This invention relates to tops such as toy tops. More particularly it relates to toy tops having movable balls within a transparent cover of the top and being activated by the motion of the top.

It is an object of this invention to provide a spinning top which is an action toy when in motion and which retains interest for the child when the top has stopped spinning.

Another object of this invention is to provide an efficient, simple, effective, and economic spinning top.

Another object is to provide a top having a transparent cover so that the action of the toy is readily visible to the user.

Another object is to provide a top containing lightweight balls which become charged with static electricity as the top rotates so that the balls appear to float in air because of the mutual repelling action of the balls.

Another object is to provide a spinning top having a stable base with a fixed ball scattering vane inside the top connected to the base.

Generally, the top of this invention is comprised of a rotatable portion and a fixed supporting base portion, the rotatable portion is comprised primarily of at least a partially transparent enclosed chamber which may be composed of an upwardly opening circular dished member and a transparent dome over and covering the dished member to form the chamber space between the dished member and the dome. The top has an axis concentric to the dished member, dome, and base portion along which may operate means for rotating the chamber relative to said base, such as a helical rotational motion imparting reciprocal spiral, the manual reciprocating action of which causes the rotating portion of the top to rotate relative to the base portion. A radially armed paddle member is located in the interior space in the rotatable portion of the top adjacent the concave surface of the dished member and may be connected to the fixed base portion through a fixed axle along the axis through the dished member of the rotating portion of the top. One or more lightweight spherical balls are enclosed in the space of the rotatable portion to be visible through the transparent dome of the top. As the dished member is rotated the relatively fixed paddles cause the balls to be scooped from the internal periphery of the chamber for random motion in the chamber. The concave surface of the dished member may be radially ribbed also to agitate the balls as the dished member rotates relative to the paddle member.

The above mentioned and other features and objects of this invention and the manner of attaining them will become more apparent and the invention itself will be best understood by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a side elevational view of one embodiment of the top of this invention;
FIG. 2 is a perspective view of the top of FIG. 1 as it would appear in motion;
FIG. 3 is a vertical cross-sectional view of the top of FIG. 1 as may be taken along line III—III of FIG. 4; and
FIG. 4 is a top plan view of the dished rotating member as may be taken along line IV—IV of FIG. 1.

Referring to FIGS. 1 and 3, it may be seen that the top 10 is comprised mainly of an upper rotating portion 11 and a lower base portion 12 which may be fixed relative to the rotating portion 11 as it rests upon a table surface 13.

The rotating portion 11 of the top 10 may be comprised generally of three basic components. Two of these three components may comprise sheet metal or opaque material elements combined to form a lower dished rotating member 14. The circular lower dished rotating member 14 may be comprised of a lower concave upward element 15 having a flange 16 around its periphery 17 and having an aperture 18 in its lower central portion 19. The upper half 20 of the dish shaped member 14 may be fabricated from a piece of sheet metal or molded from any opaque material such as plastic. It has an annular central portion 21 extending concave upward to a rim 22 where it is turned downward from the edge 22 of the concave upward central portion 21 to form a surface 23 terminating in a peripheral flange 24 around its outer edge. Both of the upper 20 and lower 15 dished member elements should preferably be circular in a plan view, to FIG. 4. The upper dished member element 20 has a substantially flat portion 25 centrally of the concave upward portion 21 having an aperture 26 therein at its center and may have radial ribs 27 integral with the element 20 extending at least along the concave upward surfaces 21 intermediate of the flat central portion 25 and the rim 22. The peripheral flange 24 of the upper element 20 should be such that it may nest in the peripheral flange 16 of the lower element 15.

The third basic component of the rotating portion 11 of the top 10 may be comprised of an electrical non-conductive material such as plastic in the form of a truncated conical transparent dome piece 30 which may have a substantially flat upper end 31 having an aperture 32 at its center and an outwardly turned flange 33 around its lower open end 34. The diameter of the lower open end 34 of the cone dome 30 should be of such nature that the flange 33 of the dome 30 rests on top of the flange 24 of the upper dished member element 20 which in turn rests on the flange 16 of the lower element 15. The flange 16 may then be cramped against the dome flange 13 to hold the three pieces 15, 20, and 30 together.

Affixed to the flat truncated top 31 of the transparent dome piece 30 may be an annular friction disk or clutch plate 35 and movable clutch 36 with a hole therein aligned with the hole 32. Above the plate 35 may be the second and movable clutch member 36 which may be formed as a spider having pointed clutch plate 35 engageable corners 37 and a central elongated slot 38 positioned over the aperture 32 in the dome 30. Enclosing the movable clutch members 35 and 36 and attached to the flat dome top 31 may be a housing 39 formed of sheet metal or plastic, but preferably of sheet metal secured to the dome 30 by means of tabs 39' passed through slots in the top 31 of the dome 30 which tabs 39' may be bent over or have an outward radial projection to prevent the helix 41 from becoming disengaged with the slot 30 in the clutch member 36 as the helix 41 is reciprocated vertically along the axis 45 of symmetry of the top 10 when the drive means is manually actuated. Around the helix 41
There may be suspended a decorative and/or protective tubular housing 46, the upper end of which may have an outwardly projecting rib 47 below the top 10 and then the upper end of which may extend through the housing 51 and have its upper edge 48 spun or crimped over the clutch plate 35 as a means for attaching it and the housing 46 to the top 10 of the dome 30. Along the axis 45 of symmetry of the top 10, which in this case is vertical, there may be a lower housing 50 affixed to the bottom surface of the lower dish member element 15 and secured thereto by means of tabs 52 on the lower housing 50 cooperating in circularly oriented slots in the lower element 15. All the elements, namely the lower 15 and upper 20 dish-dam element members, the dome 30, the upper housing 39, and lower housing 50 should be of circular cross-section and should all be aligned concentric to the axis 45 of rotation of the top 10. The lower housing 50 should have a flat lower end 54 and should have an aperture 55 in this flat surface 54 in alignment with the axis 45 of rotation of the top 10.

The rotating portion 11 of the top 10 is supported on base 12 which, in the embodiment disclosed in FIGS. 1, 2 and 3, is a hollow conical plastic member 69 having radially oriented reinforcing ribs 61 along its inner surface 62. The base member 69 may have a hole 63 from its apex 64 downwardly in a tubular housing 65 in the interior of the base member 69 at the junction of the radial strengthening ribs 61. It is preferred that the base 69 be formed from a soft plastic material, such as polyethylene, so that, as the top 10 is rotated and experiences vibration, the soft composition of the base 69 will have good gripping and non-scratching properties against the horizontal surface 13 of the supporting structure, be it table, floor or the like, to prevent the top 10 from creeping as it rotates. A pivot rod or axle 66 may be supported and attached in the housing 65 of the base 69 and extend upward from the base 69 through the journal aperture 55 in the flat surface 54 of the lower housing 50, through the journal aperture 25 in the lower 15 and upper 20 rotating member elements to terminate short of the lowermost position of the lower end 44 of the helical reciprocating driving means 41 to establish the fixed axis 45 for the rotation of the top 10 rotating portion 11 relative to the base 12.

Affixed to the upper end 67 of the axle rod 66 in the space 42 between the dished rotating member 14 and the dome 30 there is an armed scoop member 70 connected to the axle 66 by force fit in an aperture 71 in the central hub 72 of the armed scoop member 70. From the central hub 72 of the scoop member 70 extend one or more radial arms 73 which may be angled or configured above the concave portion 21 of the upper rotating member element 20, but such configuration is a matter of appearance and design rather than function vital to this invention. The two arms 73 shown have upwardly extending sculpted scoop blades 74 opposed in direction to one another and preferably extend from the arms 73 of the scoop means 70 against the direction of rotation of the rotating portion 11. Thus, the stationary portion relative to the rotating portion 11, comprises the base member 69, with its axle rod 66 and attached thereto the armed scoop member 70.

Provided with this invention are a plurality of light weight balls 80 contained in the space 42 inside the dome 30 above the dished member 14. These balls 80 are such size that as the rotating portion 11 of the top 10 rotates about its axis 45, the balls 80 encounter the scoop 74 (fixed relative to the rotating portion 11) and are tossed about inside the dome 30. The radial ribs 26 in the dished rotating member 14 further act to agitate these balls 80 and assist in the general throwing of the balls 80 by the rotating motion of the top 10.

The composition of this invention is preferably molded of a styrene transparent plastic and the balls 80 may also be of non-electrical conducting material as plastic or such composition that they are charged with static electricity as they are thrown around in the space 42 by the centrifugal action imparted by the rotating portion 11 and by contact with the paddle scoop means 70 and the inner surface of the dome 30. Because of the mutual repelling nature of the charges on the balls 80, the balls 80 seek positions as far away from each other as possible, but they are attracted to plastic dome 30 and to the paddle scoop means 74. This produces an illusion that the balls 80 are floating in mid-air since the balls 80 do not always maintain contact with the rotating surfaces of the top and hence rotate slower than the rotating portion 11 of the top 10. As the top 10 slows down, the balls 80 thus may adhere to the dome 30 above the reciprocal of the dished member 14 further producing an intriguing effect for the child operating the toy top 10.

While there is described above the principles of this invention in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation to the scope of this invention.

What is claimed is:

1. A top comprising: a stationary base having a shaft fixed thereto and projecting therefrom, a rotatable enclosed chamber mounted for rotation on said shaft, said chamber having a transparent pane, a paddle means, whereby said ball is caused to move randomly in said chamber, at least one freely movable ball in said chamber, and reciprocable means for rotating said chamber about said shaft relative to said paddle means, whereby said ball is caused to move randomly in said chamber when it contacts said paddle means.

2. A top according to claim 1 wherein said chamber comprises a dish portion covered by a transparent dome portion.

3. A top according to claim 1 wherein said means for rotating said chamber comprises a reciprocable helix and clutch means connected to said chamber.

4. A top, comprising: a dished rotatable member, a stationary base supporting said dished member, a transparent dome over said dished member, an axis concentric with said dome and said dished member, reciprocable means for rotating said dished member, and reciprocable means for rotating said dome said and said dished member about said axis, fixed radial paddle means in the space between said dome and said dished member connected to said base, and a plurality of balls in said space for random movement in said space during rotation of said dished member relative to said paddle means.

5. A top according to claim 4 wherein said means for rotating said dished member comprises a reciprocable helix and clutch means cooperating along said axis.

6. A top comprising: an upwardly opening dished rotatable member, a transparent dome covering said dished member, a vertical axis through said top, reciprocating means along said axis operable through said dome for rotating said dished member and said dome, a base below said dished member fixable relative to said dished member, a space above said dished member enclosed by said dome, stationary paddle means in said space connected to said base, and a plurality of balls for random movement in said space during rotation of said dished member relative to said paddle means.

7. A top according to claim 6 wherein said paddle means includes scoops adjacent the closure between said dome and said dished member.

8. A top comprising: a stationary base having a shaft projecting therefrom, a rotatable enclosed chamber mounted for rotation on said shaft, said chamber having a transparent portion, a paddle means attached to said shaft in said chamber, at least one freely movable ball in said chamber, and reciprocable means for rotating said chamber about said shaft relative to said paddle means, whereby said ball is caused to move randomly in said chamber when it contacts said paddle means, and at
least a part of said chamber and said ball being composed of materials which are chargeable with static electricity generated by the relative movement between said chamber and said ball when said chamber is rotated.

9. A top comprising: a dished rotatable member, a stationary base supporting said dished member, a transparent dome over said dished member, an axis concentric with said dome and said dished member, reciprocable means for rotating said dome and said dished member about said axis, radial paddle means in the space between said dome and said dished member connected to said base, and a plurality of balls in said space for random movement in said space during rotation of said dished member relative to said paddle means, the compositions of said dome and said balls being such that the produce static electrical charges between said dome and said balls when said balls move against the surface of said dome.

10. A top comprising: a dished rotatable member, a stationary base supporting said dished member, a transparent dome over said dished member, an axis concentric with said dome and said dished member, reciprocable means for rotating said dome and said dished member about said axis, radial paddle means in the space between said dome and said dished member connected to said base, and a plurality of balls in said space for random movement in said space during rotation of said dished member relative to said paddle means, said paddle means including radial arms extending from said axis and terminating in scoops against which said balls impinge as said dome and dished member is caused to rotate about said axis.

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