Aug. 21, 1951 S. D. GOULD ET AL 2,565,365

KITE CONSTRUCTION

Filed Jan. 25, 1950

FIG. 1.

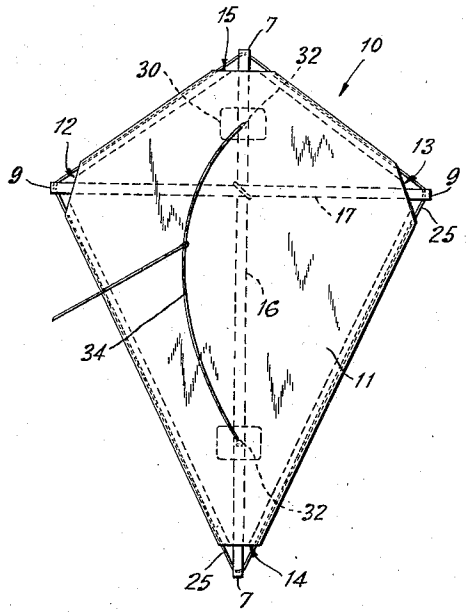
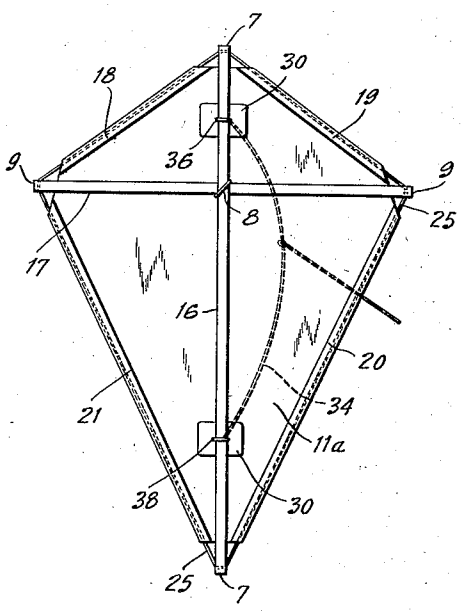


FIG. 2.



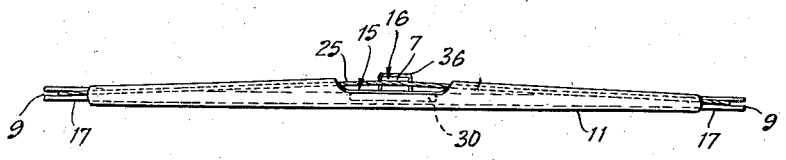


FIG. 3.

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Patented Aug. 21, 1951

2,565,365

UNITED STATES PATENT OFFICE

2,565,365

KITE CONSTRUCTION

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Application January 25, 1950, Serial No. 140,448

2 Claims. (Cl. 244—153)

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This invention relates to kites and to kite construction.

An object of the invention is to provide a novel and improved form of kite and kite construction by means of which improved strength, and flying qualities are achieved.

Another object of the invention is to provide a novel and improved form of kite construction in which the framework includes flexible main frame elements the ends of which are interconnected by tensile members, and in which the frame thus defined is overlaid by means of a filmy sheet material light in weight, substantially impermeable to air, and of such nature that it is easily flexed and subjected to tensile strains across the same in any direction, without being ruptured under such influences.

A further object of the invention is to provide a novel and improved form of kite construction in which the framework and tensile cables defining the outline area of the kite, are covered with a film of sheet material which is of relatively small thickness on the order of less than about 0.003 inch thick, and which is of such a nature that marginal areas thereof, when folded over and brought into contact with contiguous portions thereof, may be caused to adhere together by means of the application of heat thereto, or sealed electronically.

Still another object of the invention is to provide a novel and improved kite construction whereby a kite is formed, which is simple in design, and inexpensive to manufacture, while retaining lightness of weight and ruggedness in use.

Other objects and advantages of the invention will become apparent from the following description of a preferred embodiment thereof as illustrated in the accompanying drawings, and in which,

Fig. 1 is a front face view of our novel and improved kite as assembled.

Fig. 2 is a rear face view of the kite shown in Fig. 1, as assembled.

Fig. 3 is an end view of the kite.

Kites as heretofore manufactured for use by the general public and by others, have been commonly characterized by a considerable degree of inherent fragility, so that, when subjected to even rather mild stresses, in shipping, in storage, and during assembly, they have been easily damaged. Such kites must usually be made at low cost, to keep the selling price down, and yet must be sufficiently sturdy to withstand the rigors imposed upon them in use, and also prior

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thereto. The present application discloses means for avoiding these and other well known disadvantages of other kite constructions.

In order to understand clearly the nature of the invention and the best means for carrying it out, reference may now be had to the drawings, in which like numerals denote similar parts throughout the several views.

As shown, our improved kite 10 includes a frame formed of main frame elements such as the longitudinal rib member 16, which extends from top to the bottom of the kite, and the transverse rib member 17 which overlies the intermediate portion of the longitudinal rib member 16, and extends across the same at substantially a right angle to delineate the breadth of the kite. These rib members may be made of any suitable light weight material, such as light wood strips, light metal rods, light tubing, plastic materials, or other suitable materials having sufficient inherent strength for the purpose intended. A clamp member 8 may be secured around both rib members 16 and 17 at the location where they cross over each other, as seen best in Fig. 2, to hold them together in the desired relationship. The clamp member 8 may be made of metal or other suitable material, of sufficient strength to hold the members together.

Notches are cut or formed in the outer ends 9 and 7 of the respective kite frame ribs 16 and 17, to receive the peripheral strut cords 25, which may be in one continuous length, and which interconnect the outer ends 9 of the transverse bow rib 17 with the top and bottom ends 7 of the longitudinal main rib 16. The strut cords 25 are maintained under sufficient tension so as to not only delineate the quadrilateral outline of the kite frame, but also to aid in maintaining the ribs 16 and 17 in their relative angular position, for uniform flight.

A wing fabric 11 is then placed over the entire kite frame including the ribs 16 and 17 and the peripheral strut cord 25, being folded inwardly as at its marginal portions 18, 19, 20 and 21 shown best in Fig. 2, to form elongated passageways for the strut cords 25 which are thereby contained in the passageways. We prefer to use for this wing fabric 11, a plastic sheeting or film such as the type commonly known as Vinylite plastic, and which is capable of having overlying portions thereof joined or seamed together by the mere application of heat thereto while in mutual contact. Such material may be selected so that it is sufficiently light in weight, yet suitably strong for the purpose intended, and has

sufficient elasticity so as to yield where necessary to take up the stresses and strains incident to a flying kite.

Having folded over the marginal areas **18**, **19**, **20**, and **21** upon themselves, we then apply heat thereto to weld the resultant seam, allowing a small portion to remain unheated through which the cords **25** pass. These heated marginal areas remain permanently sealed as described, once the heat has been removed, and are quite strong, being capable of taking up a great many stresses to which the kite is subjected. At the same time, the plastic vinylite sheeting fabric **11** has sufficient flexibility and resilience for the purpose.

At those portions where the plastic sheeting fabric would overlie the corners **7** and **9** of the main frame ribs **16** and **17**, we cut it away as at **12**, **13**, **14** and **15**, the cut out portions thus permitting the ends of each of the strut cord passageways to remain open. We may also provide reinforcing tabs **30** of the same plastic vinylite sheeting material as the main fabric **11**, which are placed against the under surface **11***a* of the main fabric **11**, as seen in Fig. 2, and sealed thereto by means of application of heat. These reinforcements are disposed above and below the intersection **8** of the main ribs.

Holes **32** are punched through the reinforcing tabs **30** and the underlying main fabric **11**, to receive the upper and lower ends **36** and **38** of the bridle cord **34**, which extend through the holes **32** and encircle the underlying portions of the main longitudinal rib **16** as seen in Fig. 2, being secured thereto by knotting or otherwise. A bowstring, not shown, may be employed to additionally interconnect the ends **9** of the lateral rib **17**, and it may be placed under tension sufficient to bow the rib **17**, and the intermediate portion of the kite fabric **11** overlying the same.

We have found it preferable to use plastic Vinylite fabric sheeting **11** having a thickness of less than about 0.003 inch, a thickness such for example as 0.002 inch being entirely suitable. This makes it light in weight, yet strong enough to take the stresses of heavy winds, and sudden gusts, and its inherent resilience enables it to stretch as needed. The use of heat sealing dispenses with the added weight of adhesives or pastes, and the weight of stitching cord when such might be used in enclosing the cords **25**.

The kite string is of course tied to an intermediate portion of the bridle cord **34**, as is well known, when flying the kite. When flying, the main fabric **11** can expand without tearing.

Although we have described our invention in specific terms, it will be understood that various changes may be made in size, shape, materials and arrangement without departing from the spirit and scope of the invention as claimed.

We claim:

1. Kite construction comprising a plurality of main frame ribs disposed in mutually intersecting arrangement, strut cord means interconnecting the outer ends of all said main frame ribs and thus delineating the main frame outline, a main fabric formed of stretchable plastic vinylite sheeting having a thickness of less than about 0.003 inch, said main fabric material overlying said main frame ribs and extending across said strut cord means interconnecting said rib ends, marginal areas of said main fabric being folded back upon themselves to form strut cord passageways receiving said strut cords, said folded back portions of said fabric being fused to said main fabric area to maintain said strut cord captive in said passageways, the corners of said main fabric being cut away at the corners of said main frame, allowing the ends of said strut cord passageways to remain open near such corners, bridle cord receiving openings in said main fabric sheeting material above and below the intersection of said main frame ribs, reinforcing members surrounding said openings.

2. The kite construction according to claim 1, wherein said main fabric has a uniform thickness of about 0.002 inch, and in which the entire construction is free from use of adhesive materials or pastes.

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