

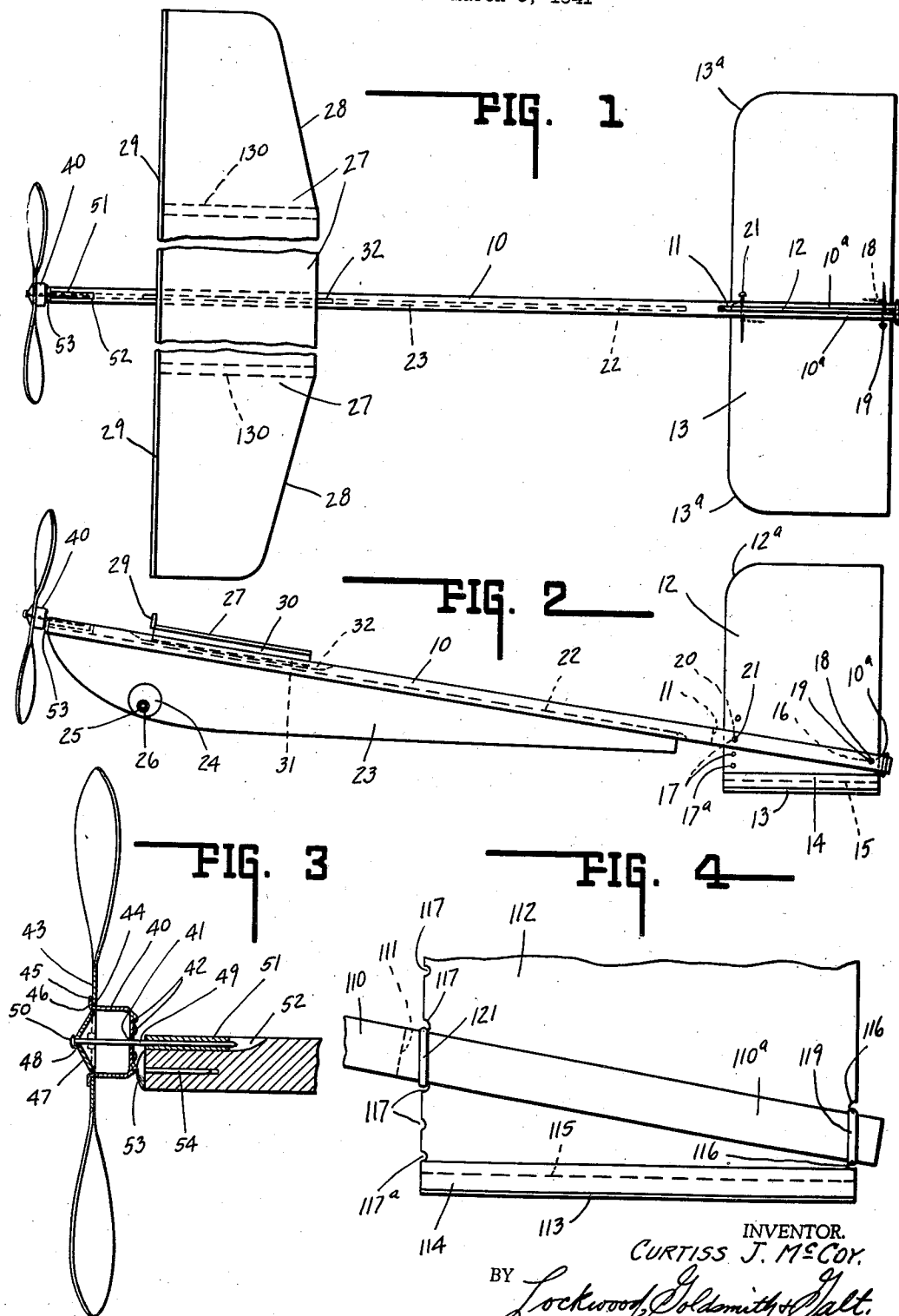
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AIRPLANE KITE

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## AIRPLANE KITE

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This invention relates to an airplane kite.

The chief object of this invention is to provide an airplane kite which has its several parts so arranged that they have complementary interfitting associations whereby the several parts may be partially fabricated by the manufacturer and the assembly readily completed by the purchaser through the medium of adhesive and pins, elastic bands, or the like, all as hereinafter set forth.

Another object of this invention is to provide a kite structure which may be readily adjusted for different wind intensities, thus obviating the necessity of utilizing or applying a tail thereto.

A further object of the invention is to provide an airplane kite construction which requires no lateral bracing for wing, stabilizing rudder and vertical rudder support.

A further object of the invention is to provide an airplane kite which requires no supplementary connections other than a singular direct connection between the flying string and the kite.

The chief feature of the present invention consists in the formation of the kite structure, whereby all of the aforesaid objects may be accomplished.

Another chief feature of the invention is to include a wind operable propeller like arrangement which in association with an adjacent abutment in the rotation of the propeller by wind action in kite flying will intermittently and repetitiously produce sounds that resemble cylinder exhausts of an airplane motor.

Other objects and features of the invention will be set forth more fully hereinafter.

The full nature of the invention will be understood from the accompanying drawing and the following description and claims:

In the drawing Fig. 1 is a top plan view of the airplane kite embodying the preferred form of the invention.

Fig. 2 is a side elevation thereof.

Fig. 3 is a longitudinal sectional view, slightly enlarged, parts being broken away and to illustrate the construction in greater detail.

Fig. 4 is an enlarged side elevational view of a modified form of the rear vane structure of the kite and its adjustable association with the rear end of the main frame member of the kite.

In the drawing, 10 indicates the main central bar, frame or support. The same at its rear end is slotted as at 11 and this slot is provided to receive the vertical rudder 12. The two portions 10a of the bar or frame member straddle the aforesaid. The horizontal stabilizing vane 13 is provided with a median bar member 14, the

same being slotted in its upper face as at 15. This bar 14 is suitably secured to the horizontal stabilizing vane by the kite manufacturer and glue is usually the means of connection.

Herein the forward corners of the stabilizing vane are rounded as at 13a and herein the upper forward corner of the vertical rudder vane is rounded as at 12a. The purchaser applies glue to the groove 15 in the bar or block 14 and then applies the vane 12 thereto, seating the vane in the groove 15. When the glue has set, the rear end of the kite structure is in assembled relation.

The vane 12 at its rearward and lower portion may be provided with an opening therethrough, indicated by the numeral 16. It also is provided with three openings, indicated at 17, near its lower forward edge. The position of these three openings 17 relative to the opening 16 is that they are on the arc of a circle, the center of which is the opening 16.

Inasmuch as the material from which the vanes, blocks and bars are formed, consists of balsa wood, which is notoriously light, an ordinary pin passed through the two portions 10a of the main frame member 10 at 18 and indicated by the numeral 19, and registering with the hole 16, pivots the rear end of the kite structure to the main frame member 10.

The main frame member 10 may be marked as at 20, the same distance from the marking 18 as the distance between the openings 16 and 17, and another pin 21 may be readily passed through this balsa frame member 10 and at the two portions thereof, and registers in one of the holes 17. The upper hole 17 of the three holes is utilized when the wind is of considerable intensity. The middle hole 17 is utilized when the wind is of moderate intensity. The lower hole 17 is utilized when the wind is of but slight intensity.

As hereinafter pointed out, other means of connection of the rear portion of the kite structure to the bar may be utilized in lieu of the foregoing, but it has been found that by the marking arrangements and by the perforations 16 and 17 or by the marking thereof, a child may readily register and secure the two portions together in the proper adjusted relation. In using pins, as aforesaid, the household pin may be readily passed through the two portions 10a and the vertical rudder vane 12 therebetween and then turned angularly. If perfect balance is desired, the forward pin may be passed through from right to left and the excess turned rearwardly, while the rearward pin could be passed through

from left to right and the projecting end bent forward.

The frame member 10 on its underface and the same may be a continuation of the slot 11, is provided with a median groove 22 and seated in said groove is a depending, elongated central vane 23. This is a semi-diagrammatic representation of a fuselage. It aids in preventing lateral movement of the kite while in flight, and is one of the reasons why a tail is not required.

The manufacturer suitably secures the two members 10 and 23 together by means of glue in the groove 22 or by any other suitable means. This groove has a depth approximately one-third the thickness or depth of the member 10. The forward and upwardly curved end of this fuselage vane terminates immediately adjacent the forward end of the frame member 10.

Substantially coincident with the greatest width and near the outer or free edge of the vane 23, there may be provided upon opposite sides, suitable stiffening means in the form of circular paper stickers 24. The purpose thereof is to reenforce on opposite sides the light balsa wood vane 23, the actual dimension of which is about  $\frac{1}{8}$ " in thickness. Furthermore, if desired, there may be provided a conventional eyelet or grommet 25 providing the opening 26, and this forms a metallic bearing. The flying string has its kite securing end passed through the opening 26 and in this manner when the string end is tied to the string portion adjacent thereto, the kite is tied or secured to the flying string. The aforesaid constitutes the sole connection between the string and the kite.

The aeroplane wing is indicated by the numeral 27. The rearward corners are chamfered or reduced as at 28. Extending upwardly from the forward edge and secured to the forward edge, is a substantially co-extensive, upwardly directed portion 29. In practice, portions 27 and 29 are secured together by the kite manufacturer.

Suitably secured to the underface of the wing 27 and medianly thereof, is a plate member 30. This plate member, together with the upwardly directed portion 29, serves to stiffen and stabilize the wing 27. This plate member is preferably adhesively secured to the wing member 27. The thickness of this plate member 30 is about  $\frac{3}{8}$ ". Its length is substantially the width of the wing 27. The width of this plate member is approximately the thickness of the frame member 10 but may be of greater thickness or lesser thickness. When it is of substantially the same or greater thickness, there is eliminated the tendency to create a bending moment in the wing about the frame 10 in assembly.

Plate member 30 need not be of balsa wood. It is a reenforcement. Likewise, members 130 are stiffeners applied to the underface of wing 27 to straighten warped material and to assist in holding the wind under the wing to steady the kite. These are of balsa wood.

The lower face of the plate member 30 and substantially coextensive therewith and medianly thereof, is provided with a tongue 31 approximately  $\frac{1}{8}$ " in thickness and  $\frac{1}{8}$ " in depth. The upper face of the frame member 10 approximately 3" rearwardly from the front end thereof, is provided with an elongated, medianly positioned groove 32, said groove being slightly longer than the length of the tongue 31. The purchaser need only apply glue to this groove 32 and then seat the tongue 31 in said groove and thereby permanently secure the wing to the frame. It will be

noted—see Fig. 2—that the forward edge of the wing structure 27—29 is substantially above or in vertical registration with the eyelet opening 26 or string anchorage to the kite.

As previously set forth, the fuselage vane 23 and the wing vane 27 also are of balsa wood as well as member 30; hence, the entire structure is extremely light. The front upwardly directed edge portion 29 in kite flying creates a vacuum on the upper face of the wing. This created vacuum tends to cause the kite to rise. Inasmuch as the string anchorage is below the wing in the flying of the kite, the wind on the underface of the upwardly inclined wing also causes the kite to rise and thus the kite in the flying is maintained in the usual flying position.

In order to further simulate an airplane, there is provided a propeller structure and the same is of relatively light metal, such as thin sheet aluminum. The propeller arrangement includes a rearwardly directed hub member 40, the rearward face of which is centrally apertured as at 41. About the same and on the rearward face are projections 42 formed in said face in its initial formation and these projections extend rearwardly.

The propeller proper is a single sheet element having a central portion 43 apertured at 44 to receive tongues 45 projecting forwardly from the cup-like hub member and the outer and forward ends of the members 45 are turned angularly as at 46 to anchor the blade portion of the propeller structure to the hub portion thereon. The central portion of the blade arrangement is directed outwardly in conical formation, as indicated at 47, and is centrally apertured as at 48.

A pin 49 having the head 50 is seated in the two apertures 48 and 41 and thus rotatably supports the propeller arrangement. The propeller arrangement by reason of the spacing of the bearings 41 and 48 is prevented from cocking relative to the axis of rotation and thus is caused to rotate in a plane substantially transverse to that axis of rotation. The pin 49 constituting the propeller shaft is forcibly secured by the manufacturer in a socket member 51. If desired, glue may be added for securing the shaft to the member 51 but usually the friction connection is sufficient to rigidly connect the socket 51 and the shaft 49.

It has been found if the pin 49 be pressed into the forward end of the frame member 10 which is of balsa wood, that in the continued rotation of the propeller due to any slight difference in the setting of the curve in the propeller blades and the like, that the pin would tend to wobble in the frame member 10 and thus gradually enlarge the hole receiving the pin and thus permit the pin to escape from its anchorage; hence, the inclusion of a socket member 51, which is of materially harder wood. This socket member is small dowel stock and slightly larger in diameter than the conventional wooden match.

This method of socket mounting prevents breakage of member 10 and also the dowel and socket recess constitute a predetermined true locating arrangement.

The socket, shaft and propeller are all assembled by the manufacturer who also forms in the upper face and at the forward end of the frame 10, the groove 52. This groove is of just sufficient length and width to receive the dowel stock socket. The purchaser applies glue to this groove and then forces the socket into the groove

by lateral presentation thereto and holds it in the groove until the glue has set.

Whenever it is desired to simulate engine operation, a relatively small curved headed upholstering tack having the head portion 53 and the shank portion 54 is forced into the front end of the frame member 10 immediately below the groove 52. When so mounted projections 42, in the rotation of the propeller incident to wind passing therethrough which causes the propeller to rotate, successively engage the head 53 on the upholstering tack. Each engagement causes a sound simulating an engine explosion. In view of the fact that such contact is eccentric of axis of propeller rotation, the dowel stock socket addition is most desirable since without it the balsa wood frame member 10 would not have sufficient resistance to withstand continuous rotation of the propeller without freeing the propeller pin or shaft from the frame member 10.

In Fig. 4 there is illustrated a modified form of rear structure connection. The same is not as desirable as that shown in Figs. 2 and 3. In this figure numerals of the 100 series indicate like or comparable parts. Thus, the main frame member 110 slotted at 111 straddles the vertical rudder 112, the latter being secured at its lower end to the horizontal stabilizing vane 113 by being secured in the slot 115 of the bar member 114 medianly secured to the upper face of the horizontal stabilizing vane 113.

On the free end of the portions 110a there is mounted a rubber band 119. Adjacent the end of the slot 111 is mounted the rubber band 121. The rearward edge of the horizontal vane 112 adjacent its connection to the bar member 114 is provided with a pair of spaced notches 116. The forward edge of the vane 112 is provided with a series of notches 117. The rubber bands may be of approximately  $\frac{1}{4}$ " in diameter, these being standard bands for orthodontic brace use in the dental art.

When the parts are assembled as shown in Fig. 4, the bands are moved along the frame member 10 towards each other with the vane 112 included therebetween until band 119 seats in the notches 116 and the band 121 seats in the selected pair of notches 117 to yieldingly hold the bar 110 either approximately parallel to the bar 114 or at any one of the additional angular relationships provided, as previously described, for the purpose of adjusting the kite structure, following assembly, to the wind velocity.

Whenever desired, the spaced apart free ends of member 10 may mount a small rubber band retainer, as shown at 119, even in the form shown in Figs. 1 and 2, which serves to prevent separation and stabilizes the structure. Such a retainer is in addition to pin 18 and is only applied to member 10.

The lowest of all holes and notches 17a and 117a when used make this structure a hand glider so that it can be hand thrown. The other holes and notches are for tailless kite flying adjustment purposes.

It is to be observed that it is not essential that bar 10 be located immediately adjacent stabilizer vane 13 but it may be mounted approximately midway on rudder 12 or in any other convenient position thereon.

While the invention has been illustrated and described in great detail in the drawings and foregoing description, the same is to be considered as illustrative and not restrictive in character.

The several modifications described herein as well as others which will readily suggest themselves to persons skilled in this art, all are considered to be within the broad scope of the invention, reference being had to the appended claims.

The invention claimed is:

1. An airplane kite including an elongated main frame member of full kite length upon which all the main elements are supported, a depending fuselage vane depending therefrom and extending from adjacent the front end of the full length member toward the rear end and terminating short of the member rear end and at some distance therefrom, a horizontal stabilizing vane extending oppositely and sidewardly of the frame member at the rear end thereof and adjacent to but spaced from the rear end of the fuselage vane and positioned below the frame member, a vertical rudder vane extending upwardly from and through the rear end of the frame member and to the lower end of which is secured the stabilizing vane, means securing the rudder vane to the frame member, a wing extending oppositely and sidewardly from the frame member and near the forward end thereof and having its lower face secured to the upper face of the frame member, and a flying string anchorage portion on the fuselage vane near the bottom forward portion thereof but some distance rearwardly of the extreme end of the frame member.

2. An airplane kite including an elongated main frame member, a depending fuselage vane depending therefrom and extending from adjacent the front end of the member toward the rear end thereof and terminating at some distance therefrom, a horizontal stabilizing vane extending oppositely and sidewardly of the frame member at the rear end thereof and adjacent to but spaced from the rear end of the fuselage vane, a vertical rudder vane extending upwardly from the frame member and stabilizing vane, and a wing extending oppositely and sidewardly from the frame member near the forward end thereof, the wing including an upwardly directed portion at its forward edge.

3. An airplane kite including an elongated main frame member of full kite length upon which all other main elements are supported, a depending fuselage vane depending therefrom and extending from adjacent the front end of the full length member toward the rear end thereof and terminating short of the member rear end and at some distance therefrom, a horizontal stabilizing vane extending oppositely and sidewardly of the frame member at the rear end thereof and adjacent to but spaced from the rear end of the fuselage vane and positioned below the frame member, a vertical rudder vane extending upwardly from and through the rear end of the frame member and to the lower end of which is secured the stabilizing vane, means securing the rudder vane to the frame member, a wing extending oppositely and sidewardly from the frame member and near the forward end thereof and having its lower face secured to the upper face of the frame member, and a flying string anchorage portion on the fuselage vane near the bottom forward portion thereof but some distance rearwardly of the extreme forward end of the frame member, the stabilizer vane and frame member having an adjustable connection therebetween for wind velocity correction, the vane pivoting at its rear edge and being

tiltable upwardly relative to the frame member for high velocity correction.

4. An airplane kite including an elongated main frame member of full kite length upon which all other main elements are supported, a depending fuselage vane depending therefrom and extending from adjacent the front end of the full length member toward the rear end thereof and terminating short of the member rear end and at some distance therefrom, a horizontal stabilizing vane extending oppositely and sidewardly of the frame member at the rear end thereof and adjacent to but spaced from the rear end of the fuselage vane and positioned below the frame member, a vertical rudder vane extending upwardly from and through the rear end of the frame member and to the lower end of which is secured the stabilizing vane, means securing the rudder vane to the frame member, a wing extending oppositely and sidewardly from the frame member and near the forward end thereof and having its lower face secured to the upper face of the frame member, and a flying string anchorage portion on the fuselage vane near the bottom forward portion thereof but some distance rearwardly of the extreme forward end of the frame member, the stabilizer vane and frame member having an adjustable connection therebetween for wind velocity correction, the vane pivoting at its rear edge and being tiltable upwardly relative to the frame member for high velocity correction, said connection including means mounting on the frame member and directly associated with the rudder vane.

5. An airplane kite including an elongated main frame member of full kite length upon which all other main elements are supported, a depending fuselage vane depending therefrom and extending from adjacent the front end of the full length member toward the rear end thereof and terminating short of the member rear end and at some distance therefrom, a horizontal stabilizing vane extending oppositely and sidewardly of the frame member at the rear end thereof and adjacent to but spaced from the rear end of the fuselage vane and positioned below the frame member, a vertical rudder vane extending upwardly from and through the rear end of the frame member and to the lower end of which is secured the stabilizing vane, means securing the rudder vane to the frame member, a wing

extending oppositely and sidewardly from the frame member and near the forward end thereof and having its lower face secured to the upper face of the frame member, and a flying string anchorage portion on the fuselage vane near the bottom forward portion thereof but some distance rearwardly of the extreme forward end of the frame member, the stabilizer vane and frame member having an adjustable connection therebetween for wind velocity correction, the vane pivoting at its rear edge and being tiltable upwardly relative to the frame member for high velocity correction, said connection including means mounting on the frame member and directly associated with the rudder vane, said means including pins.

6. In an airplane kite, a main frame member including a longitudinal median groove in its lower face, a fuselage representation vane secured in said groove, a rear vane structure including a vertical and a lateral vane arrangement, said main frame member including a slot therethrough at its rear end for rear vane structure mounting, the fuselage vane extending approximately from the forward end of the frame member and terminating at its rearward end adjacent the inner and forward end of the frame member slot, the lateral vane lying below the frame member and the vertical vane projecting upwardly above the frame member.

7. In an airplane kite, the combination of an elongated main frame member of comparatively narrow width and having a median groove in its upper surface, a wing structure of considerable fore and aft width, an elongated tongue projecting downwardly therefrom and rigid with the wing and medianly positioned relative thereto, said tongue being receivable by said groove.

8. In an airplane kite, the combination of an elongated main frame member of comparatively narrow width and having a median groove in its upper surface, a wing structure of considerable force and aft width, an elongated plate member rigid with the undersurface of the wing and of a width at least equal to the width of the frame member and medianly positioned with respect to the wing structure and including a depending tongue, said tongue being receivable by the member groove for wing and frame member connection.

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