the arm 17, that carries the 35 axis of the globe, being fixed to said stud to move with it, as stated. The support on which the circle 20 is pivoted is, as stated, made fast to the sleeve 14 of the arm 4, and consequently has no movement independent 40 of such arm 4, the result of which is that as the arm is turned the angle of the globe's axis with relation to said circle is constantly changed, as is usual in globes employing such circles. As the arm 4 is turned the pointer 45 27 will of course be turned on its pivot-pin 8 at the same time, inasmuch as such pointer is made to embrace by its fork 28 the stud 13, carried by said arm 4. As shown, the disk or plate 6, over which the pointer moves, is 50 provided near its outer edge with twelve divisions, in which appear the names of the months and to which in succession the pointer 27 may be brought, so that the portion of the earth's surface illuminated by the sun's rays 55 at any particular time may be determined. The months only are shown as appearing on the disk or plate; but it is to be understood that the many other markings that are usually applied to calendar-zodiacs are to be applied 60 in their proper places to this disk or plate, so that by the turning of the arm 4 the pointer 27 will be brought over or in line with any desired mark or character on the disk or plate to enable the parts to be brought into their 65 proper relative positions for the demonstration of any fact which a device of this kind is adapted to.

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

1. In a tellurian, the combination of a base, 70 a gear fixed on the base, a swinging arm provided with intermeshing gears one of which engages the fixed gear, a vertical pin extending through the base, the fixed gear and one end of the swinging arm and having a squared 75 portion near its upper end, a calendar-zodiac composed of a horizontal disk or plate arranged above said swinging arm and engaged at its center with the squared portion of the said vertical pin, a pointer arranged horizon- 80 tally over the calendar-zodiac and pivoted at a point above the central portion of the latter, a globe carried by the outer end of the swinging arm, and devices operated by said gears to maintain the parallelism of the axis 85 of the globe, substantially as described.

2. In a tellurian, the combination of a base, a gear fixed to the base, a vertical pivot-pin 90 extending through the base and fixed gear and having a squared portion near its upper end, a swinging arm mounted at one end on the pivot-pin and provided with gears, one of 95 which engages said fixed gear, a calendar-zodiac composed of a horizontal disk or plate arranged above the swinging arm and having its center fitted upon the squared portion of 100 said vertical pivot-pin, devices for circularly adjusting the calendar-zodiac and locking it in a fixed position, and a pointer arranged above said calendar-zodiac, pivoted upon the 105 upper end of said vertical pivot-pin above its said squared portion and swinging with said arm, substantially as described.

3. In a tellurian, the combination of a base, a calendar-zodiac composed of a horizontal 105 disk or plate mounted at its center on the base, devices for circularly adjusting the calendar-zodiac and locking it in a fixed position, a 110 rotatable pointer pivoted between its ends at a point above the center of the calendar-zodiac, a swinging arm mounted at one end on the base and arranged below said calendar-zo- 115 diac, a globe mounted at the other end of the swinging arm, and devices carried by and moving with said swinging arm to maintain the parallelism of the axis of the globe and to vary the angle of inclination of said globe-axis, substantially as described.

4. In a device of the character described, the combination with a base, of a disk or plate 120 supported thereby, a movable arm located between the base and the disk or plate, a vertical pin extending through the base, the disk or plate and the movable arm and having a 125 cylindrical upper extremity and a squared portion directly below said extremity, said squared portion engaging the center of said disk or plate, a globe carried by the movable arm, means carried by said arm for maintain- 130 ing the parallelism of the globe's axis as such globe is moved around said disk or plate, mechanism for adjusting the globe's axis to the proper inclination, and a pointer arranged over said disk or plate, engaged with said mov-

able arm and journaled upon the cylindrical upper extremity of said vertical pin, substantially as described.

5 In a device of the character described, the combination with a base, of a disk or plate supported thereby, a movable arm located between the base and the disk or plate, a vertical pin extending through the base, the movable arm and the disk or plate and having a  
10 cylindrical upper extremity and a squared portion directly beneath the latter, which engages the center of said disk or plate, a globe carried by the movable arm, means carried by said arm for maintaining the parallelism  
15 of the globe's axis as such globe is moved around said disk or plate, mechanism for adjusting the globe's axis to the proper inclination, a pointer arranged above the disk or plate, engaged with said movable arm and  
20 journaled upon the cylindrical upper end of the said vertical pin, and a device representing the sun and attached to and moving with the said pointer, substantially as described.

6. In a device of the character described, the combination with a base, of a disk or plate supported thereby, a movable arm pivoted on the base below the disk or plate and having an upwardly-projecting portion, a globe carried by the latter, means for maintaining the  
30 parallelism of the axis of the globe, and a pointer pivoted over the said disk or plate and having one end forked to embrace the upwardly-projecting portion of said pivoted arm, substantially as described.

35 7. The combination with a globe, of a wheel, an axis for the globe, a vertically-arranged stud extending through said wheel and connected with said axis, a plate rigidly secured to the stud and carried by and laterally ad-

justable upon said wheel to vary the angle of inclination of the globe-axis, and means for locking the plate to the wheel after the plate has been laterally adjusted upon the wheel to place the globe-axis in the required position, substantially as described.

8. The combination with a globe, and an axis for the globe, of a rotatable wheel, a vertically-arranged stud extending through said wheel and connected with the globe-axis, a plate movably mounted upon said wheel and rigidly secured to the shaft to axially turn the latter, and means for holding the plate in different positions upon said wheel, substantially as described.

9. In a device of the character described, the combination with a base of an arm pivotally supported thereon, gears carried by said arm, a stud passing through one of such gears and having its end beyond such gear squared, a plate fitting over such squared end of the stud, and means for adjusting such plate and securing it to such last-named gear, substantially as and for the purpose specified.

10. In a device of the character described, the combination with a base of an arm pivotally supported thereon, a gear carried at the outer end of said arm, means for rotating said gear, a stud passing through the gear and having its end beyond said gear squared, a plate fitting over such squared end, and having a curved slot in it registering with a hole in the face of the gear, and a screw passing through such slot into said hole, substantially as and for the purpose specified.

THOMAS H. COSTELLO.

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