

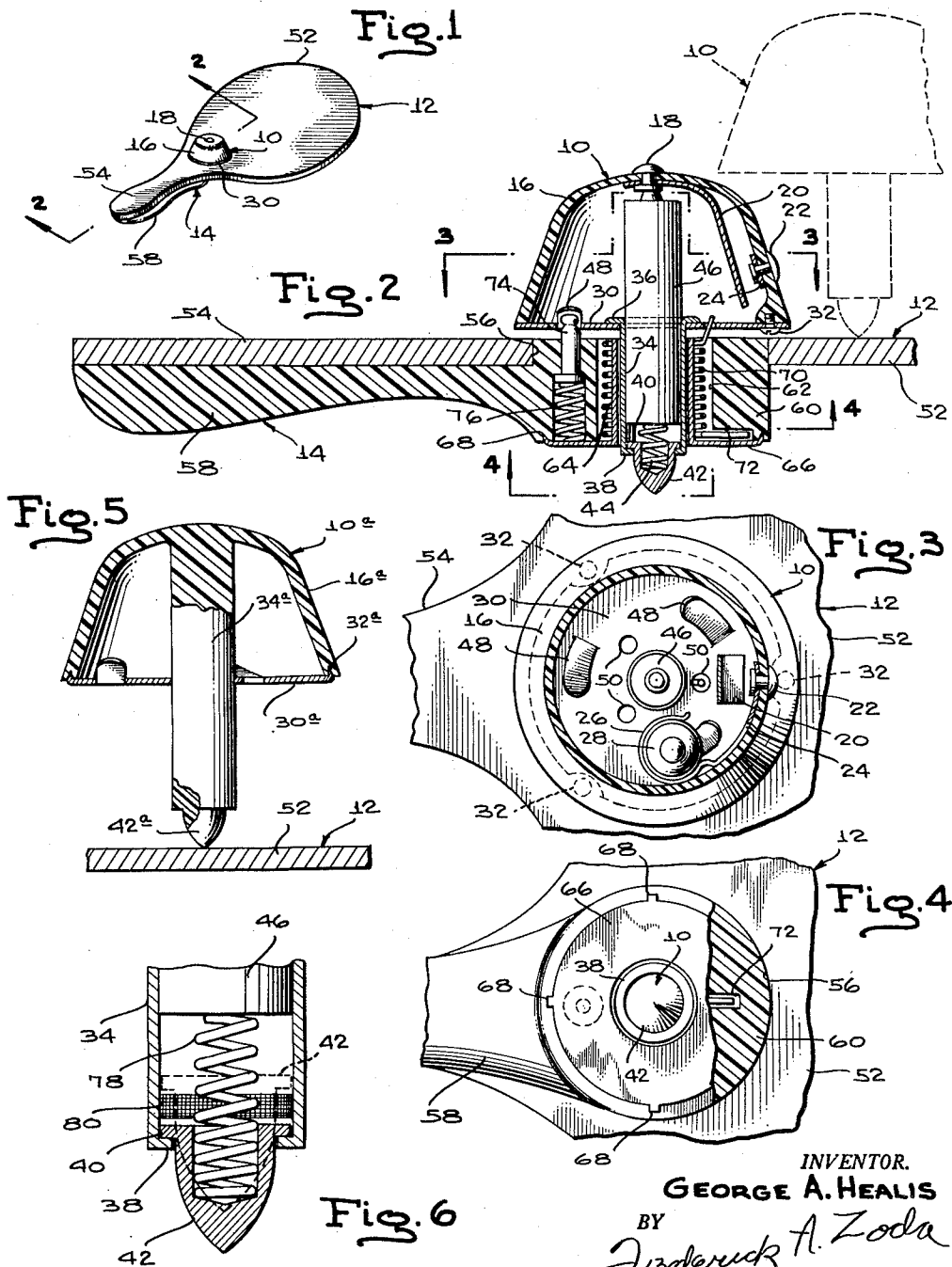
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TOP AND PADDLE

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TOP AND PADDLE

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This invention relates to toys, and more particularly has reference to a toy including a paddle, a top winding mechanism mounted thereon, and a top adapted to be wound by said mechanism and releasably latched thereby in its wound condition, to be subsequently disengaged from the mechanism by a user and guided about while spinning, upon the surface of the paddle.

Heretofore, it has been proposed to mount upon a paddle a means for imparting rotatable movement to a top, with the top to be maintained upon the surface of the paddle while the top is spinning, through the skill and dexterity acquired by the user. An important object of the present invention, in this regard, is to generally improve upon any devices having this basic similarity to the present invention.

Another object is the provision of a novel formation and relative arrangement of the parts making up the mentioned basic components, with a view to relieving the paddle of the shock incurred thereby on sudden release of the winding mechanism at the moment the top is given its initial impetus by said mechanism. It is proposed, in this manner, to stabilize the paddle against lateral deviation that might otherwise tend to occur when the winding mechanism is released, at the instant the top begins to spin and is to be shifted onto the paddle surface.

A further object of importance is to facilitate the manufacture of the device by incorporation of the entire winding mechanism in a handle grip element formed separately from the body of the paddle. In this way, preassembly of the winding mechanism and grip element as a unit separate from the top proper and paddle body is proposed, with said unit to be readily interfitted with and fixedly secured to the paddle body to complete the construction of the device at a minimum cost.

A further object of importance is to so design the winding mechanism as to reduce to a minimum losses incurred when said mechanism is released to impart spinning movement to the top. It is thus proposed to spin the top at a greater initial velocity than has heretofore been the case, to prolong thereby the duration of the top's motion.

A further object of importance, in another form of the invention, is to provide in the stem of the top a sliding tip and a spring biasing the tip axially, outwardly of the stem, with the arrangement being one effective to progressively build up a force sufficient to ultimately disengage the top from an associated detent, responsive to a pressure exerted on the tip by a finger of one's hand.

Other objects will appear from the following description, the claims appended hereto, and from the annexed drawing, in which like reference characters designate like parts throughout the several views, and wherein:

Figure 1 is a perspective view of a top and paddle formed in accordance with the present invention, the top being shown in its latched position;

Figure 2 is an enlarged longitudinal sectional view on line 2—2 of Figure 1, the top being shown in dotted out-

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line as it appears when spinning and in full lines as it appears when latched in a wound condition;

Figure 3 is a sectional view on line 3—3 of Figure 2;

Figure 4 is a sectional view on line 4—4 of Figure 2;

Figure 5 is a view partly in vertical section and partly in elevation of a modified form of top; and

Figure 6 is an enlarged, fragmentary longitudinal sectional view through the stem of a second modification.

In the form of the invention shown in Figures 1—4, the top has been generally designated 10. It is illustrated in association with a paddle generally designated 12, and with a combined winding mechanism and handle unit generally designated 14.

The top 10 includes a generally frusto-conical shell 16 of molded plastic or other electrically insulative material formed open at its lower larger end. An upwardly concavo-convex top wall closes the shell at its upper end. The shell, in this form of the invention, is translucent, and may be suitably colored to give off a correspondingly colored light while the top is spinning.

Mounted in the center of the top wall of the shell is a rivet 18 of electrically conductive material, defining a contact for the post of a battery to be described hereinafter. Within the shell, the rivet extends through an opening formed in the inner end of an elongated spring contact 20, formed of leaf spring material and extending radially of the shell. The spring contact 20, as shown in Figure 2, at its other free end, is normally spaced inwardly from the wall of the shell, by reason of its inherent spring tension. However, when the shell is spinning at a predetermined peripheral speed, the tension of the spring contact is overcome, and the free end thereof shifts radially, outwardly of the shell into engagement with a cooperating, fixed switch contact 22 formed as a rivet extending through the wall of the shell adjacent the flared, lower end thereof.

Rivet 22 anchors to the inner surface of the shell one end of an arcuate clamp arm 24 (see Figure 3) extending circumferentially of the shell in contact with the inner surface thereof, and merging at its other end into a spring clamp 26 adapted to receive and securely grip the base of a flash light bulb 28. The clamp and arm are formed from a single length of conductive material.

Closing the lower end of shell 16 is a flat, circular electrically conductive base plate 30 having openings formed therein at locations spaced uniformly about the periphery of the base plate. Screws 32 or equivalent fastening elements extend through said openings, and are threaded in downwardly opening recesses formed in correspondingly spaced lugs formed in shell 16 at the lower end thereof. The base plate, thus, can be removed whenever it is necessary to replace the lamp bulb 28 or the battery providing the electrical power for illuminating the bulb.

In the center of base plate 30 there is formed a relatively large opening, receiving the upper end of a tubular stem 34 depending from the base plate and formed, at said upper end thereof, with an outwardly directed circumferential lip 36 overlying the edge portion of the center opening of the base plate. Lip 36 is fixedly secured to the base plate in any suitable manner, as for example by spots of solder spaced circumferentially of the lip.

At its lower end, the tubular stem 34, which is disposed axially of the top, is formed with an inwardly directed circumferential lip 38, on which seats an outwardly directed flange 40 formed upon the larger, inner end of a tapered tip 42 depending from and aligned coaxially with the stem. The stem and tip are of electrically conductive material, and formed in the tip, and opening inwardly of the stem, is an axial socket in which seats one end of a coiled compression spring 44. The other end of spring 44 is abutted against the lower end of a battery 46, thus

to hold the battery at its upper end in engagement with the contact 18.

The bulb, it will be understood, has the tip of its base in engagement with the base plate 30. Thus, it will be seen that when the centrifugal switch closes, current will flow through the spring 44, tip 42, tubular stem 34 and base plate 30 to the base tip of the bulb, from one side of the battery. The bulb will thus be illuminated as the current passes therethrough through the bulb clamp, contact 22, contact 20, and contact 18 to the other side of the battery.

Referring to Figure 3, uniformly spaced, arcuate tongues 48 are struck upwardly out of the material of the base plate, and are disposed in an annular series concentric with the axis of rotation of the top. The tongues 48 are also concentric with an inner, annular series of apertures 50 formed in the base plate.

Referring now to the construction of the paddle 12, this includes a wide body 52 formed of plywood or the like, integral at one end with a handle 54. A large opening 56 is formed in the body of the paddle, adjacent the inner end of the handle.

The combined winding mechanism and handle unit 14 is preassembled as a unit, separately from the top and paddle, and includes an elongated handle grip portion 58 the edges of which are in registration with the handle 54 of the paddle. The handle grip portion 53, as shown in Figure 2, is shaped to permit one to comfortably grasp the handle. At its inner end, it is integrally formed with a cylindrical block or extension 60 projecting upwardly above the plane of the bottom surface of the paddle, and fitting snugly in the opening 56. The extension 60 and handle grip portion 53, when interfitted with the paddle in the manner shown in Figure 2, are cemented to the paddle, thus to permanently and fixedly connect the paddle to the preassembled handle grip and winding unit.

Formed in the extension 60 is an axial bore 62 of large diameter, opening upon the top surface of the extension, said top surface of the extension 60 being flush with the top surface of the paddle. The bore 62 is also formed open at its lower end, and extending within the bore for its full length is a tubular housing 64 the upper end of which lies in the top plane of the paddle, and the lower end of which is formed integrally with an outwardly directed, large diameter flange 66 having uniformly spaced teeth 68 disposed circumferentially thereof and embedded in the underside of the extension 60. The stem 34, while the top is being wound, fits into the housing 64, and is somewhat loose therein, so as to reduce frictional losses to a minimum when the top is given its initial rotatable movement by release of the winding mechanism therefrom.

The bore 62 is substantially greater in diameter than the housing 64, so as to define an annular space therebetween within which extends a torsion spring 70. One end of the spring 70 extends radially outwardly of the space, and is anchored in a radial, downwardly opening groove 72 formed in the extension 60 and closed at its bottom by the flange 66. The other end of the spring 70 projects upwardly above the plane of the paddle, and is engageable in any one of the apertures 50.

Detent means is embodied in the winding mechanism to engage in the several openings defined by striking of the tongues 48 out of the material of the base plate 30, and includes a latching pin 74 having a rounded head projecting above the plane of the paddle. The pin 74 is axially shiftable within a small diameter bore formed in the extension 60 in parallel relation to the bore 62 thereof. At its base, the pin has a collar defining a shoulder thereon that engages against the inner end of a counterbore formed as a continuation of the lower end of the pin-receiving bore. Within the counterbore, a coiled compression spring 76 is housed, and is held under compression between the pin and the flange 66.

In use, the stem of the top 10 is inserted in the tubular housing 64, and the upper end of the torsion spring 70

is engaged in a selected aperture 50. The top is now rotated by the user, in a direction to wind the spring 70. The detent engages in successive latching openings under the tongues 48 at successively following stages of the winding movement of the top. This particular winding action for a top is well known in the art per se. Heretofore, however, the torsion spring and the detent means has been embodied in a round winding knob which is held in the user's hand, and which is not stationarily mounted in a paddle or the like in the manner shown. Further, in tops of this type, the conventional design has been such as to cause the top to spin upon that end thereof remote from the winding mechanism, that is, the end where, in the instant device, the contact 18 is located. In the present invention, the top spins on the opposite end, that is, upon the tip 42 as will be apparent by reference to the dotted line showing in Figure 2.

When the top has been fully wound, the user grasps the paddle in one hand, and with the index finger exerts upward pressure upon the tip 42. When the pressure exceeds a predetermined value, the rounded head of the pin 74 will become disengaged from its associated latching opening of the base plate 30, thus freeing the top for rotatable movement. With respect to the manner in which the pin becomes disengaged, it will be noted that the torsional force exerted by the wound spring 70, tending to rotate the top, binds the base plate against the pin, with disengagement of the pin occurring at such time as a force exerted axially, upwardly of the stem by progressively increased compression of spring 44 is built up to a value sufficient to overcome the mentioned torsional force. The rotatable movement of the top will accordingly be imparted thereto, by the torsion spring 70 which is now free to unwind.

At the same time, the user whips the paddle upwardly a few inches to shift the top upwardly out of the tubular housing 64. This is done to free the top from the spring 70, and also to toss the top onto the surface of the paddle body, where it may be guided about. It may be seen that one can acquire considerable skill in maintaining the top upon the paddle, and even when it begins to wobble as its speed of rotation decreases, it can be kept spinning upon the paddle surface by skillful manipulation of the paddle. Further, one may guide the spinning top back into the tubular housing, should he so desire.

When the peripheral speed of the top reaches a predetermined speed, the tension of the spring contact 20 will be overcome. The contact 20 will now be shifted radially outwardly of the top by centrifugal force into engagement with the contact 22, thus illuminating the lamp bulb.

It may be noted, in this regard, that the tip 42 is axially slidable within the tubular stem 34. Thus, bouncing movement may be given the top as it spins upon the paddle.

The spring 44 alternately compressing and expanding. Again, dexterity may be acquired, to cause the top to bounce upon the paddle surface.

An important characteristic of the invention resides in the fact that the winding mechanism is so designed as to reduce to a minimum losses incurred as the top is given its initial spinning movement. Heretofore, in tops of this general type having a winding knob as previously described herein, the spring 70 has been wound directly against the stem of the top. As a result, it tends to bind thereagainst, thus creating friction that detracts from the speed of the spinning motion. In the illustrated example, the spring 70 is disposed exteriorly of the tubular housing 64 in which the stem is loosely positioned, and thus, there is no possibility of the spring binding upon the stem.

Further, it is important to note that the winding mechanism is so designed as to eliminate shocks which the paddle may suffer when the mechanism is released to spin the top. Heretofore, it has been proposed to embody a top spinning means in a paddle, but such a means as heretofore proposed has involved a lateral force exerted against the paddle, tending to forcibly shift the paddle

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laterally at the moment the top begins to spin. This detracts from the freedom which the user should have, with respect to shifting the top upwardly out of the housing as soon as the top begins to spin.

In the form of the invention shown in Figure 5, the illuminating means has been omitted. In this form, the top has been generally designated 10a, and includes a plastic shell 16a having a shape similar to that of the shell 16. Integrally molded with the plastic shell 16a, at its center, is a depending stem 34a, projecting through a center opening formed in a base plate 30a. The base plate 30a is similar to the base plate 30 in all respects, except for having circumferentially spaced, upwardly projecting teeth 32a embedded in the flared, open lower end of the shell 16a. A tapered tip 42a is integrally formed upon the lower end of the stem 30a.

It will be understood that in the non-illuminated form, the body or shell of the top can be of wood, or other similar material, and further, the stem can be a tubular element secured to the base plate in the same manner as in the first form, to reduce the cost of manufacture.

In the form of the invention shown in Figure 6, the top shown in Figures 1-4 is used, having the illuminating means previously described. In this form, however, means is embodied in the stem for causing the light bulb 28 to flash, each time the top is bounced upon the surface of the paddle. To this end, it may be desirable to provide a longer spring 78 in the socket of the tip 42, in place of the spring 44, a shorter battery being used in this event. However, it is not essential that the spring be made longer, and whether the spring 44 or 78 is used, the inner surface of the stem 34, adjacent the lower end of the stem, is coated with a narrow band of electrically insulative paint 80.

By reason of this arrangement, when the spring 78 is compressed during a bounce of the top, tip 42 will ride upwardly within the stem 34, to the dotted line position shown in Figure 6. As a result, when the tip 42 passes the band 80, the circuit through the bulb will be momentarily broken, to cause a flashing of the bulb. Said flashing will occur, further, whenever the tip 42 moves upwardly only as far as the area of the band.

The flashing of the bulb will occur, of course, with the centrifugal switch closed while the top is spinning at a predetermined peripheral speed.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles of operation and the means presently devised to carry out said principles, it being considered that the invention comprehends any minor change in construction, that may be permitted within the scope of the appended claims.

I claim:

1. A toy comprising: a support having a generally vertical bore; a torsion spring within the bore having a lower end anchored to the support and an upper end projecting out of the upper end of the bore; a top including a stem removably seating in the bore in coaxial alignment with the spring, the top including means at the

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upper end of the stem releasably engaging the other end of the spring, for winding of the spring responsive to manual rotation of the top in one direction and for spinning of the top in an opposite direction responsive to unwinding of the spring; a detent carried by the support releasably engaging the top in the wound condition of the spring, the detent and the other end of the spring disengaging from the top responsive to upward movement of the stem within the bore; a tip axially slidable within the stem and projecting out of the lower end of the stem beyond the lower end of the bore; and a compression spring extending between the stem and tip within the stem to exert a resilient, yielding force on the tip tending to bias the same in a direction axially, outwardly of the stem, said tip being manually shiftable axially, inwardly of the stem to place the compression spring under increased compression effective to increase the pressure thereof against the stem to a value sufficient to disengage the top from said detent, thus to initiate a spinning motion of the top responsive to unwinding of the torsion spring substantially simultaneously with an axial motion of the stem upwardly within the bore responsive to expansion of the compression spring.

2. A toy comprising: a support including an elongated handle, a body rigid with an extending from the handle, the body being of a width substantially greater than that of the handle and having a flat top surface formed with an opening, and a block fixed in the opening and having a bore extending normally to the plane of said surface; a coiled spring within the bore anchored at one end to the block and projecting at its other end beyond one end of the bore; a top including a stem removably seating in the bore within the spring and means releasably engaging the other end of the spring, for winding of the spring responsive to manual rotation of the top in one direction and for spinning of the top in an opposite direction by the spring during unwinding thereof; a detent on the support releasably engaging said means in the wound condition of the spring, the detent and the other end of the spring disengaging from said means responsive to shifting of the stem axially of the bore in one direction; a tip axially slidable within and projecting out of the stem beyond the other end of the bore; and a spring within the stem held under compression between the stem and tip, the second spring biasing the stem axially in a direction to disengage the detent from said means responsive to pressure exerted by a user on the projecting tip tending to shift the tip axially, inwardly of the stem.

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