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DIVE STABILIZER FOR KITES

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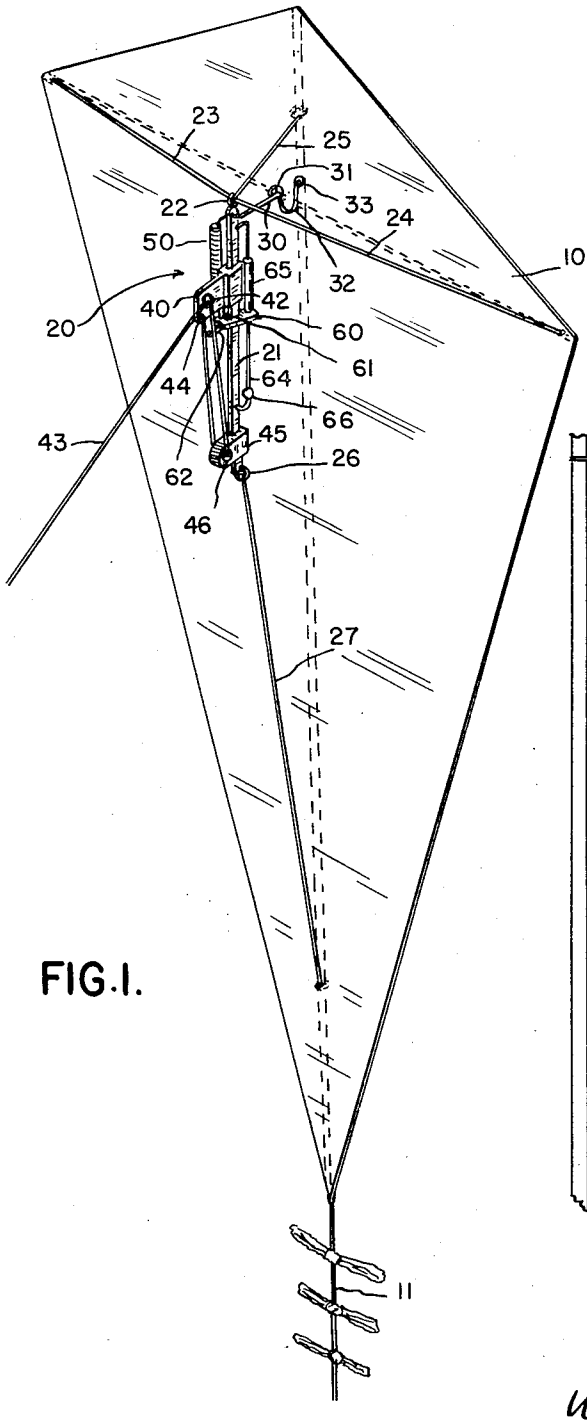


FIG.1.

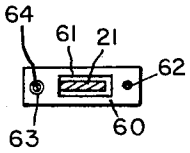


FIG.3.

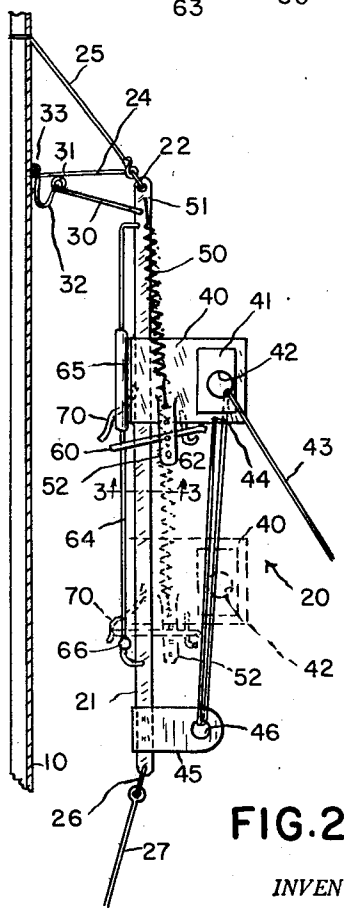


FIG.2.

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DIVE STABILIZER FOR KITES

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21 Claims. (Cl. 244—153)

1

The present invention relates to a dive stabilizer for kites and more particularly to a device effective to compensate for variations in wind pressure on the kite so as to maintain stability and to prevent diving of the kite.

It is an object of the present invention to provide a simple and inexpensive device effective to stabilize the kite against diving.

It is a further object of the present invention to provide a dive stabilizer having means responsive to variations in wind pressure to effect automatic adjustment between the kite and the kite string.

More specifically, it is an object of the present invention to provide a dive stabilizer for kites including means responsive to variations in wind pressure for varying the effective point of attachment of a kite string to the kite.

It is a further object of the present invention to provide a dive stabilizer for kites including means responsive to variations in wind pressure or to tension in the kite string for effecting one-way adjustment of the effective point of attachment of the kite string to the kite.

It is a further object of the present invention to provide a dive stabilizer for kites including means responsive to variations in wind pressure or tension in the kite string to effect vertical adjustment of the effective point of attachment of the string to the kite.

It is a feature of the present invention to provide a dive stabilizer for kites comprising a bar, a kite string connecter element slidable along said bar, resilient means urging said element upwardly on said bar and a retainer effective to prevent upward movement of said element on said bar from intermediate positions thereof.

It is a further feature of the present invention to provide a dive stabilizer for kites comprising a bar, a kite string connecter element slidable vertically on said bar, biasing means urging said connecter element upwardly on said bar, a retainer effective in operative position to prevent upward movement of said element on said bar, and latch means automatically operated at either limiting position of said element to engage or disengage said element.

Other objects and features of the invention will become apparent as the description proceeds, esepecially when considered in conjunction with the accompanying drawings, wherein:

Figure 1 is a perspective view of the improved kite stabilizer attached to a conventional kite;

Figure 2 is a fragmentary transverse section showing the kite stabilizer in elevation; and

2

Figure 3 is a fragmentary section on the line 3—3 of Figure 2.

Referring now to the drawings, in Figure 1 there is illustrated a conventional kite 10 which is herein shown as of a quadrilateral flat type having a tail 11. The present invention, however, is not limited to use with a kite of this type but instead may be employed with the transversely curved tailless type, the box type, and other types. As illustrated in Figure 1, the dive stabilizer 20 comprises a guide bar 21 having a ring 22 at its top for connection to the kite by suitable lateral supporting strings 23 and 24 and a top supporting string 25. At the bottom of the guide bar 21 is a ring 26 which is illustrated as connected to the kite by the bottom string 27.

Adjacent the top of the guide bar 21 is a link 30 having an eye 31 at its end adapted to be connected by a slack string 32 to the kite proper as by means of an eyelet 33. The purpose of the link 30 is to prevent spinning or twisting of the stabilizer 20 with respect to the kite and it may be employed or not as seen fit.

Longitudinally slidable on the guide bar 21 is a kite string connecter element 40. The element 40 has an apertured block 41 thereon providing an opening or eye 42 whose edges are rounded and through which is adapted to pass an intermediate portion of the main kite string 43. Beneath the eye 42 is a small opening 44 to which the upper end of the kite string is permanently attached. Adjacent the bottom of the guide bar 21 is a rigid bracket 45 having an eye 46 formed therein, the edges of which are smoothly rounded and through which is adapted to pass a second intermediate portion of the kite string 43, which portion is located between the end of the string secured in the opening 44 and the first mentioned intermediate portion of the string passing through the eyelet 42. The arrangement just described provides for a compound pulley effect whereby tension in the string 43 tends to move the connecter element 40 downwardly on the guide bar 21.

Biasing means are provided urging the connecter element 40 upwardly on the guide bar 21 and these means are illustrated herein as taking the form of a light tension spring 50 anchored at its upper end as indicated at 51 to the upper end of the guide bar. The connecter element 40 has an arm 52 provided with a plurality of openings, into one of which the lower end of the tension spring 50 is inserted. The plurality of openings thus provided affords means for varying the ten-

sion of the spring 50 and thus the operating characteristics of the kite stabilizer as a whole.

Secured to the underside of the connecter element 40 is a retainer 60 having an opening 61 through which the guide bar 21 extends. The retainer 60 is pivoted to the underside of the connecter element 40 by means of a pin 62 and is further provided with a small opening 63 through which passes a fine guide wire 64 having an upper unlatching stop 65 and a lower latching stop 66. In the position shown in Figure 2, the retainer 60 is inclined with respect to the guide bar 21 and slides along its inner edge as the connecter 40 is moved downwardly toward the bracket 45 by increased tension in the kite string 43. However, the retainer 60 in the position illustrated serves to prevent upward movement of the connecter 40 on the guide bar 21, as such upward movement tends to cause slight counterclockwise rotation of the retainer 60 and provides a wedging interlock between the retainer 60 and the guide bar 21.

Carried by the connecter 40 is a releasable spring finger 70 adapted to engage the outer edge of the retainer 60 so as to retain the same in inoperative position and thus to permit both upward and downward sliding movement of the retainer on the guide bar 21. In Figure 2 the connecter 40 is illustrated in dotted lines in its lowermost position, at which time the retainer 60 has engaged the latching stop 66, thus moving the retainer 60 up into engagement with the spring latch 70. At this time the connecter 40 is released for sliding movement along the guide bar to positions which will be determined by the tension of the spring 50 and the wind pressure acting on the kite or tension of the kite string 43.

However, when the connecter element 40 reaches the uppermost limiting position the retainer 60 strikes the unlatching stop 65 carried by the guide wire 64 which releases the retainer from the latch 70. Thereafter motion of the connecter 40 in response to variations in wind pressure or in tension of the kite string 43 is limited to downward movement of the connecter 40 until such time as the connecter element has again reached its lowermost position so as to effect unlatching of the retainer 60.

The dive stabilizer for kites specifically described above operates to effect automatic adjustment of the operative point of connection between the kite string and the kite, and increases in the wind pressure cause downward adjustment of the connecter 40 and hence of the aperture 42 which determines the effective point of connection of the kite string 43. If during normal operation of the kite it is desired to effect release of the connecter element 40 for upward movement on the guide bar 21 the necessary downward movements of the connecter element may be effected by strong pulls on the kite string, thus moving the connecter element 40 to its lowermost or retainer latching position, and thereafter upward movements of the connecter element may be as determined by tension in the kite string and the predetermined tension of the spring 50. In like manner, the operator can adjust the position of the connecter element toward lower position by tugging on the kite string so as to move the connecter to any desired lower position. If it is moved too far downwardly, it may be similarly moved to latching position, permitted to return to unlatching position, and thereafter returned to desired intermediate position.

The drawings and the foregoing specification constitute a description of the improved dive stabilizer for kites in such full, clear, concise and exact terms as to enable any person skilled in the art to practice the invention, the scope of which is indicated by the appended claims.

What I claim as my invention is:

1. A dive stabilizer for a kite comprising a guide bar, a string connecter element movable on said guide bar, and means responsive to wind pressure acting on said kite to shift said element along said guide bar.

2. A kite stabilizer comprising a guide bar, a string connecter element slidable on said bar, and biasing means urging said element upwardly on said bar.

3. A kite stabilizer comprising a guide bar, a string connecter element slidable on said bar, and biasing means urging said element upwardly on said bar, said element constructed for permanent connection to an end of a kite string and having a first eye therein for slidably receiving an intermediate portion of the kite string, and a second eye piece carried adjacent the lower end of said bar for receiving a portion of the kite string between its end and the portion thereof in said first eye, whereby tension in said string exerts a pulley effect to move said element downwardly against the force of said biasing means.

4. A kite stabilizer comprising a guide bar, a string connecter element slidable on said bar, and biasing means urging said element upwardly on said bar, said element including a one-way retainer effective to prevent upward movement of said element on said bar.

5. A kite stabilizer comprising a guide bar, a string connecter element slidable on said bar, and biasing means urging said element upwardly on said bar, said element including a one-way retainer effective to prevent upward movement of said element on said bar and a latch for said retainer effective when engaged to render said retainer inoperable.

6. A kite stabilizer comprising a guide bar, a string connecter element slidable on said bar, and biasing means urging said element upwardly on said bar, said element including a one-way retainer effective to prevent upward movement of said element on said bar and a latch for said retainer effective when engaged to render said retainer inoperable, said stabilizer having latch operating means adjacent the top and bottom of said bar effective respectively upon engagement with said latch to disengage and engage said latch.

7. A kite stabilizer comprising a guide bar, a string connecter element slidable on said bar, and biasing means urging said element upwardly on said bar, said element including a one-way retainer effective to prevent upward movement of said element on said bar, said retainer comprising an apertured plate surrounding said bar and pivotally supported at one side of said bar from said element.

8. A kite stabilizer comprising a guide bar, a string connecter element slidable on said bar, and biasing means urging said element upwardly on said bar, said element including a one-way retainer effective to prevent upward movement of said element on said bar, said retainer comprising an apertured plate surrounding said bar and pivotally supported at one side of said bar from

said element and a spring latch releasably engageable with said retainer.

9. A kite stabilizer comprising a guide bar, a string connecter element slidable on said bar, and biasing means urging said element upwardly on said bar, said element including a one-way retainer effective to prevent upward movement of said element on said bar, said retainer comprising an apertured plate surrounding said bar and pivotally supported at one side of said bar from said element and a spring latch releasably engageable with said retainer, a guide wire slidably engaging said retainer and stops on said guide wire engageable with said retainer in limiting position thereof effective to engage and disengage said retainer with said latch.

10. In combination, a kite, a dive stabilizer on said kite including a connecter element movable thereon longitudinally of said kite, a kite string secured to said stabilizer and engaging said element, said element being effective to shift the effective point of connection of said string along the longitudinal axis of said kite, and means responsive to wind pressure to cause compensating movement of said element.

11. In combination, a kite, a dive stabilizer on said kite including a connecter element movable thereon longitudinally of said kite, a kite string secured to said stabilizer and engaging said element, said element being effective to shift the effective point of connection of said string along the longitudinal axis of said kite, and means responsive to wind pressure to cause downward movement of said element upon increase in wind pressure.

12. In combination, a kite, a dive stabilizer on said kite including a connecter element movable thereon longitudinally of said kite, a kite string secured to said stabilizer and engaging said element, said element being effective to shift the effective point of connection of said string along the longitudinal axis of said kite, means responsive to wind pressure to cause downward movement of said element upon increase in wind pressure, and additional means preventing upward movement of said element until said element has reached its lower limiting position.

13. In combination, a kite, a dive stabilizer on said kite including a connecter element movable thereon longitudinally of said kite, a kite string secured to said stabilizer and engaging said element, said element being effective to shift the effective point of connection of said string along the longitudinal axis of said kite, means responsive to wind pressure to cause downward movement of said element upon increase in wind pressure, and additional means preventing upward movement of said element until said element has reached its lower limiting position, said additional means being thereafter effective to permit either upward or downward movement until said element has reached its upper limiting position.

14. In combination, a kite, a dive stabilizer on said kite including a connecter element movable thereon longitudinally of said kite, a kite string secured to said stabilizer and engaging said element, said element being effective to shift the effective point of connection of said string along the longitudinal axis of said kite, means responsive to wind pressure to cause downward movement of said element upon increase in wind pressure, and additional means preventing upward movement of said element until said element has reached its lower limiting position, said additional means being thereafter effective to permit either upward or downward movement until said element has reached its upper limiting position and being effective after said element has reached upper limiting position to prevent upward movement of said element until said element has again reached its lower limiting position.

15. In combination, a kite, a dive stabilizer on said kite including a connecter element movable along the longitudinal axis of said kite, and a kite string engaging said element, movement of said element being operable to shift the effective point of connection of said string along the longitudinal axis of said kite.

16. In combination, a kite, a dive stabilizer on said kite including a connecter element movable along the longitudinal axis of said kite, and a kite string engaging said element, movement of said element being operable to shift the effective point of connection of said string along the longitudinal axis of said kite, resilient means opposing downward movement of said element.

17. In combination, a kite, a dive stabilizer on said kite including a connecter element movable along the longitudinal axis of said kite, and a kite string engaging said element, movement of said element being operable to shift the effective point of connection of said string along the longitudinal axis of said kite, resilient means opposing downward movement of said element, a retainer permitting downward movement of said element against the opposition of said resilient means but preventing upward movement thereof.

18. In combination, a kite, a dive stabilizer on said kite including a connecter element movable along the longitudinal axis of said kite, and a kite string engaging said element, movement of said element being operable to shift the effective point of connection of said string along the longitudinal axis of said kite, resilient means opposing downward movement of said element, a retainer movable with said element on said stabilizer permitting downward movement of said element against the opposition of said resilient means but preventing upward movement thereof.

19. In combination, a kite, a dive stabilizer on said kite including a connecter element movable along the longitudinal axis of said kite, and a kite string engaging said element, movement of said element being operable to shift the effective point of connection of said string along the longitudinal axis of said kite, resilient means opposing downward movement of said element, a retainer movable with said element on said stabilizer permitting downward movement of said element against the opposition of said resilient means but preventing upward movement thereof, a latch engageable with said retainer effective to hold said retainer in inoperative position so as to permit both up and down movement of said retainer as determined by the force of said resilient means and the tension of said kite string.

20. In combination, a kite, a dive stabilizer on said kite including a connecter element movable along the longitudinal axis of said kite, and a kite string engaging said element, movement of said element being operable to shift the effective point of connection of said string along the longitudinal axis of said kite, resilient means opposing downward movement of said element, a retainer movable with said element on said stabilizer permitting downward movement of said element against the opposition of said resilient means but preventing upward movement thereof, a latch engageable with said retainer effective to hold said retainer in inoperative position so as to permit

both up and down movement of said retainer as determined by the force of said resilient means and the tension of said kite string, a latching stop on said stabilizer engageable with said latch at the lower limiting position of said element.

21. In combination, a kite, a dive stabilizer on said kite including a connecter element movable along the longitudinal axis of said kite, and a kite string engaging said element, movement of said element being operable to shift the effective point of connection of said string along the longitudinal axis of said kite, resilient means opposing downward movement of said element, a retainer movable with said element on said stabilizer permitting downward movement of said element

against the opposition of said resilient means but preventing upward movement thereof, a latch engageable with said retainer effective to hold said retainer in inoperative position so as to permit both up and down movement of said retainer as determined by the force of said resilient means and the tension of said kite string, a latching stop on said stabilizer engageable with said latch at the lower limiting position of said element and an unlatching stop on said stabilizer engageable with said latch at the upper limiting position of said element.

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No references cited.