

FIG. 1

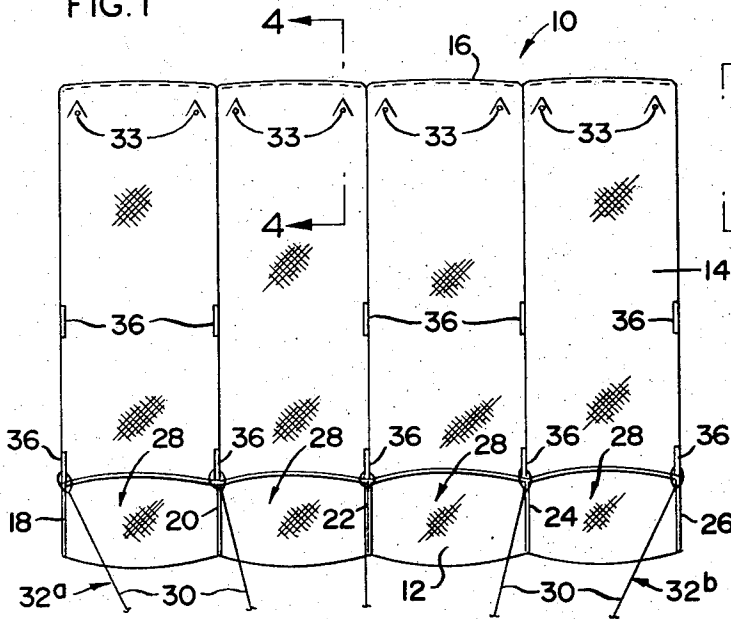


FIG. 2

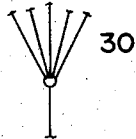
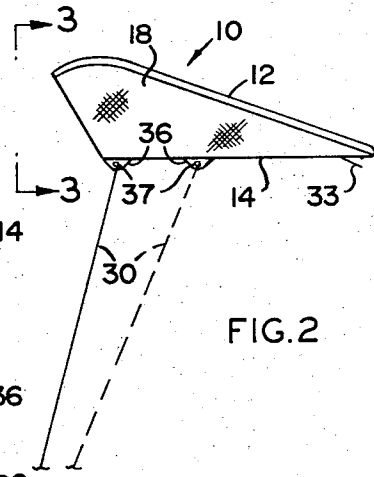


FIG. 5

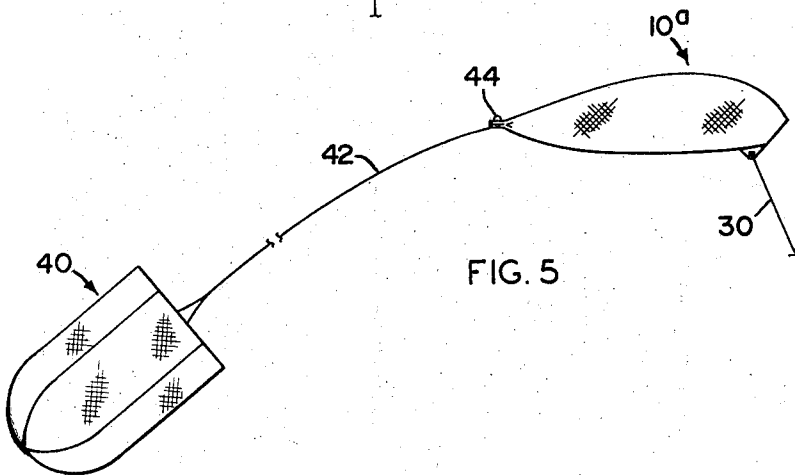


FIG. 4

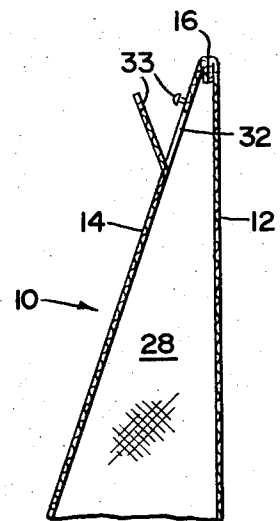
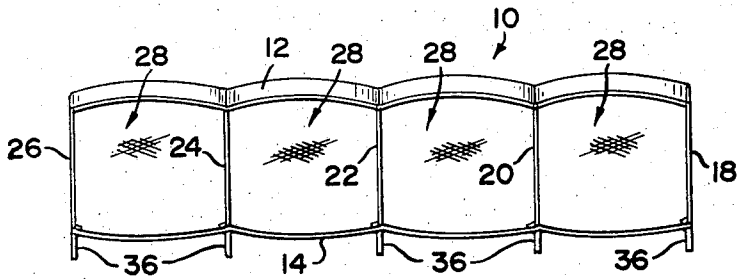


FIG. 3



AIR FOIL KITE

This invention relates to amusement devices, and particularly to articles of the type of kites.

BACKGROUND OF INVENTION

Heretofore there have been many different types of air supported amusement devices, such as kites, provided. These kites have been made in a variety of designs, and have been of varying degrees of durability and cost.

Many kites as heretofore made have been very fragile and were easily broken in service, while other kites have been extremely difficult to operate and achieve any satisfactory flying action therefrom.

The general object of the present invention is to provide a novel and improved kite which is characterized by its durability and ease of flying.

A further object of the invention is to provide a kite which is made from fabric material and has no frame, and which includes a number of air or wind receiving pockets to provide flying and/or lift characteristics to the improved kite construction.

Another object of the invention is to provide a flexible air foil contour kite having air flow slot means therein and having a plurality of attaching means thereon for several different angles or attitudes for flying.

Further objects of the invention are to provide an extremely durable, flexible kite which is very readily inflated to assume a lift condition under any appreciable windage conditions, and which kite is very easy to fly.

The foregoing and other objects and advantages of the invention will be made more apparent as the specification proceeds.

When referring to corresponding members shown in the drawings and referred to in the specification, corresponding numerals are used to facilitate comparison therebetween.

Reference now is made to the accompanying drawings, wherein:

FIG. 1 is a bottom plan view of a kite of the invention shown in one possible operative flying condition;

FIG. 2 is a side elevation of the kite of FIG. 1;

FIG. 3 is a front elevation of the kite of the invention when in operative form;

FIG. 4 is a fragmentary enlarged vertical section taken on line 4—4 of FIG. 1; and

FIG. 5 is a side elevation of a modified kite with a drogue chute.

SUBJECT MATTER OF THE INVENTION

This invention particularly relates to a flexible or foldable kite of generally air foil contour, which kite is made with no framework means of any type and it includes a top and bottom sheet means operatively attached together at a rear margin of the structure, a plurality of vertically extending axially directed partition sheet means secured to and extending between the top and bottom sheet means at parallel, laterally spaced portions thereof to form a plurality of air receiving pockets in the kite, and control strings are attached to a front edge of the structure at laterally spaced portions thereof to engage the kite for flying action. Controllable air flow slots are formed in rear portions of the pockets.

Attention now is directed to the details of the structure shown in the attached drawing, and a kite embodying the principles of the invention is indicated as a whole by the number 10. This kite is formed, in effect, solely from a fabric, or material wherein the fabric sections or sheets used in forming the kite can be secured together by sewing, adhesive or any other conventional means. The kite, when operative, has a generally air foil contour. Specifically, the kite can be formed from a top sheet means 12 and a bottom sheet means 14. This sheet means or members can be formed from any suitable material, preferably lightweight, closely woven material such as nylon, sail or parachute fabric or the like. The two members 12 and 14 may be made from one sheet or strip of material, or they may be sewn or otherwise secured together at their rear ends, as indicated at 16.

A plurality of axially or rearwardly directed partition members or sheets 18, 20, 22, 24 and 26 are provided and are positioned in parallel relation between the top and bottom sheets and with the upper and lower edges or margins of these partition members or sheets being secured in a conventional manner to the top and bottom sheets. A plurality of separate, rearwardly directed pockets 28 are provided in the kite by any suitable construction thereof.

FIGS. 2 and 4 of the drawings show that the kite 10, when inflated by having air blowing thereinto, takes the shape, roughly, of an air foil which is of generally triangular shape in vertical section with the kite decreasing in height rearwardly of the structure in the manner illustrated in the drawings to come to a point or rounded edge at the rear of the kite.

So as to control the kite when flying the same, a plurality of control strings 30 are shown suitably attached as by grommets to a front edge of the kite's structure. These control strings 30 are attached in this instance to laterally spaced portions of the front edge of the bottom sheet 14. The drawings illustrate that the front edge of the top sheet 12 normally extends slightly forwardly from the front edge of the bottom sheet in the kite's structure and this aids in forming air receiving pockets in the kite when it is exposed to any appreciable air current. Normally the open mouths of the individual air pockets provided in the kite will be exposed to a stream or pressure of air flowing toward the rear of the kite structure and this provides a surprising and very effective flying or lifting action for the kite. Thus, it readily assumes a slightly upwardly inclined position and tends to move upwardly from the ground. The kite itself can be substantially level in flight or it may assume other positions such as being inclined upwardly at a sharp angle.

It will also be realized that the frameless kite of the invention will not necessarily have the exact firm, straight line dimensions or slope as indicated in the drawings because of the flexible non-rigid nature of the kite.

To aid in producing some air flow through the air receiving pockets 28 in the kite and aid in the kite's lifting action, a plurality of apertures 32 are provided in the various pockets in the kite. These apertures may be formed by just tearing or cutting a strip or section from the fabric in the associated top or bottom portion of the kite sheets. Specifically, the bottom sheet 14 has V-shaped apertures 32 formed therein. Any suitable tabs or fasteners 33 can be secured to the fabric adjacent

the apertures 32 to enable the openings to be closed, when desired.

FIG. 1 shows that four control strings 30 may be provided in the kite of the invention and these strings may comprise two different loops indicated at 32a and 32b, whereby the loops are centered at the center of the kite and can be attached to a unitary control string 34 by which the kite of the invention is flown. This kite has provided very attractive flying and amusement characteristics and it may be flown under both light and severe wind conditions. The kite is very durable and it is light in weight whereby it flies readily by even unskilled personnel.

While upper and lower sheet means have been referred to in describing the kite's structure, the pockets 28 can be formed from separate top and bottom fabric strips or means and partition strips or means of any suitable nature and assembly. Hence, a plurality of pocket forming means are secured together in lateral abutment to form the pocketed fabric kite of the invention.

Small tabs of fabric 36 may be provided on the kite at laterally spaced portions thereof to extend downwardly therefrom and have grommets 37 therein to engage the strings 30 for a modified flying action or angle of attack for the kite. The tabs 36, it will be seen, are located rearwardly in the kite from the front edge thereof and, when the attaching strings 30 are secured thereto, will provide for a greater or sharper angle of attitude for the kite when it is being flown. Thus, use of the tabs 36 for engaging the strings 30 can provide for an angular positioning of the kite at an upward inclination of between about 45° and 60° for rapidly attaining a relatively high position. But use of the grommets at the front edge of the kite or tabs at about the front edge of the lower sheet in the kite still permits it to have a substantially horizontal attitude in flight even at a relatively great height such as 1,000 feet.

One further important advantage of the present construction is that the kite is believed to be lifted by the vacuum formed over it due to its air foil contour on its upper surface. The primary purpose of the wind is to maintain the wing shape of the kite and to supply air flow over and under the kite to maintain its vacuum and flight characteristics.

In tests of the kite, it has been found to be preferable to have the leads or strings 30 that are secured to the kite be at least approximately 36 inches or more in length.

The kite can be caused to descend by giving a sharp jerk on the line 34 as this abruptly turns the kite over and it plummets to the ground.

FIG. 5 illustrates a modified kite 10a with curved upper and lower surfaces, but having the same pocket type configuration as kite 10 and similar tether line 30. The trailing edge of each pocket is held together by releasable snaps 44 which when released in high wind conditions perform the same function as the flaps 33 of the kite 10. I have further found that under normal and high wind conditions a drogue 40 tied by line 42 to kite 10a serves to stabilize the kite better than a rag tail or

the like. The drogue is an open bag type normally tethered to the kite by two spread lines 42 to hold the drogue open when the kite is flying. Typically, with a kite about 2 feet long, 2½ feet wide, the tether lines 30 will be about 10 feet long, the drogue lines 42 about 5 feet long and the drogue about 12 inches in diameter and 18 inches long.

From the foregoing comments, it is believed that the objects of the invention have been achieved and a novel, improved kite has been provided by the invention.

While one complete embodiment of the invention has been disclosed herein, it will be appreciated that modification of this particular embodiment of the invention may be resorted to without departing from the scope of the invention.

What is claimed is:

1. A kite comprising a flexible structure of air foil contour formed of top and bottom sheet means attached to each other at a rear margin of the structure,

a plurality of vertical axially extending partition sheet means extending between said top and bottom sheet means at parallel laterally spaced portions thereof to form a plurality of air receiving pockets in the structure, each pocket having an air discharge aperture formed in the bottom sheet means adjacent the rear of the flexible structure, and a single set of control strings attached to a portion of the structure along laterally spaced portions thereof.

2. A kite as in claim 1 where the structure is of minimum height at the rear thereof.

3. A kite as in claim 1 where closure and fastener means are operatively carried adjacent the air discharge means to close the same.

4. A kite as in claim 1 which includes a drogue chute tethered to the rear edge of the kite to stabilize the kite in flight.

5. A kite comprising a flexible structure formed of top and bottom sheets sealed together at one end and a plurality of vertically extending partition sheets secured to the top and bottom sheets to form a series of laterally aligned air receiving pockets in the structure, each pocket being closed at one end and having a closeable aperture in the bottom sheet adjacent the closed end thereof, and

means for attaching a single set of aligned control strings to the kite at laterally spaced portions thereof.

6. A kite as in claim 5 where a plurality of air receiving pockets with adjacent pockets having common partition means are formed in the structure and the control strings are attached to the structure at the partition means.

7. A kite as in claim 5 where the structure tapers downwardly in height toward the rear thereof and is generally of air foil contour when operative.

8. A kite as in claim 5 where the top sheet front edge protrudes forwardly of the bottom sheet front edge.

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