June 15, 1948. L. W. BROWN 2,443,299

HELICOPTER TOY ROCKET AND BOMB

Filed Jan. 13, 1947

Fig. 1.

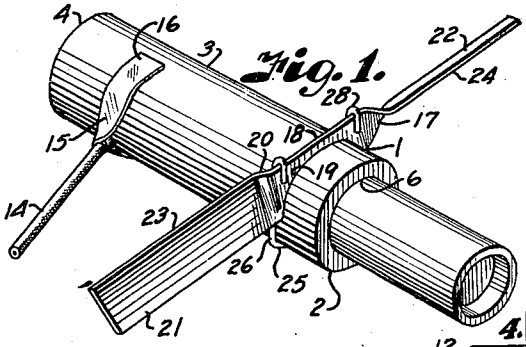


Fig. 2.

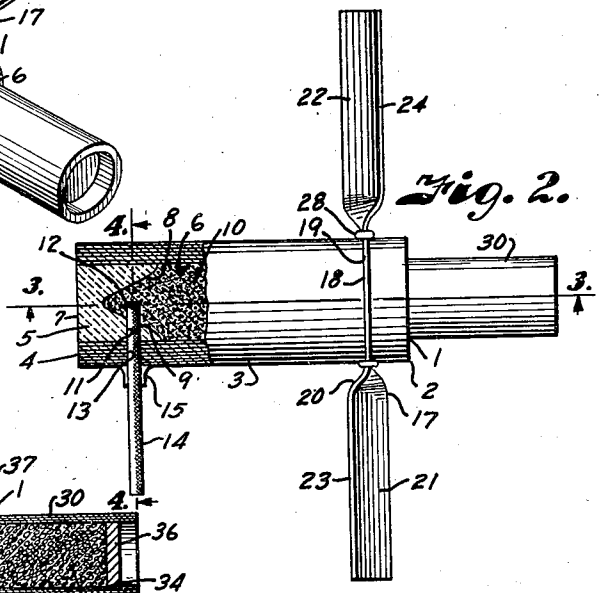


Fig. 3.

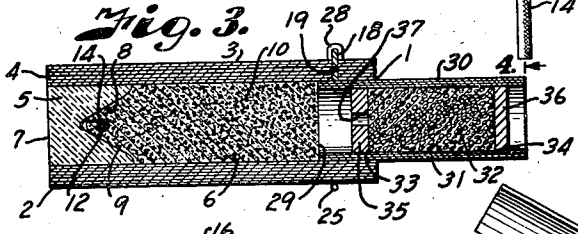


Fig. 4.

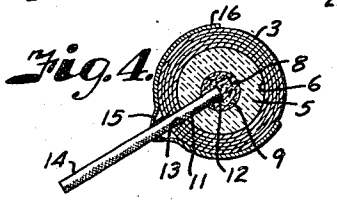


Fig. 5.

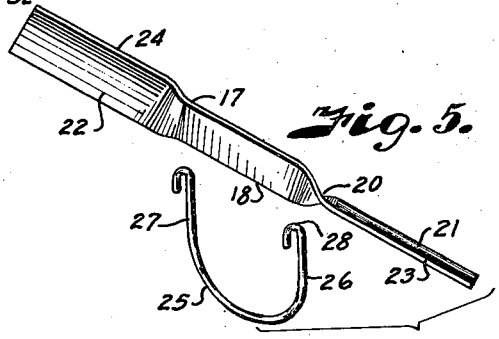
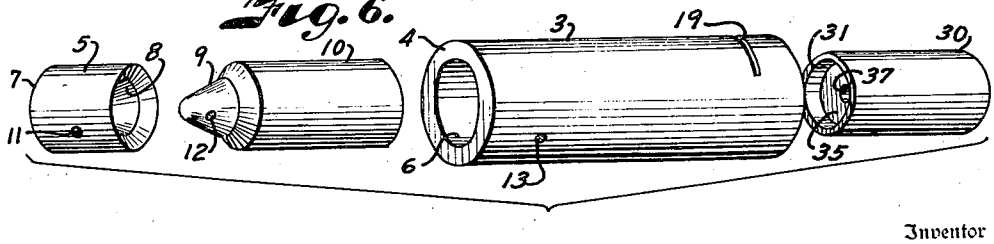


Fig. 6.



Inventor

Lawrence W. Brown

By

Fishburn & Mullendore

Attorneys

Patented June 15, 1948

2,443,299

UNITED STATES PATENT OFFICE

2,443,299

HELICOPTER TOY ROCKET AND BOMB

Lawrence W. Brown, Clinton, Mo.

Application January 13, 1947, Serial No. 721,677

4 Claims. (Cl. 102—37.1)

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This invention relates to a helicopter toy and more particularly to a helicopter toy rocket and bomb having rocket propulsion for rotating and effecting lifting of said toy into the air and effecting explosive destruction of the toy at the top of its flight providing amusement with little danger of burns or fire.

This application is a continuation in part of my co-pending application Serial No. 648,235, filed February 18, 1946, on "Rocket helicopter toy."

The principal objects of the present invention are to provide a toy having combined rocket propulsion and helicopter action to impart flight thereto; to provide a flying toy rocket with a self-destruction explosive charge for ignition at the terminus of its upward travel; to provide a rocket toy with a jet aperture that will retain its size throughout the burning of the propulsion charge; to provide a jet aperture in a rocket toy where the escaping burning gases will not ignite any portion of the toy; to provide a rocket toy of substantially non-inflammable material except for the charge therein; to provide novel mounting of the wings on the toy and anchoring means therefor; to provide a rocket toy with separated propellant and explosive charges arranged whereby the explosive charge is ignited at the end of the burning of the propellant charge for exploding said toy substantially at the peak of its flight; and to provide an amusing, economical and highly efficient helicopter rocket and bomb that is relatively safe to operate.

In accomplishing these and other objects of the present invention, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view of a rocket helicopter toy embodying the features of the present invention.

Fig. 2 is a plan view of the toy, portions being broken away to illustrate the arrangement of the fuse and jet orifice.

Fig. 3 is a vertical longitudinal sectional view through the body of the toy on the line 3—3, Fig. 2.

Fig. 4 is a transverse sectional view through the body of the toy on the line 4—4 of Fig. 2.

Fig. 5 is a perspective view of the helicopter wing and the fastening means therefor.

Fig. 6 is a detail perspective view of the body of the toy, the parts thereof being shown in disassembled spaced relation.

Referring more in detail to the drawing:

1 generally designates a rocket helicopter toy constructed in accordance with the preferred

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form of the invention. The toy preferably consists of a body 2 including a tube 3 made substantially non-inflammable by forming same of tightly rolled paper. The rear end 4 of the tube 3 is closed by a plug 5 preferably formed of ceramic material. The plug has a tight fit into the bore 6 of the tube and if desired may be cemented or otherwise secured in place with the flat rear face 7 of the plug flush with the rear end of the tube 3. The forward end of the plug 5 is provided with a conical socket 8 adapted to receive a conical projection 9 on a propulsion charge 10, said charge preferably consisting of black powder pressed into a cylindrical shape to fit into the bore 6 of the tube 3.

Approximately midway the depth of the socket 8 the plug 5 is provided with an aperture 11 preferably extending radially through the wall of the plug and below the horizontal center at approximately a thirty degree angle thereto. The aperture 11 aligns with a recess 12 in the conical projection 9 of the propulsion charge 10 and an aperture 13 in the tube 3. The apertures 11 and 13 and the recess 12 are of such size to receive a standard size fuse 14 of suitable length, the inner end of said fuse resting in the recess 12 in contact with the charge 10 so any burning of the fuse will ignite said charge. The fuse 14 is preferably held in the apertures by an adhesive tape 15 such as Cellophane tape, said tape being wrapped around the fuse adjacent the tube 3 and the ends 16 of the tape are drawn upwardly over the top of the tube where said ends are secured to the tube in lapping condition.

While I have described the fuse 14 and jet apertures as being located at an angle of approximately thirty degrees with the horizontal, it is obvious other angularities would provide the same jet propulsion with some difference in the lift provided by said jet.

In order to provide a helicopter action to the rocket toy, a horizontal wing 17 is located near the front of the body 2 and secured above the center thereof by suitable fastening means. The wing may be any suitable material, but preferably consists of a metal strip 18 mounted edgewise in a vertical transverse slot 19 in the tube 3, the ends of said strip extending laterally of said tube. The ends are twisted in opposite directions at a point 20 adjacent the tube to provide reversely warped blades 21 and 22 which will tend to lift the toy from the ground when said toy is rotated end for end. The upper edge 23 of the blade 21, located on the same side of the tube as the jet aperture, is twisted toward the rear of the device and the

upper edge 24 of the opposide blade 22 is twisted toward the forward end of the tube as illustrated to obtain the lifting effect. The wing may be secured to the tube by any suitable clamping means 25 preferably consisting of a wire bent in a U shape to extend around the lower side of the tube 3 and having legs 26 and 27 extending upwardly adjacent the wing 17, the ends of said legs being bent over the upper edge of said wing as at 28 to rigidly clamp the wing in the transverse slot 19 in the tube 3.

The forward end of the propulsion charge 10 is preferably spaced from the forward end of the tube 3 as at 29, said spacing being sufficient to receive and hold a tubular member 30 formed of tightly rolled paper, said tubular member having an outside diameter substantially the same as the bore 6 of the tube 3. The tubular member 30 is preferably cemented or otherwise securely anchored in the bore 6. The tubular member 30 is provided with a bore 31 adapted to receive an explosive charge 32 preferably of granulated powder pressed into cylindrical shape to fit the bore 31. The explosive charge 32 is preferably shorter than the length of the tubular member 30 whereby the ends of said charge are spaced from the ends of the tubular member 30 as at 33 and 34. Suitable packing or wadding 35 and 36 of fiberboard or the like is tightly pressed into the bore 31 into contact with the explosive charge 32 to confine same and to seal each end of the tubular member 30. The wadding 35 is preferably provided with an aperture 37 whereby a flame from the burning propellant charge 10 will pass through the aperture 37 to ignite the explosive charge 32. In this manner the explosion charge is ignited when the propulsion charge has substantially completed its burning or at the peak of the flight of the toy, thereby providing a loud noise to add to the amusement provided by the device.

In some instances it may be possible to insert a firecracker such as is commonly termed a salute into the end of the tubular member 33 to provide the explosive charge for the device. In such instances it is desirable to remove the fuse from the salute, however, it is believed obvious that a fuse may be used to provide a delay in the ignition of the explosive charge if desired.

The operation of the rocket helicopter toy and bomb constructed as described is as follows:

The toy is placed on the ground or other suitable surface and the fuse 14 ignited. Burning of the fuse will direct a flame into the recess 12 of the conical projection 9 of the propellant charge 10 to ignite same, creating gases which will escape through the apertures 11 and 13 in the plug 5 and tube 3 respectively. The projection 9 of the charge 10 is small, thereby preventing too rapid initial burning and formation of sufficient gas to explode the toy. The force of the escaping gases through the jet apertures 11 will cause the toy to rotate and be lifted by the wing 17. The location of the jet aperture below the center of the body of the toy also provides lift thereto. The projecting tubular member 30 and charge therein tend to balance the toy around the wing 17 aiding in maintaining the toy in rotating condition.

The propellant charge being formed of black powder pressed into a cylindrical shape burns gradually from the point of ignition to the forward end of the tube 3. When the burning has extended to the forward end of said charge, a flame therefrom will pass through the aperture 37 to ignite the explosive charge 32. This takes place at substantially the end of the application of lifting force by the propellant charge or substantially at the peak of the flight of the toy. The explosion of the explosive charge 32 provides a loud noise to add to the amusement provided by the device and also the force of the explosion will blow out any flame if any portion of the toy should become ignited, however, there is substantially no danger of fire in the use of this toy as the tightly wound paper tubes 3 and 30 and other materials used in construction of the toy are substantially non-inflammable.

The use of this toy combines the interest of a helicopter, a rocket and the noise and self-destruction of the toy when the toy has lifted itself a considerable distance in the air whereby there is no danger of any person being burned or injured by flying particles from said toy to combine the maximum of amusement with the maximum safety in such device. The plug 4 being of suitable ceramic material prevents enlargement of the aperture 11 through the burning and maintains an even propulsion of the toy throughout its flight.

It is believed obvious that the present invention combines rocket propulsion, helicopter action and explosive noise in a safe amusement toy.

What I claim and desire to secure by Letters Patent is:

1. A toy of the character described, a body member having a longitudinal bore therein; a transverse slot extending through the wall of the body member, a wing mounted on the body member in said slot including laterally extending blades reversely warped for lifting the top when said toy is rotated end for end, a wire having ends secured to the wing adjacent the blades and extending around the body member for securing the wing thereto, means closing one end of the bore in the body member and having a laterally arranged jet aperture, a propulsion charge in the bore, means for igniting the propulsion charge adjacent the bore closing means whereby gases formed by burning the charge are discharged through the jet aperture to effect end for end rotation of the toy, a tubular extension mounted in the other end of the bore of the body member and projecting therefrom, means closing the projecting end of said tubular extension, an explosive charge in the bore of said tubular extension, and means separating the explosive charge from the propulsion charge and having an aperture therein for conducting flame from the propulsion charge at the termination of the burning thereof to the explosive charge for igniting same.

2. A toy of the character described, a body member of tightly rolled paper having a longitudinal bore therein and an aperture extending through the wall of said body member adjacent to one end thereof, a transverse slot adjacent the other end of said body member, a horizontal wing mounted in said slot and having laterally extending blades adapted to lift the toy when said toy is rotated, said blades being twisted whereby opposed edges are bent upwardly at an angle to a plane defined by the axis of the blades and a line parallel to the body member, a U-shaped clamp extending around the body member and having the ends thereof engaging the wings to secure same to the body member, a plug in the bore adjacent the aperture in the body member having a recess communicating with said bore, said plug having a radially ar-

ranged aperture aligned with the aperture in the body member providing communication from outside the body to the recess in said plug, a propellant charge in the bore of the body member and having a projection extending into the recess of the plug, a fuse extending through the aligned apertures and having contact with the projection of the propellant charge to ignite same, burning of said propellant charge forming gases for discharge through the aligned apertures to effect rotation of the toy, means for securing the fuse to the body member, a tubular extension of tightly rolled paper having one end secured in the longitudinal bore at the end of the body member adjacent the wings, an explosive charge in the bore of said tubular extension, means sealing the outer end of the tubular extension, and means separating the explosive and propellant charges and having an aperture therein for conducting flame from the propellant charge at the termination of the burning thereof to the explosive charge for igniting same for exploding and destroying the toy adjacent the peak of its flight.

3. A toy of the character described, a tubular body member having a transverse slot therein and open at one end thereof, a wing mounted on the body member in said slot and having laterally extending blades reversely warped for lifting the toy when said toy is rotated end for end, a U-shaped clamp extending around the body member and having portions bent over said wing to hold same in the slot of the body member, means closing the open end of the body member and secured thereto, said closing means having a laterally directed jet aperture communicating with the interior of said body member, and a propulsion charge in said body member ignitable to create a gas to produce a discharge through the jet aperture whereby the force of the gas discharge rotates the toy end for end to cause the same to lift into the air.

4. A toy of the character described, a tubular body member having a transverse slot therein and open at one end thereof, a wing mounted on the body member in said slot including laterally extending blades twisted whereby opposed edges are bent at an angle to a plane defined by the axis of the blades and a line parallel to the body member for lifting the toy when said toy is rotated end for end, means closing the open end of the body member and secured thereo, said closing means having a laterally and downwardly directed jet aperture communicating with the interior of said body member, an explosion charge secured to the other end of said body member, a propulsion charge in said body member ignitable to create a gas for discharge through the jet aperture, the force of the gaseous discharge rotating the toy end for end to cause same to lift into the air, and means for conducting flame from the propulsion charge at substantially the termination of the burning thereof to the explosive charge to ignite same.

LAWRENCE W. BROWN.

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