Oct. 31, 1967 W. W. ENGLISH 3,350,041

KITE CONSTRUCTION

Filed Oct. 21, 1965 2 Sheets-Sheet 1

FIG. 2

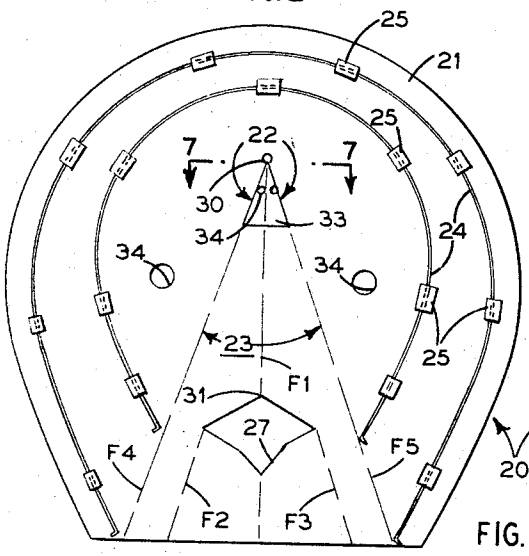
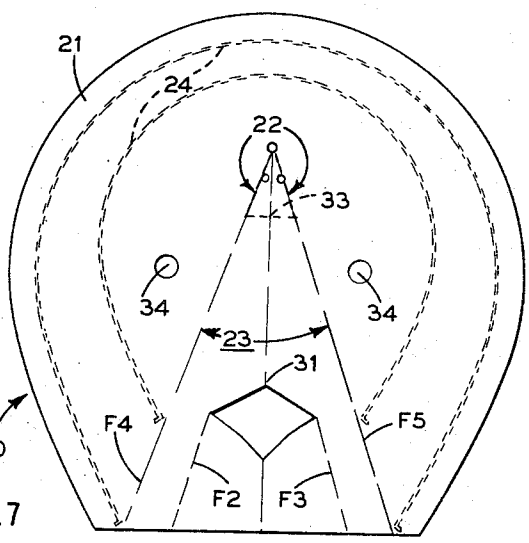


FIG. 1



20

FIG. 7



FIG. 3

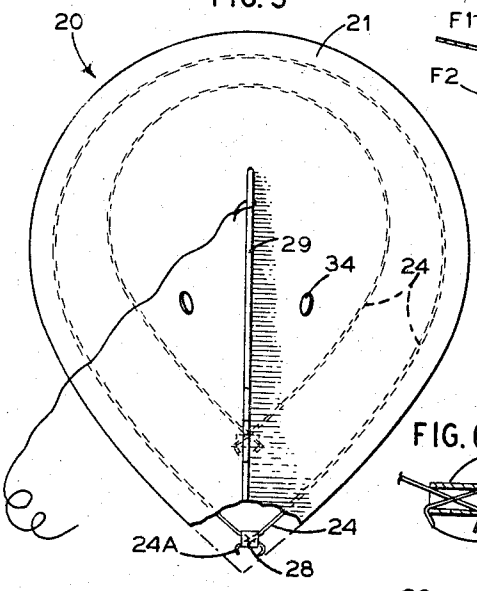


FIG. 8

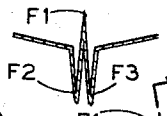


FIG. 4

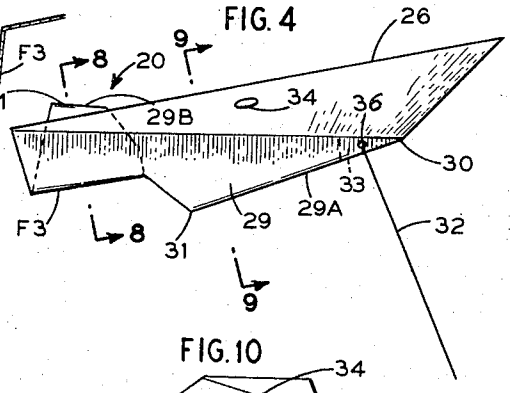


FIG. 6

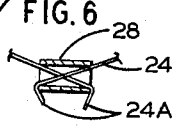


FIG. 10

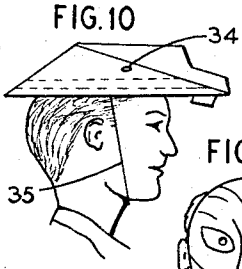


FIG. 11

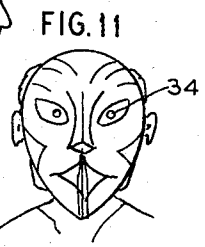


FIG. 5

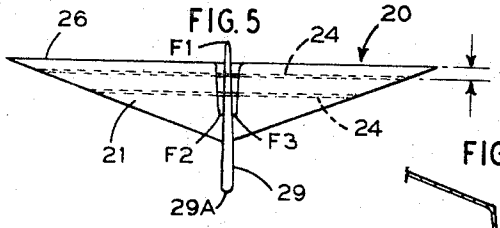
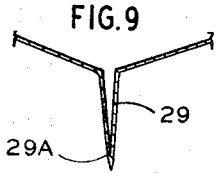


FIG. 9



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KITE CONSTRUCTION

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FIG. 12

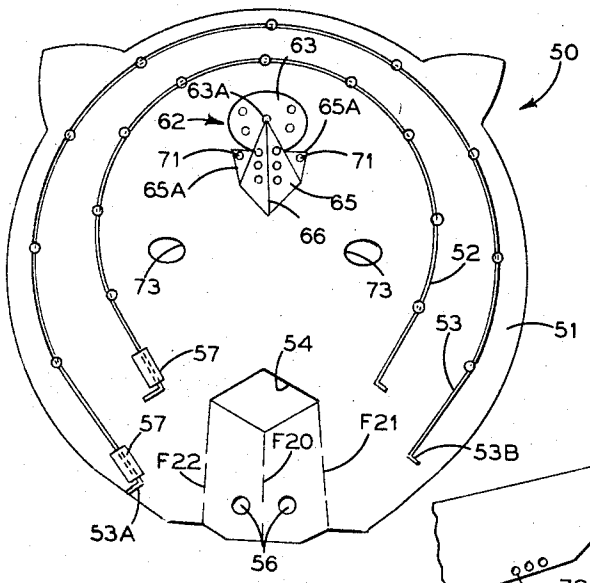


FIG. 15

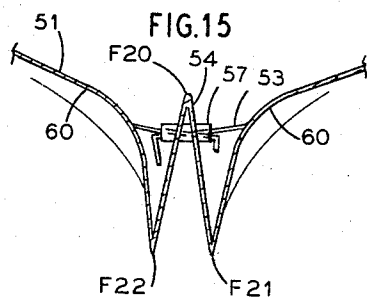


FIG. 13

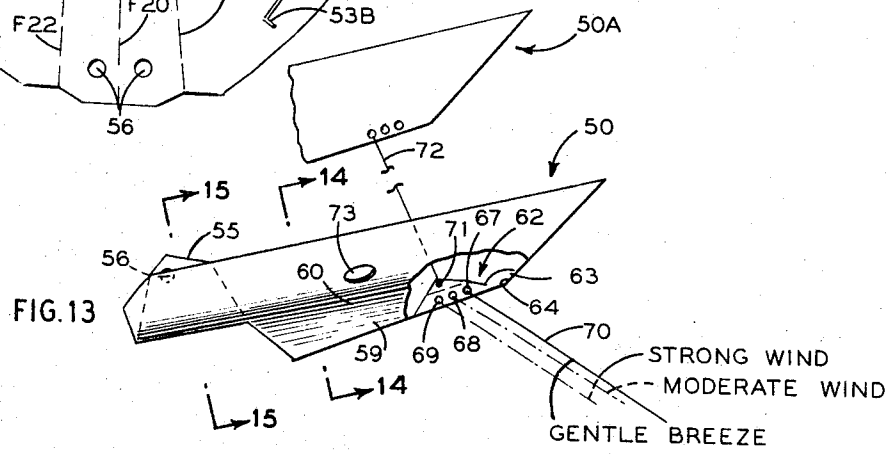


FIG. 16

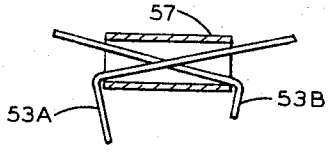
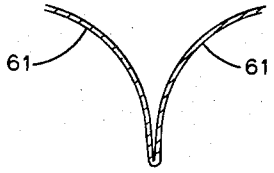


FIG. 14



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3,350,041

KITE CONSTRUCTION

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Filed Oct. 21, 1965, Ser. No. 499,394
16 Claims. (Cl. 244—153)

ABSTRACT OF THE DISCLOSURE

This invention is directed to a kite construction comprising a co-planar blank of tissue-like material having a surface development of an oblique cone to define an oblique conical airfoil in the folded position of the blank and which blank is reinforced by resilient spring wire stiffeners disposed in planes parallel to the base of the conical airfoil in the folded position of the blank. The ends of the respective stiffeners are loosely connected in criss-cross relationship to render the respective end portions relatively movable thereby rendering the shape of the conical airfoil self-adjusting to changing wind conditions.

This invention relates in general to a kite construction, and more specifically to a kite having a unique airfoil construction to render the flying of the kite extremely simple, and to permit the kite to be optionally used as either a mask or hat for added amusement and fun.

Heretofore, kites have been formed in numerous configurations to define an airfoil to render the kite flyable. Generally, such kites have been constructed of a sheet material placed or stretched over a suitable frame. For this reason the kites were required to be sold in a kit form which had to be assembled by the child or person desiring to fly the kite. Because such kites included a plurality of separate and distinct component parts, the manufacturing, packaging, distributing, and assembling of such kites proved to be relatively costly and involved.

The prior known kites also required relatively complex multi-string bridles to assist the kite in assuming a proper flying attitude. Dependence upon complex bridles, rather than on self-stabilizing airfoil contours, has rendered the known kites extremely difficult to fly. One had to be either extremely adept to flying a kite; or otherwise, a strong wind or breeze was necessary to get the kite airborne and to maintain the same in flying condition. Also, the prior known kite could not be used for any other purpose but flying. Consequently, the play value thereof was limited to flying only.

It is therefore an object of this invention to provide an improved kite construction which can be readily manufactured with relative ease and at very little cost.

Another object is to provide a kite construction which can be virtually distributed and sold in an assembled form and thereby eliminate the need of any assembly on the part of the flyer or purchaser.

Another object is to provide an improved kite which is constructed to define in the operative position thereof a substantially oblique, conically shaped, airfoil having a self-stabilizing effect in all directions.

Another object is to provide an improved kite construction in which its unique airfoil configuration renders the kite extremely simply to fly, and which is capable of being successfully flown in a very gentle breeze as well as in a strong wind.

It is another object of this invention to provide a kite construction having an airfoil configuration which requires but a single point of attachment for the flying string to maintain it in a flying attitude.

Another object is to provide a kite constructing having a conically shaped airfoil which can be readily handled, packed, and shipped in a flat co-planar position, and which can be readily folded and maintained in an operative position to facilitate flying the same.

Another object is to provide an oblique conically-shaped kite having resilient stiffening means secured thereto to maintain the conical shape of the airfoil with sufficient resiliency to resist damage thereto, and also to provide the necessary flexing of the kite to vary the affect of wind forces acting thereon.

It is another object of this invention to provide a kite with resiliently supported airfoil structure for automatically controlling the effective airfoil area thereof as the wind forces acting thereon vary, thus permitting said kite to be flown on a less-strong and lighter weight tether than would otherwise be needed.

It is another object of this invention to provide an improved kite construction that is so light in weight relative to effective area that it can be flown in a relatively slow-moving air stream.

Still another object of this invention is to define a kite construction that can be readily manufactured and shipped in a co-planar flat state and which can be readily folded into an oblique, conically shaped airfoil and maintained as such in a relatively simple manner.

Still another object is to provide a kite construction which can be optionally used by a child either as a face mask or a hat to attribute to it added amusement and joy.

Still another object is to provide a kite construction formed of relatively light weight, tissue-like paper reinforced with resilient stiffening wires to define an operative flying shape that is substantially an oblique cone in which the stiffening wires are disposed in planes substantially parallel to the base of the cone.

Another object is to provide a kite formed of a co-planar sheet of material that can be readily folded into an oblique conically shaped airfoil having a fold extending along an axis of the kite to function as a stabilizing and stiffening keel when the construction is utilized as a kite, and as a facial feature, e.g. a nose when used as a mask.

The foregoing objects, and other features and advantages of this invention are attained by a kite construction which is simply formed from a co-planar blank of relatively light weight sheet material having a shape conforming substantially to the development of an oblique cone with a web portion extending between the ends of the development. Resilient stiffening means are secured to the surface of the sheet material in the co-planar position thereof. Preferably the stiffener means comprises an elongated flexible member which normally tends to assume a straight position, and which member is flexed to conform to the shape of the conic development on the sheet. Accordingly, the arrangement is such that when the co-planar sheet is folded to define the oblique, conically shaped airfoil, the ends of the stiffener member are brought together and detachably secured to maintain the blank in its conical shape. The web portion or material disposed between the ends of the co-planar developed shape is reversely folded to define a keel extending between the apex of the conical airfoil and the remote edge thereof.

To impart a facial configuration to the airfoil so that it can be also utilized as a mask, the rear portion of the fold may be oppositely folded inwardly and outwardly. Also, to further enhance the use of the airfoil as a mask, openings for one's eyes may be formed on the plane surface thereof. The openings so formed also have utility as a means to decrease the force of the wind acting on the kite when it is being flown in a strong breeze. The kite construction is composed of extremely light weight sheet material which renders the same readily flyable in a gentle breeze, and the construction of the airfoil is such that the flying string may be secured thereto at

a single point of attachment. However, several optional points of attachment may be provided to accommodate for various wind conditions.

A feature of this invention resides in the provision of a kite having an airfoil defined as a substantially oblique cone to impart a self-stabilizing effect in all directions, and which thus affords the kite the lateral and longitudinal stability necessary to enhance the flying characteristics of the kite.

Still another feature of this invention is to provide a novel kite construction in which the airfoil can be maintained in flying attitude with a single point of attachment for the flying string.

Still another feature of this invention resides in the provision of a kite construction having a substantially conically shaped airfoil in which the shape of the airfoil is resiliently supported.

Still another feature of this invention resides in a kite construction which can be sold and distributed in a flat co-planar arrangement, and which can be readily set up to define a conically shaped airfoil necessary to render the same flyable.

Still another feature of this invention resides in having a shape which provides that pitch and yaw be automatically compensated by presentation to the air stream of effective surfaces sufficiently unequal to restore airfoil to efficient flying attitude.

Other features and advantages will become more readily apparent when considered in view of the descriptions and drawings in which,

FIGURE 1 is a front plan view of the expanded kite construction of the invention.

FIGURE 2 is a back plan view of the expanded kite construction of the instant invention.

FIGURE 3 illustrates a front view of the kite construction of FIGURES 1 and 2 folded to define a substantially oblique conic airfold having portions thereof broken away to illustrate the holding means.

FIGURE 4 illustrates the kite construction of FIGURE 3 in a flying attitude.

FIGURE 5 is an end elevation view of the kite of FIGURE 3.

FIGURE 6 is an enlarged detail view shown in section of the means for securing the ends of the kite in its operative position.

FIGURE 7 is a detail sectional view taken along line 7—7 on FIGURE 2.

FIGURE 8 is a sectional view taken along line 8—8 on FIG. 4.

FIGURE 9 is a sectional view taken along line 9—9 on FIG. 4.

FIGURE 10 illustrates the use of the kite construction as a hat for added enjoyment.

FIGURE 11 illustrates the use of the kite construction of FIGURE 3 as a mask.

FIGURE12 is a back plan view of a modified construction.

FIGURE 13 illustrates the kite construction of FIG. 12 in a flying attitude having portions thereof broken away to illustrate how more than one kite can be flown in tandem from a single kite string.

FIGURE 14 is a sectional view taken along line 14—14 on FIGURE 13.

FIGURE 15 is a sectional view taken along line 15—15 on FIGURE 13.

FIGURE 16 illustrates an enlarged detail of a modified way of securing the ends of the kite in operative position.

Referring to the drawings, there is shown therein the improved kite construction **20** of this invention. The kite **20** comprises a co-planar sheet **21** of relatively light weight material, as for example, tissue paper, onionskin paper, plastic film and the like. The co-planar surface of the blank or sheet **21** comprises the development **22** of an oblique cone and web portion or piece **23** to define

a fold, as will be hereinafter described, extending between the directrix and generatrix of the development **22**. Accordingly, as is best seen in FIGURES 4, 5 and 10, the oblique cone from which the blank is developed has a relatively small altitude with respect to the base of the cone to define a shallow cone. Accordingly, since the blank **21** comprises substantially the development of an oblique cone, it will be apparent that in the folded position, the base **26** of the cone or kite is substantially defined as an ellipse. See FIGURES 3, 4 and 5.

In accordance with this invention, flexible stiffening means are secured to the expanded planar surface **21** of the kite material. In the illustrated form of the invention, the stiffening means comprises of one or more elongated spring wires or other suitable boning material **24** that has normal tendency to assume a straight line position. The flexible boning or wires **24**, defining the stiffening means for the co-planar sheet or blank **21**, are each flexed in a manner as best seen in FIGURE 2, and are secured to the expanded sheet **21** by suitable securing means, as for example, an adhesive tape and/or by spot gluing **25**. The stiffening members **24** are preferably secured to the co-planar sheet of material in a manner so that in the folded position of the kite, as best seen in FIGURES 3 and 4, the respective stiffening means **24** are disposed in planes parallel to the base **26** of the kite.

Referring to FIGURES 1 and 2, it is to be noted that the material defining the web portion **23** disposed between the directrix and the generatrix of the developed cone surface is provided with a central foldline **F1** about which the web **23** is reversely folded in the folded position of the blank as evidenced in FIGURES 4, 5, 8 and 9.

In the illustrated form of the invention, the web portion **23** of the sheet **21** has formed therein a substantially diamond-shaped cutout portion **27** which is symmetrically formed to each side of the central foldline **F1**. Intermediate foldlines **F2**, **F3** extend from the outer point of the diamond cutout **27** and the remote edge of the co-planar sheet **21** with each foldline **F2**, **F3** disposed substantially parallel to the foldlines **F4** and **F5**, which are coincidental with the directrix and generatrix of the developed cone. As will be hereinafter described, the diamond-shaped cutout **27** is provided in order to facilitate a reverse or change the direction of fold of the web portion **23**.

In the illustrated form of the invention, a pair of stiffening means or wires **24** are secured to the expanded co-planar portion of the sheet or blank. Accordingly, each end of the respective stiffener members **24** is provided with means, e.g. a lateral bend **24A** to define an arrangement whereby the opposed ends of the respective stiffening means may be detachably secured together to maintain the expanded blank into its oblique conical airfoil shape. In the illustrated form of the invention, a tubular bead **28** is provided to secure the opposed ends **24A** of the respective stiffening means or wire **24** to form the airfoil. This is attained as seen in FIGS. 5 and 6, by passing the bent ends **24A** of the respective stiffening means or wire **24** through the bead **28**. Accordingly, the bent ends **24A** of the wires **24** extend beyond the ends of the bead **28** and the inherent resiliency of the stiffening members resiliently maintains the ends of the wires fixed. To form the airfoil, from the expanded sheet, one simply has to bring the ends **24A** of the respective stiffening members together and secure the same by slipping the bent ends **24A** thereof through the holding bead **28**. In doing so, due to the prescoring of the blank along the respective foldlines **F1–F5**, the fold **29** intermediate the directrix and the generatrix assumes its prescribed folded position. As shown, a portion **29A** of the fold **29** is outwardly folded. This portion **29A** extends from the apex or vertex **30** of the kite to the inner edge **31** of the diamond cutout portion thereof.

The rear or remaining portion **29B** of the web material **23** defined in the central fold is outwardly and reversely folded about the respective intermediate foldlines **F2**, **F3**, and inwardly and reversely folded about the central foldline **F1**. Accordingly, the fold **29B** developed thus constitutes a substantially W shaped fold as seen in FIG. 8 in which the outer portions of the fold extend to the convex side of the kite and the central or inner portions of fold extends to the concave side of the kite.

In the folded position of the co-planar blank **21**, the kite assumes an oblique conical shape as is best seen in FIG. 4.

In accordance with this invention, the flying string **32** is secured to a point of attachment disposed adjacent to the apex or vertex **30** of the folded kite. In the instant form of the invention, the point of attachment may be reinforced by a reinforcing member **33**. Accordingly, the reinforcing member **33** comprises a triangular piece of relatively stiff material or board **33** slit, perforated, or otherwise disposed so as to be reversely folded along the central foldline of the kite as indicated in FIG. 4. Holes **36** formed in the reinforced apex portion of the kite define the point of attachment for the flying string **32**. The shape of the kite thus defined provides a unique airfoil having self-stabilizing effect in all directions. Said kite is exceedingly stable even though attached at the end of a flying string at but a single point of attachment. Ideally, the point of attachment may be at the vertex or apex **30** of the cone. However, for practical considerations, as for example, the weight of the airfoil and/or the disposition of the weight about the apex or vertex, the single point of attachment is loacted somewhat lower than the apex, as is seen in FIG. 4. Accordingly, it is to be noted that the center of gravity of the airfoil together with the supporting members thereof will occur on a plane on which both the central foldline and the cone's axis lie.

The elastic stiffening means **24** for maintaining the shape of the airfoil in the flying position thereof are rendered most efficient when they are disposed in planes parallel to the plane of the base portion **26** of the cone.

While the illustrated form of the invention discloses a kite shape in which the outer periphery is defined as being substantially elliptical in shape, it is contemplated that for added design appeal only, various appendages may be added to the blank **21** to simulate, e.g. ears, whiskers, or other animated features to form numerous amusing designs without adversely affecting the flying characteristics of the kite structure. Consequently, the kite may assume irregular shapes; it being realized, however, that the respective irregular shapes maintain the substantial oblique conically shaped airfoil principle herein described.

With the airfoil described, the arrangement is such that the kite structure defines an airfoil which provides stability and lift through the automatic counter-action of pitch and yaw by the air stream's action on the airfoil's conical surface. While the form of stiffening means **24** are illustrated as comprising spring-type wire, it will be understood that various other stiffening means such as plastic reeds, boning, other resilient stiffening means may be substituted in lieu thereof.

By applying the stiffening means **24** to the co-planar blank so that in the folded position they lie in planes substantially parallel to the base of the conical airfoil, the stiffening means **24** tend to resist further curvature as they are already laid in a simple curve. Accordingly, the stiffening means by maintaining the foil resilient, attains several advantages. That is, the resilient bonings or wires **24** resist damage in the event of crashes. Also, the resiliency afforded to the kite by the spring wires **24** supply the necessary flexing of the airfoil in sudden gusts of winds making it possible to fly the kite on a lighter weight string than was heretofore possible. This is so because the forces exerted by sudden gusts on the kite are diminished as the flexing of the kite reduces its effective airfoil area and consequently the wind pressure acting against the kite and the forces tugging on the string are minimized. Also, the resiliency of the kite is such that a greater effective airfoil area is afforded in the light winds generally found at near ground levels, with the effective airfoil area of the kite being automatically reduced as the same rises into the stronger winds that generally exist above obstructions such as trees and buildings. Consequently, the advantages attained by the instant invention permit the kite to fly with a lighter weight tether or string. This results in further advantages that the cost of the string necessary to fly such a kite is greatly minimized as the kite being so resilient it can be readily flown at the end of a No. 10 thread or less. Also, the lighter the string, the less weight the kite has to lift. The resulting effect is that the kite is able to fly higher in a given wind condition.

Because of the specifically conically shaped airfoil which the kite assumes, and because of the novel fold **29A** provided by the structure herein defined, added amusement can be attained in that a child may utilize the kite structure as a mask as seen in FIG. 11. Accordingly, holes **34** defining eye openings may be formed in the plane of the blank. A head string **35** tied to the marginal ends of the blank **21** may be provided to hold the mask to one's face. Accordingly, the fold **29** of the web portion **23** defines the nose characteristic of the face mask when used as such. Also, it is to be noted that the diamond shape cut out **27** and the W-shaped fold **29B** afforded thereby allow for other simulated facial features, e.g. a chin which renders the fold **29** to simulate a dominant nose characteristic.

As another alternate use of the structure described, the kite may be further used as a hat to shield one's head from the sun. See FIGURE 10 wherein the head string **35** is passed around the chin to hold it in place.

FIGURES 12 to 16 illustrate a modified form of the invention. In this form, the kite **50** comprises a co-planar sheet of light weight material or blank **51** which also includes a development of an oblique cone and a connected web portion or piece extending between the directrix and generatrix of the cone development. However, in this form, the generatrix and directrix need not be finitely defined as by foldlines **F4**, **F5** as described with respect to FIGS. 1 and 2.

As previously described, flexible stiffening means, such as wire or boning **52**, **53** are suitably secured to the expanded surface of the kite material. While the number of stiffening means may vary, two stiffening means are illustrated. The stiffening means **52**, **53** are each flexed so that a substantial portion thereof approaches a curvilinear form approximating a circle except for the end thereof. By more nearly approximating a circle, the respective stiffening means **52**, **53** in the folded position of the blank **51**, will develop a more elliptical shape at the base of the oblique cone formed by the blank development, and thereby enhance the stability of the kite. Accordingly, the respective stiffening means or boning are disposed in planes parallel to the base of the kite.

As noted in FIGURE 12, the end portion of the kite blank **51** is provided with a substantially diamond-shape cut out portion **54** which is symmetrically formed about the centerline of the blank. As shown, foldlines **F20**, **F21** and **F22** are provided between the ends and center portion of the diamond cutout **54** and the remote edge of the blank. The respective foldlines **F20**, **F21** and **F22** define the tail fold **55** as shown in FIGS. 13 and 15.

In this form of the invention, it will be noted that the remote edges of the blank and the tail fold **55** extends beyond the ends of the outermost stiffener **53**. Accordingly, the tail fold **55** is provided with openings **56** through which the ends of the outermost stiffener may project in the folded position. Thus, in the assembled position of

the kite, the tail fold **55** is prohibited from billowing out in the opposite direction under difficult flying conditions.

As best seen in FIGS. 15 and 16, the respective ends **53A**, **53B** of the stiffening means **53** are each provided with laterally bent end portions, one of which is longer than the other. The longer laterally bent end **53A** provides the means for positively retaining the locking bead **57** on the adjacent end of the wire or boning.

To secure the ends **53A**, **53B** of the wire or boning **53** or **52** in the assembled position of the kite, the end of the wire with the shorter lateral bend is simply inserted through the bead **57**, as hereinbefore described; it being understood that the ends **53A**, **53B** of the outermost boning or stiffener **53** pass through the openings **56** of the tail fold **55**.

In this form of the invention, it will be noted that in the folded position of the kite material, the absence of fold-lines F4 and F5 will cause the kite to flare along the juncture of the central fold or keel **59** and the cone portion of the kite as at **60** and **61** in FIGURES 14 and 15.

The apex and the adjacent point of attachment of the kite is reinforced by a reinforcing member **62** of relatively stiff material or board which is suitably secured to the blank as by gluing. As shown, the reinforcing means **62** is defined by a portion **63** which is developed as a cone so that when the blank is folded, this portion will define the apex **64** of the conical kite. To facilitate folding the conical developed portion **63**, it is provided with a small cutout or hole **63A**.

Connected to the apex defining portion **63** is a portion **65** which defines the reinforced point of attachment. As shown, this attachment portion **65** is die cut, slit or scored at **66** along the centerline thereof to facilitate the folding thereof when the blank is formed into its conical form. Accordingly, the reinforcing portion **66** described is also suitably secured to the blank or kite material by gluing or the like.

In order to adapt the kite **50** to various wind conditions, the reinforced point of attachment **65** may be provided with a plurality of holes **67, 68, 69** through which the flying string **70** is secured. In the effect, the respective holes **67, 68, 69** in the point of attachment **65** function to change the center of gravity and angle of attack which the kite assumes depending to which hole the string **70** is secured. For example, under gentle wind conditions, the string **70** is secured to hole **67** for a moderate wind condition, hole **68** is used, and hole **69** for a strong wind condition.

If desired, the reinforced attachment portion **65** may be provided with opposed ear portions **65A** which are not glued to the kite material. Accordingly, the ears **65A** function as an aid to facilitate one in folding of the kite. That is, the opposed ears **65A** when pinched together, will hold the conical shape of the kite until the ends of the stiffeners are secured. Also, if desired, the ears **65A** may be each provided with a hole **71** for receiving a string **72** by which a second kite **50A** may be flown in tandem with a first kite **50** as seen in FIG. 13.

The kite of FIGURE 12 is also provided with eye holes **73** so that the same may be optically worn as a mask as hereinbefore described.

From the foregoing, it is to be noted that the kite structure is extremely light in weight which renders it capable of being flown in a slow-moving air stream, and yet is sufficiently rugged to withstand considerable abuse. Further, the self-stabilizing effect renders it extremely easy to fly with a minimum of effort. Consequently, the kite is such that the simplicity and ease by which it can be flown makes it an exceedingly amusing device for small children.

While the instant invention has been described with reference to a particular embodiment thereof, it will be readily appreciated and understood that variations and modifications may be made without departing from the spirit and scope of the invention.

What is claimed is:

1. A kite construction comprising:
- a sheet of light-weight material folded to define a substantially oblique conical airfoil,
- stiffening means applied to said airfoil for resiliently maintaining the conical contours of said conical airfoil,
- said stiffening means circumscribing the circumference of said conical airfoil in parallel planes to the base of said conical airfoil,
- said stiffening means including normally straight pieces of flexible wires having angular bent end portions, said wires being applied to said blank,
- and said wires being disposed so that in the folded position of said blank each of said wires lies in a plane and each of the respective planes lies parallel to the base of said oblique cone,
- means for detachably securing the bent end portions of said wires in the folded position of said blank whereby the inherent resiliency of said wires maintains the self-stabilizing effect of the airfoil defined in all directions about its apex,
- said latter means including a tubular link through which the respective end portions of the wires are threaded so that the respective ends of said wires are maintained secured in criss-cross relationship,
- and means formed adjacent the vertex of said airfoil defining a single point of attachment for securing thereto a flying string.

2. A kite construction comprising:
- a co-planar sheet of light weight tissue-like material having a surface development substantially that of an oblique cone which when folded defines a substantially oblique cone airfoil and a connected web portion disposed between the ends of said development,
- a plurality of stiffening means applied to said co-planar sheet for resiliently maintaining the conical contours of said airfoil in the folded position of said sheet,
- said stiffening means circumscribing the circumference of said conical airfoil in substantially parallel planes to the base of said oblique conical airfoil in the folded position of said sheet,
- connecting means for detachably connecting the end portions of said stiffening means in the folded position of said sheet so that the inherent resiliency of said stiffening means maintains the self-stabilizing effect of the airfoil defined in all direction about its apex,
- and said connecting means maintaining said end portions of said stiffeners loosely connected so as to provide for relative limited movement of the respective end portions thereby causing the airfoil formed to be rendered self-adjusting to changing wind conditions,
- and means formed adjacent the apex of said airfoil defining a single point of attachment for securing thereto a flying string.

3. The invention as defined in claim **2** wherein each of said stiffening means comprises:
- a normally straight piece of flexible spring wire,
- means for securing each of said wires to said co-planar sheet whereby the respective end portions of said wires are normally spaced apart on said co-planar sheet.

4. The invention as defined in claim **3** wherein the respective end portions of said wires are angularly bent.

5. The invention as defined in claim **4** wherein said connecting means comprises:
- a tubular link through which the respective end portions of the respective wires are threaded so that the respective ends of the wires are maintained in criss-cross relationship,
- and said tubular link having a diameter substantially greater than that of the wire so that the criss-cross

ends of said wires are loosely retained in said link for limited relative movement with respect to one another to define an adjustable ring which functions to flex the shape defined airfoil to changing wind conditions.

6. The invention as defined in claim 2 wherein said resilient means comprises a straight flexible member which is flexed to conform substantially to the shape of said sheet as that in the folded position of said sheet, said member defines an adjustable ring approaching an elliptical shape similar to the base of the conically shaped airfoil defined thereby and disposed in a plane parallel to said base.

7. A kite construction comprising:

a sheet of lightweight material folded to define a substantially oblique conical airfoil,

means applied to said airfoil for resiliently maintaining the conical contours of said conical airfoil,

said resilient means substantially circumscribing the circumference of said conical airfoil but discontinuous near the longitudinal centerline of said conical airfoil aft the center of said airfoil's area,

means for detachably securing the ends of resilient means for maintaining the conical contours of said conical airfoils whereby said ends of said resilient means can, under action by wind forces, change in their spatial relationship to each other in a limited way to a predetermined degree, and

means formed adjacent to the vertex of said airfoil for securing thereto a flying tether,

said resilient means being disposed on the surface of said airfoil so that when wind forces acting upon the frontal area of said airfoil cause the airfoil and its resilient members to flex, thereby reducing the effective frontal area of said airfoil, the greatest part of that reduction of effective frontal area shall occur aft or below the center of the area of the said airfoil.

8. A kite construction comprising:

(a) a blank of tissue-like material having a shape conforming substantially to a development of an oblique cone,

(b) a resilient stiffening member secured to the surface of said blank,

(c) said resilient member being spaced inwardly from the peripheral portion of said blank and conforming substantially to a shape defined by said development to define a discontinuous ring so that in the folded position of said blank the resilient member is flexed in a plane substantially parallel to the base of said oblique cone, and means for loosely securing the ends of said resilient member to define a discontinuous ring to adjust the shape of the airfoil to changing wind conditions,

(d) means for securing a flying string adjacent the apex of said cone.

9. A blank of sheet of tissue-like material adapted to be folded to define a conically-shaped kite, said blank including an axis of symmetry, said axis of symmetry including the apex of an oblique cone in the folded position of said blank, and said blank including a central foldline extending along said axis of symmetry from said apex to the end of said sheet, a radially extending foldline extending between said apex and a point on the periphery of said blank disposed on either side of said central foldline, said radial foldlines being equally angularly disposed with respect to said central foldline, a resilient means including spring wire applied to the surface of said blank, said resilient means being spaced inwardly from the outer periphery of said blank and shaped to conform substantially thereto, means for loosely securing the ends of said resilient member in criss-cross relationship to maintain said blank in the folded position thereof to permit relative movement thereof for rendering said airfoil self-adjusting to varying wind conditions and whereby said radial foldlines are disposed juxtapositioned with respect to one another to define a conically shaped airfoil, and the material of the blank disposed between said juxtapositioned radial foldlines being reversely folded outwardly of the convex surface of said airfoil and about said central foldline to define a keel for said kite.

10. A blank of sheet of tissue-like material having a plane surface shaped substantially as the development of an oblique cone and material defining a fold connected between the ends of said development, said blank including an axis of symmetry, said axis of symmetry including the apex of the oblique cone development, and said blank including a central foldline extending along said axis of symmetry from said apex to the end of said sheet, a radially extending foldline extending between said apex and a point on the periphery of said blank disposed on either side of said central foldline, said radial foldlines being equally angularly disposed with respect to said central foldine, a resilient means comprising spring wire applied to the surface of said blank, said resilient means being spaced inwardly from the outer periphery of said blank and similarly shaped thereto, means for loosely securing the ends of said resilient member in criss-cross relationship for relative movement when maintaining said blank in the folded position thereof whereby said radial foldlines are disposed juxtapositioned with respect to one another to define a conically shaped airfoil, and the material of the blank disposed between said juxtapositioned radial foldlines being reversely folded outwardly of the convex surface of said airfoil and about said central foldline to define a keel for said kite; and means adjacent the apex of said airfoil to define a point of attachment for a flying string.

11. A co-planar of tissue-like sheet material having a plane surface conforming substantially to a development of an oblique cone and a co-planar web portion connected between the ends of said blank including an axis of symmetry including the apex of said oblique cone in the folded position of said blank, and said blank including a central foldline formed in the co-planar web portion and extending from the apex of said development to the end of said sheet, and said web portion being connected to the ends of said development to the end of said sheet, said web portion being connected to the ends of said blank along radially extending foldlines coincidental with the ends of said blank, said radial foldlines being equally angularly disposed on either side of said central foldline, a resilient spring wire means secured to the surface of said blank, said resilient wire means being spaced inwardly from the outer periphery of said blank and shaped to conform substantially to the developed portion of said co-planar blank, means for loosely securing the ends of said resilient wire member for limited movement in criss-cross relationship in the folded position of said blank to maintain said blank in a self adjusting conically shaped position whereby said radial foldlines are disposed juxtapositioned with respect to one another to define a conically shaped airfoil, and the web portion of the blank disposed between said juxtapositioned radial foldlines being reversely folded outwardly of the convex surface of said airfoil and about said central foldline to define a keel for said kite.

12. A kite comprising:

(a) a co-planar blank of sheet of tissue-like material having a plane surface generated substantially as the development of an oblique cone,

(b) a fold formed integral with and interposed between the ends of said developed surface which is creased to reversely fold outwardly of said cone defined by said developed surface,

(c) and a resilient wire member secured to said blank,

(d) said member being flexed in the plane of said blank and inwardly of the outer periphery thereof and conforming substantially to the peripheral shape of

said blank so that in the folded position of said blank said member is flexed in a plane disposed parallel to the base of the oblique cone defined by said blank, and

(e) means defining a single point of attachment for a flying string adjacent the apex of said cone.

13. A kite construction comprising:

(a) a co-planar blank of tissue-like material having a surface development of an oblique cone and a connected web portion between the ends of said development,

(b) said blank having a pair of angularly disposed foldlines extending from a point defining the apex of said airfoil and the remote peripheral edge of said blank to define said web portion,

(c) a center foldline extending between said angularly disposed foldlines to bisect the angle therebetween,

(d) said web portion having a cut-out portion therein symmetrically disposed to either side of said center fold intermediate the ends of centerfold,

(e) opposed intermediate foldlines extending from the opposite ends of said cut-out portion and the remote peripheral edge of said blank,

(f) resilient stiffening means secured to the plane of said blank,

(g) said stiffening means having its end portions normally spaced apart in the planar position of said blank so that in the folded position of said blank said angularly disposed foldlines are juxtapositioned to define the oblique conical airfoil, the web portion of the blank between said angularly foldlines being reversely folded between the apex and said cut-out portion thereof outwardly of said conical airfoil,

(h) and said web portion of the blank between said angularly disposed foldlines extending from said cut-out position to the peripheral portion being inwardly and outwardly folded about said intermediate foldlines and center foldline respectively, and

(i) means for securing the ends of said stiffening means to maintain said blank in said conical airfoil position.

14. A kite construction comprising:

(a) a co-planar blank of tissue-like material adapted to be folded to define a conically shaped airfoil having an elliptical base,

(b) said blank having a pair of angularly disposed foldlines extending from a point defining the apex of said airfoil and the remote peripheral edge of said blank,

(c) a center foldline extending between said angularly disposed foldline to bisect the angle defined by said angularly disposed foldlines,

(d) said blank having a cut-out portion symmetrically disposed to either side of said center fold intermediate the ends of the center foldline,

(e) opposed intermediate foldlines extending from the opposite ends of said cut-out portion and the remote peripheral edge of said blank,

(f) resilient stiffening means secured to the plane of said blank,

(g) said stiffening means having its end portions normally spaced apart in the planar position of said blank so that in the folded position of said blank said angularly disposed foldlines are juxtapositioned to define an oblique conical airfoil with the portion of the blank between said angular foldlines reversely folded between the apex and said cut-out portion outwardly of said conical airfoil,

(h) and said portion of the blank between said angular foldlines extending from said cut-out position to the peripheral portion of said blank being inwardly and outwardly folded about said intermediate foldlines and the center foldline respectively,

(i) means for securing the ends of said stiffening means to maintain said blank in the folded position thereof,

(j) means defining a single point of attachment for a flying string adjacent the apex of said conically shaped airfoil,

(k) means for reinforcing said point of attachment.

15. A kite construction comprising:

(a) a co-planar blank of tissue-like material having a surface conforming to the development of an oblique cone with a web portion disposed between the ends of said development,

(b) said blank having a pair of angularly disposed foldlines coincidental with the end of said development and extending from a point defining the apex of said airfoil, and the remote peripheral edge of said blank,

(c) a center fold extending between said angularly disposed foldline to bisect the angle therebetween,

(d) said blank having a cut-out portion symmetrically disposed to either side of said center foldline intermediate the ends of the center fold in said web portion,

(e) opposed intermediate foldlines extending from the opposite ends of said cutout portion and the remote peripheral edge of said blank,

(f) resilient stiffening means secured to the plane of said blank,

(g) said stiffening means including a flexible wire having its end portions normally spaced apart in the planar position of said blank so that in the folded position of said blank, said angularly disposed foldlines are juxtapositioned to define an oblique conical airfoil with the portion of the blank between said angular foldlines reversely folded between the apex and said cut-out portion outwardly of said conical airfoil,

(h) and said portion of the blanks between said angular foldlines extending from said cut-out position to the peripheral portion being inwardly and outwardly folded about said center foldline and intermediate foldlines respectively,

(i) said wires having angularly bent end portions,

(j) a tubular bead for securing the ends of said wire to maintain said blank in its conical airfoil position,

(k) means defining a single point of attachment adjacent the apex of said conically shaped airfoil,

(l) means for reinforcing said point of attachment.

16. A blank of sheet material defining a conically-shaped kite, said blank including an axis of symmetry, said axis of symmetry including the apex of an oblique cone in the operative position of said blank, and said blank including a central fold extending along the axis of symmetry from the apex to a point adjacent the end of said sheet, resilient means applied to the surface of said blank, said resilient means being spaced inwardly from the outer periphery of said blank and shaped to conform substantially thereto, means for loosely securing the end of said resilient member in criss-cross relationship to adjustably maintain said blank in the folded position thereof whereby the central fold is reversely folded outwardly of the convex surface of the kite and about the axis of symmetry to define a keel for said kite.

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