Aug. 8, 1961 C. R. LUCHSINGER 2,994,984

MAGNETIC TOY

Filed March 12, 1958 2 Sheets-Sheet 1

Fig. 1

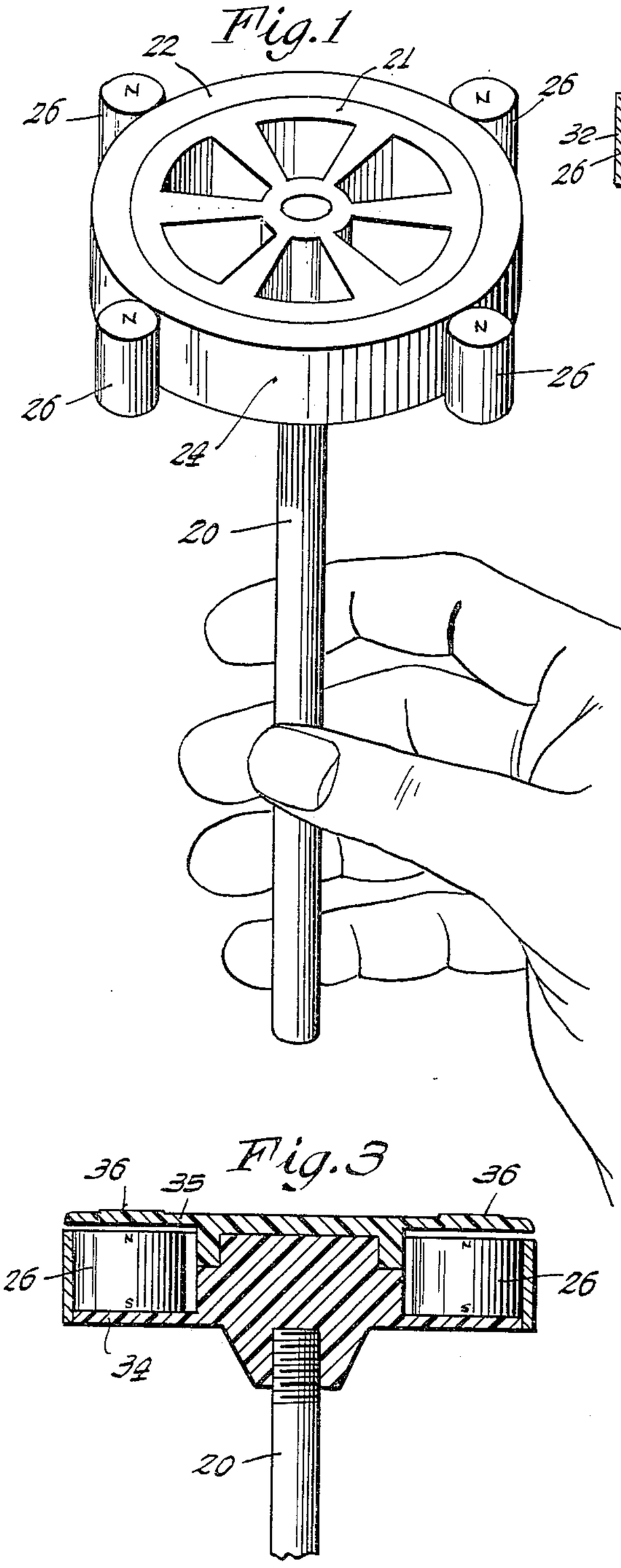

Fig. 2

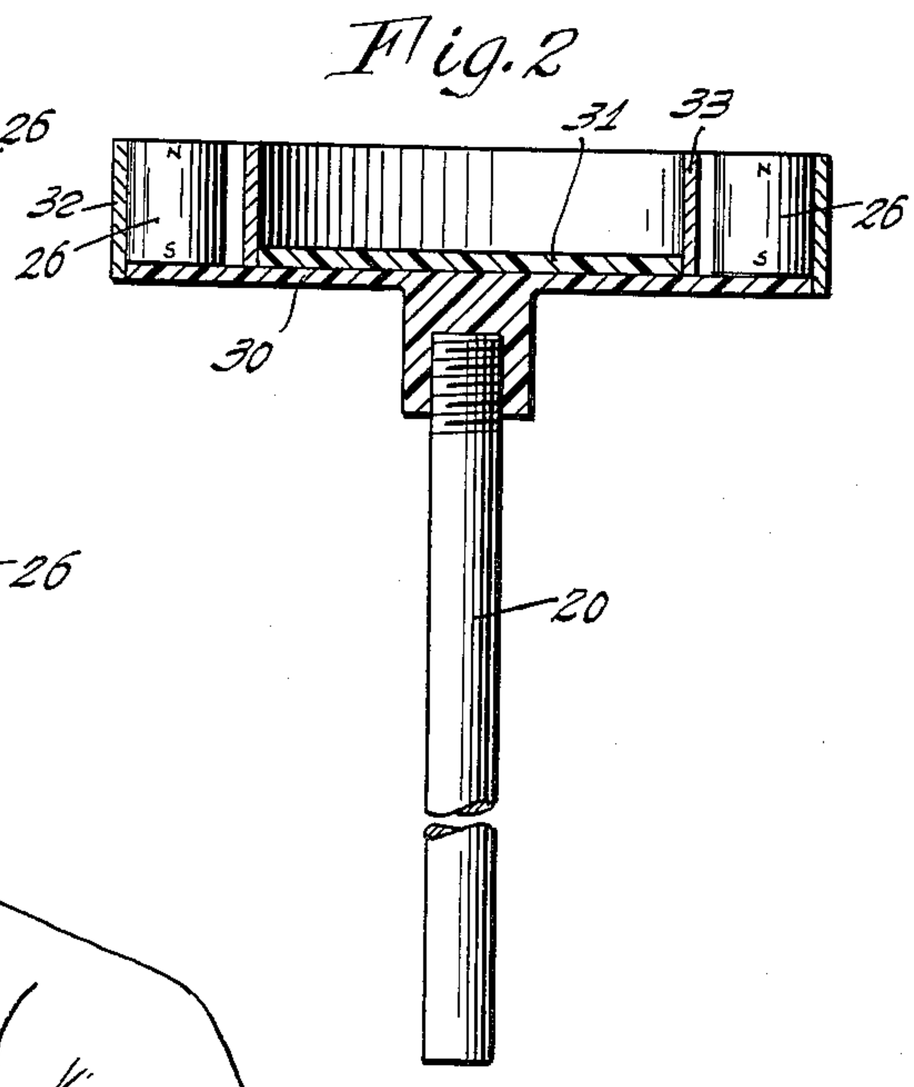

Fig. 3

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Fig. 4

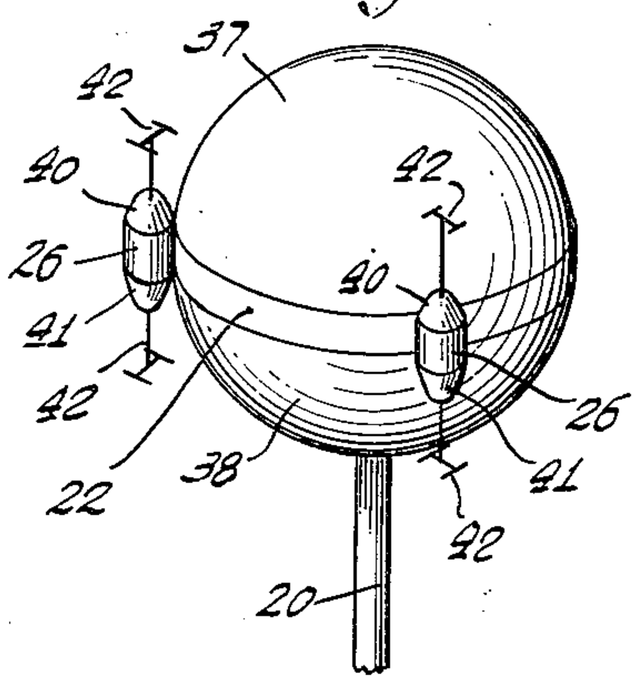


Fig. 5

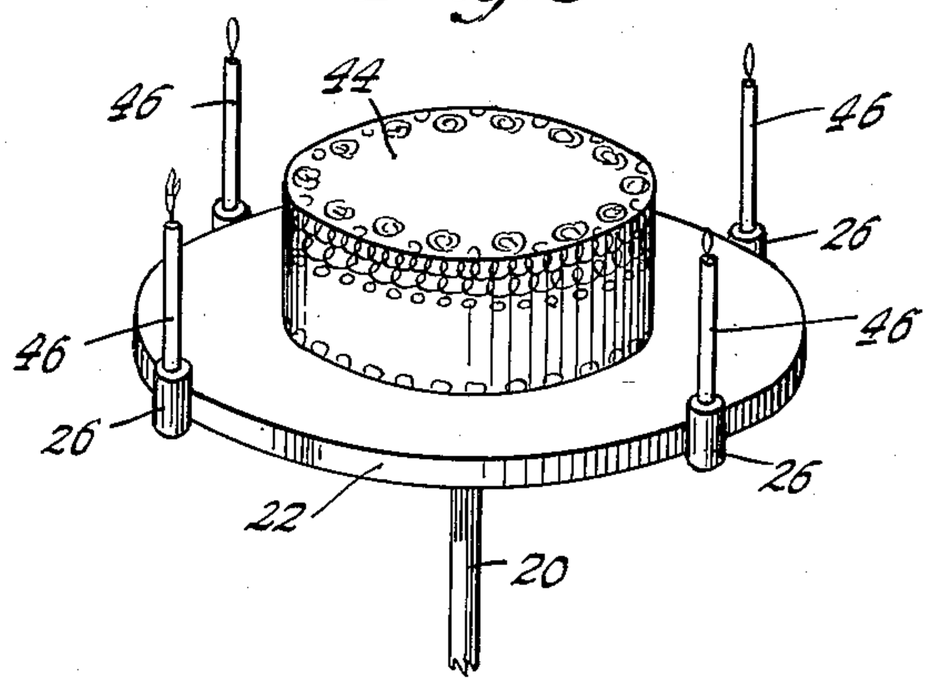


Fig. 6

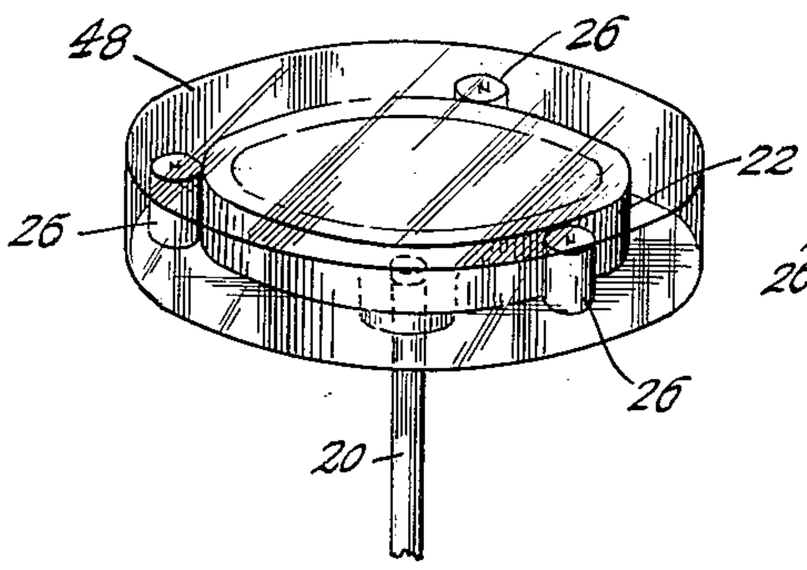


Fig. 7

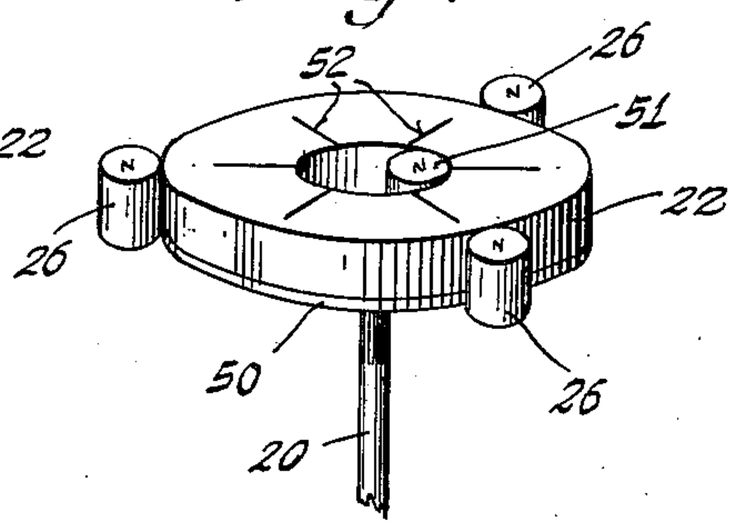


Fig. 8

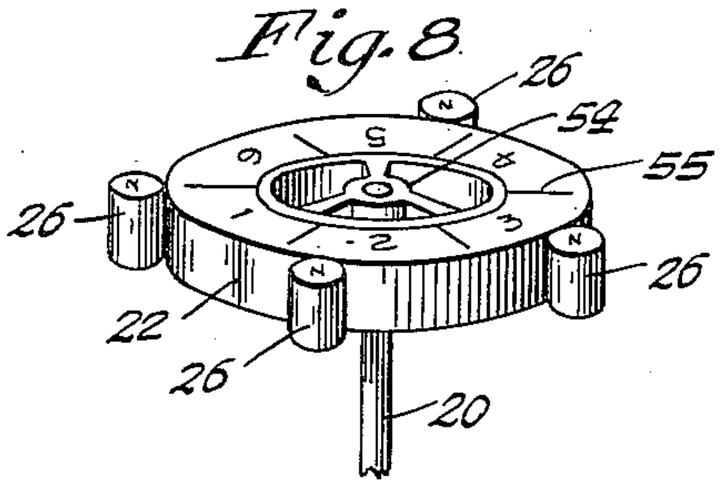


Fig. 9

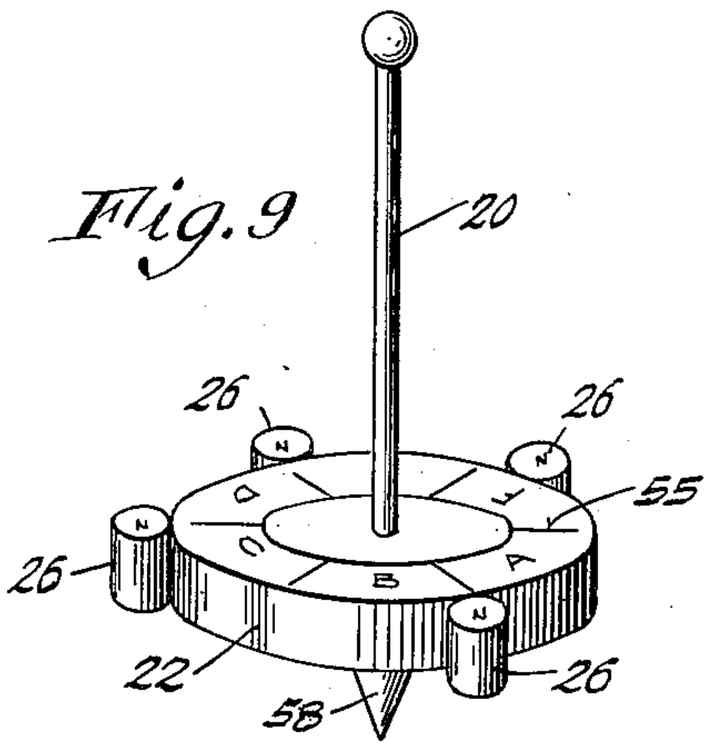
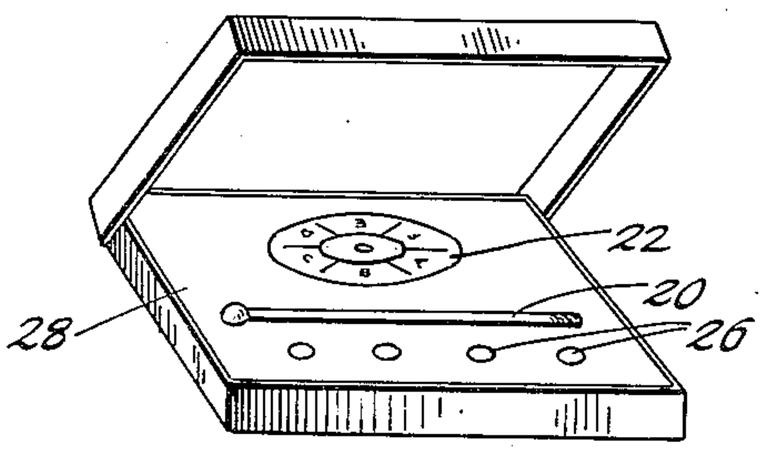


Fig. 10



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MAGNETIC TOY

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10 Claims. (Cl. 46—241)

This invention relates to small, handheld toys, and more particularly to magnetic toys which are adapted to be spun or rotated.

An object of the invention is to provide a novel and improved spinning type of magnetic toy wherein magnetic members perform movements which are interesting to watch as a consequence of the spinning operation, and wherein such members produce an optical illusion which is mysterious and amusing.

Another object of the invention is to provide a new magnetic toy as above characterized, wherein movements of the magnetic members involve the element of chance, thereby to enable the toy to function as a game device.

A further object of the invention is to provide an improved magnetic toy as above set forth, which is readily adaptable to fabrication in various forms suggestive of well-known objects, whereby the toy may be associated with different events or circumstances encountered in our present day life.

A still further object of the invention is to provide a novel magnetic toy having magnets adapted to move in a mysterious and interesting manner, which toy may be operated in the manner of a toy top while producing the said movements of the magnets.

A feature of the invention resides in the provision of a novel magnetic toy device which may be utilized to simulate the earth and earth satellites adapted to encircle the earth in a given path or orbit.

Another feature of the invention resides in the provision of a novel spinning type toy device which may be adapted to simulate a birthday cake and candles arranged to travel in an orbit about the cake.

A further object of the invention resides in the provision of a novel magnetic toy device having all of the above advantages and features, and which is nevertheless extremely simple in its construction, easy to operate, and economical to mass produce.

Other features and advantages will hereinafter appear.

In the drawings accompanying this specification, similar characters of reference are used to designate like components wherever possible throughout the several views, in which:

FIGURE 1 is a perspective view of an improved magnetic, spinning-type toy, made in accordance with the present invention.

FIG. 2 is an axial sectional view of a spinning-type magnetic toy illustrating another embodiment of the invention.

FIG. 3 is an axial sectional view of another spinning, magnetic toy, illustrating yet another embodiment of the invention.

FIG. 4 is a perspective view of a spinning-type magnetic toy constituting a further embodiment of the invention, wherein the toy simulates the earth with satellites.

FIG. 5 is a perspective view of a magnetic toy showing still another embodiment of the invention, wherein there is simulated a birthday cake with candles.

FIG. 6 is a perspective view of a magnetic-type spinning toy, illustrating still another embodiment of the invention.

FIG. 7 is a perspective view of a magnetic toy showing still another embodiment of the invention.

FIG. 8 is a perspective view of a magnetic toy, disclosing a still different embodiment of the invention, wherein the toy may be used as a game device.

FIG. 9 is a perspective view of a toy which may be used as a game device, showing still another embodiment of the invention.

FIG. 10 is a perspective view of a toy as provided by the invention, shown in dismantled condition with the components disposed in a box.

Referring first to FIG. 1, the novel magnetic toy shown therein comprises essentially a relatively short, slender shaft **20** adapted to be held in the hand. Attached to one end of the shaft **20** is a circular supporting member **21** which may for example be in the form of a spider having a central hub into which the shaft **20** extends. The supporting member **21** engages and is encircled by an annular member **22** which is constituted of magnetic material such as iron, steel or the like. The supporting member **21** and the shaft **20** may be advantageously formed of plastic substance, and may be assembled to each other by a press fit or else molded in one piece. The member **21** may also be press-fitted within the annular magnetic piece **22**.

As shown, the magnetic piece **22** has a smooth outer peripheral surface **24** which is cylindrical and adapted to constitute a track for a plurality of small permanent bar magnets **26** which are in the form of cylinders or rollers, having smooth exterior cylindrical surfaces.

The bar magnets **26** are all disposed with their like poles at the same sides of the annular member **22**. Thus, all the north poles may be uppermost as shown in FIG. 1, and all the south poles may be lowermost.

I have found that a toy when constituted in the above manner exhibits a very interesting action of the magnets **26** when the toy is given a slight oscillating motion. To begin with, all of the magnets repel each other and thus remain equispaced about the periphery of the member **22** while at the same time being held to said member by magnetic attraction. When the shaft **20** and piece **22** are spun rapidly, the magnets **26** are caused to roll about the periphery of the member **22** and the spaces between the magnets vary within limits. In consequence, the magnets produce an optical illusion, and when viewed from the top they appear to pass through each other. That is, one magnet appears to pass through the magnet next in front of it, etc. The magnets **26** may have differently colored ends, and the ends may be coated with phosphorescent paint whereby interesting color-changing effects are produced.

The shaft **20** may be detachably secured to the supporting member **21**, as by being screwed into the latter whereby the toy may be dismantled by unscrewing the shaft and removing the magnets. As shown in FIG. 10, such dismantled toy may be conveniently carried in a flat container or box **28**, whereby it does not occupy a great deal of space. The supporting member **21** and annular magnetic member **22** may be thought of as a means carried by the shaft **10** to turn therewith, said means providing a circular guide and path of travel for the bar magnets **26** and constituting a combined support and frictional drive for the magnets, whereby the latter are caused to traverse said path of travel in spaced relation to each other when the shaft and said means are spun.

Another embodiment of the invention is illustrated in FIG. 2, wherein the circular guide means comprises a pair of plastic cups **30** and **31** having side walls **32** and **33** spaced apart to provide an annular race for the magnets **26**. Centrifugal force will cause the magnets to engage the cup wall **32**, whereas the magnetic repulsion holds the magnets separated and imparts the unique motion thereto, resulting in the above-mentioned optical illusion.

The side walls **32** and **33**, instead of being constituted

of plastic material, may be formed from bands of magnetic metal such as iron or steel whereby the magnets 26 will be attracted to the bands, and will be held against dislodgement. Only one of the side walls need be magnetic, either the inner wall or the outer, and where the outer wall is magnetic the effect of centrifugal force will be to aid the magnetic attraction between the wall and the magnets.

Another embodiment of the invention is illustrated in FIG. 3, wherein the shaft 20 mounts a plastic, shallow cup-like member 34, and wherein a plastic cover member 35 is provided for retention of the magnets, said member 35 having raised letters or numerals 36 providing indicia by which various games may be played.

Yet another embodiment of the invention is illustrated in FIG. 4, wherein a pair of hemispherical shells 37 and 38 may be provided on opposite sides of the member 22 to constitute therewith a representation of the earth. The magnets 26 may have bulbous ends 40 and 41 with antennae 42, thereby to represent satellites which are thus made to travel about the "earth" in a circular orbit.

Referring to FIG. 5, the annular magnetic member 22 may carry a piece 44 adapted to represent a birthday cake, and the magnets 26 may have upward extensions 46 simulating candles, which then move about the part 44 as the toy is spun.

In FIG. 6 a clear plastic casing 48 is provided, enclosing the magnets 26 and magnetic member 22, to prevent loss or detachment of the magnets.

Another embodiment of the invention is illustrated in FIG. 7, wherein the magnetic member 22 is supported by a circular bottom plate 50 in the form of a disc, into which the shaft 20 is screwed. In addition to the magnets 26 disposed about the outer periphery of the member 22 an additional magnet 51 may be provided, to travel around the inner periphery of the member. Such inner magnet will of course have a somewhat different rate of speed, and in playing with the device one could guess or estimate where the magnet 51 would come to rest, with relation to the outer magnets 26. Radial lines 52 or other markings may be employed, in connection with such procedure.

In FIG. 8 another embodiment of the invention is illustrated, wherein the magnetic ring or annulus 22 is carried by a plastic spider 54, into which the shaft 20 is screwed. The annulus 22 may have a plurality of radial lines 55 dividing its upper surface into sector-shaped portions which may be numbered as shown. Thus the toy may be utilized in connection with a game, for example a game of chance, wherein the magnets 26 may have different colors or other distinguishing marks and may determine by their stopping positions certain factors involved in the game.

In FIG. 9 the toy is constituted as a top, which may be spun on a supporting table surface. For this purpose, a point or tip 58 may be provided, and such point may constitute an extension of the shaft 20. As in the embodiment of FIG. 8, the upper surface of the magnetic member 22 may have the radial lines 55 dividing it into the sector-shaped portions, which may be provided with suitable indicia.

It will be understood from the foregoing that I have provided an extremely simple, novel and amusing magnetic toy or game device which creates considerable interest and affords entertainment to both young and old alike.

Variations and modifications may be made within the scope of the claims, and portions of the improvements may be used without others.

I claim:

1. A magnetic toy device comprising a shaft adapted to be held in the hand and spun, magnetic disc means carried by said shaft and adapted to turn therewith, said disc means having a diameter greater than said shaft and said disc being positioned substantially perpendicular to the longitudinal axis of said shaft, said disc means being substantially cylindrical whereby a trackway is provided on the surface thereof, and a plurality of annular bar magnets disposed on said trackway at spaced positions, said magnets being arranged with their axes substantially parallel to each other and to the shaft and with like poles correspondingly positioned to cause the magnets to repel each other, said magnetic disc means constituting a combined support and slipping frictional drive for said magnets whereby said magnets are caused to traverse said trackway in spaced relation to each other when the shaft is oscillated.

2. The invention as defined in claim 1 in which the disc means carried by the shaft comprises a two-part casing formed of plastic material, said casing having an annular space the walls of which constitute the said circular guide.

3. The invention as defined in claim 2 in which the two parts of the casing comprise shallow cups of different diameters, the smaller cup being nested within the larger cup and said cups having their side walls spaced apart to constitute the said circular guide.

4. The invention as defined in claim 1 in which there are hemispherical shells disposed on opposite sides of said magnetic disc means constituting therewith a spherical body adapted to simulate the earth, and in which the magnets have bulbous ends and are adapted to simulate earth satellites.

5. The invention as defined in claim 1 in which the magnets have upwardly extending projections in the form of candles, and in which there is a circular member disposed on said magnetic disc means and adapted to simulate a birthday cake.

6. The invention as defined in claim 1 in which the magnetic disc means comprise an annulus having an inner circular periphery constituting an inner track, and in which there is a bar magnet disposed within the annulus, engaging and adapted to travel along the said inner track.

7. The invention as defined in claim 1 in which the magnetic disc means have markings dividing its upper surface into a plurality of segment-shaped areas, and in which there are indicia disposed on the said areas.

8. The invention as defined in claim 1 in which the shaft extends axially from one side of the magnetic disc means and in which there is a pointed tip extending axially from the other side of said member whereby the toy may be spun and operated as a top.

9. The invention as defined in claim 1 in which the shaft is detachably secured to the said means, and in which the bar magnets are removable from the said means whereby the device may be dismantled to occupy a relatively small space.

10. The invention as defined in claim 1 in which the shaft is detachably secured to the said magnetic disc means, and in which the magnets are removable from the magnetic disc means, thereby to enable the toy device to be dismantled so that it may occupy a relatively small space.

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