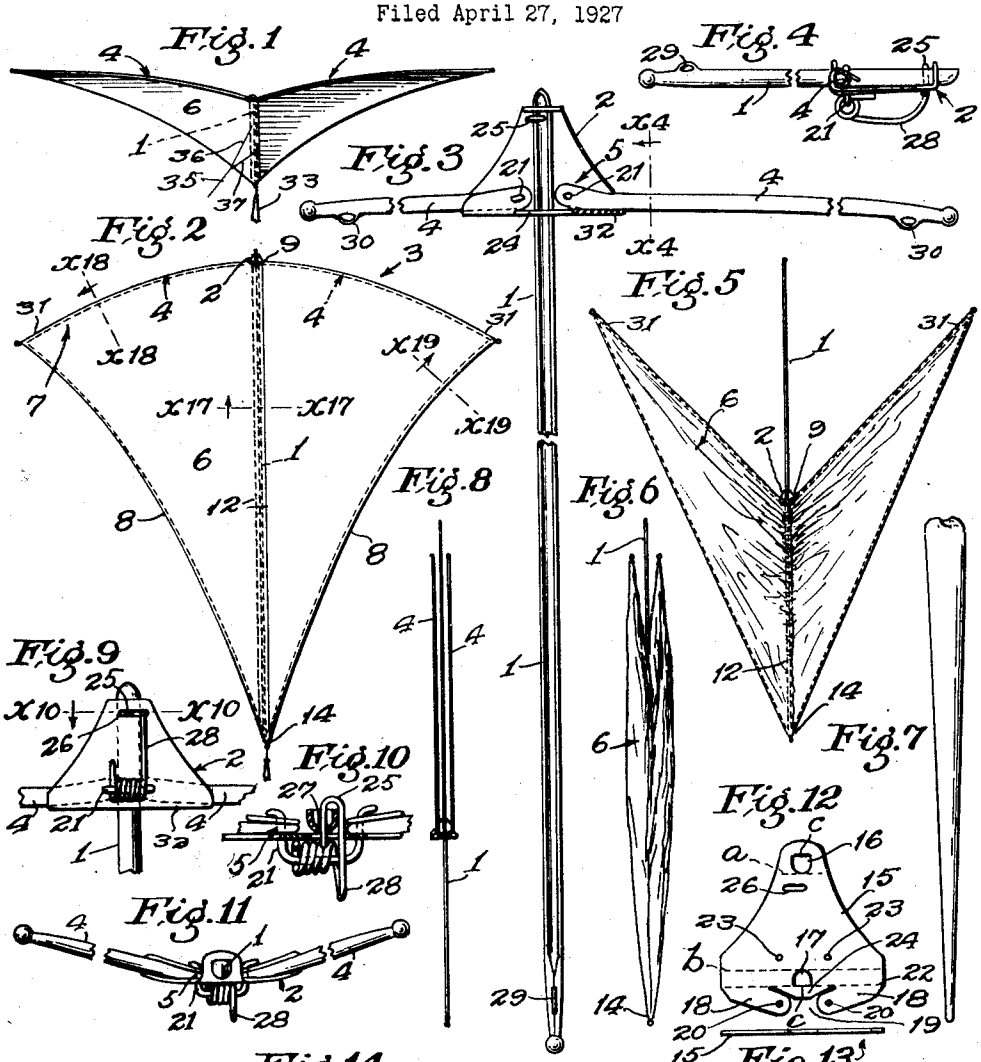
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C. N. DE WITT

FOLDING KITE

Filed April 27, 1927



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UNITED STATES PATENT OFFICE.

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FOLDING KITE.

Application filed April 27, 1927. Serial No. 186,869.

An object of this invention is to provide a kite having maximum strength in proportion to its weight, and that is practically indestructible under any and all flying conditions.

Another object is to provide a kite of superior stability in the air and of such construction that it utilizes the forces of the wind to a maximum extent.

A feature of the invention resides in a novel construction for the rib and stay members.

I have discovered that by making narrow strips of steel of appropriate lengths for the spring steel rib and stay members, of the kite and bending them lengthwise into trough-like form, U-shape in cross-section and giving them a fitting form at the ends, and then bringing them to a spring steel temper, so that each member is formed of two parallel walls united from end to end along one edge by an arcuate bridge, the members are given a highly resilient character particularly adapted to hold the kite cover in proper position; and that by bringing the inner ends of the stays to a slide mounted to slide along the rib of the kite, the frame of the kite is readily collapsible into a slender elongate form, and may be extended to a form appropriate to constitute a frame to hold the kite cover in true kite form when the edges of the cover are secured to the rib and stay and that by providing a suitable catch or fastener to retain the slide at the head end of the rib the frame may be held in cover extending position; and that by releasing the catch, and sliding the slide toward the tail end of the rib, the kite may be collapsed.

My invention also includes the provision of a sack-like tail piece which may be attached to and detached from the tail end of the rib and is adapted to form a sheath for the collapsed kite.

Another object is to provide a kite that is readily collapsible to convenient dimensions and form for transportation and storage, and in this connection I provide a central rib to one end of which the tip of the cover may be attached, and mount thereon a slide and pivot to the slide stays onto which a broad end of the cover is secured, and provide means for retaining the slide at the upper end of the rib; the axis of the cover being longer than the lateral edges so that when the slide is brought to the upper end of the rib the lateral edges of the kite will bend the stays and the rib. I provide the upper end of the kite rib with a hole forming a strike in which the catch on the slide may come to rest to hold the slide in stay bending position.

The invention includes the completed kite with and without the sheathing tail, and the various parts and combinations of parts herein set forth.

An object is to provide a kite construction in which the body of the cover is a single thickness and the connection between the cover and the kite frame is not subject to be separated by strains, and whereby great freedom of adjustment of the cover is allowed during the operation of forming and collapsing the kite.

Another object is protection of the kite cover while collapsed.

An object is to construct a kite that can be flown by one while standing still, by simply pulling or tightening the string to pull the kite forward while lying flat, face down on the ground; and I have produced a kite that will take off from the ground with less wind than it is possible to cause other kites to take off from the ground in like manner.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claims.

The accompanying drawing illustrates the invention.

Figure 1 is a front underside view on a small scale of a kite constructed in accordance with this invention and extended in position for flying; portions of the tail and the string are broken away to contract the view, and the string is drawn to one side to avoid confusion of lines.

Fig. 2 is a top view of the kite shown in Fig. 1 reversed end for end and omitting the tail and string.

Fig. 3 is a fragmental top view of the frame of the kite extended and free from any cover.

Fig. 4 is a fragmental side view of the frame of the kite in section at line x^4, Fig. 3, looking toward the left and showing the rib and slide with its catch supporting the sectioned stay.

Fig. 5 is a view of the kite partly collapsed omitting the tail and the string.

Fig. 6 is a view of the collapsed kite shown in Fig. 5.

Fig. 7 is a view of the detached tail and sheath.

Fig. 8 is a view of the frame of the kite folded.

Fig. 9 is a view of the underside of the slide and fragments of the rib and stays.

Fig. 10 is a detail illustrating the latch or lock that holds the slide with its stays pivoted thereto; the rib being in section above the stays.

Fig. 11 is a head end view of the latch and lock with fragments of the stays pivoted thereto.

Fig. 12 is a detail of the stamping from which the latch frame may be bent.

Fig. 13 is an edge view of the stamping shown in Fig. 12.

Fig. 14 is a detached view of the kite tail extended and open to receive the collapsed kite.

Fig. 15 is a view of the flying kite with the sheath tail broken to contract the view.

Fig. 16 is a detached view of the two blanks ready to be sewed together to form a cover for the kite.

Fig. 17 is a fragmental cross sectional detail of the rib and of the cover thereon taken on line x^{17}, Fig. 2.

Fig. 18 is a section of one of the stays and a fragment of the cover thereon.

Fig. 19 is a cross section on line x^{19}, Fig. 2 showing the hem.

Fig. 20 is a perspective view of the detached slide.

The frame of the kite when covered and extended, comprises a straight central longitudinal rib 1, a slide 2 thereon and an outwardly curved head bow 3 formed of two normally straight resilient stays 4 having their inner ends hinged to the slide by knuckle-joints 5, so that when the slide is at the head of the rib, the knuckle-joints prevent the stays from being swung toward the tail end of the rib; and when the slide is moved toward the tail end of the rib, the stays may be swung toward the head of the rib and thus folded against the upper part of the rib.

The cover 6 may be of any suitable foldable sheet material and is preferably of thin, strong, closely woven silk. It is of a substantially triangular shape, the head edge 7 being outwardly curved when the cover is stretched, and the lateral edges 8 being inbent or inwardly curved.

Said head and lateral edges of the cover are formed with hems and the head hems at 7 form open ended sheaths for the stays respectively. Said sheaths are separated by a gap at 9 to accommodate the slide 2 with its knuckle joints.

The cover 6 is formed of two gores 10, the meeting edges 11 of which are inturned and overlapped and stitched with spaced-apart parallel lines 12 of stitching to form a central open ended longitudinal rib accommodating sheath 13; and the rib 1 is inserted therethrough from the central gap at 9 to the tail tip 14 of the cover.

The slide 2 is made of a rearwardly expanding truncated triangular stamping 15 of sheet metal and is provided at its axis with two holes 16 and 17 adapted to slidingly fit upon the rib; and the stamping is bent between the holes, respectively, and the main body of the stamping at lines a and b so that the holes 16 and 17 are alined upon one side of the body 15 and are thus adapted to accommodate the rib and to slide therealong.

The tail or broader end of the slide is provided with two limbs 18, the inner ends of which are spaced apart as at 19 to accommodate the rib 1 when it and the slide are assembled, and said limbs are provided at their ends with pivot holes 20 to receive pivots 21 when the limbs 18 are bent over at the line 22.

23 indicates companion pivot holes in the body 15 of the slide and said pivots 21 are riveted or otherwise fixed in the pivot holes in the body and arms.

24 indicates an intermediate lip extending at right angles to the body 15 of the slide and the same maintains the slide in position on the rib.

The slide is provided with a latch slot 26 between the shoulders formed by the bends at a and b and preferably closer to the hole 16 than it is toward the other end.

The rib holes are stirrup shaped; the straight ends c of the stirrup holes being away from the body 15 when the slide blank has been properly bent to receive the rib.

The intermediate portions of the ribs and stays are alike U-shaped in section and fit snugly in the stirrup shaped holes.

The slide 2 is provided with a catch 25 that operates in a hole 27 in the rib, and that is carried by the slide, and is operable by a thumb piece 28 to be withdrawn from said hole 27.

The lapped edges of the two gores and the sheath formed between the two thicknesses and the two lines of stitches on opposite sides of the mid-line or axis of the kite, is longer than either hemmed selvage edge of the kite, and the tip of the gore or cover is fixed to the tail point of the rib, there being an eye 29 provided on the rib for that purpose; and to this eye, the tip of the gore is tightly sewn; and said eye also forms a point of attachment for the tail of the kite.

The stays are each provided with an eye 30 corresponding to the eye 29, and the head angles 31 of the gore are sewn to such eye so that when the slide is brought to the upper end of the rib, the ends of the stays are held closer to the rib 1, than the abutting ends of the stays. Said abutting ends are thus brought toward and against the end wall 32 of the slide, and are thus prevented from collapsing; and the selvage edges of the gore thus draw the two stays into arcuate form as shown in Fig. 2, thus producing the bow head.

By unfastening the catch, the slide may be

moved toward the middle of the rib as indicated in Fig. 5 and then the stays may be brought together against the rib substantially as shown in Figs. 6 and 8, and when the kite is collapsed, as shown in Fig. 6, it may be inserted into the sheath 33 which is detached from the rib for that purpose, and which normally forms the tail of the kite when said sheath is fastened by its tip 34 to the tail end of the rib.

The string 35 is attached to the rib by two terminals 36 and 37 appropriately spaced apart to balance the kite as will be readily understood by those familiar with kite flying.

The sheath 33 is made of a gore of suitable material, such as materials like that of which the cover of the kite is made, sewed together at 38 and then turned outside in, so that the seam will be inside the sheath.

I claim:—

1. A kite comprising a longitudinal rib, an element slidably related to the rib, a pair of stays pivotally carried by the slidable element; means for limiting the pivotal movement of the stays, a flexible cover secured at its one end to said stays and at its other end to said rib with its intermediate portion freely movable lengthwise of the rib; and releasable means for securing the slidable element against movement relative to the rib.

2. A kite frame comprising a longitudinal rib, a stay support slidably related to the rib, releasable means for holding the stay support against movements lengthwise of the rib, a stay extending laterally from each side of the support, knuckle joints connecting the stays with the support, a cover of substantially triangular shape, having sheaths surrounding said rib and said stays; and means for connecting the cover at each end of each sheath with the rib and stays and said cover bearing such dimensions with respect to the frame as to effect a bending of the rib and stays thereof when extended to flying condition.

3. In combination a kite having folding frame elements and a flexible cover, a kite tail constructed of flexible material and of tubular shape; and means for detachably securing the tail to the kite proper whereby it may be employed as a casing for the kite when folded.

4. A kite tail constructed of light weight, flexible sheet material and as a lengthwise attenuated tubiform.

5. A kite cover constructed of flexible sheet material and of substantially triangular shape, a sheath formed continuously along the longitudinal medial line and a sheath formed at the head of the cover at each side of the longitudinal sheath.

6. A kite frame comprising a longitudinal frame member, a cross member comprising a slide carried by the longitudinal frame member, a pair of oppositely extended stays, and knuckle joints between the slide and stays; means for releasably securing the slide against movement lengthwise of the frame and a cover constructed of flexible sheet material and of substantially triangular shape, and having a sheath for enclosing the longitudinal frame member and a sheath for each stay.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 22nd day of April, 1927.

CLARENCE NEIL DE WITT.