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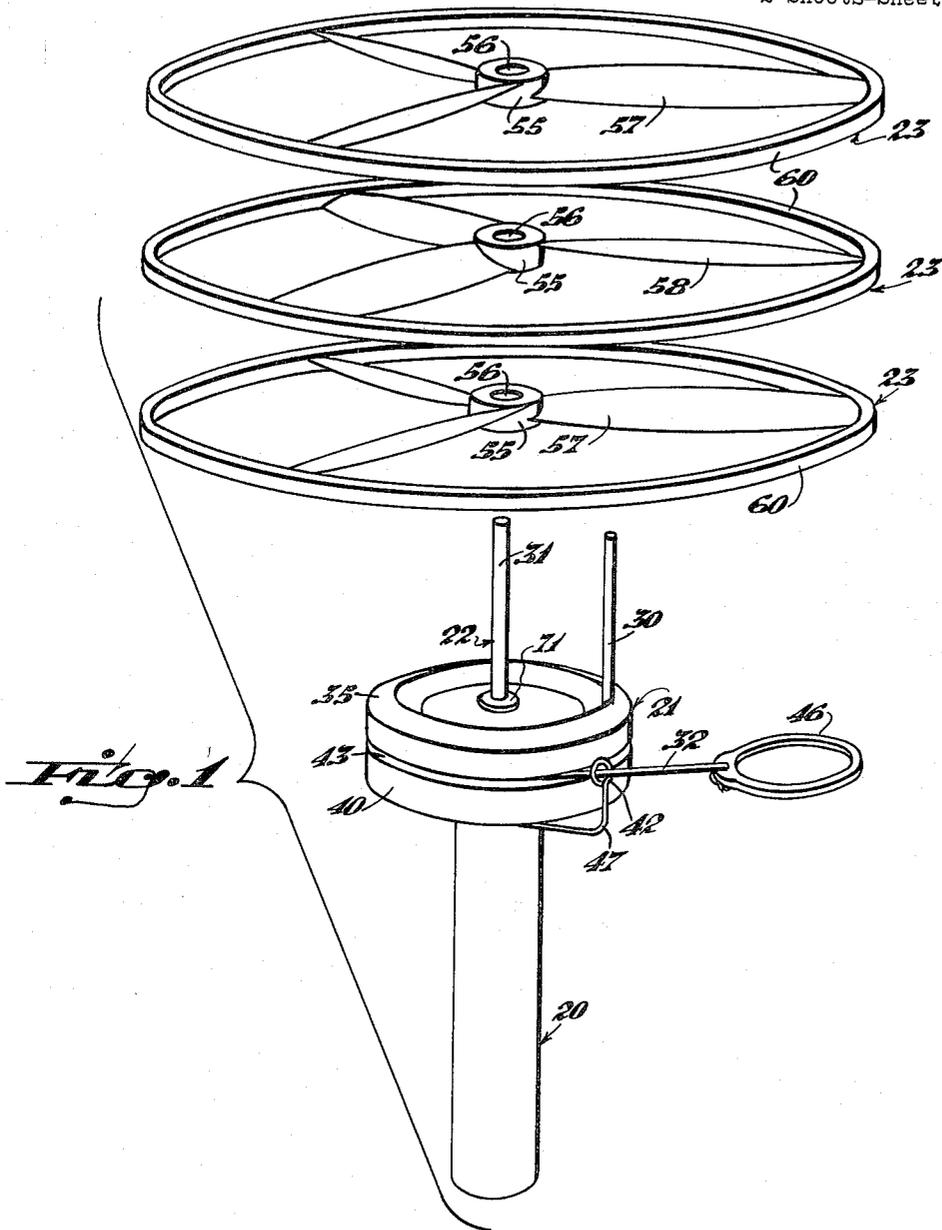
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3,246,424

SPINNING TOY LAUNCHER

Filed April 11, 1963

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Fig. 2

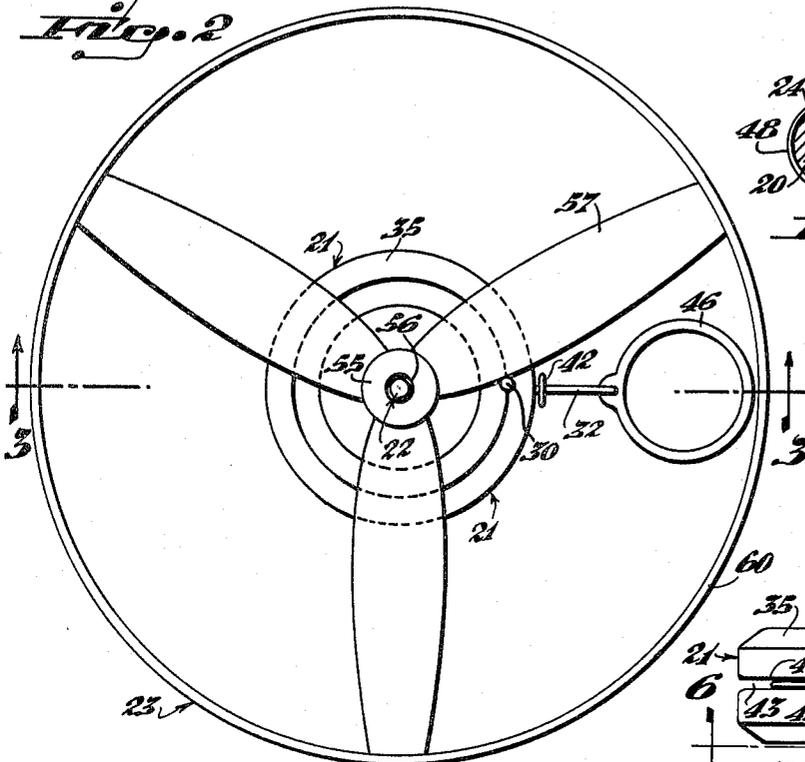


Fig. 4

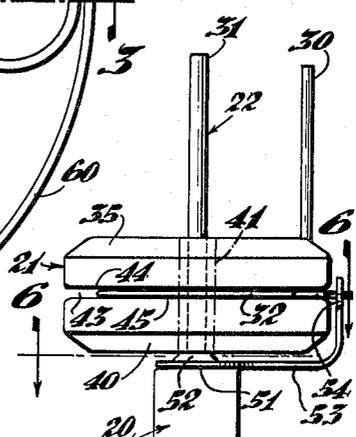


Fig. 5

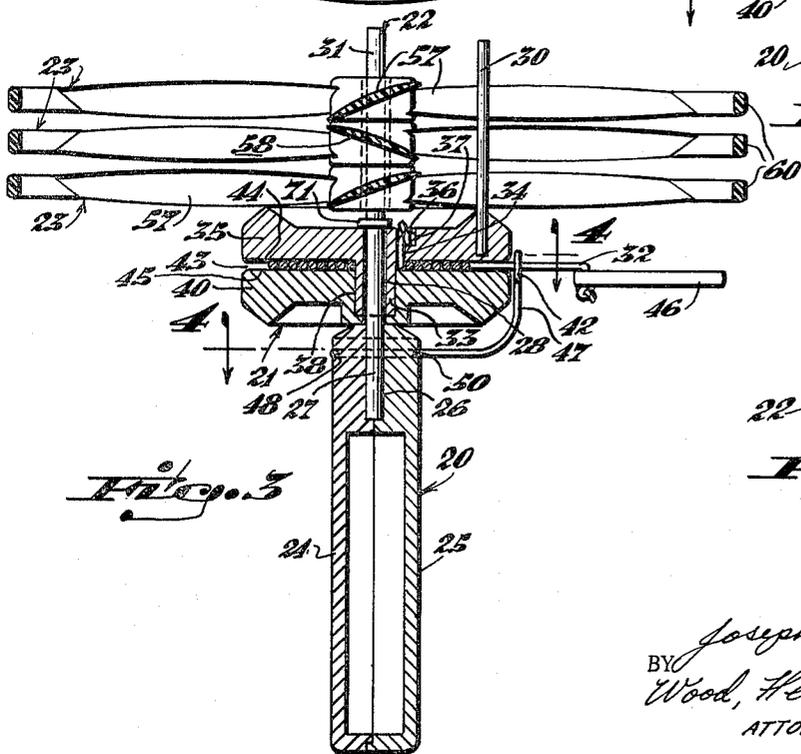


Fig. 3

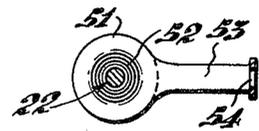


Fig. 6

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SPINNING TOY LAUNCHER

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4 Claims. (Cl. 46-59)

This invention relates to toys and it is directed in particular to a launcher for imparting a rapid spinning motion to toys such as flying rotors.

One of the objectives of the invention has been to provide a launcher that has greater play value than those provided in the past. Unlike the launchers of the prior art which were adapted to be used with a single spinning toy, the launcher of this invention can be used with a number of them. For example, three or more flying rotors, or "helicopters," can be placed on the launcher at the same time, and launched, one immediately after the other, so fast that the third one takes off while the first is still rising in the air. The same launcher can be used to impart a spinning motion to various types of rolling toys. Tops can be spun either on the launcher or they may be ejected from it to spin on the floor. Some of these toys may be used indoors as well as outdoors, which further enhances the play value of the launcher.

Another objective has been to provide a spinning toy launcher that automatically rewinds itself between launchings. Rewinding devices have been known in the past. A typical launcher of the prior art incorporates a spindle upon which a pull-cord is wound. When the cord is pulled, the spindle is rotated and its motion is transmitted to the toy to be launched. As the cord is pulled, the rotation of the spindle winds up a rubber band and, after launching, the wound-up rubber band drives the spindle in the opposite direction to rewind the pull-cord. However, the rubber band usually breaks after comparatively little use and since it is a special kind and sealed within the handle of the toy, the launcher becomes useless. By contrast, inertia is relied upon for rewinding in the launcher in this invention and as a result it has a long life even in the hands of a young child.

The essential element in the launcher of this invention is similar to a popular toy known as a "Yo-Yo." This toy comprises two circular discs that are spaced apart slightly and joined by a dowel pin which passes through their central axes. One end of a string is tied to the dowel pin and the string then wound around the dowel pin a number of times. The loose end of the string is looped around a person's finger. When the toy is released, it falls and the string unwinds, causing the toy to spin. When the string unwinds completely, the inertia of the spinning discs causes the string to rewind upon the dowel in the opposite direction. By manipulating the toy with skillful jerking motions, it can be kept moving. However, as incorporated in the launcher of this invention very little skill is required to keep the "Yo-Yo"-like element in motion.

Thus, a further objective of the invention has been to provide a launcher of the type set forth, that is simple to operate, requiring little skill, so that it may be enjoyed by young children who are as yet not well coordinated.

In the launcher of this invention, the "Yo-Yo"-like element has a bore through the central axis of the equivalent of the dowel pin in a "Yo-Yo" toy. This bore receives an elongated pin that projects from a handle up through the "Yo-Yo"-like element and beyond it so that with the handle vertical, the discs and the slot between them are horizontal. Thus, when the string is pulled sharply away from the toy, the "Yo-Yo"-like element spins on the elongated pin and rewinding of the spring takes place just as in an actual "Yo-Yo" toy as the result

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of inertia. However, since the element does not have to lift its own weight when rewinding, as does an actual "Yo-Yo," none of the skill necessary for the successful operation of an actual "Yo-Yo" is required. Toys to be spun are placed on the elongated pin above the "Yo-Yo"-like element and they are engaged by a drive pin projecting from the upper discs adjacent to its rim and paralleling the elongated center pin. Therefore, as the element rotates, its motion is transmitted to the toys to be spun.

Another objective of the invention has been to provide a toy launcher of the type to which reference has been made in which a self-aligning guide-eye is provided for the pull-cord. The purpose of this guide-eye is to insure that the pull-cord is aligned properly with the slot between the discs and does not rub upon either disc during the operation of the toy, which makes it easier for a small child to operate it. The self-aligning feature enables the operator to begin operating the toy by simply pulling upon the cord regardless of the position of the guide-eye around the circumference of the discs at the time. When the cord is pulled, the eye automatically swings around into alignment with the cord.

A further objective has been to provide spinning toys of various types for use with the launcher.

Other features of the toy and objectives of the invention will be readily apparent to those skilled in the art from the following detailed description of the drawings.

In the drawings:

FIGURE 1 is an exploded view of the launcher and three flying rotors or helicopters.

FIGURE 2 is a top plan view of the launcher with one or more rotors or helicopters in position thereon.

FIGURE 3 is a vertical sectional view taken on line 3-3 of FIGURE 2.

FIGURE 4 is a sectional view taken on line 4-4 of FIGURE 3, illustrating the self aligning pull cord guide-eye.

FIGURE 5 is a fragmentary side elevational view of the spinning and launching mechanism illustrating a modified form of a pull cord guide-eye.

FIGURE 6 is a sectional view showing the modified guide-eye taken on line 6-6 of FIGURE 5.

Referring to the drawings, and more particularly to FIGURES 1 through 4, the toy of this invention comprises generally a handle portion 20, a spinning or launching means 21 that is rotatably mounted on a spindle 22 carried by the handle 20, and a plurality of flying rotors or helicopters 23. The handle 20 can be made of wood or a suitable plastic. A wooden handle would preferably be of solid one piece construction while a plastic handle could be solid or, as illustrated in FIGURE 3, a hollow two piece construction as designated by the numerals 24 and 25. A vertical bore 26 is provided centrally in the upper portion of the handle 20 to receive the lower end 27 of the spindle 22.

The spinning or launching means 21 is generally similar to the toy known commercially as a "Yo-Yo" toy with the exception of a central bore 28 that is designed to receive spindle 22 and a drive pin 30 that is embedded in the upper face of the toy to project upwardly therefrom parallel to the spindle. For the sake of brevity, this part will hereinafter be referred to as the "Yo-Yo." The upper end 31 of the spindle 22 is adapted to loosely traverse the bore 28 of the "Yo-Yo" and to extend a considerable distance above it. In its operating position, as illustrated in FIGURE 1, the handle and spindle are generally vertical.

A pull-cord 32 is provided for the "Yo-Yo" which may be secured thereto adjacent a central sleeve pin 33 by threading the pull-cord 32 through a small bore 34 in the upper half 35 of the "Yo-Yo." The outer end of

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the cord may be knotted and adapted to reside in an enlarged cavity 37 at the outer end of the bore 34.

The actual construction of the "Yo-Yo" depends to some extent on the material from which it is made. If constructed of a suitable plastic it is preferably composed of two parts, as shown, the upper disc 35 being made integral with the center sleeve pin 33, pin 33 being received in a central bore 38 provided in the lower disc 40. The sleeve pin 33 is rigidly fixed in the bore 38 by means of a suitable solvent. In a "Yo-Yo" constructed of wood the central sleeve pin 33 may be in the form of a separate piece as indicated by the dot-dash lines 41 in FIGURE 5. The two "Yo-Yo" discs 35 and 40 would be joined by the separate sleeve pin 41 by means of a suitable glue in the conventional manner. The size and weight of the "Yo-Yo" is important only to the extent that sufficient weight be provided to permit the inertia to rewind the pull-cord after each outward pull on same.

A pull string guide-eye 42 is provided closely adjacent to an annular slot 43 provided by the adjacent faces 44 and 45 of the "Yo-Yo" discs 35 and 40. The pull-cord 32 is wound about the sleeve pin 33 traversing the annular slot 43 and passing outwardly through the guide-eye 42 and being provided with a loop or finger grip 46 at its outer end. The guide-eye 42 provides a generally L-shaped leg portion 47 extending downwardly and inwardly toward the upper end of the handle 20 and terminating in a snap ring portion 48 (FIGURE 4) adapted to loosely engage an annular groove 50 on the handle 20. This guide-eye is preferably made of spring steel wire to enable the eye to retain its spaced relationship with the outer periphery of the "Yo-Yo." The loose fit of the snap ring 48 in the annular groove 50 enables the guide-eye 42 to be positively aligned with the pull-cord 32 regardless of the direction of pull.

In FIGURES 5 and 6 a modified form of guide-eye is provided which is preferably constructed of thin spring steel. A hub portion 51 loosely embraces the spindle 22 and is provided with an upstanding bearing boss 52 for the "YO-YO." An L-shaped portion 53 carries a guide-eye 54 in position adjacent the annular slot 43 that is adapted to be traversed by the pull-cord 32.

The rotors or helicopters 23 illustrated in FIGURES 1, 2 and 3 have center hubs 55 provided with central bores 56 adapted to be loosely traversed by the upper end 31 of the spindle 22. In FIGURES 1 and 3 the propeller blades 57 of the top and bottom helicopters are of a conventional forward pitch while the propeller blades 58 of the intermediate helicopter 23 are of a reverse pitch. The outer ends of the propeller blades on both types of helicopters are joined by a peripheral safety ring 60.

When the pull-cord is operated to spin the "Yo-Yo" counter-clockwise, the drive pin 30 engages one propeller blade on each helicopter and imparts a corresponding spin thereto which causes the top helicopter to become disengaged from the launcher and soar upwardly. The other two helicopters 23 remain seated on the launcher 21 until the pull-cord 32 is rewound clock-wisely by the inertia of the spinning launcher 21 and two remaining helicopters 23. The subsequent operation of the pull-cord causes the second or reverse pitch helicopter to soar upwardly with the bottom helicopter remaining in place on the launcher 21 until the pull-cord is operated a third time. It is not intended to limit the operation of the launching means 21 to three helicopters as illustrated and described because the launching means can obviously be used to launch a single helicopter as well as two, three, four or more within practical limits. The helicopters can be launched singly in rapid succession regardless of the number placed on the launcher as long as the forward and reverse pitch helicopters are alternated. As each flying rotor or helicopter is preferably molded as a single unit of a flexible plastic such as polyethylene, separate and distinct colors can be used to enable the operator to readily differentiate between the forward and reverse pitch

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helicopters. It is also obvious that the rotors or helicopters will operate as described if the top and bottom helicopters 23 are of a reverse pitch and the intermediate helicopter is a forward pitch. In this event the launching sequence is initiated by spinning the launcher clockwise. If the launcher 21 is "loaded" with helicopters and the launching operation begun with the pull-cord wound in the wrong direction, the entire stack of helicopters simply remains in place until the next operation of the pull-cord when the launching sequence will then begin.

It is preferable to have the width of the annular slot 43 just slightly wider than the thickness of the pull-cord 32 so that the pull-cord is coiled upon itself in convolutions and does not have turns which are side by side in the annular slot 43. While the toy is readily operable with a wider slot 43, this single convolution construction provides an ideal condition in which the maximum ease of operation exists at the beginning of the pull-cord operation due to the greater circumference of the convolutions. As the pull-cord is withdrawn from the "Yo-Yo" the convolutions get progressively smaller increasing the speed to a maximum at the end of the pull-cord operation.

Having described my invention, I claim:

1. A toy comprising in combination a launcher and at least two flying rotors, said launcher comprising a handle, an elongated pin projecting upwardly from said handle, a pair of superposed discs, means joining said discs at their centers to provide an annular slot between them, a pull-cord having one end affixed adjacent to the centers of the discs and found volutely in said slot with the second end projecting from said slot, there being a bore through the central axes of said discs and said means joining them, said pin projecting through said bore to rotatably mount said discs on said handle such that repeated in and out manipulation of the pull-cord spins said discs first in one direction of rotation and then in the other, each rotor comprising a hub having a central bore therethrough and a plurality of propeller blades extending radially from said hub, the pitch of the blades of one rotor being reversed with respect to the blades of the other rotor, said rotors adapted to be mounted one above the other on said discs with said elongated pin passing loosely through the bores in their hubs, and drive means on the upper disc engageable with blades of both rotors to impart the spinning motion of the discs to said rotors, whereby one rotor flies from the elongated pin as the discs are spun in one direction and the second rotor flies from the elongated pin as the discs are spun in the opposite direction.

2. The combination as set forth in claim 1 in which a guide eye is provided through which said pull-cord passes, and means rotatably mounting said guide eye on said handle for movement around said discs in a circular path in which said guide eye remains aligned with and closely adjacent to said annular slot to prevent said pull-cord from rubbing on said discs as said pull-cord is manipulated.

3. The combination as set forth in claim 1 in which the outer ends of the propeller blades of each rotor are joined by a circular hoop.

4. The combination as set forth in claim 1 in which three rotors are provided with the blades of one of the three being reversed in pitch with respect to the blades of the other two.

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