

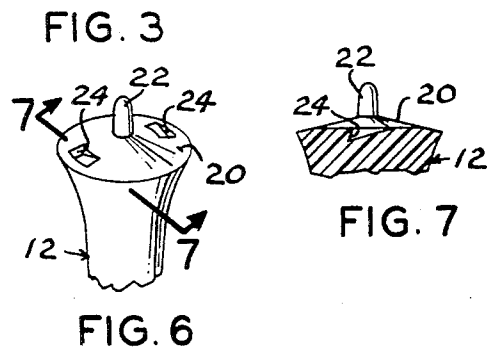
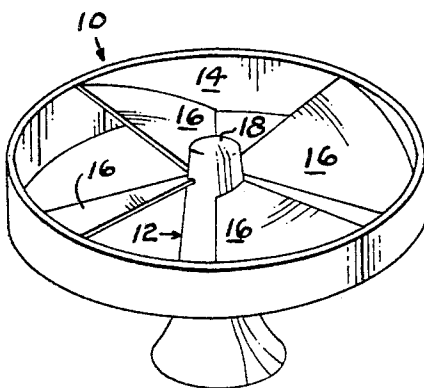
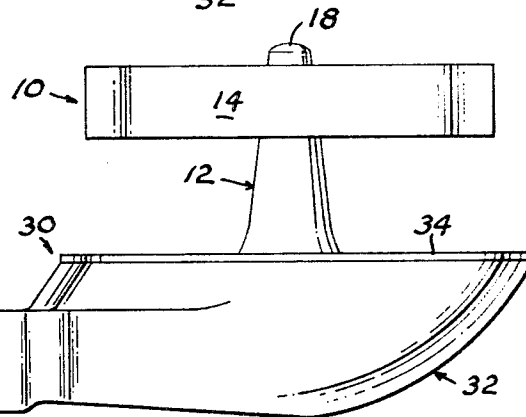
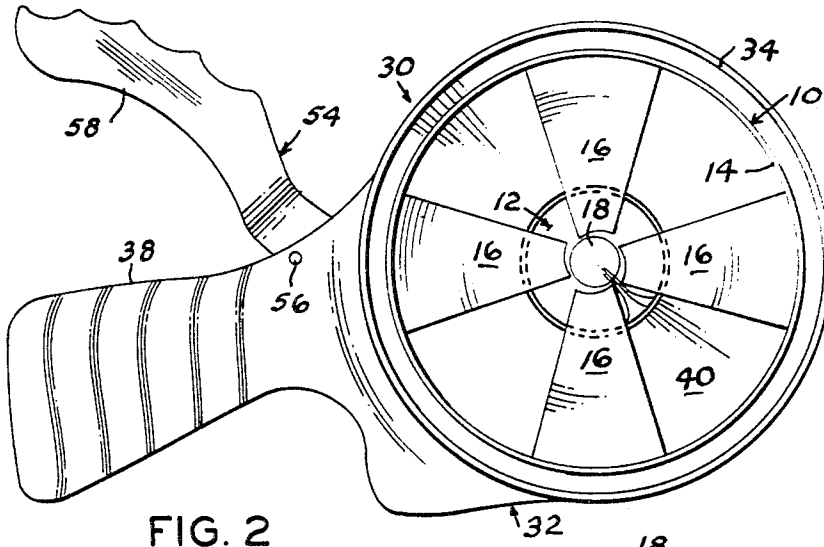
Oct. 21, 1969

F. E. TYLER
FLYING TOP

3,473,256

Filed March 23, 1967

2 Sheets-Sheet 1



FORREST E. TYLER
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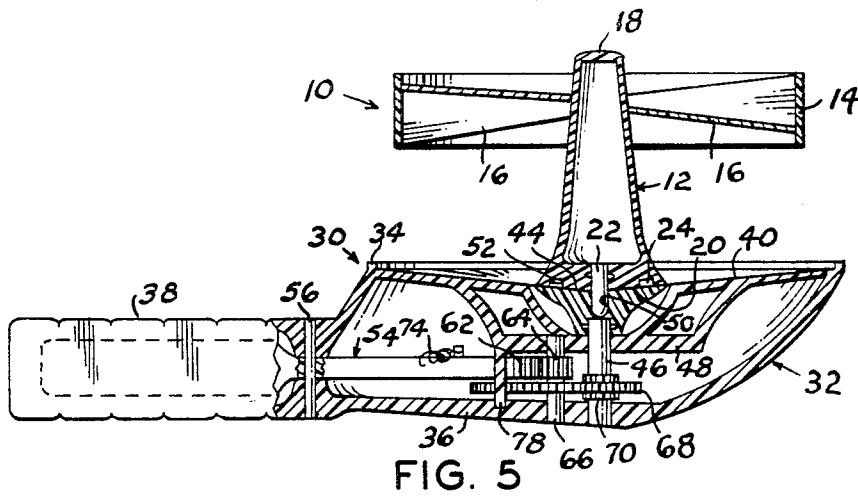
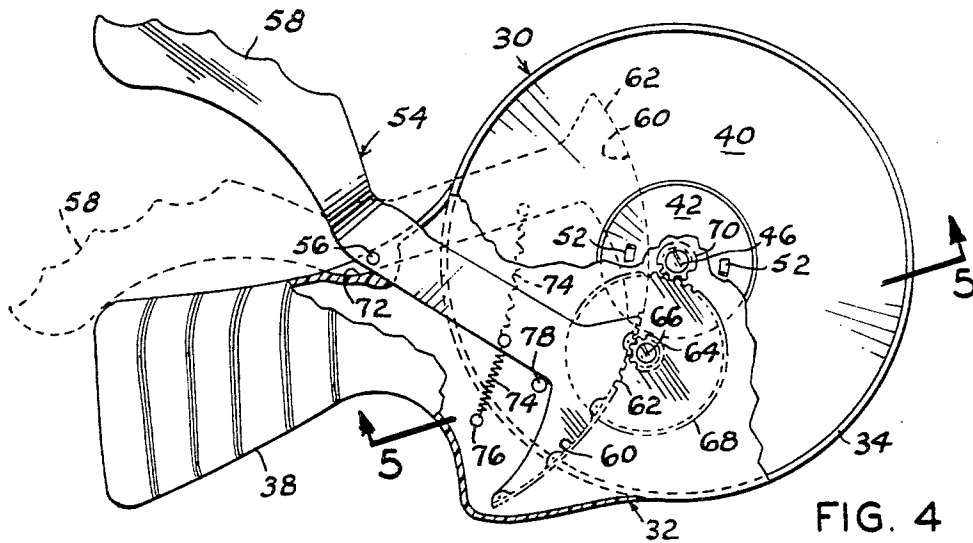
F. E. TYLER
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2 Sheets-Sheet 2



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3,473,256

FLYING TOP

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U.S. Cl. 46-84

1 Claim

ABSTRACT OF THE DISCLOSURE

A central hub connected with a surrounding ring by a plurality of propeller blades forms a top adapted to rise through the air in response to a rotary thrust imparted thereto by a launcher. The launcher comprises a handle equipped frame having a spindle engageable with the hub. A lever, pivotally mounted on the frame, imparts rotary motion to the spindle by a gear train within the frame.

Background of the invention

The present invention relates to toys and more particularly to a top adapted to rise through the air in response to a rotary thrust imparted thereto by a launching mechanism.

The prior art discloses a plurality of propeller blade equipped flying tops adapted to rise through the air, such as is disclosed by Patent No. 813,519; 1,174,951; 1,270,313 and 1,802,386. Each of the above patents are actuated by a cord or string with the exception of Patent No. 1,270,313 which is spring driven. Each of the tops disclosed by these patents are adapted to fly or sail through the air and after landing and terminating their spinning action the top must be manually replaced on or connected with the launcher.

The present invention includes a launching mechanism for actuating the flying top and a landing area or receiving platform whereby the user endeavors to catch the top during its descent. Furthermore, the launcher of this invention is provided with a train of gears manually actuated by a hand held lever which materially increases the thrust initially imparted to the top. When the idle top is repositioned on the launcher, the launcher is in condition for imparting a rotary thrust to the top without the necessity of resetting a spring or rewinding a cord or string.

Summary of the invention

The flying top comprises a hub connected with a surrounding ring by propeller blades. The top launcher comprises a circular frame having a laterally extending handle. A central spindle engageable with the hub has rotary motion imparted thereto by a lever pivotally connected with the frame handle. The lever carries a rack engaging and actuating a train of gears interposed between the spindle and the rack.

It is, therefore, the principal object of the present invention to provide a toy of the flying top class having launching means for the top which induces dexterity of the user's hands and body in launching the top and catching the same on the launcher for a subsequent launching.

Brief description of the drawings

FIGURE 1 is a perspective view of the flying top, per se;

FIGURE 2 is a top view of the top and launching means;

FIGURE 3 is a side elevational view of FIG. 2;

FIGURE 4 is a top view of the launching mechanism, per se, with parts broken away for clarity;

FIGURE 5 is a fragmentary vertical cross-sectional view taken substantially along the line 5-5 of FIG. 4;

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FIGURE 6 is a fragmentary perspective view of the depending end of the hub when inverted from the position of FIG. 1; and,

FIGURE 7 is a fragmentary vertical cross-sectional view taken substantially along the line 7-7 of FIG. 6.

Description of the preferred embodiment

The reference numeral 10 indicates the flying top comprising a body or hub 12 and a surrounding annular wall or ring 14 interconnected by propeller-like blades 16. The hub 12 is substantially truncated cone-shaped having an upper arcuate end surface 18 disposed slightly above the plane defined by the upper limit of the ring 14, as viewed in FIG. 3. The other or base end of the hub is flared outwardly and has its depending or bottom surface tapering downwardly, as best seen in FIG. 7, at 20. A central relatively short axle 22, forming a spinning point, depends from the hub. The free end of the axle is provided with an arcuate end surface to reduce frictional contact of the axle with a support while the top is spinning and prevent injury to a user's hand when contacting the top. The bottom surface 20 of the hub is provided with diametrically opposite inclined surface sockets 24 for imparting rotary thrust to the top 10 in the manner more fully explained hereinbelow.

The wall forming the ring 14 is relatively thin and cylindrical-like with the wall surface parallel with the longitudinal axis of the hub. The blades 16 are relatively thin and are wedge-shaped extending radially outward from their connection with the hub 12 and are connected at their outermost ends to the inner wall surface of the ring 14. As shown in FIG. 1, each of the blades are inclined in a propeller blade manner with respect to the longitudinal axis of the hub.

A spinning action is imparted to the top 10 to achieve its flying action by a launcher 30. The launcher 30 comprises a substantially cup-shaped housing or frame 32 having an upper circular end portion, as viewed in FIGS. 3 and 5, defined by a relatively short upstanding wall 34 and an opposite lower or bottom wall 36. A handle 38, integrally connected with the frame, projects laterally therefrom. Inwardly of the upstanding wall 34 the upper surface of the frame is provided with a downwardly and inwardly converging upper surface 40 forming a disk-shaped landing area for the top 10.

A spindle 42 is centrally positioned within a central well defined by the upper surface 40 of the frame and is provided with an upper surface 44 forming a continuation of the slanting surface 40 which contiguously engages the depending surface 20 of the hub 12. The other end portion of the spindle 42 is connected with and driven by a driving shaft 46 journaled at its respective end portions by the frame wall 36 and an intermediate frame wall 48 connected with the landing surface wall 40. The spindle 42 is provided with a central bore or socket 50 for cooperatively nesting the hub axle 22, as shown in FIG. 5. The upper surface of the spindle 42 is provided with diametrically opposite upstanding inclined latches or lugs 52 which are cooperatively received by the hub sockets 24 so that rotary motion imparted to the spindle is in turn imparted to the hub 12.

A lever 54 is pivotally connected by a pin 56 to the handle 38 adjacent its juncture with the frame 32. One end portion 58 of the lever projects laterally of the frame within the plane of the handle 38. The other end portion of the lever projects into the frame and terminates in a transversely widened arcuate end surface 60. A toothed rack 62 is secured to the arcuate end surface 60. The rack engages a small gear 64 mounted on an idling shaft 66 journaled at its respective ends by the housing wall 38 and intermediate wall 48. A second substantially larger gear 68 is coaxially connected to the idling shaft

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66 in turn engaging a spur gear 70 mounted on the drive shaft 46. Thus when the lever 54 is rotated about its fulcrum pin 56 the rack 62 rotates the gears 64 and 68 which in turn imparts rotary motion to the spindle 42. A recess defined by a wall 72 forms a stop which is engaged by an adjacent surface of the lever 54 when its end portion 58 is pivoted toward the handle. A spring 74, connected with the inwardly disposed end portion of the lever and a pin 76 secured to the inner surface of the frame, returns the lever 54 from its dotted to its solid line position, as shown in FIG. 4, thus resetting the lever for subsequent rotative action of the spindle 42 after each launching action. A stop pin 78, connected with the intermediate wall 48, limits the return movement of the lever 54.

Operation

The launcher 30 is manually held by the handle 48 with the user's fingers encircling the end portion 58 of the lever. The launcher is held substantially horizontal so that its upper rim 34 is parallel with the surface of the earth. The top 10 is positioned on the launcher, as shown in FIGS. 3 and 5. The user pivots the lever end portion 58 toward the handle 38, as shown by dotted lines (FIG. 4), wherein movement of the rack 62 rotates the gear 68 and the spur gear 70 so that the lugs 52, engaging the hub sockets 24, imparts the desired rotary thrust to the top 10. With sufficient rotary thrust, the top, by its blades 16, rises through the atmosphere. As the rate of rotation of the top decreases and it begins its descent the user may endeavor to catch the top on the slanted surface 40 of the launcher or permit it to fall to the floor or earth and continue its spinning action. Repositioning the top on the launcher completes one cycle of its operation.

Obviously the invention is susceptible to some change or alteration without defeating its practicability, and I therefore do not wish to be confined to the preferred embodiment shown in the drawings and described herein.

I claim:

1. A flying top, comprising: an annular wall forming a ring; a hub, one end of said hub projecting laterally of

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the plane of said ring; an axle connected with said one end of said hub; propeller blades extending radially between and connected with said hub and said ring, respectively; and launching means including a substantially cup-shaped frame having a relatively short upstanding wall surrounding a substantially dish-shaped upper surface defining a flying top launching area and a central well, a spindle journaled by said frame within the well, said spindle having a socket for coaxially receiving said axle and having an upper surface merging with and forming a continuation of said flying top launching area, latch means on said spindle releaseably engaging said hub, said latch means comprising a pair of diametrically disposed upstanding lugs formed on the hub receiving end of said spindle, said hub having a pair of sockets formed in its end surface cooperatively aligned with said lugs, a lever pivotally connected intermediate its ends to said frame, spindle rotating means at one end of said lever including a drive shaft coaxially connected with said spindle within said frame, a spur gear surrounding said drive shaft, an idling shaft journaled by said frame, gears coaxially connected with said idling shaft, one said gear meshing with said spur gear, and a rack mounted on said one end portion of said lever, said rack meshing with the other said gear on said idling shaft for imparting rotational movement to said spindle in response to pivoting movement of said lever.

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