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ASTRONOMICAL TOY

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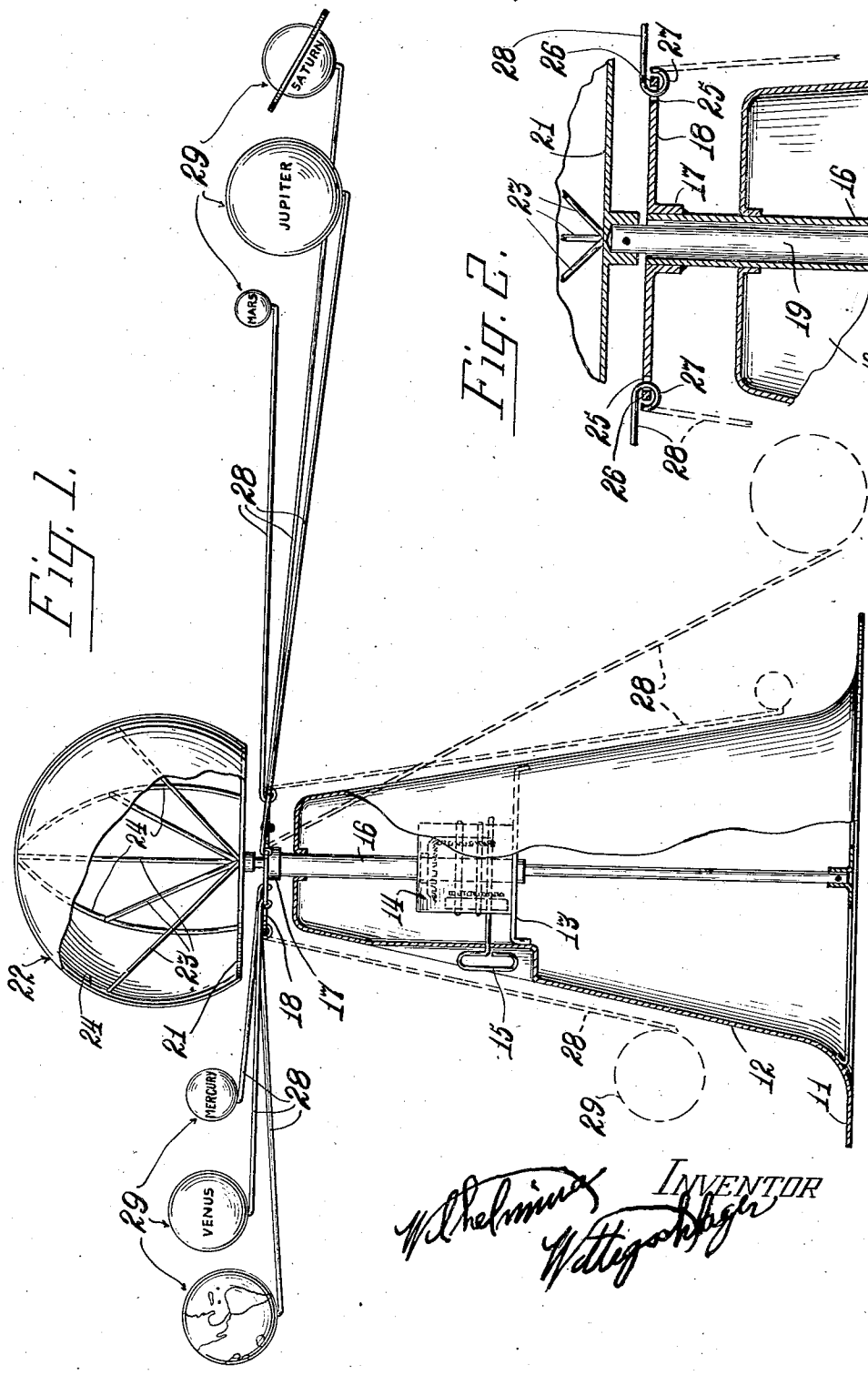


Fig. 1.

Fig. 2.

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ASTRONOMICAL TOY

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12 Claims. (Cl. 35—45)

The invention relates to astronomical toys and more particularly to an entertaining educational device having motor driven elements representing the various heavenly bodies movable about a common element representing the Sun.

Known types of astronomical devices, planetariums and planispheres involve such expensive and involved mechanisms as to preclude their wide distribution and restrict their use to class room display.

It is therefore, an object of the invention to provide a simple inexpensively constructed device of the character referred to which is particularly adapted for use as an entertaining and educational toy.

Another object is to provide a device of the character referred to, embodying a novel construction and arrangement of operating parts so grouped as to substantially afford a realistic appearance of the planets.

Another object is to provide an astronomical toy having movable elements representing various planets in the solar system with gravity actuated means operable to carry said elements out of the plane of their natural orbit when the toy is not in operation.

The foregoing and such other objects of the invention as will appear hereinafter as the description proceeds will be more readily understood from a perusal of the following description, in which reference is had to the accompanying drawing, wherein:

Fig. 1 is a side elevational view, partly broken away, of the device.

Fig. 2 is an enlarged vertical sectional view of the shaft and mounting, showing details of their assembly.

Referring particularly to the drawing, the toy includes a base 11 having a raised central portion or standard 12. The base and standard preferably are stamped or drawn from a single sheet of metal but it is obvious that it may be molded or otherwise constructed of, for example, Bakelite or other plastic substance. At least one horizontally disposed strap 13 is secured inside the standard 12, a short distance below its top, to provide a rigid support for a conventional spring motor 14 having its winding key 15 extending through to the outside of said standard.

As shown, the vertically disposed motor driven shaft 16 is tubular and it extends for a suitable distance through and beyond an opening in the top of the standard. A hub 17 having an external annular flange 18 preferably is rigidly secured to the upper end of the tubular shaft 16, although it is apparent that the flange 18 may be formed by flaring or otherwise distorting the upper end of the tubular shaft. A second or inner shaft 19 extends axially through the tubular driven shaft 16. Said inner shaft is held against rotation preferably by anchoring its lower end to the base 11 as shown.

The inner shaft 19 terminates a short distance above the flanged end of the tubular driven shaft 16 and has a circular plate 21 thereon which provides a base for a substantially spherical member 22 which constitutes a representation of the Sun. The Sun 22 may be of any suitable construction, however, it is preferable that it constitute a light weight assembly in which substantially radial bars 23 and arcuate ribs 24 provide an adequate frame over which a covering of light weight material such as fabric, leather or thin sheet metal is placed.

As best illustrated in Fig. 2 the flange 18, carried on the upper end of the tubular driven shaft 16, preferably has a plurality of circumferentially spaced openings 25 adjacent its periphery to provide integral bearing elements 26. Each bearing element 26 receives, in permanent connection therewith, an eyelet 27 provided on one end of one of a plurality of supporting arms 28. Obviously, the arms 28 normally assume the suspended position shown in dotted lines. The said arms are of different lengths and each has a sphere 29 on its free end. The spheres 29 are of the proper relative size with respect to each other and to the Sun 22 so as to represent other planets in the solar system, such as for example Mercury, Venus, the Earth, Mars, Jupiter, and Saturn and, because of the difference in the lengths of their respective supporting arms 28, each is positioned, with respect to each other and to the Sun, approximately in the relative position of the planets of the solar system.

To operate, the previously wound spring motor 14 is allowed to operate to rotate the tubular shaft 16 and its flange 18. The speed of rotation is such that centrifugal force carries the supporting arms 18 into a substantially horizontal position, as shown in full lines in Fig. 1, thereby positioning the planets to rotate about the Sun in a plane substantially horizontal thereto.

I claim:

1. In an astronomical toy, the combination of a standard, a hub rotatable about a vertical axis on said standard, a sphere representing the Sun supported above the axis of said hub, a plurality of supports each connected at one end to said

hub for independent swinging in a vertical plane, a sphere representing a planet carried on the free end of each support, said supports normally hanging substantially vertically, and means to rotate said hub to carry said supports and planets into a substantially horizontal plane for movement around said Sun.

2. In an astronomical toy, the combination of a standard, a hub rotatable about a vertical axis on said standard, a sphere representing the Sun supported above the axis of said hub, a plurality of supports each connected at one end to said hub for independent swinging in a vertical plane, the supports being of different lengths, a sphere representing a planet carried on the free end of each support, said supports normally hanging substantially vertically, and means to rotate said hub to carry said supports and planets into a substantially horizontal plane for movement around the Sun.

3. In an astronomical toy, the combination of a standard, a hub rotatable about a vertical axis on said standard, a sphere representing the Sun supported above the axis of said hub, a plurality of supports each connected at one end to said hub each for independent swinging in a vertical plane, a sphere representing a planet carried on the free end of each support, said supports normally hanging substantially vertically, and a spring motor operatively connected to said hub operable to rotate said hub to carry said supports and planets into a substantially horizontal plane for movement around said Sun.

4. In an astronomical toy, the combination of a base including a standard, a fixed sphere representing the Sun arranged above said standard, a rotatable vertical shaft in said standard, means operable to rotate said shaft, a plurality of spheres representing other planets mechanically connected to said shaft, said spheres being suspended normally below said fixed sphere and being adapted to move upwardly into a horizontal plane to revolve around said fixed sphere while the shaft is rotating.

5. In an astronomical toy, the combination of a base including a standard, a fixed sphere representing the Sun arranged above said standard, a rotatable shaft in said standard, a motor in said standard operable to rotate said shaft, a plurality of spheres representing other planets mechanically connected to said shaft, said spheres being suspended normally below said fixed sphere and being adapted to move into a horizontal plane to revolve around said fixed sphere while the shaft is rotating.

6. In an astronomical toy, the combination of a driven vertical shaft, a plurality of planet supports hingedly connected to said shaft, and a planet on the free end of each of said supports, said supports hanging substantially vertically while the driven shaft is idle.

7. In an astronomical toy, the combination of a driven vertical shaft, a flange on said shaft, a plurality of planet supports hingedly connected to said flange, and a planet on the free end of each of said supports, said supports hanging substantially vertically while the driven shaft is idle.

8. In an astronomical toy, the combination of a base, a standard on said base, a motor supported within said standard, a tubular vertical shaft operatively connected to said motor and extending above the top of said standard, an annular flange on the upper end of said shaft, a second shaft extending axially through said tubular shaft and having its lower end secured to said base, a sphere representing the Sun mounted on the upper end of said fixed shaft, and a plurality of spheres representing other planets suspended from said annular flange, said planets moving into a substantially horizontal plane when said shaft is rotated.

9. In an astronomical toy, the combination of a base, a standard on said base, a motor mounted within said standard, a tubular vertical shaft operatively connected to said motor and extending above the top of said standard, an annular flange on the upper end of said shaft, a non-rotatable shaft extending axially through said tubular shaft, a sphere representing the Sun mounted on the upper end of said non-rotatable shaft, and a plurality of spheres representing other planets hingedly connected to said annular flange, said planets normally being in a suspended position but moving into a substantially horizontal plane when said shaft is rotated.

10. In an astronomical toy, the combination of a base including a standard, a tubular vertical shaft mounted in and extending above said standard, means operable to rotate said shaft, a hub on the upper end of said shaft, a non-rotatable shaft extending axially through said tubular shaft, a sphere representing the Sun mounted on the upper end of said non-rotatable shaft, and a plurality of spheres representing other planets of the solar system connected to said hub and being arranged at unequal distances from said hub, said planets normally being suspended therebelow but moving into a substantially horizontal plane when said shaft is rotated.

11. In an astronomical toy, the combination of a base including a standard, a spring motor mounted within said standard, a tubular vertical shaft operatively connected to said motor, said shaft extending above the top of said standard, an annular external flange on the upper end of said shaft, a second shaft extending axially through said tubular shaft having its lower end secured to said base, a sphere representing the Sun mounted on the upper end of said inner shaft, radial supporting arms on said external flange, and a plurality of spheres representing other planets of the solar system one mounted on each arm, said planets and arms normally being suspended below said flange but moving substantially into the plane of the Sun when the driven shaft is rotated.

12. In an astronomical toy, a standard, a sphere representing the Sun on said standard, a plurality of other spheres representing planets in the solar system normally positioned below the plane of said Sun, and means operable to move said planets substantially into the plane of and revolve them around said Sun.

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