S. X. PANTCHEFF.

KITE.

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1,375,970. Patented Apr. 26, 1921.

Fig. 1.

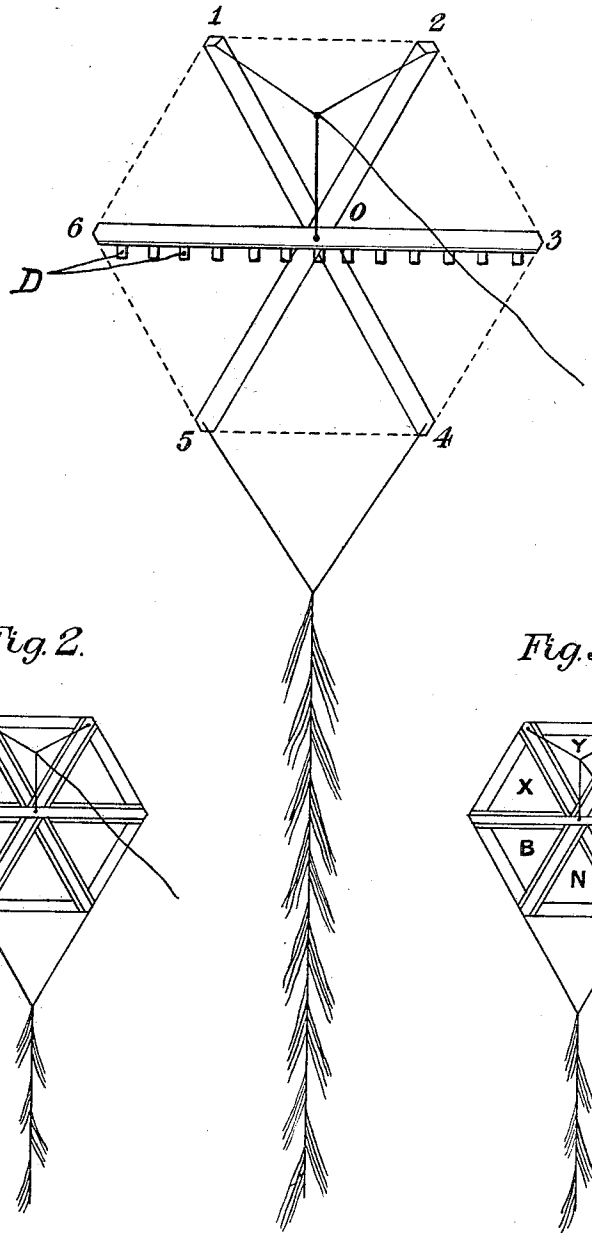
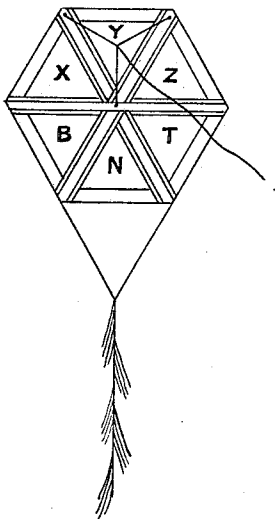


Fig. 2.

Fig. 3



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KITE.

1,375,970. Specification of Letters Patent. Patented Apr. 26, 1921.

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To all whom it may concern:

Be it known that I, SOPHOCLES XENOPHONE PANTCHEFF, of Victoria Road, Buckhurst Hill, Essex, England, a subject of the King of Bulgaria, a Greek born in Bulgaria, have invented certain new and useful Improvements in Kites, of which the following is a specification.

The present invention relates to kites.

A kite made in accordance with this invention comprises a frame constituted by a plurality of radiating ribs or spars all of which are not necessarily of the same length and of any desired cross section covered with tissue paper or other light material in one of more pieces, said ribs or spars lying one on top of the other at their centers where they cross and practically in the same plane at the periphery, said spars or ribs being connected together at their centers and having their extremities connected together by tension members, such as a thread, a wire or the like under tension, so as to slightly bend the front and back ribs in opposite directions and cause the peripheral tension members to be practically in one plane, the covering being stretched over the frame and fastened to the peripheral tension members only, thus forming a plurality of slightly inclined surfaces symmetrically arranged with respect to the center of the kite when under the action of wind pressure, means being provided for attaching the flying string to the kite at the center and on two of the radiating spars by three ties of approximately equal length so that the projection of their common end falls on the upper level of the kite, and means for attaching the tail to the two other ends of the spars to which the flying string is attached, the covering material being preferably formed of strips or pieces of material of any desired width pasted (or joined) together with overlapping edges to form strengthening elements, in any desired direction or directions, said covering being composed of material of the same or different colors, forming any scheme of colors.

The remarkable features this kite possesses are due to:

(1) The peculiar construction of the frame work or skeleton of the kite.

(2) Mode of attachment of the kite to the flying string.

(3) The construction of the tail and its manner of suspension to the skeleton of the kite.

(4) The construction of the covering of the kite and its manner of attachment to the frame work.

With a kite made in accordance with this invention automatic equilibrium at any position, stable flight and flexibility are obtained in varying conditions of the wind.

The frame work is light, rigid and knife edged (at the periphery), so that it offers practically no resistance to the air on the motion of the body of the kite sidewise.

In use the stream of wind, after striking the covering of the kite, has a downward action, causing an upward reaction on the kite which accordingly rises with remarkable certainty and balance.

The Figure 1 of the drawing shows one particular form of kite constructed according to this invention;

Fig. 2 shows a strengthened covering for this kite;

Fig. 3 shows a covering comprising transparent portions on which signs or the like are attached.

Owing to the five symmetrical points of attachment and suspension 1, 2, 0, 4 and 5 (see Fig. 1) a remarkable automatic static balance is produced *i. e.* there is always a tendency to bring the center of gravity and the resultant of the forces acting upon the kite and tail at the same point at any position of the kite.

The wind has, besides its tendency to lift the kite, a tendency to twist it around in a clockwise or counter-clockwise direction, these tendencies opposing one another in two opposite halves of the kite, and being counter-balanced automatically by the weight of the tail and by its resistance to the air. As this tail has a large surface exposed to the air which causes it to give considerable resistance when passing through the air, it produced a braking, floating and damping effect. The tail is preferably formed of ribbons of tissue paper forming bunches, which may be of different colors, secured in loops along a thread and distributed in any suitable manner, not necessarily uniform, the distance between any two consecutive bunches being less than the length of said bunches. It is worth noting here how these two tendencies are counter-balanced automatically by the tail and how perfect sta-

bility is obtained. This is effected by a symmetrical V suspension of the tail by two strings at points 4 and 5, see Fig. 1. Now if the kite is tilted to the right the whole weight and counter action of the tail act only at point 5 and bring back the kite to its normal position at once. If tilted to the left the whole weight and counter action of the tail act on point 4 and bring the kite to its normal position at once. This automatic balancing suspension has a remarkable equilibrating action and gives very stable flight under normal conditions, this being secured principally by means of the tail, constructed as described, a tail so constructed being very light, yet offering to the wind a great resistance, which varies with the velocity of the wind, the resistance being greater as the wind becomes stronger, owing to the opening out of the bunches of tissue paper.

The pyramidal attachment of the flying string to the skeleton of the kite, see Fig. 1, allows the operator to alter the amount of pull on one or two of the points 1, 0, 2, by simply pulling the flying string with the result that a twisting or tilting effect can be produced on the kite. A jerky pull on the flying string or a series of such pulls to the right or to the left or in a direct line, skilfully timed and directed, twist or tilt the kite, momentum is thereby imparted to the kite, the shape, and hence the slope of the several portions of the surface of the kite, changes owing to the sagging of the fabric, the velocity of the wind with respect to the kite surface and tail surface also alters, with all the consequent actions and counter actions on the kite and tail.

In one word, the helical surfaces of the kite, the wind pressure together with the means of altering the amount of pull on each point of attachment of the kite and the tail give the operator efficient means of maneuvering and controlling the evolutions, gyrations, and antics of the kite and of the tail.

The kite may be provided with a buzzing attachment consisting of small surfaces of any shape, arranged on a string or elastic or other support; these are attached in front of any kite surface which receives the wind pressure, as illustrated at D in Fig. 1.

These small surfaces are caused by the wind to vibrate very rapidly and in so doing they come in contact with the covering of the kite thus producing a pleasant buzzing noise of varying intensity according to the velocity of the wind with respect to the kite.

The coverings may be manufactured separately, so that several differently colored coverings may be provided for the same kite, or spare coverings may be provided to replace any damaged or soiled covering. These coverings may be prepared all ready with adhesive edges, or adapted to be fixed on the frame of the kite with any suitable adhesive. They may also be attached to the frame with short pieces of ribbons or by any other suitable means. In this manner the color of the kite may be changed for signaling or optical testing purposes.

The covering may also be partially or wholly of transparent material such as cellophane, tissue paper and the like. The cover may be strengthened where required by the superposition or lap joint of strips of cellophane, tissue paper or other similar material. The portions of the cover which are in contact with the spars or any other portion may be likewise strengthened as shown in Fig. 2. Signs, letters, symbols and the like, transparent or opaque, black, white, or colored, may be affixed or detachably fixed to a wholly or partially transparent kite cover which may be of colorless material for advertising or signaling purposes, as shown in Fig. 3.

What I claim and desire to secure by Letters Patent is:—

1. A kite comprising a frame constituted by a plurality of radiating ribs or spars of any desired cross section, means for securing said ribs or spars in superposition at the center, means for connecting together the peripheral extremities of said ribs or spars approximately in the same plane, a covering for said frame fastened to the periphery of the kite only and constituting a plurality of inclined surfaces symmetrically arranged with respect to the center of the kite, a flying string, means for attaching said flying string to said kite, a tail and means for attaching said tail to said kite.

2. A kite comprising a frame constituted by a plurality of radiating ribs or spars, means for securing said ribs or spars in superposition at the center, tension members such as a thread connecting together the peripheral extremities, a covering of tissue paper supported by the tension members of said frame and constituting symmetrically inclined surfaces, a flying string, means for attaching said flying string to said kite at the center and on two of the radiating spars, a tail and means for attaching the said tail to the two other ends of the spars to which the said flying string is attached.

3. A kite comprising a frame constituted by a plurality of radiating ribs or spars, means for securing said ribs or spars in superposition at the center, tension members connecting together the peripheral extremities, a covering of tissue paper supported by the tension members of said frame and constituting symmetrically inclined surfaces and constituted by strips of tissue paper forming any desired scheme of colors joined together with overlapping edges to form strengthening elements and obtain at the

same time any desired color effect, in any desired directions, a flying string, means for attaching said flying string to said kite at the center and on two of the radiating spars, a tail and means for attaching the said tail to the two other ends of the spars to which the said flying string is attached.

4. A kite comprising a frame constituted by a plurality of radiating ribs or spars, means for securing said ribs or spars in superposition at the center, tension members such as a thread connecting together the peripheral extremities, a covering of tissue paper, said covering supported by the ribs and tension members of said frame and constituting symmetrically inclined surfaces, strengthened by strips of light material at suitable portions of its surface, a flying string, means for attaching said flying string to said kite at the center and on two of the radiating spars, a tail and means for attaching the said tail to the two other ends of the spars to which the said flying string is attached.

5. A kite comprising a frame constituted by a plurality of radiating ribs or spars, means for securing said ribs or spars in superposition at the center, tension members such as a thread connecting together the peripheral extremities, a covering of tissue paper supported by the tension members of said frame and constituting symmetrically inclined surfaces parts of which are of transparent material, a flying string, means for attaching said flying string to said kite at the center and on two of the radiating spars, a tail and means for attaching the said tail to the two other ends of the spars to which the said flying string is attached.

6. A kite comprising a frame constituted by a plurality of radiating ribs or spars, means for securing said ribs or spars in superposition at the center, tension members such as a thread connecting together the peripheral extremities, a covering of tissue paper supported by the tension members of said frame and constituting symmetrically inclined surfaces parts of which are of transparent colorless material on which are fixed signs cut out of light material of suitable color visible against the background of the sky when the kite is flying, a flying string, means for attaching said flying string to said kite at the center and on two of the radiating spars, a tail and means for attaching the said tail to the two other ends of the spars to which the said flying string is attached.

7. A kite comprising a frame constituted by a plurality of radiating ribs or spars, means for securing said ribs or spars in superposition at the center, tension members such as a thread connecting together the peripheral extremities, a covering of tissue paper supported by the tension members of said frame and constituting symmetrically inclined surfaces parts of which are of transparent colorless material on which are removably fixed signs cut out of light material of suitable color visible against the background of the sky when the kite is flying, and easily changed between the flights, a flying string, means for attaching said flying string to said kite at the center and on two of the radiating spars, a tail and means for attaching the said tail to the two other ends of the spars to which the said flying string is attached.

8. A kite comprising a frame constituted by a plurality of radiating ribs or spars, means for securing said ribs or spars in superposition at the center, tension members such as a thread connecting together the peripheral extremities, a covering of tissue paper supported by the tension members of said frame and constituting symmetrically inclined surfaces which may be formed of strips of material which may be of any color joined together with overlapping edges to form strengthening elements, a flying string, means for attaching said flying string to said kite at the center and on two of the radiating spars, a tail formed of ribbons of tissue paper, said ribbons forming bunches secured in loops along a thread, and means for attaching the said tail to the other ends of the spars to which the said flying string is attached.

9. In combination with a kite comprising a frame constituted by a plurality of radiating ribs or spars, means for securing said ribs or spars in superposition at the center, means for connecting together the peripheral extremities of said ribs or spars approximately in the same plane, a covering for said frame constituting symmetrically inclined surfaces, a flying string means for attaching said flying string to said kite, a tail and means for attaching said tail to said kite, a buzzing attachment consisting of small surface members of different shapes, arranged on a taut elastic string, in front of any portion of the kite surface which is subjected to wind pressure causing said members to vibrate and to produce a buzzing noise by contacting with said kite surface.

10. In combination with a kite frame of the type described, a spare or detachable covering for said kite, constituted by strips of tissue paper of any color pasted or joined together with overlapping edges to form strengthening elements and adapted to be fastened to the frame by any suitable means so as to allow the covering of the kite to be changed for signaling or optical purposes.

11. A kite, comprising a frame constituted by a plurality of radiating ribs, means for securing said ribs in superposition at the center, tension members connecting together the peripheral extremities of said ribs, a

covering of tissue paper supported by said tension members and constituting symmetrically inclined surfaces formed of strips of material which may be of any color joined together with overlapping edges, a flying string, means for attaching said flying string to said kite at the center and on two of the radiating ribs, a tail formed of ribbons of tissue paper, said ribbons forming bunches secured in loops along a thread and gradually varying in weight per unit length from the kite end to the free end of the tail, and means for attaching said tail to the outer ends of the ribs to which said flying string is attached.

In testimony whereof I have signed my name to this specification.

SOPHOCLES XENOPHONE PANTCHEFF.