This invention relates to toys and has particular reference to such devices employing propellers adapted for free flight into the atmosphere.

One object of the invention is to furnish a toy of the character described having improved means for flight of the propeller in a path aligned with the handle of the device or at an angle thereto, at will.

A particular object of the invention is to furnish a game of skill, wherein the toy includes improved means such that the angle of flight of the propeller is partly controlled by the tension exerted on a draw string that causes rotation of the propeller.

Since the propeller is initially carried by a rotary head which is subject to friction, the speed of rotation varies with the tension of the draw string subject to the effects of friction. Hence the toy thus permits a degree of control of the direction of flight. The skill of the operator may reside, for instance, in causing maximum flight of the propeller at certain angles consistent with the setting of the toy, as hereinafter more fully described.

Other objects and advantages of the invention will become apparent as the specification proceeds.

With the aforesaid objects in view, the invention comprises the novel features, combinations and arrangements of parts hereinafter described in their preferred embodiments, pointed out in the subjoined claims, and illustrated in the annexed drawing, wherein like parts are designated by the same reference characters throughout the several views.

In the drawing:

Figure 1 is a top plan view of a toy embodying the invention.

Figure 2 is a vertical central sectional view thereof with parts in elevation, showing the toy set for vertical flight of the propeller.

Figure 3 is a view in elevation showing the toy set in a different position for angular flight of the propeller subject to the skill of the operator.

The advantages of the invention as here outlined are best realized when all of its features and instrumentalities are combined, but useful embodiments may be produced involving less than the whole.

It will be obvious to those skilled in the art to which the invention pertains, that the same may be incorporated in several different constructions. The accompanying drawing, there-fore, is submitted merely as showing a preferred embodiment of the invention.

Referring in detail to the drawing, 10 denotes a toy embodying the invention. The same includes a handle 11 made of any suitable rigid material such as metal, wood or plastic and having an axial passage 12 extending from the upper end 13 to the lower end 14 thereof. Slidably, frictionally fitted in the passage 12 is an element 15 of resilient material, which may be in the nature of a wire having an upper end portion 16 and a lower headed end portion 17.

Carried by the upper end of the element 15 is a bearing or tube 18 formed at its upper end with a flat head 19. Said bearing may have a similar head 20 at its lower end, or such head may be formed on an adjacent portion of the element 15. The bearing 18 may be rigidly secured to the latter as by press fitting thereinto the end portion 15.

Journalled with suitable friction on the bearing 16 is a pulley head 21 retained thereon by the portions 19, 20 so that the pulley is maintained in a given position on the rod 15 whether the same be in the low position of Fig. 2 or in the high position of Fig. 3. Wound around the pulley is a straw string 22 one end of which may be fixed thereto in any suitable manner.

Carried coaxially by the head 21 is a propeller 23 releasably operatively engaged in any suitable manner therewith. Thus, the pulley 21 may have a pair of pins 24 therein releasably engaged in holes 25 of the propeller, so that at a proper speed the propeller is adapted to fly off from and to disengage the pulley.

The operation of the toy will now be briefly described. The operator grasps the handle 11, and with the toy adjusted as in Fig. 1, the draw string is pulled hard to unwind it and cause a rapid rotation of the pulley and hence of the propeller 23 causing the latter to soar into the atmosphere after disengaging the pins 24. The flight of the propeller is in a path aligned with the passage 12 and the handle 11, subject of course to wind currents and the like, until the momentum of the propeller substantially diminishes so that the path curves downward and the propeller fails, to be retrieved for further use. In the position of Fig. 1, the element 20 rests on the end 13 of the handle, the section 15 being completely received in passage 12 and reinforced by the handle so that no deflection of the axis of propeller can occur.

Now the finger piece 17 is manipulated to push the rod 15 upwardly to any selected position as
in Fig. 3; the rod is normally frictionally retained at that elevation. Initially, the pulley 21 is aligned with the handle but when the draw string 22 is pulled to rotate the pulley, the tension exerted causes the rod 15 to resiliently bend or deflect in the direction of the pull on the draw string as shown in Fig. 3. Thus the axis of the pulley and its propeller is inclined, and as rotational speed increases, the propeller flies off into space at a like angle. The angle of flight relative to the handle is determined by two factors: the length of the section of the element 18 which is external of the handle at the top thereof, as at 26 and hence laterally unsupported by the handle; and the degree of tension exerted on the draw string 22. The greater the length of the section 28, the greater the angular deflection for the same stress, and vice versa. The draw string tension may be varied as between a hard, steady pull or an extremely powerful jerk which may achieve maximum flight. In a cheap construction such as is used in a toy, there is naturally a fair amount of friction at the bearing surface and this will afford a measure of retardation to permit the operator to gauge the tension applied.

Thus by the invention a game of skill may be played with the hand held vertically or so mounted in a support, the operator seeking to cause propeller flight at a certain angle, for example, relative to a tree, building or telephone pole, and yet obtain a maximum flight or to cause the propeller to come within a certain range of an object. For this the operator may adjust the distance 26 as well as the tension applied on the draw string.

It will be appreciated that the element 15, 18 may be regarded as a piece structure or rod resilient throughout, or as a one piece rod thicker at 16 and thinner at 15; and other changes may be made within the scope of the following claims.

1. A toy including a propeller element, a rotatable element therefor, the elements having releasable interengaging means permitting the propeller element to travel away from its companion element when the latter causes rotation of the propeller element, a draw string element wound around the rotatable element for causing rotation thereof, a handle, a member having a stem portion on which the rotatable element is journaled, the member having a resilient elongated portion below the stem portion, the handle having a part having a longitudinal passage for slidably frictionally receiving the said resilient portion and reinforcing the same, with the resilient portion being axially movable to different degrees, at will, out of the said part whereby the resilient portion is adapted to be angularly lateral deflected with relation to the handle in response to a pull on the draw string for causing rotation of the rotatable element and travel of the propeller at variable angles, the said stem portion comprising a bearing for the rotatable element whereby the latter is held against movement along the member.

2. A toy having a draw string operated pulley head releasably carrying a propeller rotated thereby so that the propeller is adapted to fly off the head, an elongated member, and a handle of rigid material having a longitudinal bore, the member having upper and lower respectively relatively rigid and flexible sections, with the pulley head journaled on the upper section and the lower section being fitted in said bore for frictionally sliding into and out of the bore to expose different lengths of the flexible section, at will, outside of the handle to permit different degrees of deflection in response to a varying pull on the draw string, to thus cause the rigid section to assume different angles for angular flight of the propeller, the pulley head being engaged by the rigid section against relative axial movement of the flexible section being adapted to be so fully received in said bore as to reduce said reflection substantially to zero to cause flight of the propeller in substantial alignment with said bore.

3. A toy having a draw-string operated rotatable pulley head, a propeller releasably operatively carried by said head so as to fly off therefrom upon rotation of the propeller, a handle of rigid material having a longitudinal passage, and a rod like member, the head being journaled thereon, means to maintain the head journaled at an upper end of the member without permitting relative axial movement of the head, the rest of the member constituting a section slidably frictionally fitted in said passage with the handle stiffening the member, the member being adapted to be partly advanced from the handle to free a part of said section which part is resilient and adapted to be angularly deflected by a pull of the draw string in causing rotation of said head, the upper end portion of the member being unaffected by the resilient deflection whereby the head is freely rotatable at different angles.

4. A toy having a draw-string operated, rotatable pulley head releasably operatively carrying a propeller coaxially therewith so that the propeller is adapted upon rotation to fly off from said head, a handle having an axial passage therethrough, a rod of resilient material extending through said passage so as to project from both ends of the handle, one end of the rod constituting a finger piece, a bearing of rigid material for the head fixedly secured on the other end of the rod, the rod being of such length that it is frictionally movable in said passage to move the bearing toward and away from the handle and when the bearing is moved away from the handle the adjacent part of the rod is free of the handle for resilient angular deflection in respect to a pull of the draw string.

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