March 6, 1951 H. M. VANDERHIDER 2,544,057

TELLURIAN

Filed July 7, 1948 5 Sheets-Sheet 1

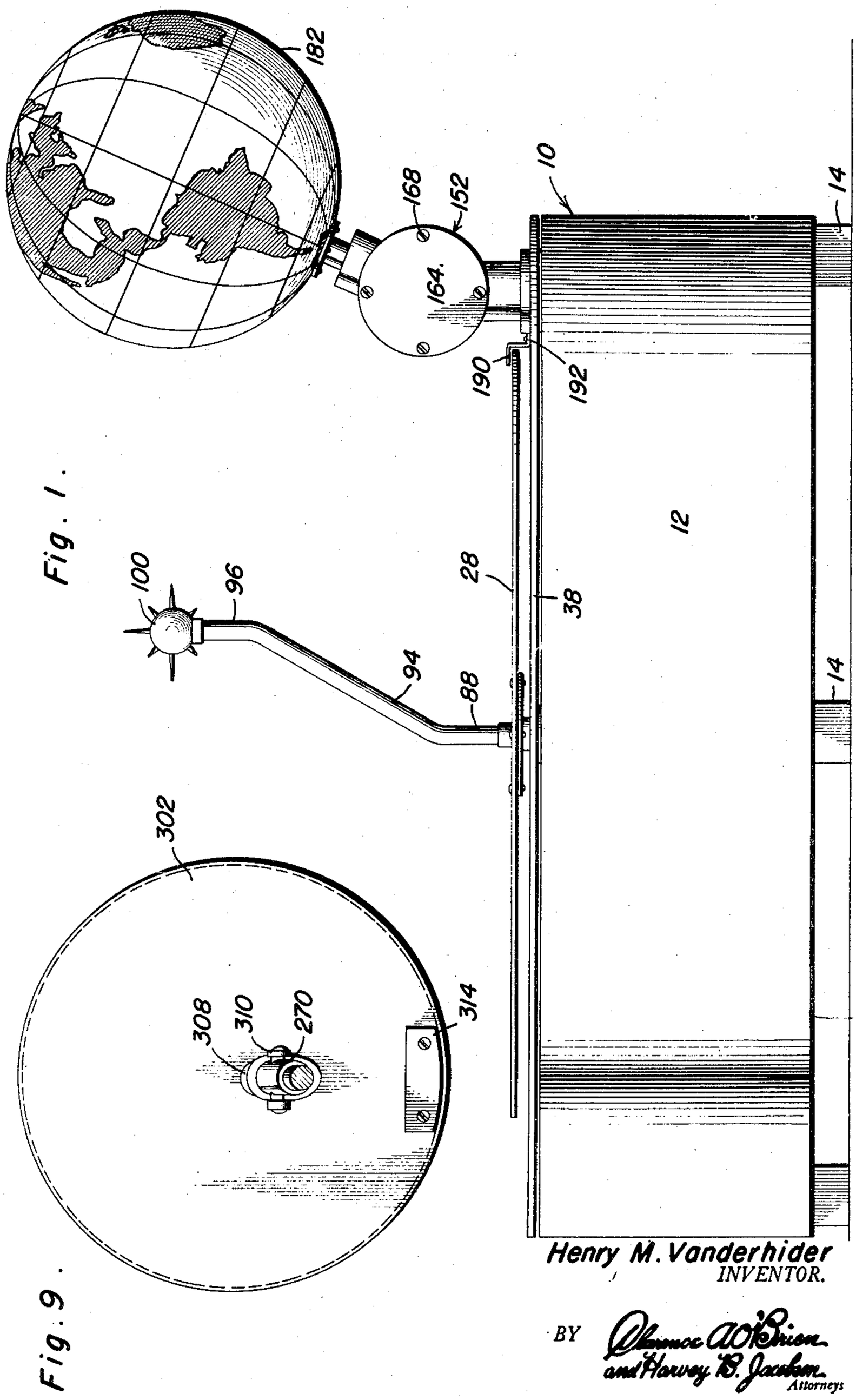

Fig. 1.

Fig. 9.

Henry M. Vanderhider
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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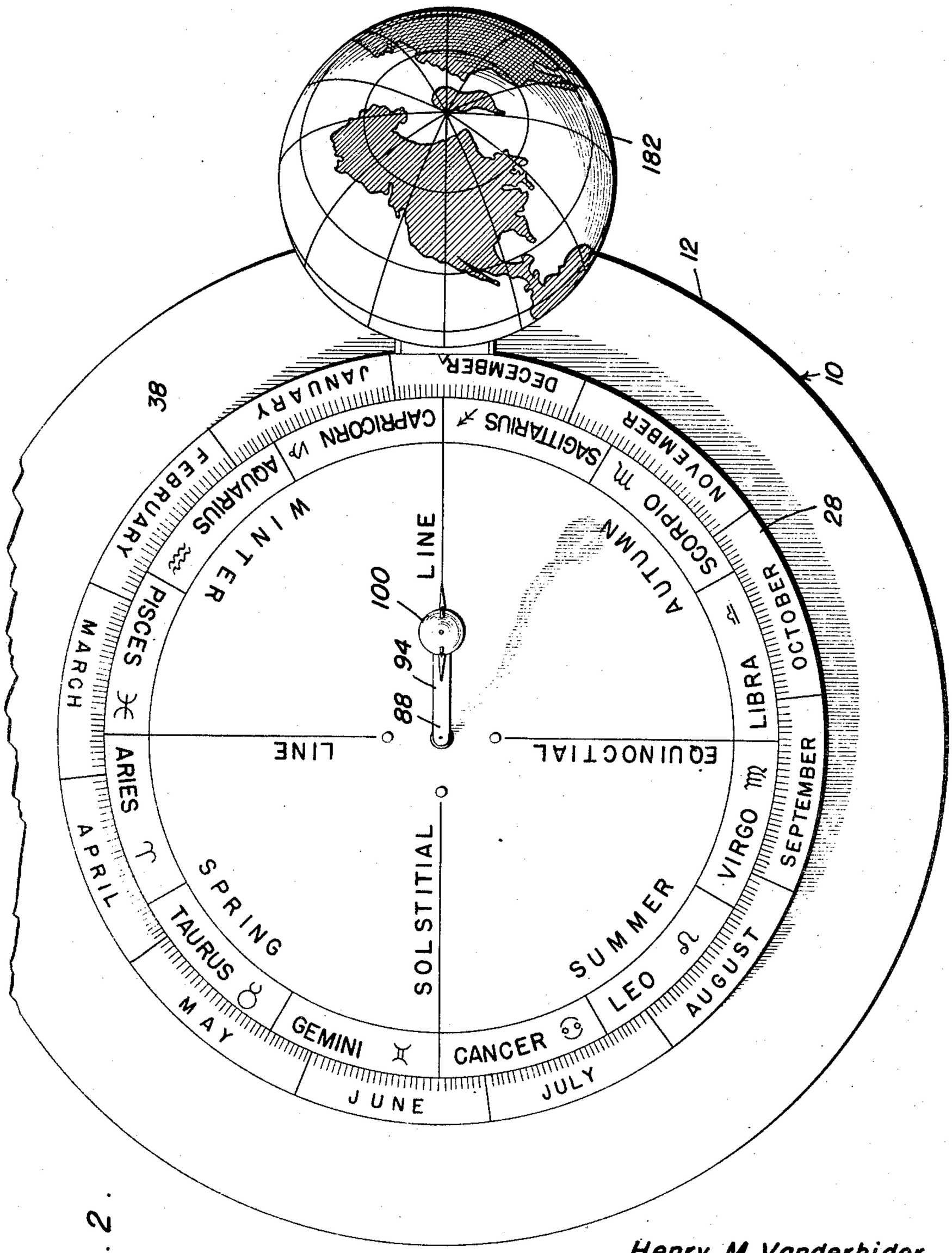

Fig. 2.

Henry M. Vanderhider
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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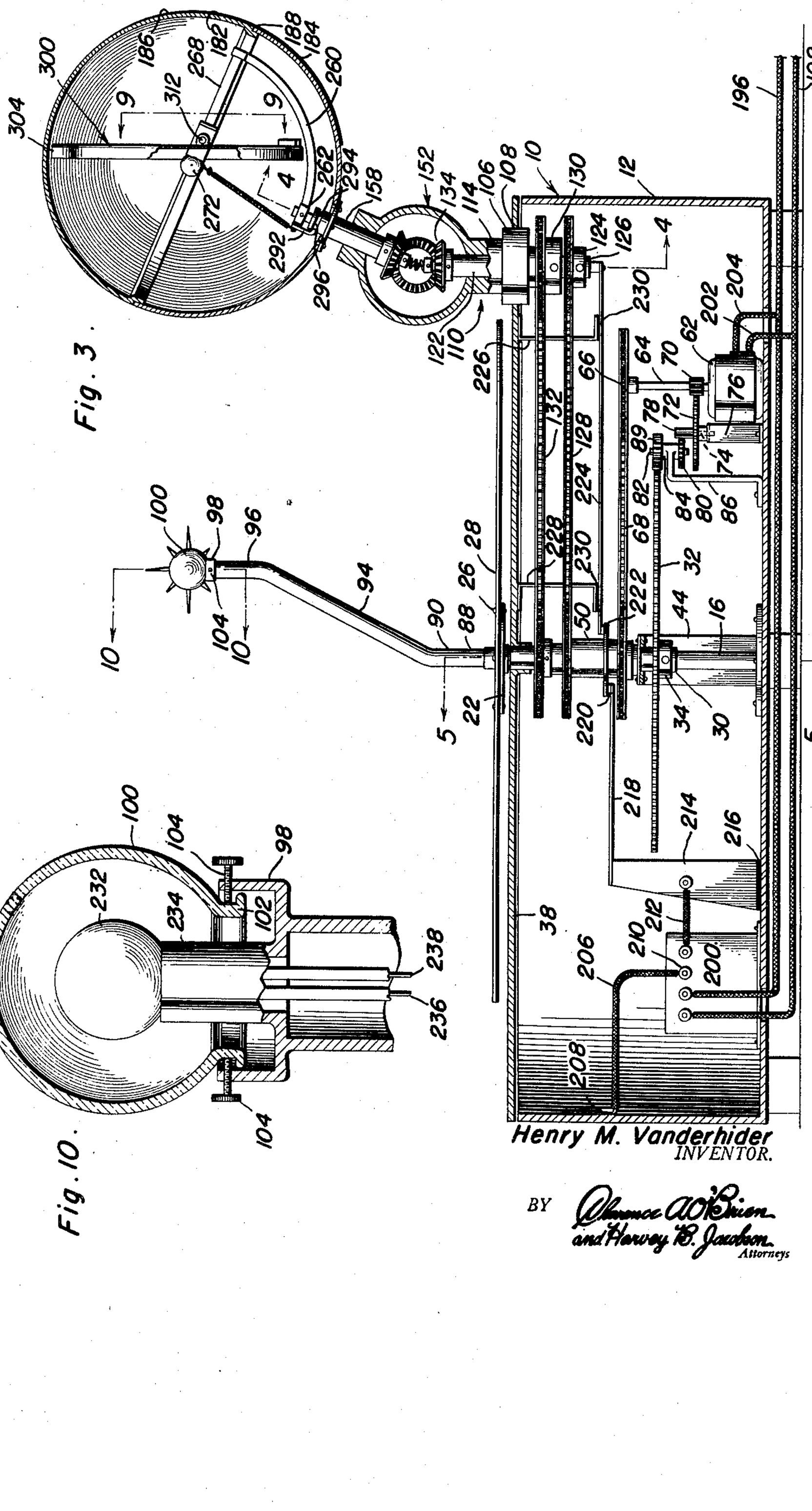

Fig. 3.

Fig. 10.

Henry M. Vanderhider
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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Fig. 4.

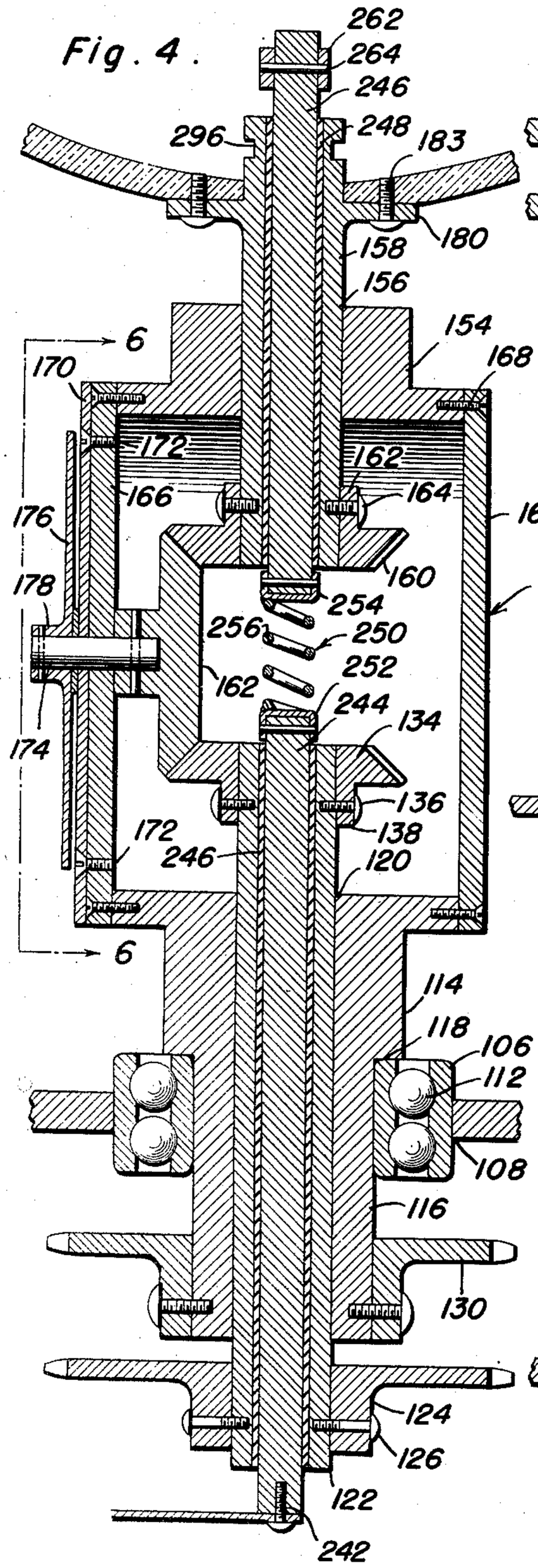
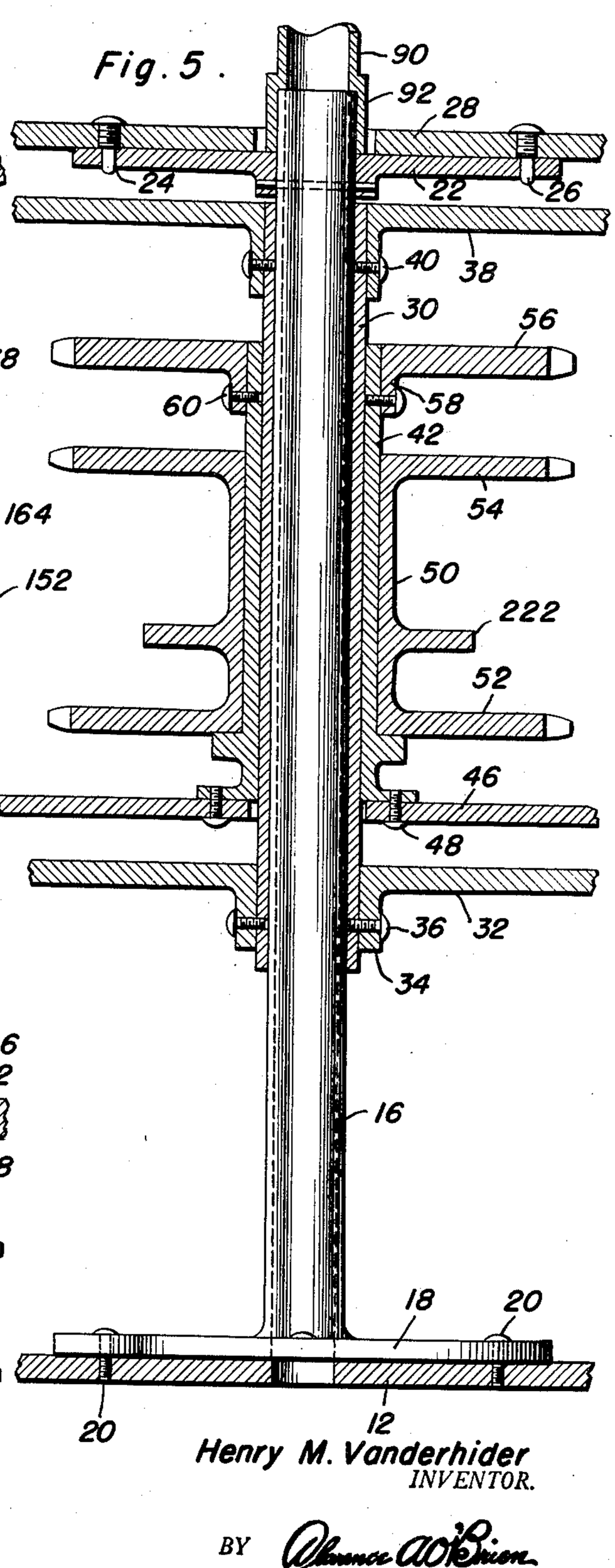


Fig. 5.



Henry M. Vanderhider
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

March 6, 1951 H. M. VANDERHIDER 2,544,057

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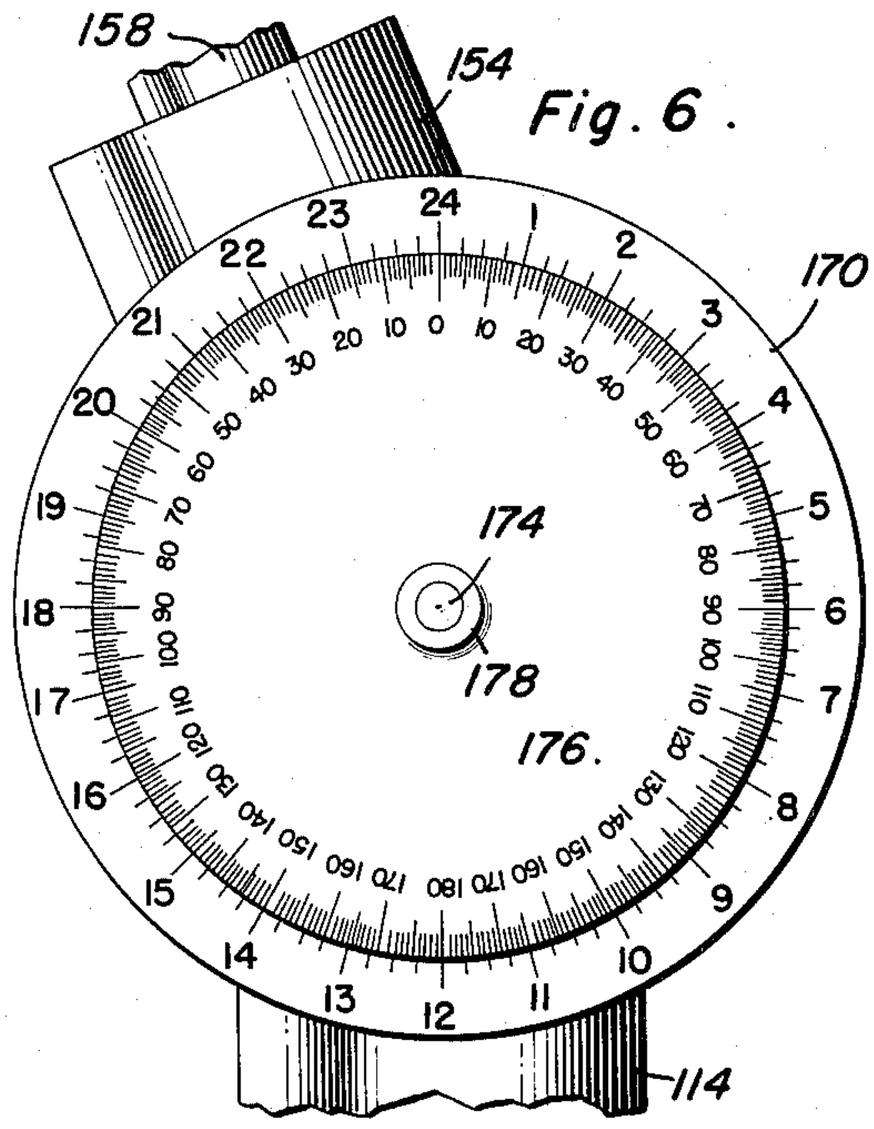

Fig. 6.

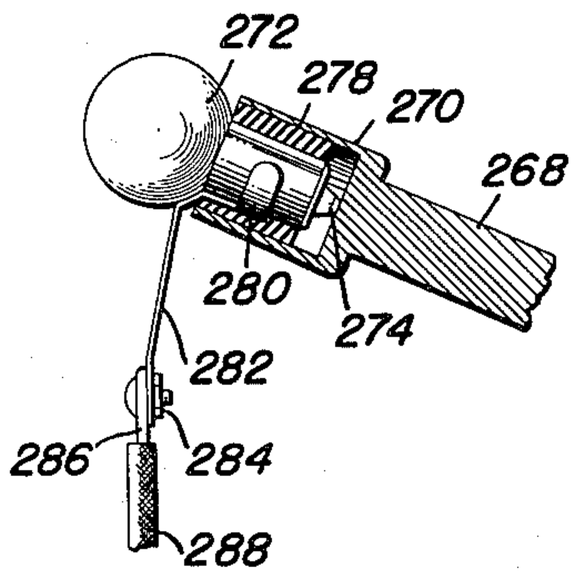

Fig. 7.

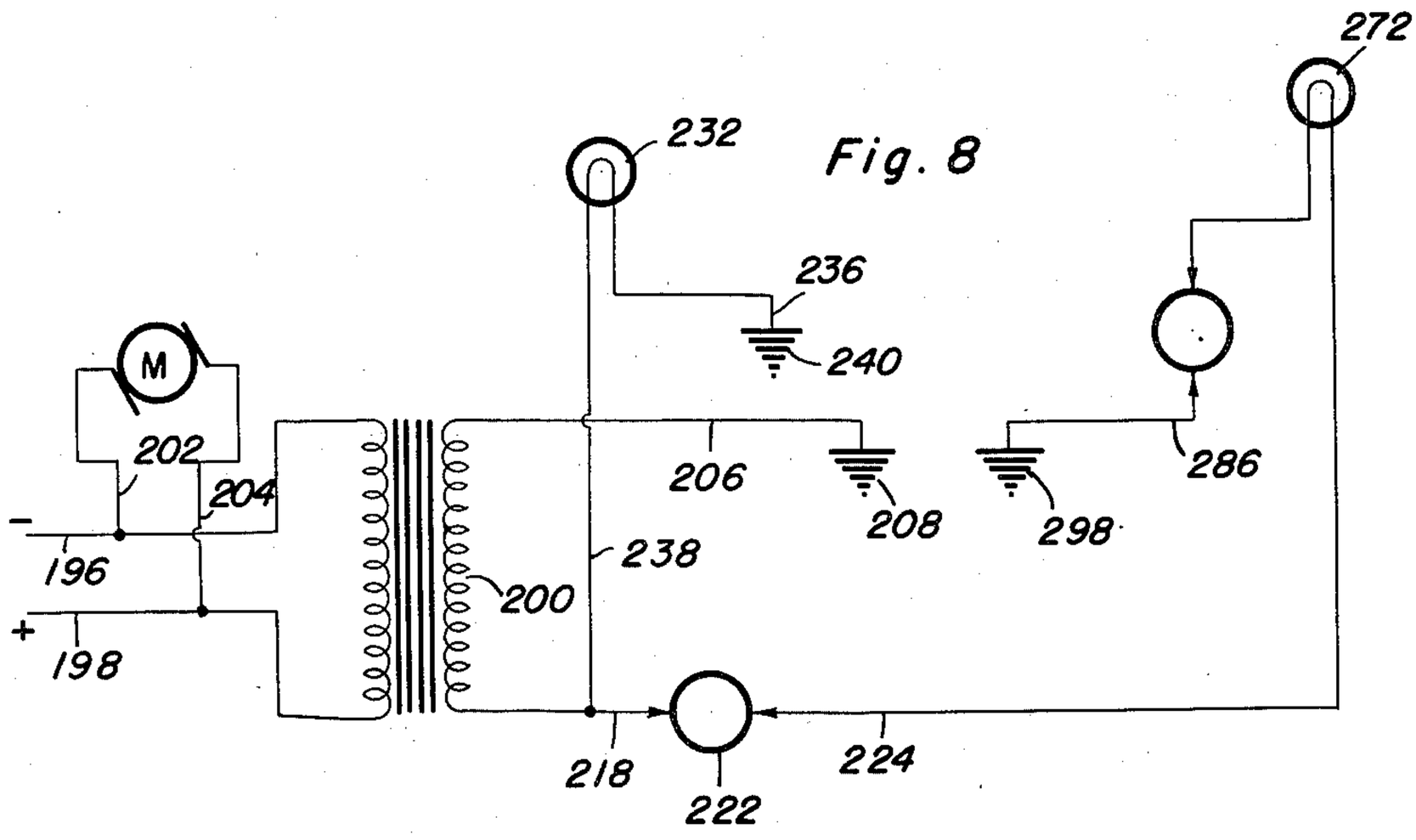

Fig. 8

Henry M. Vanderhider
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

Patented Mar. 6, 1951 2,544,057

UNITED STATES PATENT OFFICE

2,544,057

TELLURIAN

Henry M. Vanderhider, South San Antonio, Tex., assignor of fifty per cent to Johnie O. Pierce, Brownsville, Tex.

Application July 7, 1948, Serial No. 37,439

12 Claims. (Cl. 35—45)

1

My present invention relates to novel and useful improvements in a mechanical structure for reproducing in an accurate and scientific manner the relative movements of and the relationship between the earth and the sun and other solar bodies and constitutes an improvement over my prior Patent No. 1,814,984, issued on July 14, 1931. More particularly, it is my primary aim and purpose in this application to simplify and reduce to an essential minimum the mechanical organization necessary to reproduce in a scientific manner the coordinated movements of the earth and the sun, so that anyone, devoid of a background of scientific knowledge, can appreciate and comprehend the celestial phenomena and the workings of the Copernican system. Such a reduction in mechanical features and changes in the means for carrying out the primary purpose, disclosed in the above designated patent, without any change in the purpose of result would render a device of this type more practical, less expensive, and more useful and appreciated.

The phenomena of the interrelated movements of the sun and the earth and the responsive reactions of the latter in such movements are of major importance and should be understood by all children of school age and adults. To demonstrate with scientific accuracy and yet in a manner within the comprehension of an average child the individual rotation of the sun and the individual rotation of the earth held in its orbit by the sun, as the sun rotates in a period ranging from a various amount of days at particular points on the earth's sphere, is the primary purpose of all structures of this type, conventionally referred to as tellurians. The movement of the earth describes an elliptical orbit about the sun and the earth receives and retains the heat emanating from the sun, distribution of this heat over the earth varying on account of the inclination of the earth's axis to the plane of the ecliptic and resulting in the seasons experienced by us. Causations of our days, months, seasons and years results from the interrelated movements and is depicted with the use of my device.

In my prior patent, designated above, there is disclosed a tellurian comprising three spherical members, representing the earth, the sun and the moon. Disk members and other elements were provided to rotate correspondingly and coincidentally to the coordinated movements of the spheres to demonstrate and point out the results of the earth and sun's interrelation at all times. Such interrelation at any given time and point

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was transferred graphically to the indicating elements and members, whereby seasonal changes and the causation of a solar day could be studied.

However, it was discovered that the structure employed in that patent and also found in other conventional and well known tellurian and similar devices involved unnecessary features, detrimental to scientific accuracy and constituting a definite bar to easy transportation and operation so that children of school age were not being oriented in the subject. Further, the cost of manufacturing such conventional devices was prohibitive and resulted in an impossibility on the part of educational institutions and school boards to purchase and employ the devices.

To overcome these outstanding defects, I have reduced the mechanical structure and operation of my new and novel tellurian herein disclosed and obtain an accurate scientific result, which can be demonstrated in any place and to any group, the device being easily and conveniently transported and installed for use by a novice and being capable of being understood by average school children.

Yet, the tellurian, set forth in this application, can be manufactured and distributed very inexpensively so that it can be placed within the reach of all educational institutions and within the budgets of school boards and various amateur and civic groups.

By way of specific improvement, I have eliminated operating and actuating members and have installed the simplified and novel operating mechanism in a portable housing. Further, the need of a high voltage commutator has been eliminated and the supporting structure of the spheres has been modified. The means provided for effecting the rotation of the sun and the earth and for reflecting such rotation on members, having suitable indicia thereon to represent earthly conditions and stages, and the means provided for illuminating the respective members is assembled in a compact, portable, inexpensive device, which can be easily operated and appreciated.

The invention, in this application, also consists in certain other features of construction and arrangement of parts, which will be hereinafter more fully described and which are illustrated in the accompanying drawings which disclose one embodiment of this invention and wherein:

Figure 1 is an elevational view of this device;

Figure 2 is a top plan view of this invention;

Figure 3 is an elevational view of this invention, with a portion of the casing broken away

and showing some of the actuating structure in sectional view;

Figure 4 is a vertical sectional view of the operating and supporting means for the earth sphere, taken substantially on the plane of line 4—4 of Figure 3;

Figure 5 is an enlarged vertical sectional view of the operating and supporting structure for the sphere, simulating the sun, and is taken substantially on line 5—5 of Figure 3, looking in the direction of the arrows;

Figure 6 is an enlarged elevational view of a disk provided to illustrate the mean solar day;

Figure 7 is an enlarged view of the means provided for illuminating the interior of the earth sphere, drawn in organization in Figure 3;

Figure 8 is a diagrammatic showing of an electrical circuit provided for transmitting power to the illuminating means for the sun and earth spheres;

Figure 9 is an enlarged fragmentary view taken on the plane of line 9—9 of Figure 3 and looking in the direction of the arrows, and;

Figure 10 is an enlarged sectional view taken on the vertical plane of line 10—10 through the sun sphere, as shown in Figure 3.

Referring now more particularly to the drawings, wherein similar characters of reference designate corresponding parts throughout, this invention is generally designated by the reference numeral 10 and comprises a cylindrical casing or housing 12, which is supported in a horizontal position by a plurality of vertical standards or legs 14. Vertically disposed in the casing is a shaft 16, which has a bottom flange 18 bolted as at 20 to the bottom of the casing. The shaft 16 extends above the upper edge of the casing in the center thereof and an attaching collar 22 is secured thereon, adjacent the upper end. The collar 22 has a plurality of vertically disposed apertures 24 provided therein, within which are seated depending pins or lugs 26 carried by a large disk or dial 28. Thus, the dial 28 is detachably seated on the supporting collar 22 and is mounted in a fixed position. The dial 28, as seen in Figure 2 represents a year dial, the dial being provided with indicia on its outer rim representing the months of the year and having the signs of the zodiac inscribed in a circular fashion and spaced inwardly from the outer year band. The major portion of the dial is divided into four equal segments, representing the four seasons of the year, by the solstitial line and the equinoctial line.

A rotatable shaft 30 is concentrically disposed on the fixed shaft 16 and supports at its lower end an annular gear 32, which has an attaching flange 34 secured by set screws 36 to the shaft. A disc 38 is secured by set screws or the like 40 to the upper end of the movable shaft 30 and serves to rotate the earth sphere, as will be later described. A shaft 42 is concentrically disposed about the movable shaft 30 and is fixed or secured to a bracket 44 extending from the casing 12. The shaft 42 is secured to a lateral extension 46 of the bracket 44 by securing means 48, such as bolts or the like. A shaft 50 having annular gears or sprocket wheels 52 and 54 disposed at its upper and lower end is rotatably received on the fixed shaft 42 and serves to transmit a driving power from a power unit to the shaft and gear assembly for the earth sphere, whereby rotation is imparted to the sphere, representative of the rotation of the earth and its orbit.

A fixed gear 56 is secured on the fixed shaft 42 at the upper end thereof through the medium of an attaching flange 58 and set screws 60 and is

communicated with the operating assembly for the sphere in a manner and for a purpose to be later described.

A conventional motor 62 is secured to the bottom of the casing and functions through the foregoing gear structure to rotate the earth sphere about the fixed sun and also, to revolve the earth sphere in its individual orbit.

In this respect, an armature shaft 64 of the motor is provided with a gear or cogwheel 66 on its outer extremity which is communicated with the gear 32 by a flexible connecting and transmitting means 68, such as a belt or chain. A gear 70 is disposed on the shaft 64 adjacent the motor 62 in meshing engagement with a gear 72 carried by a shaft 74, which is journaled in a bearing bracket 76. A gear 78 is disposed on the shaft 74 in engagement with an annular gear 80 keyed on one end of a shaft 82. The shaft 82 is vertically supported by a bearing collar 84 laterally offset and vertically supported by an L-shaped bracket 86, which is secured to the bottom of the casing. A gear 88 is keyed on the opposite end of the shaft 82 in meshing engagement with the annular gear 32 carried by the rotatable shaft 30. Rotation of the annular gear 32 rotates the shaft 30 about the fixed shaft 16 and rotates the closure disk 38 spaced above the upper edge of the casing. Received on the upper end of the fixed shaft 16 is an arm 88, which has a vertical section 90 terminating in a diametrically enlarged coupler end 92, which is disposed on the upper end of the shaft 16. A section 94 of the arm 88 is offset from the vertical section 90 and terminates in a vertical extension 96, which is parallel to the section 90. The extension 96 terminates in a flange coupling 98 which receives and detachably supports a transparent globe 100, which represents the sun. The globe 100 has an attaching flange 102 which is engaged by a pair of diametrically projecting set screws 104 positioned through the flange 98.

Attention is now directed to Figures 3 and 4, for an understanding of the supporting and operating structure for the earth sphere.

In this respect, a collar 106, having ball bearings 112 disposed therein is seated in and held in an opening 108 in the annular disk 38 for carrying the earth sphere structure 110. A shaft 114 is mounted in fixed relation on the collar 106 and has a coaxially reduced extension 116 disposed in inner opening in the collar. A downwardly facing shoulder 118 is formed at the juncture of the shaft and seats upon the collar. A longitudinally extending centrally disposed bore 120 is formed in the shaft and accommodates a rotating shaft 122. A gear or sprocket wheel 124 is keyed on the shaft 122 through securing agents 126 and is communicated with the gear 54 by a belt or chain 128, whereby rotation of the shaft results from the operation of the motor and the power thereof transmitted by the gear train to the shaft 50. A gear or cogwheel 130 is fixed on the stationary shaft 116 at the lower extremity thereof and is connected with the fixed gear 56 on the shaft 42 by a flexible connecting means 132. The two gears 130 and 56 are stationary and the flexible connecting means, such as a resilient belt or band or the equivalent, functions to maintain the respective rotating shafts in their set plane of rotation.

A beveled gear 134 is secured on the extending end of the shaft 122 by set screws 136 radially extending through flange 138 and inserted in the shaft.

A housing 152, preferably circular in cross section, as seen in Figure 3, extends integrally from the shaft 114 and terminates in an extending boss 154, which is centrally bored as at 156 to accommodate a rotating shaft 158. A beveled gear 160 having an attaching flange 162 is secured to the end of the shaft 158 through the medium of set screws 164 inserted through the flange and into the shaft. The beveled gear 160 is operatively connected with the gear 134 through an intermediate beveled gear 162 vertically disposed between the gears. Opposed sides 164 and 166 are attached to the open sides of the casing housing 152 by screws 168 or other securing and retaining elements. A disk 170 is secured to the outer surface of the side member 166 by set screws 172 and with respect to Figure 6 is provided with suitable indicia to constitute a day dial. The hours of the day are arranged around the disk and represent a mean solar day. A hub 174 carrying the gear 162 is journaled through the side 166 and the disk 170 and accommodates a disk 176, which has an attaching collar 178 received and secured on the protruding end of the hub. The disk 176 is a rotating dial which shows the meridians of the earth globe and the east and west longitude.

The shaft 158 has an annular flange 180, extending laterally adjacent its upper terminating point, upon which is seated and retained the earth sphere 182, through the medium of the securing elements 183. The sphere 182 is formed in two sections 184 and 186 representing equal halves which are joined together by an interlocking joint 188. Thus, it can be seen that rotation is imparted to the earth sphere 182 through the medium of the communicating shafts 158 and 122, which are actuated by the shaft 50 communicated with the operating shaft 64 of the motor 62. The earth's orbit is elliptical and the axis of the earth is inclined in the plane of the ecliptic (23° 27 minutes angle) in its path of travel with respect to the sun. Thus, the shaft 158 is offset from the vertical plane of the shaft 122 producing the proper interrelation between the fixed sun 100 and the earth sphere 182. The earth is rotated as an entire unit about the fixed sun extending centrally in the casing and during this rotation an angular pointer 190 secured as at 192 to the rotating disk 38 overlies the edge of the fixed indicating disk or dial 28, thereby demonstrating and depicting the month of the year and the season enjoyed by the earth, at any given point during the rotation of the earth unit about the fixed dial 28.

Of course, means is provided for illuminating the sun globe 100 and the sections of the earth sphere, which are in alignment with the sun during the interrelated movements of the two bodies. In this respect, attention is directed to Figures 3, 4, 5 and 8.

Conductors 196 and 198 lead from a suitable supply source (not shown) and are secured at their opposite ends to a transformer 200 of conventional structure. Lines 202 and 204 lead off from the main lines 196 and 198 and convey the power to the motor 62. A ground lead 206 is secured to the casing as at 208 and to the transformer as at 210. A lead line 212 extends from the transformer and is connected to a vertical plate or standard 114 which extends from the bottom of the casing and is insulated from the casing as at 216. An arm or strap 218 extends from the top of the plate and has at its opposite end a commutator brush 220 which is in brushing contact with a commutator 222 received on the rotating shaft 50. A similar strap or arm 224 is disposed in a horizontal position in the casing and depends from a pair of brackets 226 and 228 which hang from the under surface of the rotating disk 38. Of course, the strap 224 is insulated as at 230 from the brackets.

Attention is specifically directed to Figures 3 and 10, wherein it is to be noted that a conventional lamp 232 is detachably mounted in a socket 234 from which the negative and positive lines 236 and 238 depend. The circuit is carried from the commutator 222 to the lamp 232. Thus, with respect to Figure 8, it is to be noted that conductor 238 is in circuit with the strap 218 and the lamp 232 is wired in the positive line 238, being grounded by the line 236 as at 240.

The earth sphere is illuminated through the line carried by the strap 224, the end opposite the brush end of the strap being secured by a screw 242 to the lower end of a shaft 244 around which the rotating shaft 122 is concentrically disposed. However, the shafts 122 and 244 are not formed unitarily and have suitable insulating material 246 disposed therebetween, so that the shaft 122 rotates about the shaft. A similar shaft 246 is disposed in a longitudinal bore in the shaft 158, insulating material 248 being disposed between the shafts. The circuit is carried from the shaft 244 to the shaft 246 through a flexible connecting element 250. The connecting element 250 consists of a pair of caps 252 and 254 secured on the extending juxtaposed ends of the shafts and connected by a resilient element 256, such as a coil spring or the like. The current is carried through the shaft 246 to an arcuate arm 260 terminating in a collar 262 received on the end of the shaft 246 and secured thereon by a transverse pin 264. The opposite end of the arcuate arm 160 supports a rod 268 which terminates in a socket end 270. A bulb 272, of conventional description, having a contact point 274 is disposed in the socket 270, with the contact point abutting the end of the rod 268. Suitable insulating material 278 is disposed concentrically about the bulb between the end of the socket. A clip 280 is clamped to the bulb and a ground wire 282 extends from the clip out of the open end of the socket and is secured as at 284 to a conductor 286 which is provided with insulating covering 288. The conductor 286 is secured to an angular clip 292. The clip 292 terminates in a U-shaped horizontal portion 294, which is seated in an annular groove 296 in the upper end of the shaft 158. Thus, the current is grounded through the shaft 158 and down through the lower structure from whence it teters out, by spreading through the lower shafts and bearings. Thus, with respect to the diagram in Figure 8, it is to be noted that the line 224 carries the current to the lamp or bulb 272 from whence it is grounded as at 298 by the ground wire 286.

Attention is directed to Figures 3 and 9 of the drawings, wherein a sealed shield structure 300 is provided for directing the illumination from the lamp 272 outwardly through the translucent earth sphere 182 in alignment with the fixed sun globe or sphere 100. This is, of course, of utmost importance, since the lamp 272 is provided in simulation of the rays emanating from the sun and received by the portion of the earth facing the sun, at any given time and place. However, in an illuminated room no amount of illumination cast from the sun glow would be sufficient to light up the desired area in the earth sphere and

to overcome this defect, I have provided the shield structure. In this respect, the shield structure **300** comprises an annular disk **302** having an annular forwardly projecting rim **304**. The outer surface of the shield is coated with a suitable light reflecting substance, so as to reflect the light emanating from the bulb **272** through the sphere. The disk is formed with an elongated opening or aperture **308**, through which the socket **270** protrudes. A pair of complementary apertured ears **310** extend rearwardly from the disk and function to swivelly support the disk and the socket, through the medium of the pivot pins **312**. A suitable weight **314** is secured to the lowermost portion of the disk, adjacent the periphery thereof and maintains the disk in the proper position for reflecting the light cast by the bulb.

In operation, the year dial **28** shows the months of the year, the seasons of the year, the constellations of the zodiac, the equinoctial line and the solstitial line. The pointer **190** overlying the dial and rotated with the disk **38** points out the particular positions as the globe assembly carried by the disk **38** revolves about the fixed sun **100**. The meridian dial **176** rotates at the same speed as the earth sphere **182** and shows the mean solar time on the dial **170** for each meridian. The mean solar time dial **170** is concentric with the rotating meridian dial **176**.

The globe assembly revolves in an anti-clockwise direction and the globe per se rotates in an anti-clockwise direction. With respect to Figure 2, it is to be noted that the north (upper) pole of the globe **182** points away from the sun on December 22, which lies on the celestial line (beginning of winter) and points towards the sun on June 22, which is diametrically opposite the December 22 position, shown in Figure 2. Of course, the axis of the earth sphere or globe is fixed at an angle of 23° 27 minutes from the ecliptic plane.

It is believed that the foregoing brief description of the operation, in view of the purpose and structure of this device will be sufficient to enable those skilled in the art to understand and appreciate the value and novelty of this device. Accordingly, a more detailed description is not believed necessary. However, it is to be understood that this invention is not limited to the concise arrangement of parts and the parts shown in the accompanying drawings and described about but that, on the contrary, certain changes in style, design and arrangement of parts can be carried out within the spirit of the invention and within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A tellurian comprising a cylindrical casing, having an open top, a post vertically mounted in said casing, a rotatable shaft on said post, a disc carried by said shaft and rotatably disposed in covering placement in the top of the casing, a fixed arm extending from said post, a globe representing the sun detachably carried by said arm, a housing held in said disc, a rotatable shafting disposed in the housing, an earth sphere mounted on and revolved by said shafting, power means mounted in said casing, gear training connected between the motor and the rotating shaft and shafting for simultaneously rotating the disc and earth sphere assembly about the sun and for revolving the earth sphere independent of the rotation of the assembly, means for illuminating the sun globe and earth sphere, including a circuit conducting system in said globe arm and earth sphere shafting and inscribed discs for conveying the earth's reactions to the sun carried by the post and shafting.

2. In a tellurian including a cylindrical casing, a post in said casing, a shaft rotatably mounted on the post, a sun globe supported in a stationary position by the post, a table like disc rotatably carried by the rotating shaft, a housing vertically disposed in said disc, an earth sphere rotatably supported by said housing, a power unit mounted in said casing, drive transmitting means connected between said power unit and the rotatable shaft, a fixed shaft concentrically disposed about the rotatable shaft and bracketed to the casing, a rotating double gear on said fixed shaft, a rotatable shafting in said earth sphere housing and operatively associated with the sphere, drive connections between the power unit and the double gear and power transmitting means communicated between the double gear and the earth sphere shafting, a meridian dial carried by the sphere housing and power take-off means from the shafting for rotating the dial in synchronization with the rotation of the earth sphere, illuminating elements in said sun globe and earth sphere and means for conducting an electrical circuit to the elements.

3. In a tellurian including an open top casing, a post vertically mounted in said casing, a shaft rotatably disposed on said post, an extension arm vertically supported by said post and having an offset upper end, a transparent globe representing the sun detachably carried by the offset end, a rotatable table like disc secured to said post shaft, a fixed year disc superimposed on the rotatable disc and supported by the post, a housing vertically supported by said rotatable disc, a shafting in said housing, an earth sphere operatively associated with the shafting, a prime mover mounted in the casing, drive transmitting means communicated between the prime mover and the earth shafting and post shaft, a power take off unit laterally extending from the earth shafting, a meridian dial rotatably secured to the unit, a fixed mean solar day disc disposed in alignment with the meridian dial, illuminating elements in said sun globe and earth sphere, means for conducting electrical power to the elements and means adjustably supported in the earth sphere for aligning the illumination from the illuminating element therein with the illumination from the sun globe.

4. For use in a tellurian having a casing above which extends a fixed sun globe and a rotatable earth sphere, the earth sphere being revolved about the sun globe, means for illuminating the globe and sphere comprising conductors leading from a power source to a transformer within the casing, a post vertically mounted in the casing, a commutator rotatably mounted on the post, a fixed commutator brush in brushing contact with the commutator and connected with the transformer, a supporting arm vertically extending from said post and detachably carrying the sun globe, a bulb removably received on the arm within the globe and illuminated by the commutator, a rotatable table like disc mounted on the post, a housing vertically supported in the disc, a shafting disposed in said housing and operatively associated with the earth sphere, a conducting strip suspended from said table like disc and having its ends in contact with the rotatable commutator and the earth shafting, means for supporting a bulb in said sphere, means for conducting a current to the sphere bulb and a reflector structure adjustably disposed in the sphere

for directing the illumination toward the sun globe.

5. The combination of claim 4, wherein an arcuate arm is disposed in the sphere, a tubular rod is carried by said arm and a bulb is detachably received in one end of said rod.

6. The combination of claim 4, wherein current is conducted from the conducting strip through the earth sphere shafting to a bulb mounted in the sphere, said shafting comprising a pair of vertically disposed complementary shafts having juxtaposed gear ends, operatively spaced from each other, a flexible conductor between said spaced gear ends and a vertically disposed gear engageable between said gear ends.

7. The combination of claim 2, wherein said power take off means includes a bevel gear disposed in the earth sphere housing and interposed in the shafting, a hub extending from said gear through the housing and means for mounting the meridian dial on the hub.

8. The combination of claim 2, wherein said earth sphere shafting comprises a vertically disposed first shaft having gears fixed on the opposing ends thereof, the lower gear end being communicated with the power unit, a vertically disposed bevel gear in said housing in meshing engagement with the upper gear, a complementary second shaft offset from the vertical plane of the first shaft and having a bevel gear on its lower end, said gear being engageable with the vertically disposed gear whereby rotation of the first shaft is transmitted to the second shaft, a supporting structure on said second shaft for accommodating the earth sphere seated thereon, first and second conductor members disposed concentrically of said first and second shafts respectively, and a flexible conductor element disposed between the adjacent ends of said conductor members.

9. In a tellurian, a casing, a rotatable disc mounted on the casing, a housing vertically disposed through the disc, a first shaft rotatably journaled in the lower portion of the housing, a gear on the upper end of the shaft, means for rotating said shaft, a second shaft offset from the vertical plane of the first shaft and having a gear on its lower end, a vertically disposed gear operatively connecting and interposed between the gears on the adjacent end of said shafts, a shaft for said vertical gear, a plate fixed on the shaft and disposed exteriorly of the housing, first and second conductor members disposed concentrically of said first and second shafts, respectively, a flexible conductor element disposed between the adjacent ends of the first and second conductor members, and a conductor strip connected to the lower end of said first conductor member.

10. In a tellurian, a casing, a rotatable disc mounted on the casing, a housing vertically disposed through the disc, a first shaft rotatably journaled in the lower portion of the housing, a gear on the upper end of the shaft, means for rotating said shaft, a second shaft offset from the vertical plane of the first shaft and having a gear on its lower end, a vertically disposed gear operatively connecting and interposed between the gears on the adjacent end of said shafts, a shaft for said vertical gear, a plate fixed on the shaft and disposed exteriorly of the housing, first and second conductor members disposed concentrically of said first and second shafts respectively, a flexible conductor element disposed between the adjacent ends of the first and second conductor members, and a conductor strip connected to the lower end of said first conductor member, a sphere carried by said housing and operatively connected to said second shaft for rotation therewith, said second conductor member extending into said sphere, an illuminating element disposed in said sphere, means for supporting said illuminating element on said second conductor member, and a reflector plate carried by said supporting means, and means non-rotatably attaching said conductor strip to said disk.

11. The combination of claim 10 wherein said supporting means includes an arcuate conductor bar disposed concentrically in said sphere and having one end thereof secured to said second conductor member, a radially extending arm on the other end of said conductor bar, said illuminating element being carried by the inner end of said bar.

12. The combination of claim 10 wherein said supporting means includes an arcuate conductor bar disposed concentrically in said sphere and having one end thereof secured to said second conductor member, a radially extending arm on the other end of said conductor bar, said illuminating element being carried by the inner end of said bar, said reflector plate being pivotally attached to said arm, and a weight on the lower end of said plate for maintaining said plate in a vertical position.

HENRY M. VANDERHIDER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,497,150	Maddux	June 10, 1924
1,814,984	Vanderhider	July 14, 1931