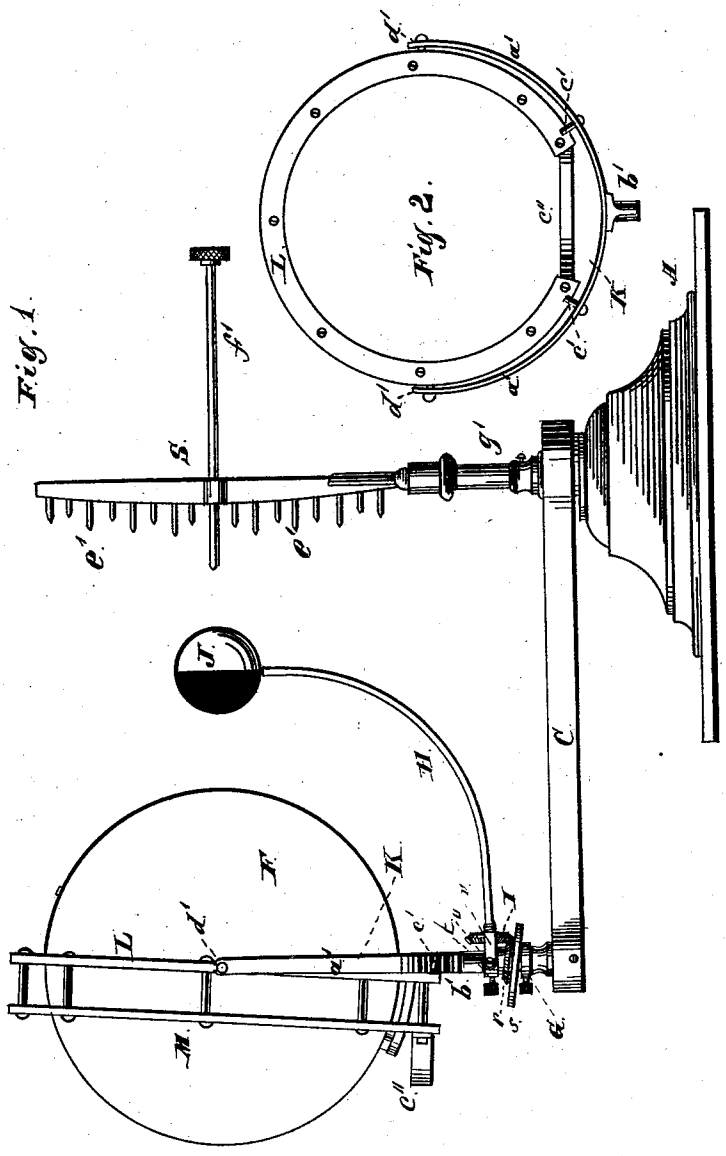
(No Model.) 3 Sheets—Sheet 1

T. H. COSTELLO.

TELLURIAN.

No. 255,491. Patented Mar. 28, 1882.



Witnesses:
Albert H. Adams,
Edgar T. Bond

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(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

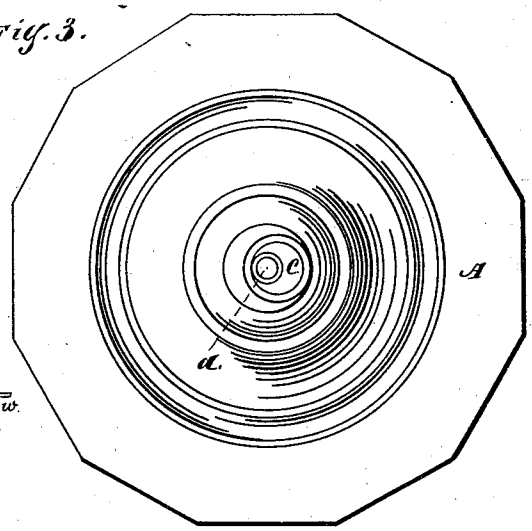


Fig. 5.

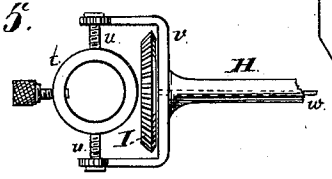


Fig. 6.

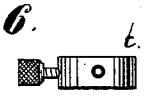


Fig. 4.

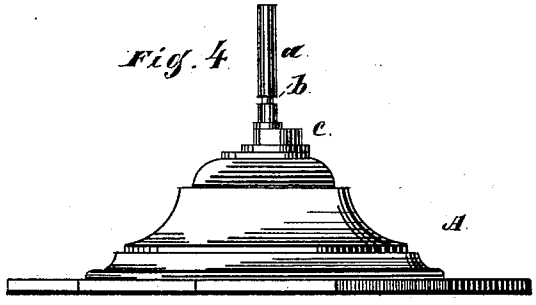


Fig. 7.

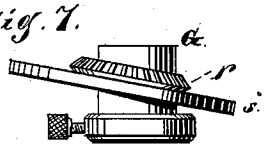
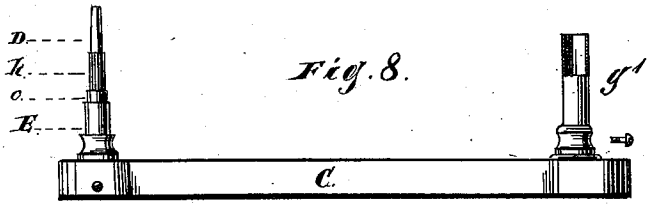


Fig. 8.



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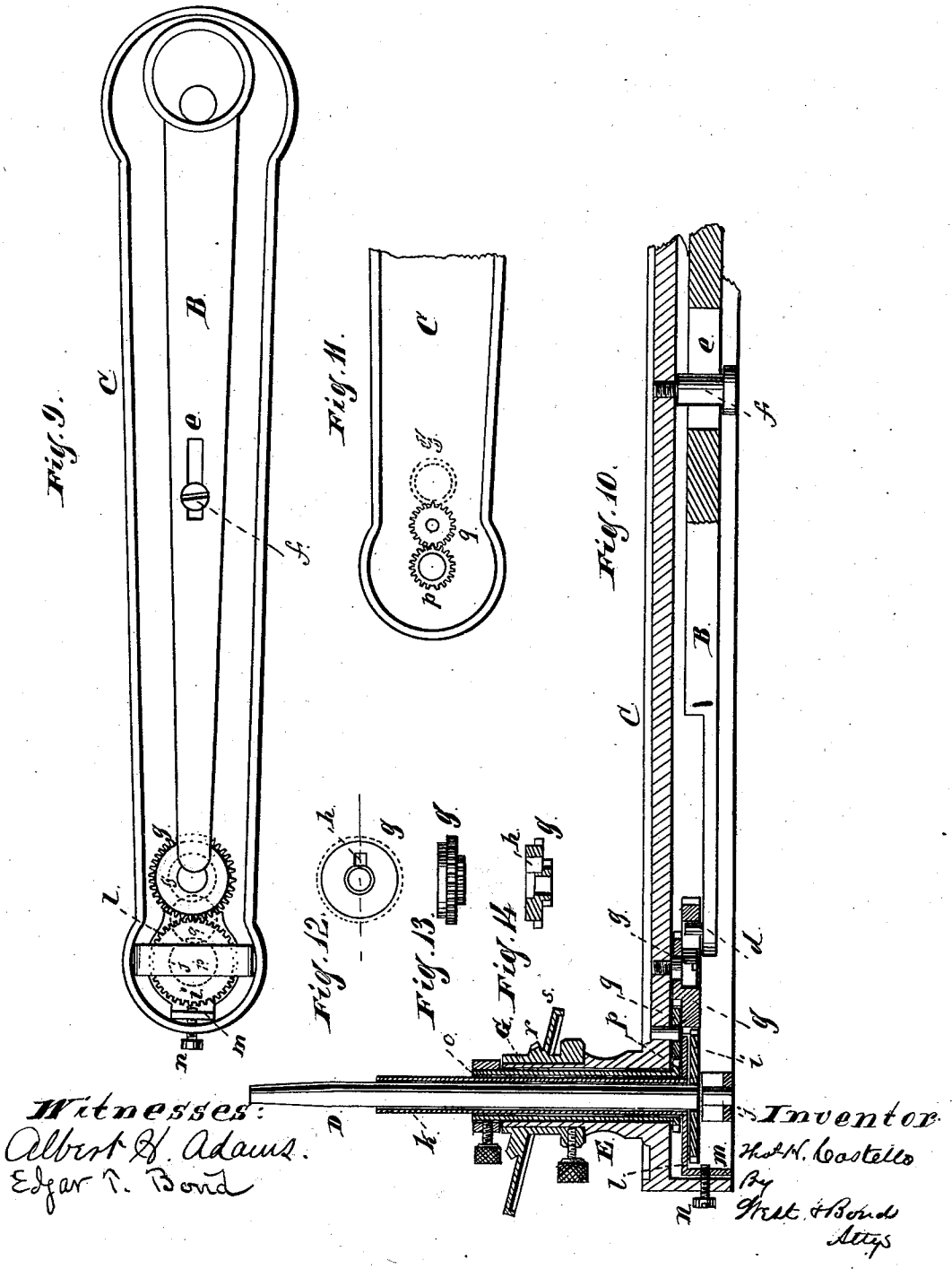
N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 3 Sheets—Sheet 3.

T. H. COSTELLO.

TELLURIAN.

No. 255,491. Patented Mar. 28, 1882.



N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

THOMAS H. COSTELLO, OF CHICAGO, ILLINOIS, ASSIGNOR TO A. H. ANDREWS & CO., OF SAME PLACE.

TELLURIAN.

SPECIFICATION forming part of Letters Patent No. 255,491, dated March 28, 1882.

Application filed March 14, 1881. (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, and a citizen of the United States, have invented new and useful Improvements in Tellurians, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation; Fig. 2, a detail reduced in size; Fig. 3, a top view of the base; Fig. 4, a side view of the base; Figs. 5, 6, and 7, details of the principal devices for supporting and rotating the moon; Fig. 8, a side view of the parts shown; Fig. 9, an under side view of the parts shown; Fig. 10, a vertical longitudinal section of the parts shown; Figs. 11, 12, 13, and 14, details. Fig. 1 is on a scale of about four inches to a foot. Figs. 9 to 14 are enlarged, Fig. 10 being enlarged more than the other figures.

My improvements relate to devices for rotating around the globe a ball which represents the moon, illustrating its phases and positions, which devices are a curved rod, on one end of which is the moon ball and on the other end a bevel-wheel engaging with a fixed bevel-wheel on a shaft beneath the globe, said rod being supported on a revolving sleeve by means of a collar and yoke; and to devices for holding the horizon and twilight circles in place, which consist of a removable curved support having slotted ends to receive pins connected to the circle, said support also being provided with pins to limit the movement of the circles.

The invention embraces other features, all of which will be fully described hereinafter in detail, and afterward the improvements will be pointed out in the claims.

In the drawings, A represents a suitable base, divided into twelve parts. *a* is a shaft secured to such base. *b* is a groove in such shaft. *c* is an eccentric cast upon the top of the base A.

C is the main arm, which rotates on the shaft *a*. This arm is held in place by means of a screw, which enters the groove *b*.

B is a reciprocating bar and oscillating lever, one end of which has a ring, which encircles the eccentric *c*, and in the other end is a pin, *d*. This bar has a slot, *e*, at or near the center, and it is held in place upon the under side of C by the screw or bolt *f*, which passes through such slot *e*.

g is a gear-wheel pivoted to the under side of C. In it is a slot, *h*, Fig. 12, to receive the pin *d*. The upper part of such wheel *g* is less in diameter than the lower part, and each part is provided with cogs.

i is another cog-wheel, engaging with the lower part of the wheel *g*, and to this wheel *i* the shaft D is permanently secured. The lower end of this shaft D rests, as shown, on a stud secured to a cross-bar, *j*, attached to the side flanges of the arms C.

k is a fixed sleeve surrounding the shaft D. Its lower end is secured to a plate, *l*, through which D passes, which plate has a flange, *m*.

n is a screw passing through a flange on the arm C and through the flange *m* on the plate *l*, which holds the plate in position and prevents the rotation of the sleeve *k*.

o is a rotating sleeve surrounding the sleeve *k*. On the lower end of this sleeve is a cog-wheel, *p*.

q is an intermediate cog-wheel, which engages with the wheel *p*, and also with the cogs on the upper part of the wheel *g*.

E is a fixed hub or hollow standard projecting up from the arm C.

F is a globe upon the shaft D.

G is a sleeve, to which is secured in an inclined position a bevel cog-wheel, *r*, beneath which is a disk, *s*. The sleeve G is secured to the upper part of the standard E by means of a set-screw.

t is a collar secured to the upper end of the sleeve *o* by set-screws.

u u are pins or screws secured upon opposite sides of the collar *t*.

v is a yoke pivoted upon the pins *u u*.

H is a curved tube, the lower end of which is secured to the yoke *v*.

I is a bevel cog-wheel located within the yoke *v*, to which wheel is secured a small wire or rod, *w*, which passes through a hole in the cross-bar of the yoke *v* and through the tube H.

J is a ball secured to the upper end of the wire *w*, representing the moon.

K is a support for the horizon-circle L. This

support consists of two curved arms, a', having a slot in the upper end of each and a socket, b', to fit over the upper end of the fixed sleeve k. Upon the outside of each arm of the support K is a pin, c', to limit the movement of the circle L.

M is a twilight-circle, connected to the circle L, as usual. These two circles are not complete, but each has an opening, as usual, for the passage of the inclined plate on which the globe is mounted. The two ends of the twilight-circle are connected by a curved bar, c''. The horizon-circle has a pin, d', on each side, which pins enter the slots in the support K.

S represents the sun. Its front is the arc of a circle of proper size to represent the size of the sun relatively to the globe F.

e' represents the sun's rays.

f' is a sliding pointer.

S is supported upon a sleeve, g', secured to the inner end of the arm C, which sleeve rotates upon the standard a.

In use, supposing the parts to be mounted as shown in Fig. 1, if the arm C be rotated, the arm B will be given a reciprocating movement by means of the ring upon its inner end, which moves around the eccentric c, and motion will be communicated to the wheel g, which will rotate the wheel i and shaft D, which carries the earth. At the same time, by means of the upper part of the wheel g and the wheel q, the sleeve o, upon which the moon is mounted, will rotate and carry the yoke v and tube H with it, and the wheel I, being engaged with the fixed bevel-gear r, will rotate, causing the wire w and the moon J, which is secured to such wire, to rotate.

By mounting the horizon and twilight circles in the manner described I dispense with tightening-screws to hold the same in position, and the circles can be easily removed and replaced.

The tube H serves the purpose of a support for the wire which carries the moon. It might be supported by means of eyes secured to a curved wire or rod of sufficient strength.

By loosening the screw which secures the sleeve G in place and turning the plate s, which is secured to such sleeve, the sleeve and inclined gear r can be brought to any desired position.

With this tellurian a great variety of illustrations can be made. In illustrating the changes of the seasons the earth must be supposed to revolve around the sun in one year. In illustrating the rising and setting of the sun and day and night the earth may be revolved by hand on its axis. In illustrating the phases of the moon it must be supposed to rotate around the earth in four weeks. By means of the inclined gear r the varying inclinations of the moon's orbit can be illustrated.

The proper methods of using this tellurian will be apparent to those accustomed to use similar devices.

If the pin upon the outer end of the bar B entered a round hole in the wheel g, great accuracy would be necessary as to the position of the pin; but by providing the slot h in such wheel g to receive such pin, if there is considerable variation in the position of this pin, it will not be material, the slot allowing therefor. The bar B is prevented from having lateral movement at the center by the bolt or screw f, and thereby the end of the lever is certain to be readily thrown past the center. The pin upon this bar fits closely in the slot h one way.

As this tellurian is constructed the horizon-circle does not interfere with the use of the moon.

The devices for rotating the moon are such that it will present the same side to the sun at all times. One half of the moon may be white and the other half dark, the white portion being that which is always toward the sun.

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

1. A curved wire or rod, w, carrying a ball, J, to represent the moon, and provided with a bevel-wheel, I, in combination with a bevel-gear, r, supported beneath the globe, for the purpose of keeping the illuminated side of the moon constantly toward the sun, substantially as specified.

2. A curved wire or rod, w, carrying a ball to represent the moon, and provided with a cog-wheel, I, a yoke, v, and collar t, in combination with a bevel-gear, r, and sleeve o, substantially as and for the purpose specified.

3. The yoke or support K, having its ends slotted and provided with a socket, by which it can be mounted on a fixed standard, within which the shaft which supports the earth rotates, in combination with a horizon-circle, L, provided with pins d' to enter the slots in the ends of the yoke K, substantially as and for the purposes specified.

4. The yoke or support K, provided with slots at its ends, a socket, b', for connecting the same to its standard, and pins c' for the purpose of receiving and holding in position the horizon-circle L, substantially as specified.

5. The sleeve k, provided with a plate having a flange, m, to receive a screw or pin for the purpose of holding such sleeve in a fixed position, in combination with an arm, C, and shaft D to receive the globe F, substantially as specified.

6. The reciprocating bar B, supported by a screw or bolt, f, passing through a slot, e, in the bar, in combination with a wheel provided with a slot, h, to receive a pin on such bar B, substantially as and for the purpose specified.

THOMAS H. COSTELLO.

Witnesses:
E. A. WEST,
B. A. PRICE.