

Jan. 18, 1938.

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2,105,579

AERIAL TOY

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2 Sheets-Sheet 1

Fig. 1.

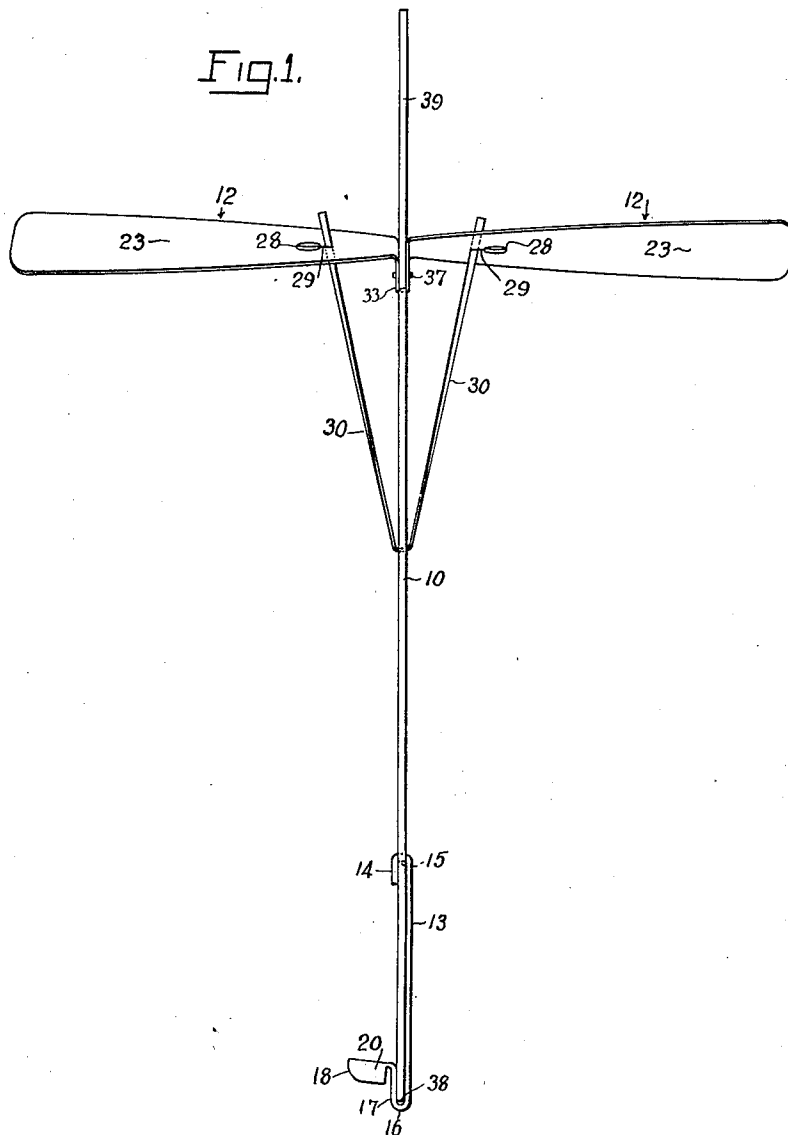
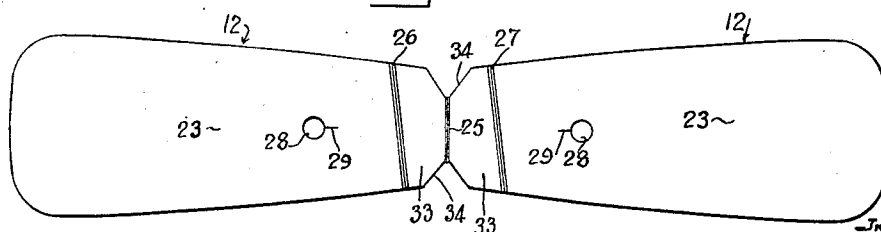


Fig. 2.



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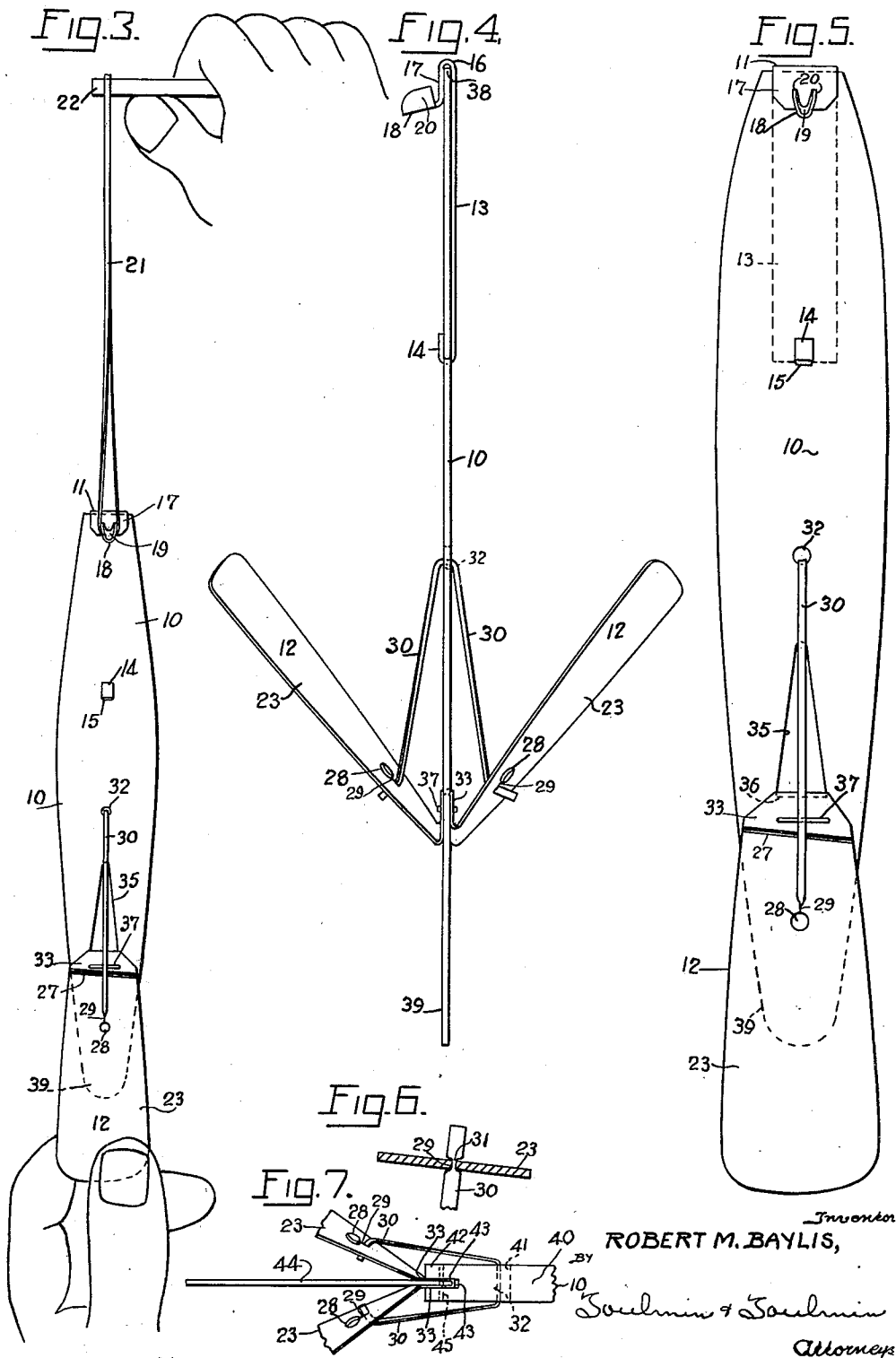
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UNITED STATES PATENT OFFICE

2,105,579

AERIAL TOY

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Application November 27, 1936, Serial No. 112,900

10 Claims. (Cl. 46-75)

This invention relates to toys, and in particular, to aerial toys.

One object of this invention is to provide an aerial toy which may be projected into the air and which rotates as it falls.

Another object is to provide such a toy having collapsible means which occupies one position during the ascent of the toy and another position during its descent.

Another object is to provide an aerial toy having a plurality of folding blades arranged at an angle to one another in such a manner as to be substantially inoperative to rotate the toy during the ascent thereof, but operative to rotate the toy and cause a slow descent thereof after it reaches the top of its path, thereby causing the blades to exert very little resistance against the upward flight of the toy while retarding the downward course thereof.

Another object is to provide means for inserting and anchoring the foldable blades in an aerial toy of this character.

Another object is to provide an aerial toy of the type described above, wherein resilient means is employed to urge the folding blades out of their folded position and arranged to be opposed by the force of the air as the toy is projected upwardly, this opposing force disappearing at the top of the path of the toy.

Another object is to provide an improved means for securing the resilient means to the blades of such a toy.

Another object is to provide an improved means of securing a weight to a forward portion of the toy in a simple yet efficient manner.

In the drawings:

Figure 1 is a side elevation of the aerial toy of this invention, shown in its position during descent.

Figure 2 is a detail plan view of the blade assembly for the toy, with the portions thereof unfolded so as to lie substantially in a plane.

Figure 3 is a side elevation showing the toy ready to be projected into the air.

Figure 4 is a side elevation of the toy, with the parts in a position of rest.

Figure 5 is an enlarged side elevation of the toy shown in Figure 3, with the blades folded back against the tail, ready for projection into the air.

Figure 6 is an enlarged detail cross section showing the manner of anchoring the rubber bands to the folding blades.

Figure 7 is a fragmentary view showing a modified

arrangement for securing the folding blades to the body of the toy.

In general, the toy of this invention consists of a body having a weight at the forward end thereof, and a pair of folding blades arranged at an angle to each other and secured to the body near the rearward end thereof. The folding blades are urged toward the front of the body by resilient means, such as rubber bands. Near the forward end of the body is a projection, or other suitable means, by which the launching arrangement is releasably attached to the toy. When the toy is projected upwardly into the air by this launching arrangement the air pressure maintains the blades substantially in their folded positions back against the rearward portion of the body in such a manner as to offer little resistance to the upward travel of the toy. When the toy reaches the top of its path, however, the air resistance disappears and the rubber bands force the blades into the positions shown in Figure 4, the positions shown in Figure 1 being reached by centrifugal force as the toy descends, rotating as it does so by reason of the angled arrangement of the blades.

Referring to the drawings in detail, Figures 1 and 5 show one embodiment of the aerial toy of this invention as consisting of a body 10, preferably of a light, thin material, having a weight generally designated 11 at its forward end, and a blade assembly generally designated 12 near its rearward end. The weight 11 consists of an elongated member 13, such as a metal strip, having a lug 14 at its rearward end arranged to enter and be bent around an aperture 15 in the body 10 of the toy. The forward end of the weight 11 is bent, as at 16, to pass around the forward end of the body 10 and continues rearwardly, as at 17, terminating in a hook-like portion 18 to which the launching device is attached. The hook-like portion 18 consists of a central portion 19 integral with the portion 17, and side wings 20 separated therefrom and bent toward each other so as to provide a hook which is easily released by the launching means. The latter (Figure 3) is shown as a rubber band 21 secured at one end to a short handle 22, which is held in one hand of the operator. A loop of rubber band 21 passes around the hook-like portion 18, and its other end is secured, as in a slot (not shown), in the handle 22. While Figure 3 shows the handle 22 rotated into the same plane as the body 10, thereby twisting the rubber band 21 with a quarter turn, it will be understood that the toy may be launched without such

a twist and with the handle 22 substantially at right angles to the body 10. The hook-like portion 18 may be a separate member secured to the body 10 or weight 11.

5 The blade assembly 12 (Figure 2) preferably consists of an integral piece of material cut to form blades 23, which are scored and folded along the lines 25, 26 and 27 in the manner shown in Figure 1, but capable also of being folded into the positions shown in Figures 4 and 5. The blades 23 are provided with apertures 28 having slits 29 extending therefrom (Figures 2 and 6), and forming an anchorage for the ends of a resilient member 30, such as a rubber band. This 10 rubber band 30 is adjusted to be under a slight tension as the toy descends with the blades outstretched. The slits 29 cause the rubber band 30 to be constricted, as at 31, near its end in the manner shown in Figure 6 so as to provide an effective locking of the rubber band to the blade. At the same time, however, the rubber band 30 is easily removed merely by sliding the constricted portions 31 out of the slits 29. The rubber band 30 at an intermediate point passes through an aperture 32 in the body 10, this aperture being larger than the band and serving approximately to equalize the force of the band upon the blades 23. The relatively angled positions of the folding lines 25, 26, and 27 cause the blades 23 to be angled relatively to each other in opposite directions. This is done by moving the portions 33 toward one another and at the same time folding the blades along the lines 25, 26, and 27.

The blades are inserted in or attached to the body 10 in any suitable manner, two arrangements being shown. According to the first arrangement (Figures 1 and 3 to 5, inclusive) the blade assembly is notched, as at 34, at the opposite ends of the folding line 25, and the body 10 40 is provided with a triangular slot 35 having a rearward edge 36. In the assembly of the toy the blade assembly 12 is inserted endwise through the triangular slot 35, and the folding line 25 then brought into engagement with the slot edge 36 by turning the blade assembly 12 through ninety degrees. With the blade assembly 12 in the position shown in Figure 5, a staple 37 is then passed through the portions 33 and the body 10, thereby firmly securing the blade assembly 12 to the body 10 in a simple, inexpensive and efficient manner. It will be understood, however, that a rivet or adhesive, or other appropriate means, may be used for this purpose instead of the staple 37. The rubber band 30 is then passed 50 through the aperture 32 and its ends secured in the slits 29 adjacent the apertures 28. Either before or after this series of operations the weight 11 is attached to the body 10 by hooking the portion 17 thereof around the front edge 38 of the body 10, and then passing the lug 14 through the aperture 15 and bending it downwardly against the body. The lug 14 in Figures 3, 4, and 5 is shown in the position which it occupies after this bending takes place.

65 In the operation of the aerial toy of this invention the launching member or rubber band 21 is hooked around the hook-like portion 18 and the toy grasped, with the blades 23 folded back against the tail portion 39 of the body 10. One convenient method of holding the toy for launching it, as shown in Figure 3, provides for the holding of the handle 22 in one hand and the folded blades 23 grasped between the thumb and index finger of the other hand. With the parts 70 in this position the toy is drawn back so as to

place the launching band 21 under tension. The toy is then aimed in a vertical line and released, whereupon the launching band 21 projects the toy vertically into the air and the hook-like portion 18 thereof releases itself from the band 21 5 shortly after it passes the handle 22. The toy shoots upwardly in approximately the position shown in Figure 5, until it approaches the top of its path.

During the toy's vertical ascent the force of the 10 air exerted against the blades 23 urges them to remain adjacent the tail portion 39 of the body 10 and overcome the pull of the rubber band 30. When the top of the path is reached, however, the speed of the toy slackens, the force of the 15 air diminishes and the rubber band pulls the blades 23 away from the tail portion 39 and toward the position shown in Figure 4. The force of gravity acting upon the weight 11, however, inverts the toy and causes it to descend into the 20 position shown in Figure 1. The force of the air during the downward descent now pulls the blades 23 outwardly, causing them approximately to assume the positions shown in Figure 1. Since the blades 23 are at angles to one another they act 23 in a manner analogous to the blades of a screw propeller and cause the toy to rotate, thereby retarding its descent.

The modified arrangement shown in Figure 7 employs a relatively thicker body 40 having a rubber band 30 passing through an aperture 41 and similarly secured, as at 29, to the blades 23, in the manner previously described. The rearward end 42 of the body 10 is provided with a slot 43 into which the portions 33 of the blade assembly 35 12 are inserted. The latter is then anchored in position by the insertion of a wedge 44, after which a staple or other suitable anchoring means 45 may be passed through the assembly.

Any suitable material may be used for the construction of this toy. An inexpensive construction is obtained by making the body 10 of balsa wood and the wing or blade assembly 12 of thin cardboard.

It will be understood that I desire to comprehend within this invention such modifications as come within the scope of the claims and the invention.

Having thus fully described my invention, what I claim as new and desire to secure by Letters 50 Patent, is:

1. In an aerial toy, a body, and a plurality of blades secured to said body and foldable relatively thereto, said body having an aperture with an approximately straight edge, said edge being 55 adapted to engage a fold in said blades.

2. In an aerial toy, a body, a plurality of blades secured to said body and foldable relatively thereto, said body having an aperture with an approximately straight edge, said edge being adapted to engage a fold in said blades, and securing means passing through said blades and said body in the vicinity of said edge.

3. In an aerial toy, a body, and a plurality of blades secured to said body and foldable relatively thereto, said body having an elongated aperture with an approximately straight edge, said edge being adapted to engage the folds in said blades and said aperture being sufficiently elongated to receive said blades endwise.

4. In an aerial toy, a body, a plurality of blades secured to said body and foldable relatively thereto, said body having an elongated aperture with an approximately straight edge, said edge being adapted to engage the folds in said blades and 75

said aperture being sufficiently elongated to receive said blades endwise, and securing means passing through said blades and said body in the vicinity of said edge.

5 5. In an aerial toy, a body, a plurality of blades adapted in one position to lie along the sides of said body and in another position to swing outwardly from said body, said body having an aperture therein with an edge arranged to receive
10 said blades, and means for securing said blades to said body.

6. In an aerial toy, a body having an aperture, a plurality of blades with an interconnecting portion therebetween, said interconnecting
15 portion being arranged to engage an edge of said aperture, and means for securing said blades to said body, said blades being arranged in one position to lie substantially adjacent each other and adapted to swing outwardly away from each
20 other into extended positions.

7. In an aerial toy, a body having an aperture, a plurality of blades with an interconnecting portion therebetween, said interconnecting portion being arranged to engage an edge of said aperture, and means for securing said blades to said
25 body, said blades being arranged in one position to lie substantially adjacent each other and adapted to swing outwardly away from each other into extended positions, said aperture including
30 an approximately straight edge portion and said interconnecting portion having a fold adapted to engage said edge portion.

8. In an aerial toy, a body, a wing structure including a unitary member comprising a pair of blades joined to each other at an intermediately disposed fold, and means for securing said wing structure to said body in the vicinity of said
5 fold, said blades being arranged in one position to lie substantially adjacent each other and to swing outwardly into extended positions away from each other.

9. In an aerial toy, a body, a wing structure including a unitary member comprising a pair of blades joined to each other at an intermediately disposed fold, and means for securing said wing structure to said body in the vicinity of said
10 fold, said blades being arranged in one position to lie substantially adjacent each other and to swing outwardly into extended positions away from each other, the planes of said blades being
15 angled relatively to each other.

10. In an aerial toy, a body, a plurality of blades secured to said body and foldable relatively thereto, and resilient means for urging said
20 blades into an unfolded position relatively to said body, said resilient means being arranged to oppose the force of the air against said blades during the upward travel of said toy and to urge
25 said blades into an unfolded position during the descent of said toy, said blades being angled relatively to one another to retard the descent of said toy.

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