

(No Model.)

3 Sheets—Sheet 1.

W. G. & H. L. SHORT.

TELLURIAN.

No. 311,264.

Patented Jan. 27, 1885.

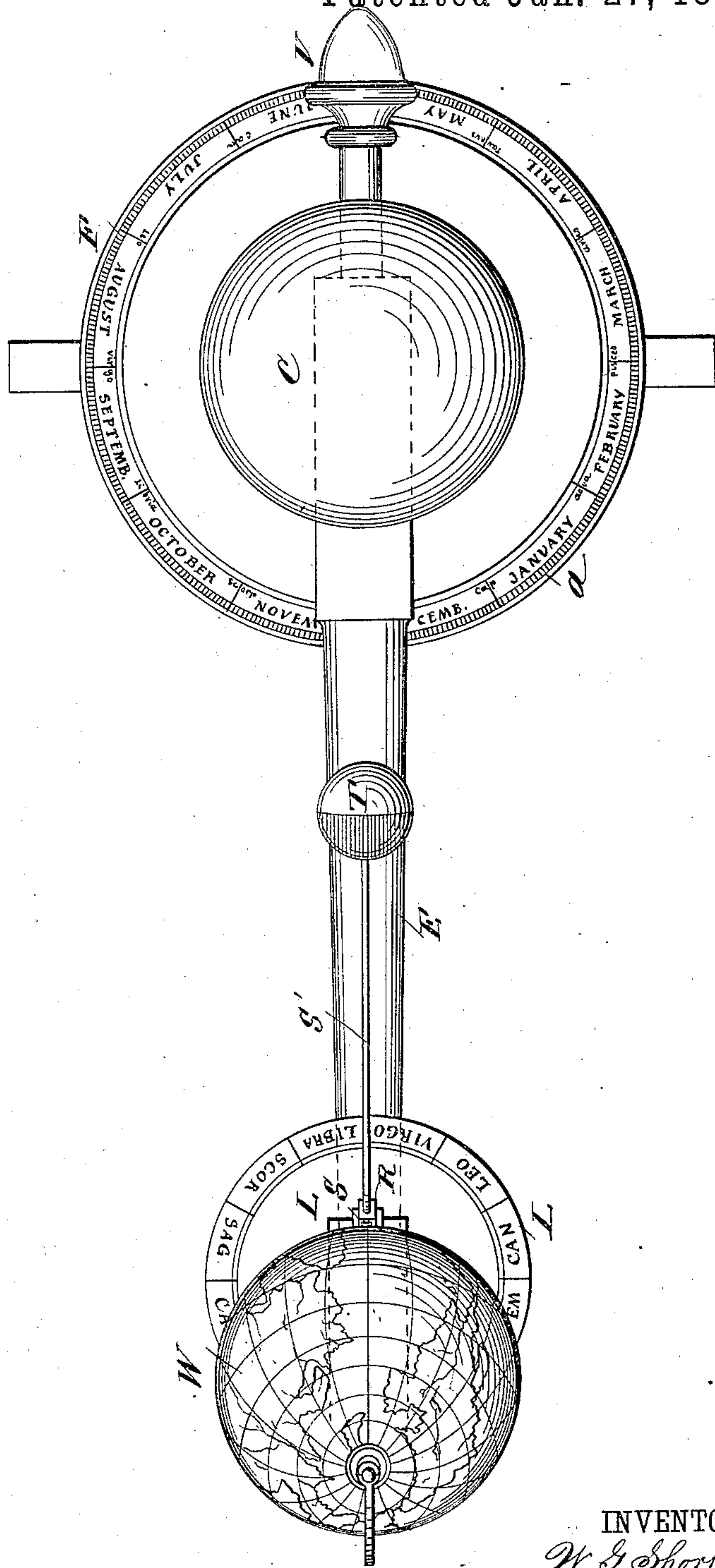


Fig. 1

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ATTORNEYS.

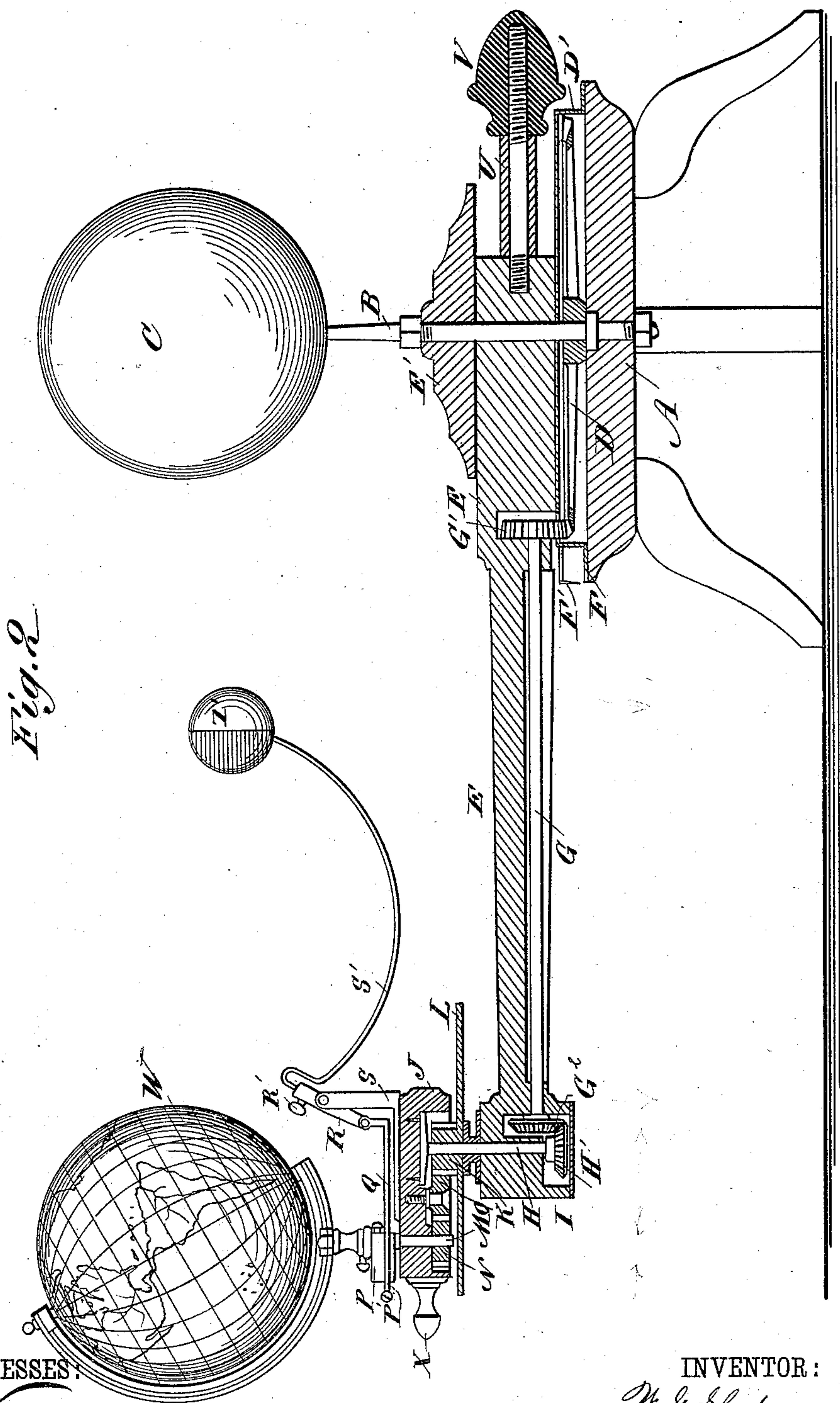
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Fig. 3

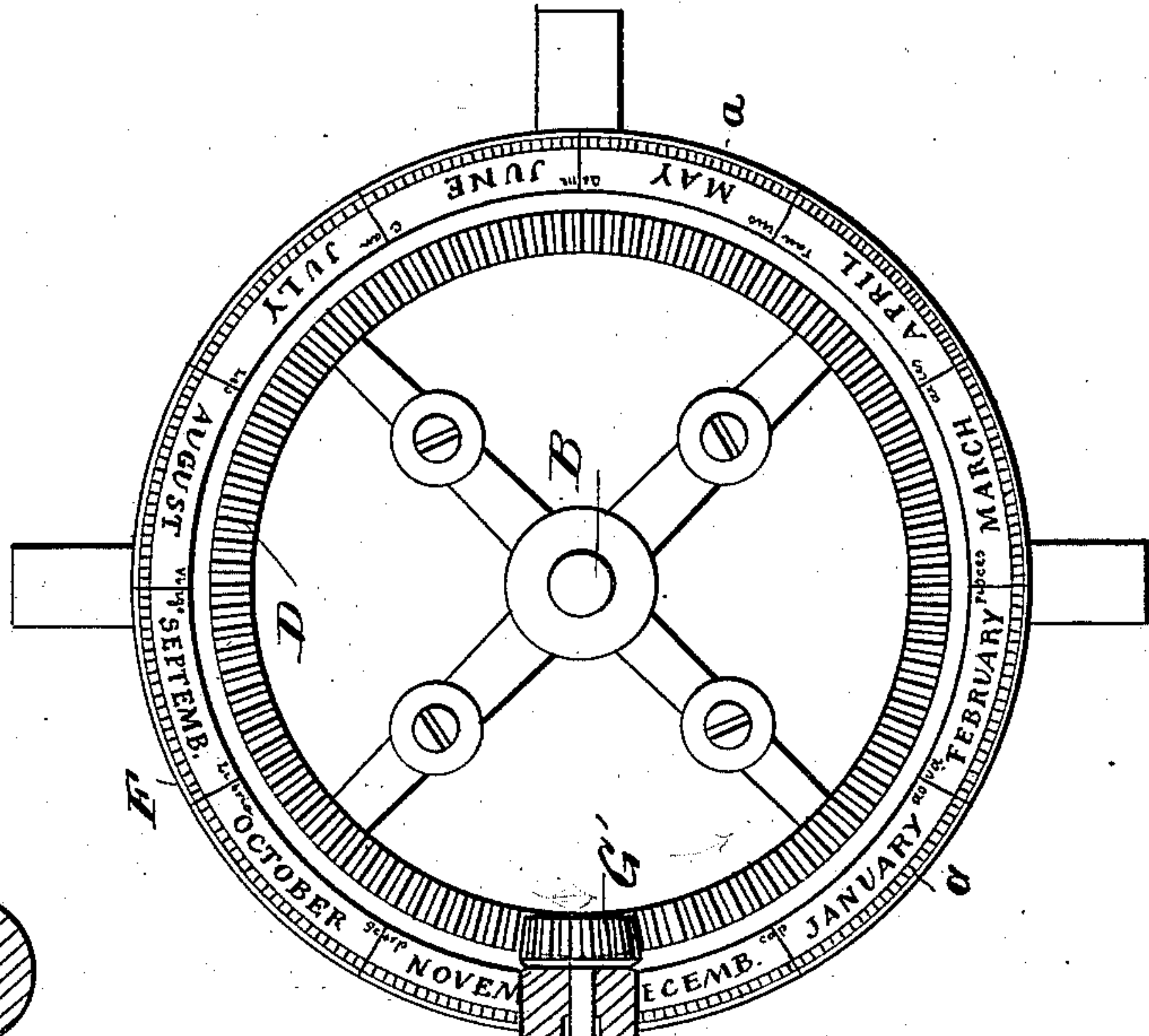
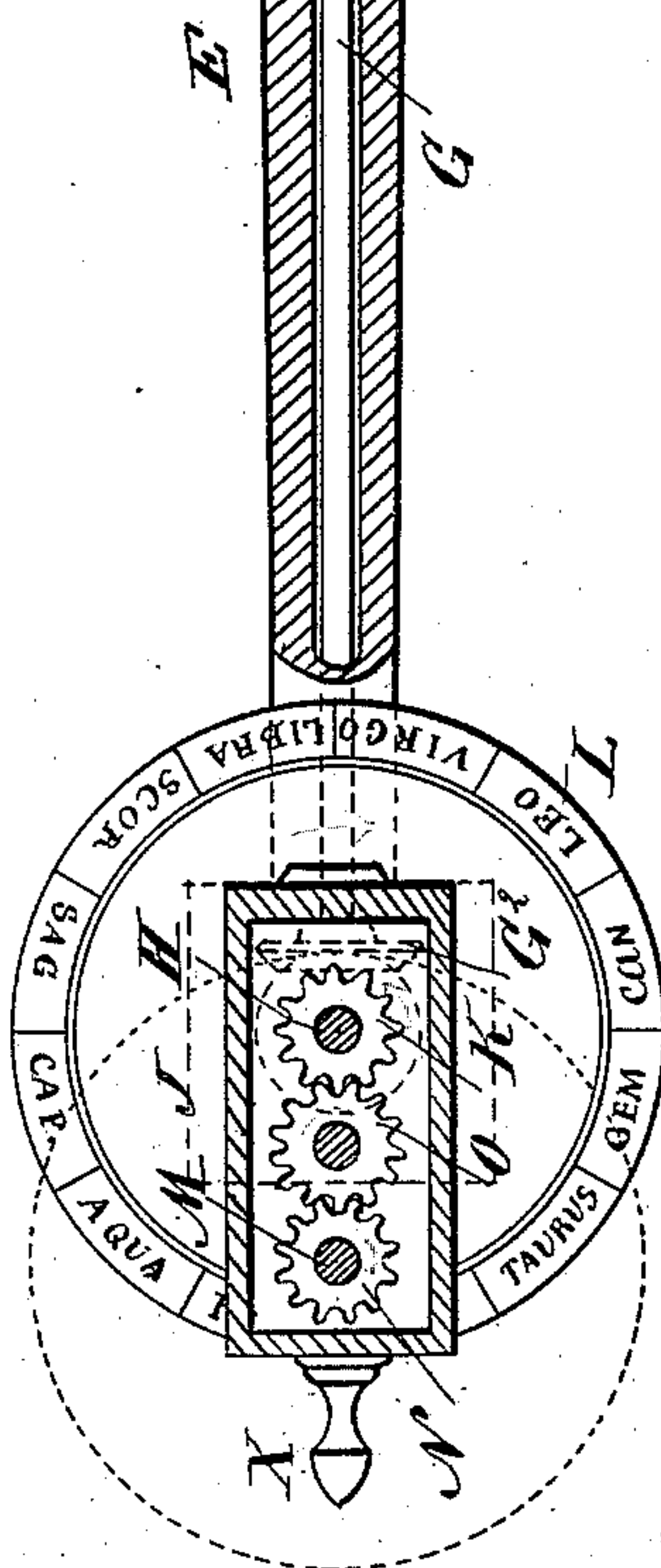
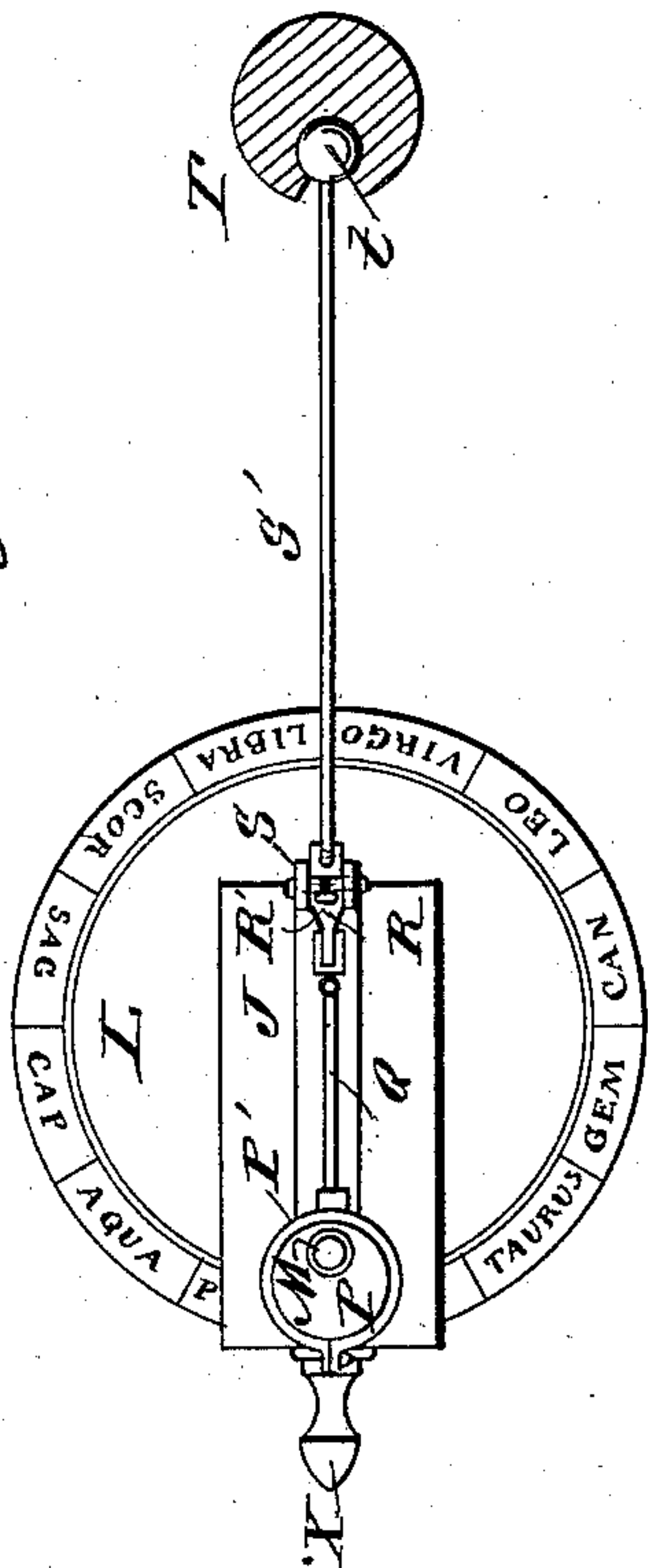


Fig. 4



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UNITED STATES PATENT OFFICE.

WILLIAM G. SHORT AND HENRY L. SHORT, OF LARUE, OHIO.

TELLURIAN.

SPECIFICATION forming part of Letters Patent No. 311,264, dated January 27, 1885.

Application filed June 19, 1884. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM G. SHORT and HENRY L. SHORT, both of Larue, in the county of Marion and State of Ohio, have invented a new and Improved Tellurian, of which the following is a full, clear, and exact description.

The object of our invention is to provide a new and improved tellurian, which is simple in construction and shows clearly the different relative positions of the sun, earth, and moon in the different seasons.

The invention consists in a tellurian constructed with a base or other suitable support provided with an upright shaft, on the upper end of which a ball representing the sun is held, on which shaft an arm is held to turn, in the free end of which arm a vertical shaft is journaled, which is provided at its lower end with a cog-wheel which engages with a cog-wheel on the outer end of a longitudinal shaft journaled in the arm revolving on the shaft on the base. In the upper end of the said vertical shaft another arm is held, in the free end of which a globe-holding frame is held, to be revolved by suitable gearing from the vertical shaft. On the inner end of the said arm on the vertical shaft a rocking lever is pivoted which is adapted to be operated by means of an eccentric disk and connecting-rod from the shaft of the globe-holding frame, and on which rocking lever a curved rod or wire is held, on the free end of which a ball is held, which represents the moon.

The invention also consists in various parts and details and combinations of the same.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of our improved tellurian. Fig. 2 is a longitudinal sectional elevation of the same. Fig. 3 is a plan view, parts being broken out and shown in section, and others being removed. Fig. 4 is a plan view of the revolving plate carrying the earth and holding the moon.

From a base, A, provided with suitable legs or supports, a spindle or shaft, B, projects upward, on the upper end of which is mounted a ball, C, which is to represent the sun, and is preferably gilt or painted yellow.

On the top of the base A a circular rack, D, is rigidly held, the spindle B passing through the center of the said rack, and over the said rack a sheet-metal casing, D', is arranged, which is held on the under side of one end of an arm, E, mounted to turn on the spindle B. An ornamental top plate, E', is secured on the top of the arm. The casing D' revolves over the fixed circular rack D with the arm E.

Around the rim of the casing D' a ring, F, is secured on the upper surface of the base A, which ring is divided into twelve sections, a, provided successively with the names of the months, each section a being divided into as many parts as there are days in the corresponding month. A pointer or tongue, F', projects from the casing D' over the ring F.

In a groove in the bottom edge of the arm E a shaft, G, is journaled, which is provided at one end with a cog-wheel, G', engaging with the circular rack D, and at the opposite end with a bevel cog-wheel, G'', engaging with a bevel cog-wheel, H', rigidly mounted on the lower end of a vertical shaft, H, journaled in a head, I, formed on the free end of the arm E.

On the upper end of the shaft H an arm, J, is rigidly mounted in such a manner as to turn with the said shaft H.

Below the arm J a cog-wheel, K, is rigidly mounted on the upper end of the shaft H, and the said cog-wheel is united at the bottom surface with a disk, L, divided into twelve parts, bearing the signs of the zodiac.

In the free end of the arm J a short shaft, M, is mounted to turn, on the lower end of which shaft M is rigidly mounted a cog-wheel, N, which engages with an intermediate cog-wheel, O, also engaging with the cog-wheel K.

On the upper end of the shaft M a disk, P, is mounted eccentrically, which is surrounded by a strap, P', connected by a connecting-rod, Q, with the lower end of a lever, R, pivoted in the forked upper end of a standard, S, secured on the arm J, in the upper end of which lever R a binding-screw, R', is tapped, for holding in the upper end of the lever R one end of a curved wire, S', on the free end of which a ball, t, is fastened, which ball t is held within a socket in a larger ball, T, representing the moon, the opening of the socket being flared toward the outer surface of the ball T, so as to give the ball T some play on the end

of the wire S'. A terrestrial globe, W, of some suitable construction, is held on the upper end of the shaft M in such a manner as to revolve with the same. From the pivoted end of the arm E an arm, U, projects, on the free end of which a counterbalancing-weight, V, is held, and on the swinging end of the arm J is an ornamental knob or handle, X. If the arm E is turned on the central fixed shaft, B, the shaft G will be revolved, as its cog-wheel G' is engaged with the fixed rack D on the base A, and thereby the cog-wheel G² will be revolved, which in turn revolves the cog-wheel H' and the shaft H, on which it is mounted, and the shaft H also revolves the arm J, held on its upper end.

By means of the intermediate cog-wheel, O, the cog-wheel N on the lower end of the shaft M is revolved from the cog-wheel K on the upper end of the shaft H, and thereby the disk P, carrying the globe W, will be revolved, thus causing the globe-standard to be revolved in the free end of the arm J. For every revolution of the globe the lower end of the lever R is swung toward and from the standard S, whereby the ball T, representing the moon, will be moved up and down, so as to have different positions in relation to the equator of the globe W, as the ball T, representing the moon, revolves around the globe W.

The above-described apparatus shows the movements of the earth and moon around the sun, the relation existing between the earth and the moon, and the movement of the earth in its annual orbit in a way corresponding to that of nature. It shows the earth and moon revolving around the center of gravity between them while moving in their annual courses; illustrates the causes that produce day and night. It shows why there is a diversity of seasons; shows the position of the earth in its annual orbit for each month of the year. It shows the position of the earth for each day of the year; represents the zodiac as passed through in a solar revolution; demonstrates the zodiac as passed through in a lunar revolution; shows why the days and nights vary in length; shows six months day and six months night at the pole; shows that the earth's axis always has the same inclination in both the solar and lunar revolutions. It shows why the Tropic of Cancer is situated twenty-three and one-half degrees north of the equator; shows why the Tropic of Capricorn is twenty-three and one-half degrees south of the equator. It shows why the Arctic circles are twenty-three and one-half degrees from the poles. It shows the earth crossing the vernal and autumnal equinoxes; shows it passing through the summer and winter solstices; shows the moon traveling in an orbit properly inclined to the ecliptic; shows the moon's orbit to be an ellipse with the earth in one focus; shows the moon in apogee and perigee. It accounts for the tide on that side of the earth next the moon by attraction. It

accounts for the tide on that side of the earth opposite the moon by centrifugal force. It shows the moon in its different phases. It shows the moon running high in winter and low in summer in both the northern and southern hemispheres. It shows why the sun is eclipsed; shows why the moon is eclipsed, and it accounts for the moon's nightly variations in altitude.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a tellurian, the combination, with a suitable base or support, of an arm, E, held to turn on the same, a vertical shaft in the end of the arm, an arm, J, mounted on the vertical shaft, a globe held on one end of the arm J, and a rocking lever held on the opposite end of the arm J, in which rocking lever a wire is secured, on the free end of which a ball representing the moon is held, substantially as herein shown and described.

2. In a tellurian, the combination, with a base, of the arm E, held to turn on the same, the subdivided ring F on the base A, the vertical shaft H, journaled in the end of the arm E, the arm J, mounted on the upper end of the shaft H, and a subdivided disk or plate, L, held on the upper end of the shaft H and below the arm J, substantially as herein shown and described.

3. In a tellurian, the combination, with the base A, and a circular rack secured on the same, of an arm held to turn on a shaft on the base, a shaft journaled longitudinally in the arm, and provided at one end with a cog-wheel engaging with the circular rack, a vertical shaft journaled in the free end of the arm, and provided with a cog-wheel, with which a cog-wheel on the outer end of the longitudinal shaft engages, an arm mounted on the upper end of the vertical shaft, the cog-wheel K, mounted on the upper end of the said vertical shaft, an intermediate cog-wheel, O, and the cog-wheel N, mounted on the lower end of a vertical shaft, M, in the free end of the arm J, and on this vertical shaft M a frame holding a globe is mounted, substantially as herein shown and described.

4. In a tellurian, the combination, with a base, of an arm mounted to turn on a vertical shaft on the base, a vertical shaft journaled in the free end of the arm, gearing for revolving the said shaft, an arm on the upper end of the vertical shaft, a globe-holding frame mounted on the free end of the said arm and adapted to be revolved from the vertical shaft, a rocking lever pivoted on that end of the arm opposite the one on which the globe-holding frame is held, means for rocking the lever from the shaft of the globe-frame, and of a curved rod or wire, on the free end of which a ball representing the moon is held, substantially as herein shown and described.

5. In a tellurian, the combination, with the arm J of the shaft M, of the globe-holding

frame, the disk P, mounted eccentrically on the shaft M, the strap P', surrounding the disk P, the standard S, the lever R, pivoted in the same, the rod Q, connecting the ring P' with
5 the lever R, a curved rod or wire held in the upper end of the lever R, and a ball representing the moon held on the free end of the said curved rod or wire, substantially as herein shown and described.

10 6. In a tellurian, the combination, with an arm mounted on a revolving shaft, of a globe-holding frame held in the free end of the arm, a rocking lever pivoted on the opposite end of the arm, an eccentric disk and rod for oper-
15 ating the rocking lever from the globe-holding frame, a curved rod or wire held in the rocking lever, and a ball representing the moon held on the free end of the wire, substantially as herein shown and described.

7. In a tellurian, the combination, with an 20 arm mounted on a revolving shaft, of a globe-holding frame held on the free end of the arm, a rocking lever pivoted on the opposite end of the arm, an eccentric disk and rod for operating the rocking lever from the globe- 25 holding frame, a curved rod or wire held in the rocking lever, a ball, *t*, held on the free end of the rod or wire, and the ball T, provided with a socket for receiving and holding the ball *t*, substantially as herein shown and de- 30 scribed.

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HENRY L. SHORT.

Witnesses:

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