Aug. 11, 1931. F. A. NORCROSS 1,818,426

TOY AIRPLANE

Filed May 26, 1930

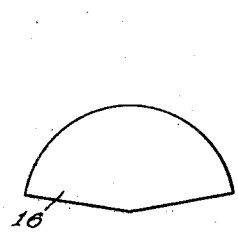


Fig. 5.

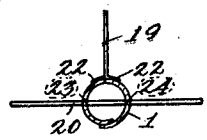


Fig. 2.

Fig. 1.

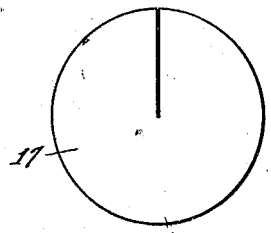


Fig. 6.

Fig. 7.

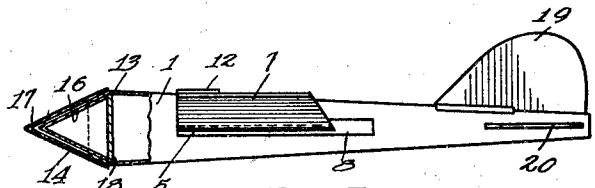


Fig. 3.

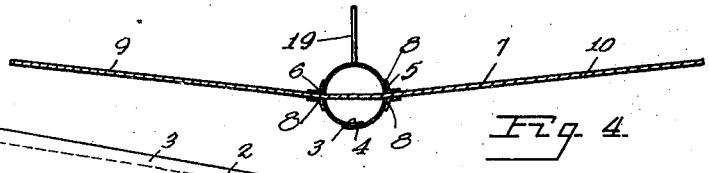


Fig. 4.

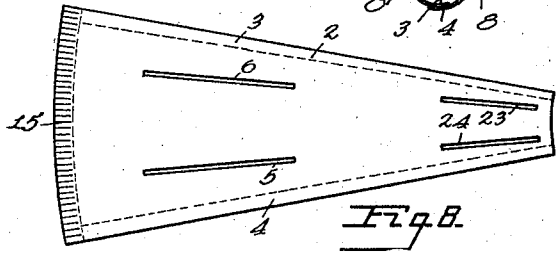


Fig. 8.

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UNITED STATES PATENT OFFICE

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TOY AIRPLANE

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The present invention relates to improvements in toy airplanes, and it consists of the combinations, constructions and arrangements hereinafter described and claimed.

An object of my invention is to provide a toy airplane that is constructed from a light flexible material, such as cardboard, the design and arrangement of the several parts being such as to secure the necessary strength and rigidity to prevent distortion and rupture in ordinary use.

A further object is to provide a fuselage of rigid construction in the shape of a cone and having a nose portion comprising several cones arranged in concentric relation with respect to each other. This construction not only materially reduces the resistance offered to the passage of the airplane through the air, but at the same time it affords protection for the airplane when striking an object during the course of flight.

A still further object is to provide a fuselage having novel means associated therewith for receiving and holding the wing and the horizontal stabilizer of the airplane in operative position. These latter elements extend through the fuselage, and are each formed from a continuous piece of material.

A further object of the present invention is to reinforce the wing of the airplane along its leading edge so as to give the wing better shape and further to maintain the selected dihedral angle thereof.

It is proposed in the present invention to simplify the various structural features necessary for carrying out the above objects in such a manner that the airplane may be cheaply manufactured, readily assembled, and easily adjusted for flying.

Other objects will appear as the specification proceeds, and the novel features will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming a part of this application, in which

Figure 1 is a plan view of an airplane constructed in accordance with my invention;

Figure 2 is a transverse section taken along line 2—2 of Figure 1;

Figure 3 is a side elevation of my airplane, parts thereof being shown in section for clarity;

Figure 4 is a section taken along line 4—4 of Figure 1 and looking in the direction of the indicating arrows; and

Figures 5, 6, 7 and 8 are plan views or developments of several parts which I employ.

In carrying my invention into practice, I provide a fuselage 1 which is rolled from the blank 2 shown in Figure 8 so as to present a long tapering cone, the edges 3 and 4 of the blank being arranged in slight overlapping relation with the contacting portions of the edges secured together by glue, or other suitable fastening means. The fuselage is thus made hollow throughout its entire length so as to reduce the weight of the airplane, and at the same time this construction will afford great strength and rigidity for the airplane.

The fuselage is slotted longitudinally at 5 and 6 along two diametrically opposite points for receiving a transversely extending wing 7, the latter being positioned centrally of the fuselage and being formed from a single sheet of cardboard, or other suitable material. Strips of adhesive material 8 are arranged lengthwise of the fuselage in the manner shown for holding the wing 7 fixed with respect to the fuselage 1. The strips 8 may be placed on the inside of the fuselage, if so desired. The dihedral angle, that is, the angle included at the intersection of the planes of the right and left wing portions 9 and 10 is obtained by bending the wing into the desired shape. The strips of material 8 are applied after the wing has been fashioned with the desired dihedral angle, and these strips, since they are disposed above and below the wing 7 in the manner shown in Figure 4, will prevent the wing portions from returning again to a common plane.

While the drawings show the wing 7 extending along the longitudinal axis of the fuselage, it is of course understood that the slots 5 and 6 could be formed at an angle with respect to the longitudinal axis so as to give a positive angle of incidence. This would aid in keeping the plane aloft.

Referring now to Figure 1, it will be noted

that the leading edge 11 of the wing 7 is provided with a reinforcing strip 12, which is preferably glued to the uppermost edge of the wing. The reinforcing strip extends through the fuselage 1 and along the entire length of the wing 7. The strips of adhesive material 8 firmly anchor the strip 12 to the fuselage and they further seal any exposed portion of the slots 5 and 6. The strip 12 protects the wing against breakage and further aids in maintaining the selected dihedral angle.

The larger end 13 of the conical-shaped fuselage is disposed a predetermined distance in advance of the wing 7, and is provided with a closure or nose indicated at 14. One end of the blank 2 from which the fuselage is formed is cut in the manner shown in Figure 8 so as to present a fringed edge 15. The nose 14 consists of an inner cone 16 over which the fringed edge 15 is turned and glued during the process of assembling the airplane and an outer cone 17 mounted in concentric relation with the first mentioned cone. The fringed edge 15 is received between the two cones in the manner shown in Figure 3, and the entire nose is glued into one unit that will withstand a considerable force of impact and which will guide the airplane through the air with little resistance being offered. The inner and outer cones 16 and 17 are respectively formed from the blanks shown in Figures 5 and 6.

The open end of the fuselage may further be provided with a transversely extending reinforcing member 18 which is so positioned that the inner cone 16 may abut thereagainst, and the cone is thus prevented from entering the fuselage beyond a certain limit.

For the purpose of flight, I have provided the airplane with a vertical stabilizer or rudder 19 and a horizontal stabilizer or elevator 20. The stabilizer 19 is cut at 21 for forming two legs 22, these legs being turned on the opposite sides of the stabilizer and glued to the fuselage 1 in the manner shown in Figure 2. The horizontal stabilizer is formed from a single piece of flexible material and is passed through diametrically opposite slots 23 and 24, and is later glued in place.

Adjustment of the wing portions and the stabilizers may be obtained by merely bending them slightly so as to produce the correct shape and consequently the desired course of flight may be accomplished. The entire airplane is made of a flexible material, such as paper or cardboard, and after the gluing operation has been completed, the entire exterior surface is colored and waterproofed with aluminum paint or the like.

From the foregoing description of the various parts of the toy airplane, the operation thereof may be readily understood. The operator takes hold of the fuselage behind the wing and in front of the rudder with the thumb and forefinger so that the fuselage rests on the middle finger. The airplane is then given a slight thrust in a manner similar to that of throwing a javelin. The plane will glide gracefully for a considerable distance. The wings and stabilizers may be adjusted so as to accomplish many of the stunts which are now accomplished by commercial aircraft.

While I have shown only the preferred form of my invention, it should be understood that I am entitled to make changes or modifications within the scope of the appended claims without departing from the spirit of the invention.

I claim:

1. In a toy airplane, a hollow fuselage having slotted portions therein, a wing disposed in the slotted portions and extending entirely through the fuselage, and strips secured to the wing and the fuselage for holding the former relative to the latter and for sealing exposed parts of the slotted portions.

2. In a toy airplane, a fuselage having an open end and a nose portion secured thereto, said nose portion comprising a plurality of conical shaped members arranged in concentric relation with respect to each other and having the open end of the fuselage secured between two adjacent members.

3. In a toy airplane, a hollow fuselage having opposed slots, a wing passed through the slots and projecting laterally beyond the fuselage, and strips securing the wing to the fuselage and causing the wing to form a dihedral angle.

4. In a toy airplane, a hollow conical fuselage having a fringed end, a cone-shaped member forming a closure for the end of the fuselage and arranged with the fringed portion projecting over the outer surface of the cone, and a second cone-shaped member mounted in concentric relation with the first and clamping the fringe between the two members, whereby said members form the nose of the airplane.

5. In a toy airplane, a hollow conical fuselage, a disc secured to the interior of the fuselage adjacent to one end of the latter, a cone-shaped member abutted against said disc and having the end of the fuselage turned down over the outer surface of the cone, and a second cone-shaped member mounted in concentric relation with the first and clamping the turned-down fuselage portion between the two members, whereby said members form the nose of the airplane.

FRED A. NORCROSS.