May 20, 1941. A. N. AYERS 2,242,770

FLYING TOY

Filed June 26, 1939

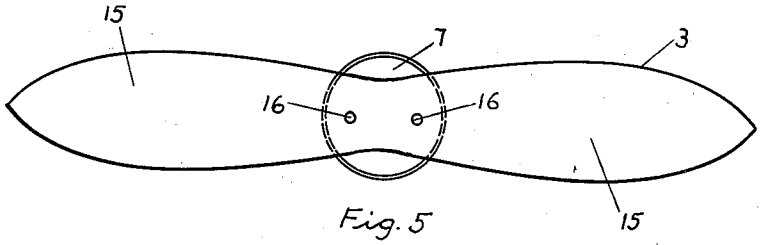


Fig. 5

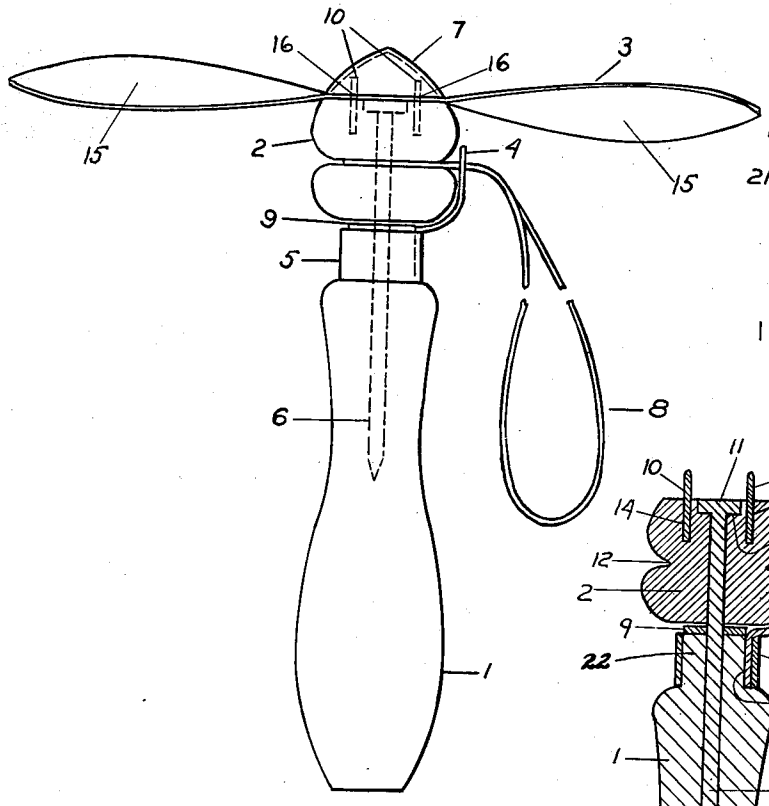


Fig. 1

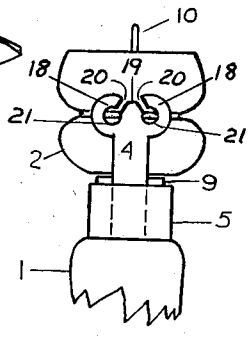


Fig. 2

Fig. 3

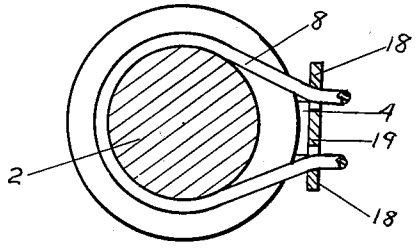


Fig. 4

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FLYING TOY

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Application June 26, 1939, Serial No. 281,117

6 Claims. (Cl. 46—83)

My invention relates to toys, and more particularly to toys having whirling members that are adapted to be projected into the air and fly for a considerable distance.

It is a particular purpose of my invention to provide a toy of the above mentioned character, comprising a handle on which a winged or propeller member is mounted, so as to detach itself therefrom due to the lifting action of the wings or propeller blades on said member, when said member is rotated in a predetermined direction, and to provide means for rotating said member always in the same direction, no matter how many times the same may be placed in position on the handle member and the driving means actuated to rotate said rotatable bladed member. This is accomplished by providing a flexible cord, or belt member, that is so associated with a pulley member that the flexible cord, or belt member, can always be given a pull in the same direction to always rotate the pulley in the same direction of rotation.

Preferably, this is accomplished by providing a long loop of the flexible belt, or cord member, with the ends thereof secured together or made in a manner to form an endless loop of cord, or an endless belt, that is always engaged with the pulley and need not be pulled in a reverse direction to reset the mechanism for rotation in a direction to cause the propeller to be released from the handle portion and projected into the air for flying purposes.

It is a further purpose of my invention to provide means for detachably mounting such a cord-like member, or endless belt, on the pulley which comprises means for guiding the same so as to keep a portion thereof in driving engagement with the pulley, said portion extending, preferably, slightly less than completely around the pulley, or having slightly less than one turn around said pulley. While an endless cord, or loop-like belt member is, preferably, utilized for actuating the flying toy, a cord that is not endless can also be utilized with my improved guiding means for the cord, or belt, which permits ready detachment of the same from the pulley and ready assembly of the same with the pulley, by removing the belt, or cord, each time that the pulley has been actuated in a direction to project the bladed member into the air, without any rearward rotation of the pulley, or winding of the cord-like member on the pulley being necessary.

Other objects and advantages of my invention will appear as the description of the drawing proceeds. I desire to have it understood, however, that I do not intend to limit myself to the particular details shown or described, except as defined in the claims.

In the drawing:

Fig. 1 is a side elevation, partly broken away, of my improved toy.

Fig. 2 is a fragmentary side elevational view as viewed at a position substantially perpendicular to that of Fig. 1, showing the pulley member and guiding means for the flexible driving cord or belt member.

Fig. 3 is a vertical sectional view through the pulley, the guide member and a portion of the handle.

Fig. 4 is a horizontal section through the drive pulley and guide member, on a plane running through the grooved portion of said pulley, and

Fig. 5 is a bottom face view of the propeller member.

Referring in detail to the drawing, my improved toy comprises a handle 1, which may be of any shape, but is preferably of a pleasing configuration, which has an opening therein, into which a pointed headed member, such as an ordinary nail, is driven to provide a shaft 6 having a head 11 thereon, that extends axially of the handle 1 and endwise beyond the same. Mounted on said headed shaft member 6 is a pulley 2, which is provided with a groove 12 running around the same substantially midway between the ends thereof, one end face having a recess 13 therein for receiving the head 11 of the shaft-like member 6. The pulley 2 is a spool-like member, but is made of a pleasing configuration to conform with the general appearance of the propeller, or flying winged member, to be described below, so as to have what might be referred to as a somewhat streamlined appearance, the convexly curved surfaces of said pulley serving also to guide the cord, or belt, to be described below, into the groove 12.

Said pulley member 2 also has a pair of pins 10 mounted in sockets 14, that extend inwardly from the recessed end face thereof, said pins 10 fitting snugly in said sockets 14, so as to be fixed in position in the pulley member and project endwise therefrom. The winged propeller member 3 comprises a body portion provided with a pair of blades 15, which are bent in a manner such that rotation of the bladed member 3 in one direction will, after said rotation reaches a predetermined speed, lift the bladed member 3 off the pulley 2. The connection between said pulley and said bladed member is a detachable one, accomplished by means of the pins 10, which loose-

ly enter openings 16 in the central portion of said winged, or propeller, member 3. A hollow hub 7 is provided on the member 3, tapering to conform with the shape of the upper portion of the pulley 2 above the groove 12, so as to give a somewhat acorn-like appearance to the pulley and hub member 1 combined, the body portion 3 being fixed to the hub portion 7 in any desired manner, and being made of any suitable sheet material, such as any of the well known plastic sheet materials, or sheet metal, the use of such a plastic sheet material being desirable because of the fact that various colorings thereof can be readily utilized and because the sharpness of the edge of a sheet metal propeller can be avoided.

The handle member 1 is provided with the usual reduced end portion 22, such as commonly provided on tool handles, around which a metal ferrule 5 extends. Confined between the ferrule 5 and the reduced end portion 22 of the handle member 1 is a downwardly extending ear 17 on the guide member 4, said guide member 4 being offset outwardly from the ferrule 5 and curved on a gradual curve to provide adequate spacing for rotation of the pulley member 2. A washer 9 is shown as being provided between the handle member and the pulley 2. The guide member terminates in a pair of oppositely curved hook portions 18, between which is provided a somewhat shorter central projection 19 defining a pair of oppositely inclined slots 20 leading into the guide openings 21 in said guide member, into which the flexible, or cord-like, member 8 may be inserted through the grooves 20 after being passed around the pulley 2 and seated in the groove 12 in said pulley. Thus, if the preferred arrangement is used, which comprises an endless loop of cord, that may be made either by making an endless cord, or belt-like member, at the cordage plant, or which may be made by splicing or otherwise securing the ends of an ordinary cord together, the cord, or belt, 8 will extend through one of the guide openings 21, then in the groove 12 around the pulley 2 to the other guide opening 21, the major portion of the elongated loop lying outwardly beyond the guide member 4. A portion of the elongated loop thus formed can be held by the hand of the operator of the device, which also grasps the handle 1, so as to put the proper tension on the cord, and the other part of the loop extending out through the other opening 21 in the guide member can be pulled repeatedly to always rotate the pulley 2 in the same direction, which is that direction in which the propeller, or winged member, will be lifted off the pulley member 2 and be projected into the air to fly through the same.

Due to the fact that a connection is provided between the guide and the cord member, whereby the cord member can be easily placed in position in the guide, a cord that is not formed into an endless loop could be utilized, the same being always automatically removed from the pulley at the end of each pulling for causing the propeller member to be projected into the air, and then this length of cord that has ends can be replaced in position with the major portion of the length thereof through one opening 21, and the short end thereof extending through the other opening 21, with a portion thereof extending around the pulley 2 in the same position as shown for the cord 8 in Fig. 1, the cord being operated in substantially the same manner as previously described to rotate the pulley and project the winged, or propeller, member from the pulley.

All tedious winding up of a cord is thus avoided and no pulling backward of the cord to reset the mechanism is required. Where the loop-like cord 8 is used, all that is necessary to repeatedly fly the winged, or propeller, member 3 is to replace the same in position, as shown in Fig. 1, grasp the cord in the manner previously described and pull on the same with a long pull to rapidly rotate the pulley 2 and the winged member, or propeller, will rotate rapidly and fly through the air a considerable distance after detaching itself from the pulley and the handle.

What I claim is:

1. A toy of the character described, comprising a handle, a pulley member mounted for rotation on said handle, a winged member, means detachably connecting the same with said pulley member to rotate therewith, a flexible member extending less than a complete turn around said pulley member in driving engagement therewith, and a guide member mounted on said handle and extending closely adjacent said pulley member, said guide member having a pair of closely adjacent guide passages therein and a projecting portion between said passages separating the same.

2. A toy of the character described, comprising a handle, a pulley member mounted for rotation on said handle, a winged member, means detachably connecting the same with said pulley member to rotate therewith, a flexible member formed into a loop to provide an endless belt having a portion extending around said pulley member in driving engagement therewith, and guiding means for detachably receiving said flexible member to detachably hold said flexible member in driving engagement with said pulley member, said guiding member being provided with a pair of guide passages extending downwardly from the upper end of said guide, and being open at their upper ends and a projection lying between said passages and separating the same.

3. A toy of the character described, comprising a handle, a pulley mounted for rotation on the axis of said handle, said pulley having a narrow groove therein, a winged member, cooperating means on said pulley and winged member to connect the same, said means permitting said winged member to detach itself from said pulley by movement axially of said handle upon rotation of said parts in a predetermined direction at a predetermined speed, a cord mounted in the groove of said pulley and extending around the same approximately one turn, and a guide member having a pair of closely adjacent upwardly opening guide passages therein aligning transversely with said groove to detachably receive spaced portions of said cord to hold the same in said groove.

4. A toy of the character described, comprising a handle, a pulley mounted for rotation on the axis of said handle, said pulley having a narrow groove therein, a winged member, cooperating means on said pulley and winged member to connect the same, said means permitting said winged member to detach itself from said pulley by movement axially of said handle upon rotation of said parts in a predetermined direction at a predetermined speed, an endless cord having a portion thereof mounted in the groove of

said pulley, and extending around the same approximately one turn, and a guide having a pair of closely adjacent guide passages open at one end and closed at the other end thereof, the closed ends of said passages being in transverse alignment with said groove and detachably receiving spaced portions of said cord to hold the same in said groove.

5. A toy of the character described, comprising a handle, a pulley mounted for rotation on the axis of said handle, said pulley having a V-shaped groove therein and having convex cord guiding faces on opposite sides of said groove curving into said groove, a winged member, cooperating means on said pulley and winged member to connect the same, said means permitting said winged member to detach itself from said pulley by movement axially of said handle upon rotation of said parts in a predetermined direction at a predetermined speed, a cord mounted in said groove and extending around the pulley approximately one turn, and a pair of closely adjacent guides lying on the same side of the axis of said pulley having detachably receiving spaced portions of said cord, said passages having closed ends aligning transversely with said groove to hold said cord in said groove.

6. A toy of the character described, comprising a handle, a pulley mounted for rotation on said handle, a winged member, means detachably connecting the same with said pulley member to rotate therewith, a flexible member extending less than a complete turn around said pulley member in driving engagement therewith, and a guide bracket mounted on said handle having a portion extending substantially parallel to the axis of said handle and terminating in a pair of hook-like portions directed toward each other and a central projection lying between said hook-like portions and spaced therefrom to provide a pair of closely adjacent guide openings for said flexible member and obliquely extending entrance passages leading to said opening.

ALAN N. AYERS.

CERTIFICATE OF CORRECTION.

Patent No. 2,242,770. May 20, 1941.

ALAN N. AYERS.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, second column, line 21, claim 6, for the word "opening" read --openings--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of July, A. D. 1941.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.