

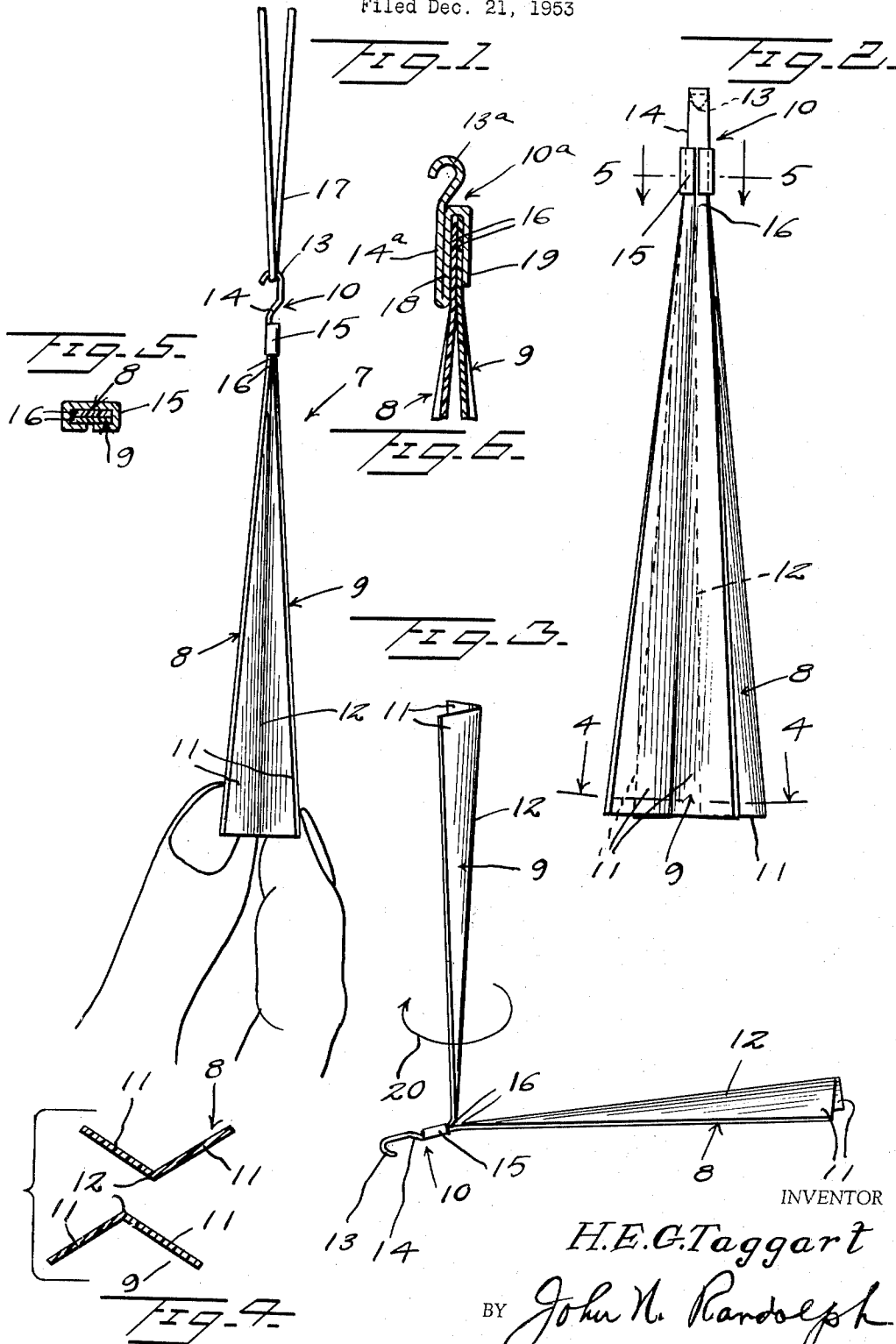
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AERIAL TOY

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AERIAL TOY

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This invention relates to a novel toy projectile or aerial toy adapted to be propelled into the air by an elastic band or the like and which due to its unique construction will descend slowly, rotating during descent and with the parts thereof disposed to simulate a helicopter.

More particularly, it is an aim of the present invention to provide a toy projectile of extremely simple construction composed of a minimum number of parts including two vanes which due to their unique shape and arrangement with respect to one another will produce a unique action of the toy on descent.

Another object of the invention is to provide a toy including a hook member which functions in conjunction with the launching of the toy and in a unique manner with the vanes as a counterweight during descent of the toy.

Still a further object of the invention is to provide a projectile type toy wherein due to the novel construction and arrangement of the vanes, the toy will offer a minimum of resistance to the air during ascent to enable the toy to reach a maximum height when launched with a given amount of catapulting force.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawing, illustrating presently preferred embodiments thereof, and wherein:

Figure 1 is an edge elevational view showing the toy in the position which it assumes and in the manner in which it is held for launching;

Figure 2 is an enlarged side elevational view looking from the right to the left of Figure 1 and showing the toy as it will appear during ascent;

Figure 3 is an edge elevational view showing the position of the parts of the toy as they will appear during descent;

Figure 4 is a cross sectional view taken substantially along a plane as indicated by the line 4—4 of Figure 2;

Figure 5 is a cross sectional view taken substantially along a plane as indicated by the line 5—5 of Figure 2, and

Figure 6 is a fragmentary longitudinal sectional view of the upper portion of the toy showing a slightly modified form of the hook.

Referring more specifically to the drawing, and first with reference to Figures 1 to 5, the toy projectile or aerial toy in its entirety and comprising the invention is designated generally 7 and consists of a pair of corresponding vanes 8 and 9 and a hook 10.

The vanes 8 and 9 are each formed from an elongated strip of a material which is capable of flexing, such as plastic which may or may not contain a metallic coating. The strips forming the vanes 8 and 9 taper in width from end-to-end thereof and are creased longitudinally from end-to-end, midway of their longitudinal edges, as best illustrated in Figure 4, so that each vane includes two angularly disposed sides or sections 11 which merge integrally along the longitudinal crease 12 of the vane.

The hook 10 includes a bill portion 13, forming one end thereof, and a shank portion 14 having a distal end which is widened and folded to provide a clamping sleeve

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15. The narrow ends of the vanes 8 and 9 are clamped in the clamping sleeve 15 of the hook 10 immovably relatively to one another and to said hook, and said vanes extend from the outer or distal end of the clamping sleeve. Said restricted ends 16 of the vanes 8 and 9 are clamped in slightly offset relationship to one another in the sleeve 15, so that the vanes 8 and 9 are laterally offset with respect to one another, as best illustrated in Figures 2 and 4. Further, the vanes 8 and 9 are clamped in the sleeve 15 so that their convex or ridged surfaces are adjacently disposed and so that their concave or grooved surfaces are remotely disposed and face outwardly, as seen in Figures 3 and 4.

The toy projectile 7 is preferably launched or catapulted into the air by means of an elastic band or strand 17, the ends of which may be secured to the two furcations of any suitable yokelike frame such as is employed in a slingshot, not shown, and the intermediate portion of which elastic strand 17 is engaged by the bill 13 of the hook 10, as illustrated in Figure 1. With one hand supporting the elastic strand 17 above the toy 7, the free ends of the vanes 8 and 9 are grasped between the thumb and index fingers, as by gripping two of the substantially parallel sides or sections 11 of the vanes between the thumb and index finger. The toy 7 is then pulled downwardly to stretch and tension the elastic strand 17 after which the fingers are released from engagement with the vanes 8 and 9. When this occurs the toy 7 will be catapulted upwardly into the air.

The creases 12 of the vanes 8 and 9 will maintain said vanes substantially straight during ascent of the toy, so that the toy will appear as illustrated in Figure 2 during ascent. Accordingly, the creases 12 will resist fluttering of the vanes 8 and 9 to thus minimize wind resistance thereon to cause the toy to ascend to a maximum height relatively to the amount of force imparted thereto in the launching thereof. It has been found that the toy may be launched to altitudes of approximately 300 feet in the aforescribed manner with little difficulty.

As the launching force of the strand 17 is spent, and as soon as gravity descent of the toy commences, the weight of the hook 10 will cause the toy to commence to overturn from its position of Figure 2. The two vanes 8 and 9 form airfoils and the air impinging thereagainst causes said vanes to spread apart. Additionally, the air striking the concave and convex surfaces of the vanes 8 and 9 will cause the toy 7 to revolve clockwise as viewed from above and as indicated by the arrow 20 during descent. The hook 10 will swing outwardly by centrifugal force due to the rotation of the toy 7 and one of the blades or vanes will assume nearly a horizontal position opposite to the hook 10 for counterbalancing the weight of the hook. It has been found that either vane may assume this horizontal position as illustrated by the vane 8 in Figure 3. Said substantially horizontal vane 8 will be disposed substantially straight with its concave side facing downwardly. The other vane 9 will assume substantially a vertical position above the hook and vane 8 and will be flexed substantially toward its concave side and away from the vane 8.

Due to the rigidifying effect of the longitudinal crease 12, plus the action of centrifugal force, the vane 8 will not flex upwardly past a substantially straight line position relatively to the hook 10, since the crease 12 thereof will resist such flexing of the vane. However, the vane 9 flexes readily toward its concave side and will normally maintain its substantially vertical position, as illustrated in Figure 3, throughout the descent of the toy and since the vane in this position offers the least resistance to air. The toy will revolve substantially about the vane 9 as an axis in the direction indicated by the arrow 20 with the vane 8 revolving in an arc around the vane 9. Thus, the

toy 7, during descent, will very realistically simulate the appearance of a helicopter.

In order to obtain best results it has been found that the weight of each vane 8 and 9 will be approximately equal to 85 per cent of the weight of the hook 10 so that either vane may properly counterbalance the weight of the hook during descent of the toy and so that the parts 8, 9 and 10 will be in substantially the positions as illustrated in Figure 3 during descent.

Without the longitudinal creases 12 of the vanes 8 and 9, the operation of the toy, as previously described, will not occur. Additionally, unless the vanes are offset as illustrated in the drawing and as previously described, the maximum airfoil effect will not be obtained by the vanes without which and the resulting rotation imparted to the toy during descent, the relationship of the parts as illustrated in Figure 3 will not be fully obtained. The lateral offsetting of the vanes provides a pitch to the vanes which functions both to maintain the vanes close together to prevent fluttering during ascent and to force the vanes apart during descent of the toy. The two sides or sections 11 of each vane or blade 8 and 9 form an angle greater than 90° and preferably somewhat less than 135°, as illustrated in Figure 4.

Figure 6 illustrates a slightly modified form of the hook, designated generally 10a, having a much longer shank portion 14a which is folded back upon itself twice. The restricted ends 16 of the vanes 8 and 9 are clamped between the intermediate fold 18 and the outer fold 19 of the hook shank, said vanes extending from said clamping folds 18 and 19 in a direction away from the bill 13a of the hook 10a.

Obviously, the vanes 8 and 9 may be formed of various materials which will normally maintain their shapes when creased longitudinally, yet which are capable of flexing outwardly with respect to one another and toward their concave or grooved sides. Likewise, the toy 7 may be made in various sizes so long as the relative weights of the parts as previously set forth are substantially maintained.

Further, any suitable launching means may be employed for catapulting the toy into the air.

It will be noted that the hook 10 or 10a has a triple function in that it provides a means for attaching the toy to a launching element, forms a clamping means for connecting the vanes 8 and 9 in proper relationship to one another, and additionally constitutes a counterbalancing means for one of the vanes during descent of the toy.

Various other modifications and changes are contemplated

and may be resorted to, without departing from the spirit or scope of the invention as hereinafter defined by the appended claims.

I claim as my invention:

1. A toy of the character described comprising a pair of elongated vanes formed of a material capable of flexing, said vanes being longitudinally creased, a hook having a bill portion constituting one end thereof and a clamp portion constituting its opposite end, complementary ends of said vanes being clamped in the clamp portion of said hook and extending therefrom in a direction away from said bill portion, said hook supporting the vanes with the convex or ridged sides thereof adjacently disposed, said vanes being clamped to the hook with the longitudinal axes thereof laterally offset relative to one another.

2. A toy as in claim 1, each of said vanes being of a weight slightly less than the weight of said hook.

3. A toy as in claim 2, the two longitudinal sides or sections of each vane forming an angle with one another of approximately 130°.

4. A toy of the character described comprising a pair of elongated strips of a relatively flexible material, said strips tapering from end-to-end thereof and being creased longitudinally from end-to-end and midway of the side edges of the strips, means clamping the restricted ends of said strips together with the convex or ridged sides of the strips facing one another, said strips forming airfoils or vanes and said clamping means having an inwardly opening hook portion at an end thereof located remote from the vanes, said vanes being secured together with their creases in laterally offset relation to one another, said creases diverging relative to one another from said clamping means toward the wider free ends of the vanes.

5. A toy as in claim 4, said clamping means extending only a short distance, relative to the length of the vanes, beyond the restricted ends of said vanes to form a counterbalancing weight for one of said vanes during gravity descent of the toy.

6. A toy as in claim 5, the weight of each vane being slightly less than the weight of the clamping means.

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