

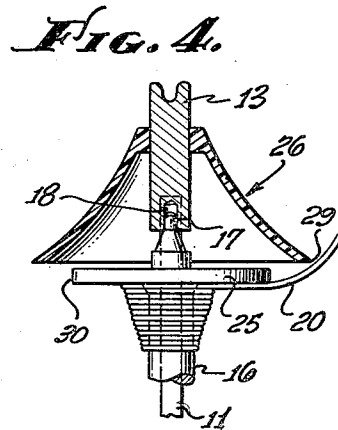
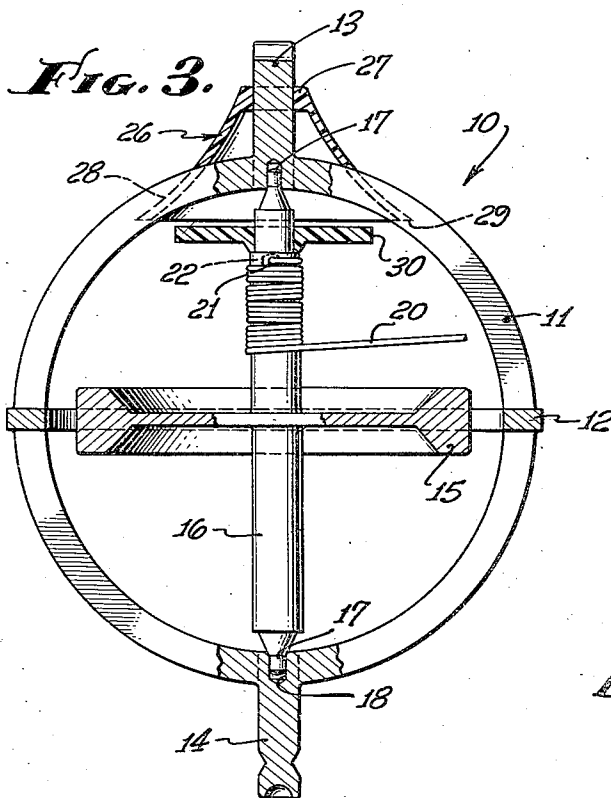
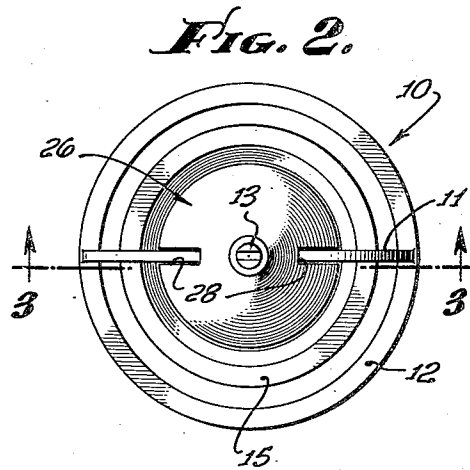
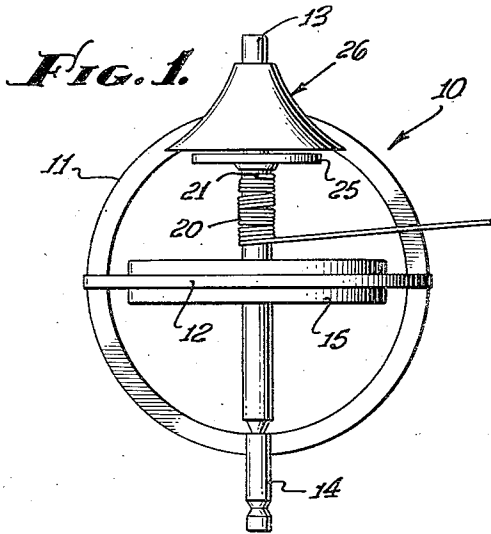
July 11, 1961

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2,991,584

GYROSCOPIC TOY

Filed July 7, 1958



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GYROSCOPIC TOY

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Filed July 7, 1958, Ser. No. 747,033

5 Claims. (Cl. 46-50)

The present invention relates to toys, and more particularly to gyroscopic toys in which the flywheel element is placed in rotation by pulling upon an actuating string.

In gyroscopic toys operated by a pull string, the latter may become caught between a rotating part of the toy and its stationary frame. This is particularly true of gyroscopic toys of the automatic rewind type, in which the string is released after being pulled, for the purpose of rewinding itself on the rotating member.

An object of the present invention is to prevent the string of a gyroscopic toy from becoming caught between its rotating and stationary parts.

Another object of the invention is to provide a gyroscopic toy having a stop member or disc for limiting outward feeding of the actuating string along the rotating shaft of the toy, in which the string is prevented from catching between the stop member and the relatively stationary frame of the toy, despite the existence of a relatively large space between the periphery of the stop member and the frame.

A further object of the invention is to provide a gyroscopic toy in which the actuating string is prevented from being caught between the rotating and stationary parts of the toy, in a relatively simple and economical manner.

This invention possesses many other advantages, and has other objects which may be made more clearly apparent from a consideration of a form in which it may be embodied. This form is shown in the drawings accompanying and forming part of the present specification. It will now be described in detail, for the purpose of illustrating the general principles of the invention; but is to be understood that such detailed description is not to be taken in a limiting sense, since the scope of the invention is best defined by the appended claims.

Referring to the drawings:

FIGURE 1 is a side elevational view of a gyroscopic toy embodying the invention;

FIG. 2 is a top plan view of the apparatus shown in FIG. 1;

FIG. 3 is an enlarged section taken along the line 3-3 on FIG. 2;

FIG. 4 is a combined elevational and sectional view through a portion of the gyroscopic toy.

The gyroscopic toy includes a frame 10 consisting of a vertical ring or gimbal 11 and a horizontal ring or gimbal 12 which are suitably secured to one another. Projecting upwardly from and suitably secured to the vertical ring 11 is an upper stem 13 which is in alignment with a lower stem 14 secured to and depending from a diametrically opposite portion of the vertical ring. The vertical ring 11 and the upper and lower stems 13, 14 are disposed generally in a central plane normal to the central plane of the horizontal ring or gimbal 12, the axis of the stems coinciding with the axis or center of the horizontal ring or gimbal.

A rotatable flywheel 15 is disposed within the frame 10, being secured to a shaft 16 extending therefrom in opposite directions. The ends 17 of the shaft are piloted within sockets 18 in the upper and lower stems, the walls of the sockets forming bearing supports for the rotating shaft and the flywheel. The shaft 16 is of such length that the flywheel 15 is positioned for rotation in a central plane that substantially coincides with the central plane in which the horizontal ring or gimbal 12 lies.

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The flywheel 15 is placed in rotation by a string or cord 20 wound around the shaft 16 on one side of the flywheel. This string or cord is permanently attached to the shaft, as by inserting an end of the cord in a hole 21 extending transversely through the shaft, the cord having a suitable knot 22 thereon for preventing the cord from being pulled out of the hole. The cord is wound around the shaft, with a portion of its string extending laterally away from the shaft and beyond the frame 10. By grasping such portion and pulling upon it, the shaft 16 and flywheel 15 are rapidly rotated. When the string has been fully unwound from the shaft, it will tend to rewind on the shaft in a reverse direction. Just before the re-winding occurs, the string should be released, in order that it can rewind itself to its fullest extent. Because of the release of the string just before rewinding commences, the shaft and flywheel will continue to rotate. The end of one of the stems 13, 14 may be placed on a suitable support or surface, the rotating flywheel resulting in the maintenance of the toy in a substantially erect position, supported by the stem that rests on the coengaging surface.

Travel of the string 20 longitudinally along the shaft 16 is limited in one direction by the flywheel 15. It is limited in the opposite or outward direction by a suitable stop member 25, such as a disc, secured on the shaft 16 and projecting outwardly therefrom toward the vertical gimbal 11. If the string 20 tends to rewind on the shaft and move in an upward direction therealong, it will engage the stop member or disc 25, which rotates with the shaft, and be precluded thereby from further outward feeding along the shaft.

It has been found that at times the string tends to catch between the rotating disc 25 and the adjacent frame 10, particularly after the string has been pulled to impart rotation to the flywheel and during its rewinding on the shaft. The string may whip around with the shaft 16 and catch between the disc 25 and the frame ring 11, either damaging or breaking the string or stopping rotation of the flywheel, or at least retarding such rotation.

In the present instance, such catching or snagging of the string is prevented by a baffle member 26 mounted on the stationary frame 10 and with a portion thereof disposed adjacent to the periphery of the stop member or disc 25. As shown, the baffle member consists of a conical cap mounted on the stationary frame. This cap 26 includes an upper central hub portion 27 that may frictionally engage the upper stem 13. The cap diverges in a downward direction and has a pair of diametrically opposite notches 28 therein enabling it to be slipped over the vertical ring 11, with the lower circumferential edge 29 of the cap disposed closely adjacent to the periphery 30 of the stop disc. The cap portions on opposite sides of the notches 28 may also frictionally engage the sides of the vertical ring or gimbal 11 to retain the cap or baffle member in place on the frame.

With the cap 26 in place, the free end of the string cannot move into a position in which it will be jammed or caught between the periphery 30 of the stop disc and the adjacent vertical ring or gimbal 11. If the end portion of the string engages the disc, it will also engage the lower circumferential edge 29 of the baffle member or conical cap 26, the string being prevented from moving upwardly between the rotating disc and the stationary vertical gimbal ring 11.

It is, thus, apparent that a gyroscopic toy has been provided in which the pull string is prevented from being caught between a rotating portion of the apparatus and a relatively stationary portion thereof. This desirable result is accomplished in a relatively simple and economical manner through the expedient of slipping the baffle piece of cap 26 onto the frame 10, with its lower edge 29 adjacent to the rotatable disc. The cap is effective in prevent-

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ing undesired catching of the pull string despite the fact that the disc 25 may be spaced a substantial distance from a gimbal ring 11 of the frame 10.

The inventor claims:

1. In a gyroscopic toy: a frame; a shaft rotatably carried by said frame; a flywheel secured to said shaft; a string adapted to be wound on said shaft to rotate said shaft and flywheel; a disc secured to said shaft to limit outward feeding of said string along said shaft, the periphery of said disc being contiguous said frame; and a baffle member on said frame having a circumferential edge contiguous and outwardly of the periphery of said disc to prevent passage of said string between said disc and frame.

2. In a gyroscopic toy: a frame comprising a ring; a shaft within and rotatably carried by said ring; a flywheel secured to said shaft; a string adapted to be wound on said shaft to rotate said shaft and flywheel; a disc secured to said shaft adjacent to said ring to limit outward feeding of said string along said shaft, the periphery of said disc being contiguous said ring; and a baffle member mounted on said ring and having a circumferential edge portion contiguous and outwardly of the periphery of said disc to prevent passage of said string between said disc and ring.

3. In a gyroscopic toy: a frame comprising a ring; a shaft within and rotatably carried by said ring; a flywheel secured to said shaft; a string adapted to be wound on said shaft to rotate said shaft and flywheel; a disc secured to said shaft adjacent to said ring to limit outward feeding of said string along said shaft, the periphery of said disc being contiguous said ring and a circular baffle member having notches receiving said ring and also having a circumferential edge portion contiguous the periphery of said disc to prevent passage of said string between said disc and ring.

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4. In a gyroscopic toy: a frame member comprising a ring; a shaft within and rotatably carried by said ring; a stem secured to said ring and extending outwardly therefrom; a flywheel secured to said shaft; a string adapted to be wound on said shaft to rotate said shaft and flywheel; a disc secured to said shaft adjacent said ring to limit outward feeding of said string along said shaft, the periphery of said disc being contiguous said ring; and a generally conical baffle member mounted on said stem and having notches receiving said ring, said baffle member having a circumferential edge portion contiguous the periphery of said disc to prevent passage of said string between said disc and ring.

5. In a gyroscopic toy: a frame having diametrically opposite sockets therein; a rotatable shaft having its end portions pivoted in said sockets; a flywheel secured to said shaft; a string adapted to be wound on said shaft to rotate said shaft and flywheel; a disc secured to said shaft to limit outward feeding of said string along said shaft, the periphery of said disc being contiguous said frame; and a baffle member on said frame having a circumferential edge contiguous and outwardly of the periphery of said disc to prevent passage of said string between said disc and frame.

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