May 29, 1962 J. ELLMAN ET AL 3,036,832

TOY MISSILE CATCH

Filed March 17, 1959

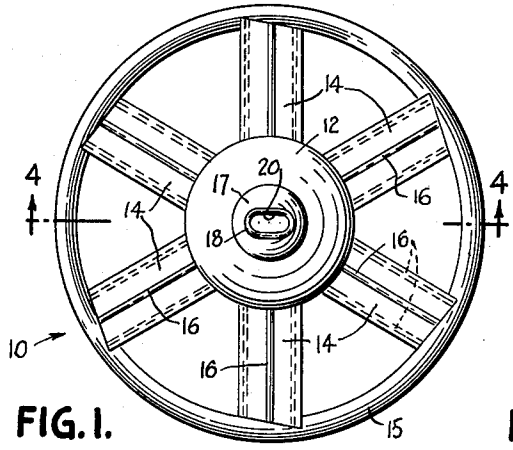


FIG. 1.

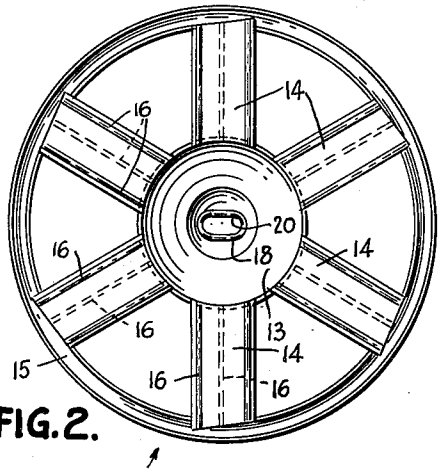


FIG. 2.

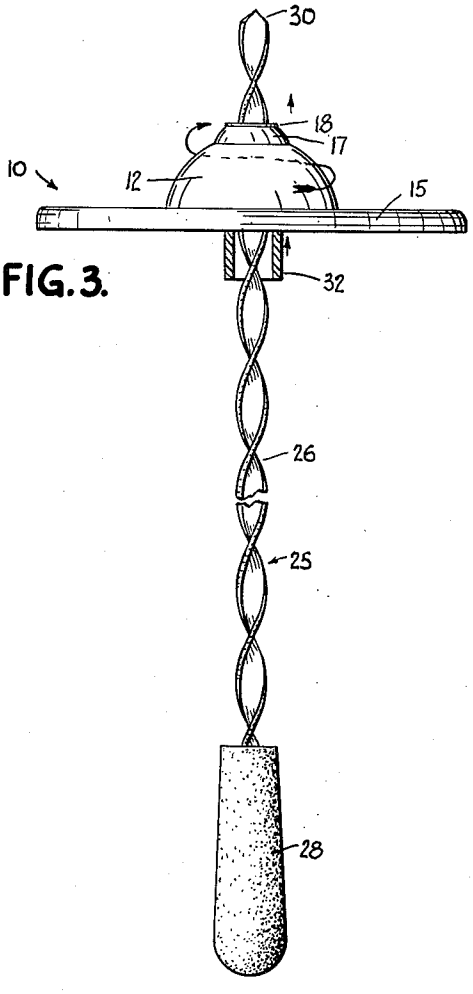


FIG. 3.

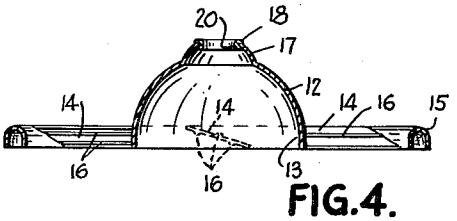


FIG. 4.

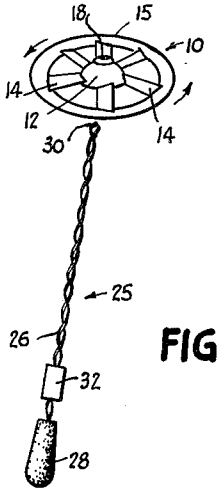


FIG. 5.

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TOY MISSILE CATCH

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This invention relates to toys and, more particularly, to an aeronautical action toy and game for children.

While various types of helicopter action toys have been provided for children, such are primarily constructed as a launching mechanism for imparting flight to a rotary type disc of one type or another. As a result, such known toys have limited use and are of little or no game value. It is, therefore, an object of the present invention to provide a combined toy and game aeronautical action toy which includes means for recovering the rotor in flight, as well as for effecting manual launching thereof in a simple and efficient manner.

Another object of the present invention is to provide an action type aeronautical toy which may be used for competitive sport, which is extremely safe in operation, and which can be easily handled by young and old operators alike.

Still a further object of the present invention is to provide an action type toy and game that includes a rotor which can be placed in flight by a launching device carride by one player, and which rotor may be caught in flight by a recovery device carried by another player, so that the game may be continuously played without loss of interest.

Another object of the present invention is to provide an aeronautical toy that includes a rotor having enlarged hub that can be readily contacted with a recovery device carried by a player and held above the ground level for launching to still another player.

All of the foregoing and still further objects and advantages of this invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing, wherein:

FIG. 1 is a top plan view of a rotor forming a part of the present invention.

FIG. 2 is a bottom plan view of the rotor shown in FIG. 1.

FIG. 3 is a side elevational view of a launching device in operative association with the rotor shown in FIGS. 1 and 2, illustrating the manner in which the rotor is launched.

FIG. 4 is a transverse cross-sectional view taken along line 4—4 of FIG. 1.

FIG. 5 is an exploded perspective view of a recovery device forming another part of the present invention, showing the manner in which the rotor is retrieved in flight.

Ordinarily, flight type toys are launched into the air by the operator, following which they are simply observed and recovered after they drop to the ground. Thus, the play value of such action toys is thus limited to the thrill of launching and observing the rotor in flight. The toy made in accordance with the present invention is not so limited, but may be used by one or more players as a toy or game in which the rotor is constantly in play so that there is no waiting period or loss of interest between successive launching procedures.

Referring now more in detail to the drawing, and more particularly to FIGS. 1 and 2 thereof, a rotor **10** forming a part of the present invention is shown to include a central hub portion **12** which is in the form of a hollow downwardly opening hemispherical member having an enlarged downwardly opening pocket **13**, for purposes hereinafter described. The hub **12** is disposed centrally within an annular fly wheel **15** and integrally connected thereto

by means of a plurality of radially extending vanes **14**. Each of these vanes lies in a plane that defines an acute angle with the general plane of the fly wheel **15**, thus imparting flight to the rotor in response to rotation thereof in a counter-clockwise direction, as viewed in FIG. 1. Each vane **14** is also provided with reinforcement ribs **16** which serve to rigidify such vanes and provide more consistent flight characteristics to the rotor.

A bulbous portion **17** integral with and projecting upwardly above the top of the hub **12** supports a follower bearing element **18** having a non-circular slot **20** extending therethrough. This slot **20** slidably receives the spiral shaft **26** of a launching device **25** that has a handle **28** secured to one end. The blunt point **30** at the free end of the spiral shaft **26** will readily find its way through the follower slot **20** of the rotor bearing **18**, after which the rotor will rotate in a clockwise direction as it moves longitudinally along the shaft **26** toward the handle end **28**, because of the right hand twist of the spiral shaft relative to the handle **28**.

A launching tube **32** slidably carried by the shaft **26**, is interposed between the handle **28** and the rotor **10** when it is placed in a launching position upon the launcher **25**. Thus, by exerting an axially outward force upon the launching tube **32** which extends into abutting relationship with the upper extension **17** of the rotor, such rotor will move toward the free end of the shaft **26**, while being rotated in the counter-clockwise direction illustrated by the arrow in FIG. 3, by the engagement of the spiral shaft with the walls of the non-circular slot **20**. After the rotor has attained sufficient rotational velocity, the vanes **14** will impart flight to the rotor and raise it upwardly into the air.

The operator that has launched the rotor may then recover it in flight simply by spearing or catching the downwardly opening pocket **13** of the hub with the blunt end **30** of the launcher **25**. On the other hand, one or more other players may be provided with a similar launcher **25** and may attempt to recover the rotor while it is still in the flight imparted to it by the first player, as shown in FIG. 5.

It will now be recognized that the enlarged pocket **13** defined by the hub **12** enables the players to recover the rotor with the blunt end **30** of the launcher while it is still in flight. Also, the manually operating launching tube **32** may remain in assembled relationship upon the launcher shaft at all times, and is readily moved longitudinally, without any rotative force being imparted thereto, for the purpose of imparting sufficient rotational speed to the rotor for effecting the flight thereof from the shaft **26**.

The particular construction of this device thus enables it to be used as a toy by a single operator, or used as a competitive game by two or more players, without having to touch the rotor between flights. Suitable scoring and playing rules may be devised for controlling the game during competitive play, thus providing incentive for the players to increase their skill in manipulating and retrieving the rotor in flight.

While we have shown and described only one particular launching device, it should be understood that any one of several well known launching devices may be used, it being only necessary that means be provided for imparting rotation to the rotor to place it in flight.

While this invention has been described with particular reference to the construction shown in the drawing, it is to be understood that such is not to be construed as imparting limitations upon the invention, which is best defined by the claims appended hereto.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. An action toy comprising in combination, a rotor,

means for spinning said rotor to launch it in free flight, and means for recovering said rotor while still airborne, said rotor comprising an annular flywheel, and an upwardly domed hub, lifting vanes extending radially outwardly from the lowermost end of said domed hub to said annular flywheel, the top of said domed hub having an opening therethrough for the interlocking reception of said launching means.

2. An action toy comprising, in combination, a rotor, an elongated shaft having an upper and a lower end, a handle at its lower end, said shaft slidably supporting said rotor for longitudinal movement between both ends of said shaft, bearing means acting between said rotor and said shaft effecting rotation of said rotor during said longitudinal movement along said shaft, and a manually operated launching tube freely slidable on said shaft for effecting said longitudinal movement of said rotor from said handle end of said shaft to the opposite free end thereof, said shaft comprising a spiral path, and said bearing means comprising a follower carried by said rotor for slidable movement along said spiral path, said

rotor comprising a central hub, a plurality of radially outwardly extending vanes integral with said hub, a peripheral fly wheel extending between the outermost ends of said vanes, and said follower being positioned concentrically above said hub, said hub being of generally hollow upwardly domed hemispherical configuration, open at the bottom, said vanes and fly wheel being in a plane common with the lowermost open end of said hub, and said follower being carried by the uppermost closed end of said hub.

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