June 17, 1958 R. L. MAYNE 2,839,259

KITE CONTROL MECHANISM

Filed March 27, 1956 4 Sheets-Sheet 1

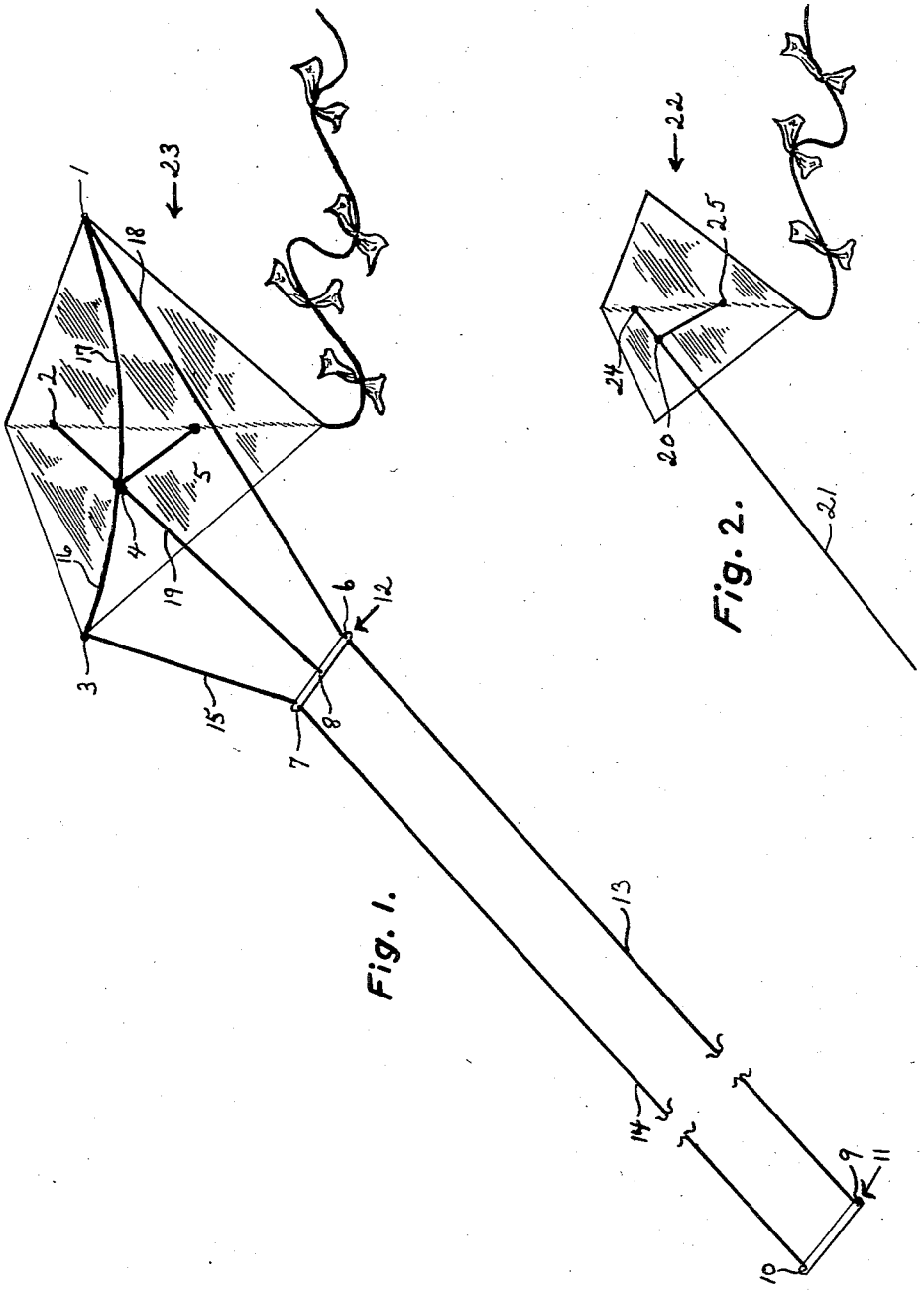


Fig. 1.

Fig. 2.

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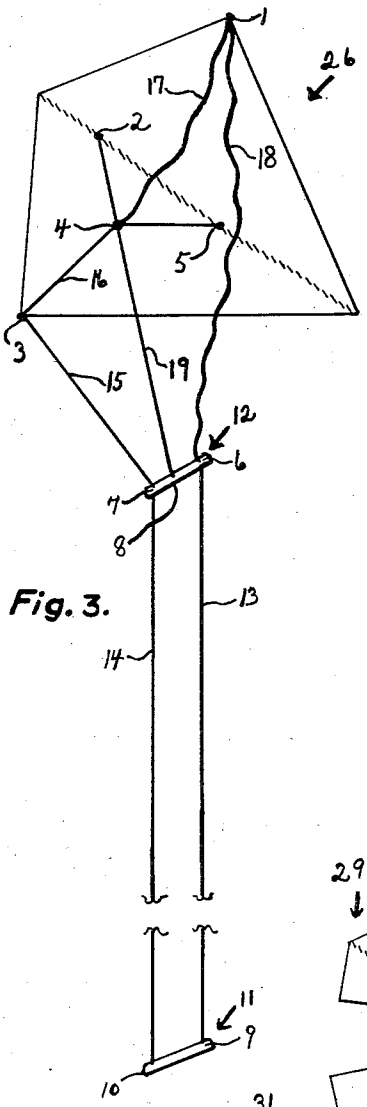


Fig. 3.

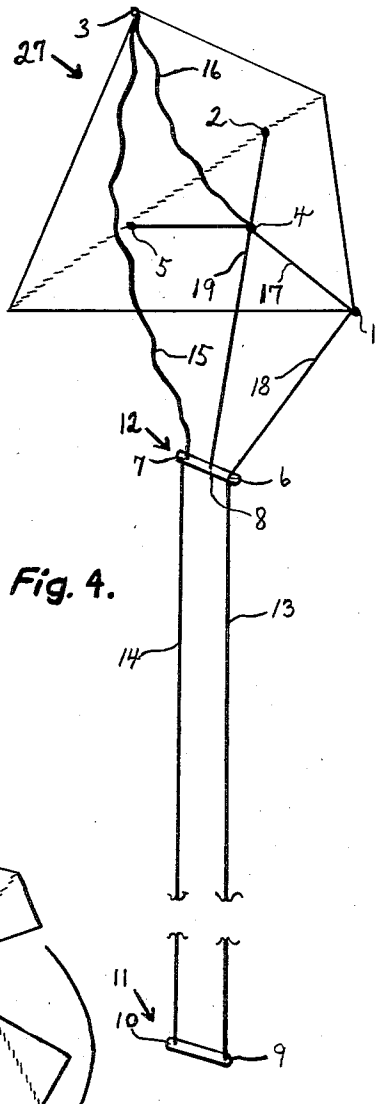


Fig. 4.

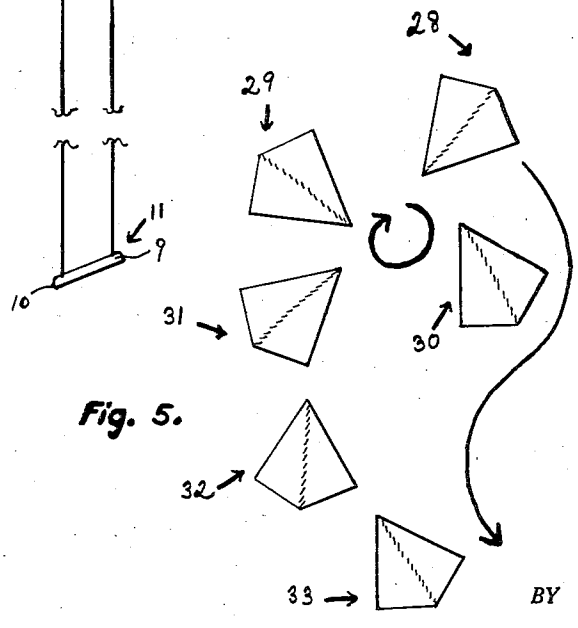


Fig. 5.

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KITE CONTROL MECHANISM

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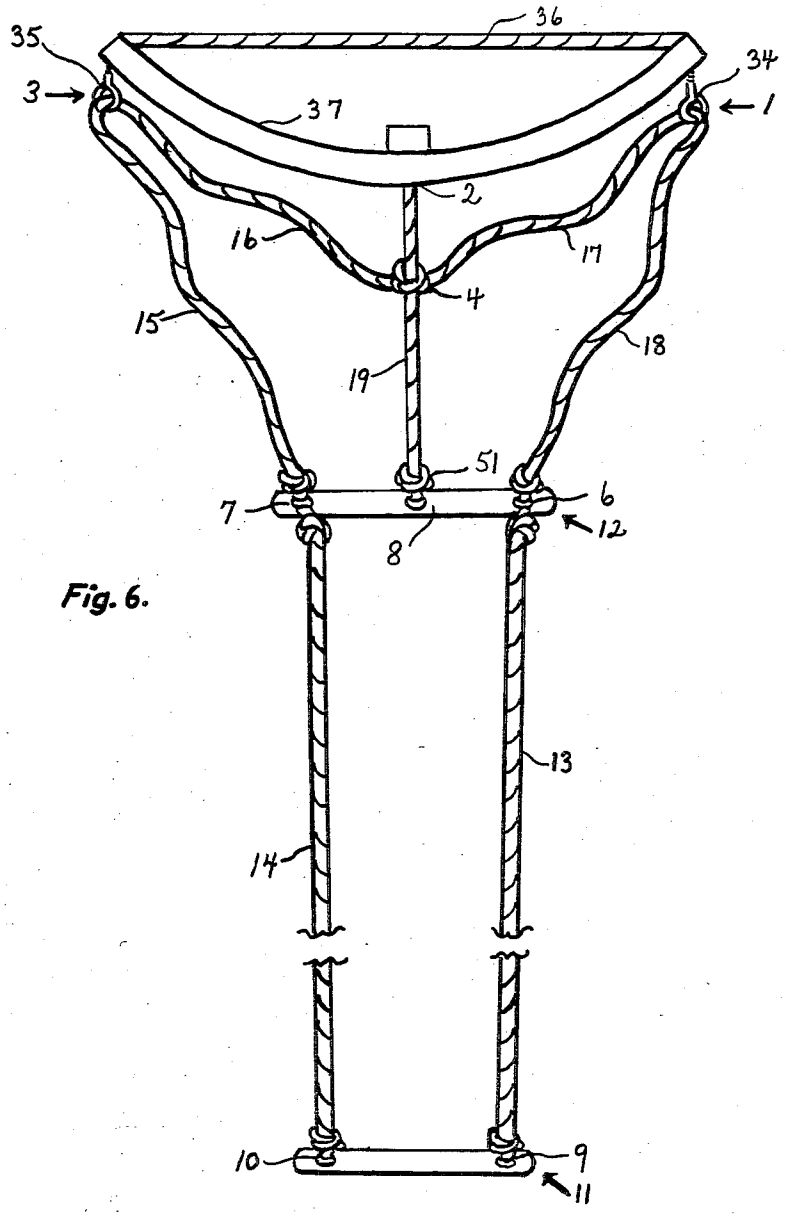


Fig. 6.

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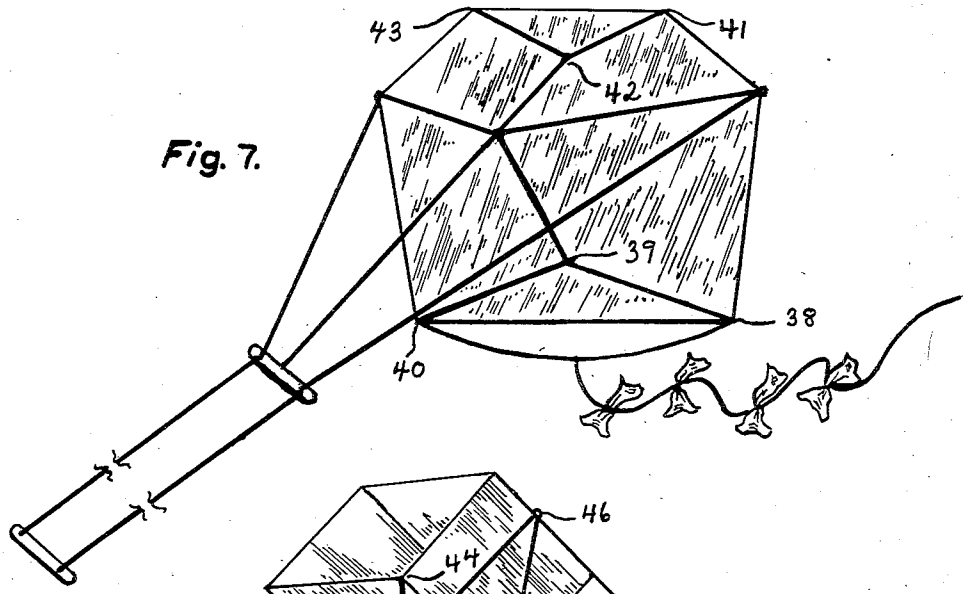
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KITE CONTROL MECHANISM

Filed March 27, 1956 4 Sheets-Sheet 4

Fig. 7.



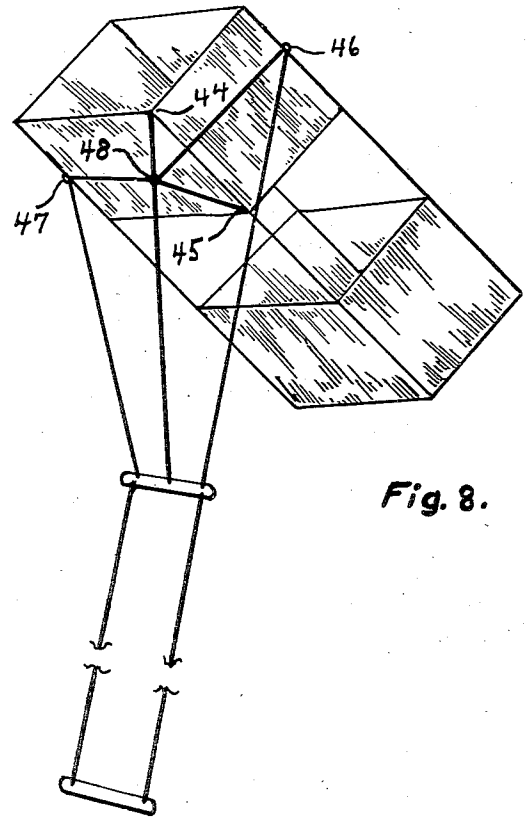


Fig. 8.

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KITE CONTROL MECHANISM

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Application March 27, 1956, Serial No. 574,218

4 Claims. (Cl. 244—153)

This invention relates to control mechanism for kites and more particularly for kites of the three basic types: the two-stick, three-stick, and the box kite. This control mechanism employs a new principle, namely two control cords which may be alternately tensed or slacked in controlling or directing the movement of the kite during flying. Furthermore, this control mechanism uses the same principle on the three basic types of kites mentioned above as well as others of the same general type.

It is the object of this invention to provide any kite, and specifically the three above-mentioned types, with a simple, effective means of control whereby the operator on the ground may cause the kite to loop, dive, lean, wag, tilt and zigzag, both upwards and downwards. Other kite control means have been designed in the past, but due to their complicated nature (including the addition of parts not inherent to the construction of the kites involved) they have had little value as toys for children. It is therefore a further object of this invention to provide a controlled kite which will be practical as a toy for young children and enjoyable and useful to adults.

It will be readily seen that my control mechanism will make the age-old sport of kite flying much more interesting to the child, the young boy, and even to adults For instance, two or more kite flyers with controlled kites can have "dog sights" in the air, or dive bomb imaginary targets. Or several kites can do tricks in formation. Like airplanes, the controlled kites can be landed at will. With a steady wind, the kite can be held in a straight dive for several hundred feet and pulled out of that dive just before it reaches the ground. In gaining height, the kite flyer can, with the controls, take advantage of the air currents, thereby accelerating the kite's rise—he can "work" the kite through the air in the manner of a fish wriggling through water.

Figure 1 is a front perspective view of a kite clearly showing the relationship of the various guide and control cords of my control system;

Figure 2 shows the usual two-stick kite from the front perspective view for comparison with Figure 1;

Figure 3 is a front perspective view of the kite turning to the operator's left;

Figure 4 is a front perspective view of the kite turning to the operator's right;

Figure 5 is a series of views of kite outlines which demonstrate how my controlled kite can be looped and dived;

Figure 6 is a top view (close up) of the control system showing the basic principle of slack in the control cords, when they are not being activated into use;

Figure 7 is a front perspective view of the control system applied to a three-stick kite; and

Figure 8 is a top-front perspective view of the control system applied to a box kite.

In normal practice, the usual two-stick kite **22** (Fig. 2) is held in flight by one string **21** attached to the

bridle **24, 20, 25**. On the controlled kite (Figure 1) the same relationship exists in the lead cord **19** and the similar bridle **2, 4, 5**. With my controlled kite, a control rod **12** and a winder rod **11** is provided. At point **8** on the control rod **12** the tension (kite pull) of lead cord **19** is divided between the two guide cords **13** and **14** that run in a parallel manner between control rod **12** and winder rod **11**. Figure 6 shows how the kite in straight, unturning flight has the tension on cords **19, 13** and **14** only. In this straight flight position, control cords **18, 17** and **15, 16** are in a slack condition.

The two control cords **18, 17** and **15, 16** run from control rod **12** through tiny screw eyes **34** and **35** (at points **1** and **3** respectively) to bridle point **4**, approximately midway in the bridle. The screw eyes **34** and **35** are fastened to the kite's lateral cross spar **37** near the ends thereof. Having the control cords in a slack condition when the kite is flying in a normal position allows all the tension to be on lead cord **19**. This allows the kite to fly in a normal manner until such time as the operator wishes to turn it. This is why the invention can be applied to the three above-mentioned basic types without modification: in each case the kite flies in a normal manner until one or the other of the slack control cords is tensed, thereby activating the kite in a particular direction.

Figure 3 demonstrates how the kite is turned to the left—this can be a partial turn in order to lean or wag the kite, or the kite may be looped depending on the degree of pressure that is applied on the related guide cord **14** and control cord **15, 16**. To turn or loop the kite to the left, winder rod **11** is turned (by one or two hands of the operator) in a horizontal, counter-clockwise manner. This, via the parallel action of the guide cords **14** and **13**, turns control rod **12** in a like counter-clockwise manner which then takes the slack out of control cord **15, 16**, tensing this cord and causing bridle point **4** to be pulled to the left. This throws the center of balance to the left and forces the kite to move in that direction. An added condition causing the kite to move to the left (in this instance) is the direct pull placed upon the left corner of the kite (screw eye **35**) by the first section of the left control cord **15**. At the same time that control cord **15, 16** is being tensed, the opposite control cord **18, 17** is becoming proportionately more slack, thereby allowing bridle point **4** and lead cord **19** to move to the left.

Figure 4 shows the exact opposite operation wherein the kite is turned to the right side, or put in a right loop, by actuating the controls (through winder rod **11**) in a clockwise direction.

Figure 5 shows the positional views of the kite making a right loop **28, 30, 31, 29**. This is accomplished by turning winder rod **11** in a clockwise manner and holding it thusly until the kite completes the loop and reaches position **29**; at this moment, the winder rod **11** would be returned to its normal position (parallel to the kite, Figure 6) taking the tension off control cord **18, 17** and returning this tension to the lead cord **19**.

A zigzag dive is accomplished by putting the kite into a right loop (kite **27**) as seen in positional views **28, 30** and **31**. At position **31** the tension would be rapidly switched to the opposite side (kite **26**) causing the kite to continue downward as in position **32** and **33**.

When the kite is given a loop in either direction, the two guide strings **13** and **14** will be crossed. This does not inhibit the controlling of the kite whatsoever. These guide cords may be straightened in two ways: (1) by turning the winder rod **11** one full circle in the direction of the loop, or (2) by merely looping the kite in the opposite direction from the first loop.

Control rod **12** and winder rod **11** are small dowel pieces about one foot in length. Three small holes are drilled in the control rod **12** and two in the winder rod **11**. At points **7**, **8**, **6**, **10** and **9** the various cords involved are threaded through their respective holes and tied to themselves with a square knot, plus a half-hitch as in Figure 6, point **51**. At points **7** and **6** on the control rod **12** the same hole is used by the contiguous guide and control cord, on each side.

Figure 6, the line **36** is the bow string for the two-stick kite and has no direct relation to the invention other than to provide a bowed front surface for the kite.

Figure 7 shows the invention applied to the three-stick kite. The control system operates in the exact same manner as for the two-stick kite. The only minor difference is the modified bridle **38**, **39**, **40** and **41**, **42**, **43** that is necessary due to the additional corners of the three-stick kite.

Figure 8 shows the control mechanism on a box kite. Bridle **44**, **48**, **45** is the same as the bridle **2**, **4**, **5** on the two-stick kite. Points **46** and **47** are the same as the (screw eye) corners **1** and **3** on the two-stick kite. The only difference on the box kite is that these points (**46** and **47**) are set back considerably more from bridle point **48** (**4** on the two-stick kite) than on the two-stick kite. This is due to the three dimensional character of the box kite, and it does not detract in any way from the efficient controllability of this type of kite.

Thus it will be apparent that my invention has broad application to any kite which normally employs a bridle to which would normally be attached a lead cord (such as **21**) for holding the kite in flight. The adjustment of the control cords in my invention, is very simple, it being necessary only that the control cords be adjusted upon the kite so as to have a litte slack (approximately an inch or so in each control cord) when the kite is in normal straightforward flight.

The control rod may be set only a short distance from the kite face, as shown. A good rule is to have the control rod **12** set from the kite a distance equal to about one to two times the length of the kite (longest dimension). The winder rod **11** may, of course, be set from the control rod any distance which suits the operator; any extra length in the guide cords can be wound up on the winder rod when not needed for flying the kite at the particular altitude desired. With these few things in mind, anyone who can fly an ordinary kite can readily control the flight with my invention.

I have not gone into the construction of the kites themselves inasmuch as every boy has for many decades, known how to construct kites of the standard type. In addition to the arrangement of the sticks in the manner shown in the drawings herewith, it is well known that the perimeter of the ordinary flat kite is formed by means of a string and that the face or flying surface of the kite is usualy made of paper although weatherproof cloth or plastic sheeting is sometimes employed. As is apparent, any special construction of the basic kite is not a part of this invention inasmuch as the kite may be any of the types shown or any of those well known to youngsters and adults for decades and readily be controlled in flight by the use of my invention.

Certain minor variations in the exact construction or placement of the bridle, the control cords and the guide cords will, of course, occur to those skilled in the art, all of which will be understood to be within the scope of the claims appended hereto. For instance, in kites of larger construction—such as four or five stick flat types—it may be desirable to employ a combination bridle comprising two bridle sections which are substantially parallel and vertically placed and then lashed together at a point approximately midway in their lengths. The lead cord

and the control cords are then attached to this lash-point much the same as shown in Fig. 1. Also, the exact placement of the screw eyes, the distance of the control rod from the face of the kite, the exact parallelism of the guide cords, and the exact parallelism of the control rod and winder rod may be varied so long as following the general principles of my invention. In addition, it is obvious that the control and winder rods do not have to be made of dowel stock inasmuch as any thin, light piece of wood with the necessary strength, is sufficient for the purpose. In other words, substantial conformance in the construction of this invention is to be regarded as included in the claims.

I claim:

1. A control mechanism for a kite comprising a bridle, a control rod and right and left-hand control cords each attached at their upper ends to the bridle approximately midway of the ends of the bridle and at their lower ends to the ends, respectively, of the control rod, and a lead cord connecting approximately the midpoint of the bridle to the mid point of the control rod, the control cords being threaded through eyes positioned at points near the outer lateral edges of the flying surface of the kite and the control cords being of such a length as, when the kite is in normal flight, to be slack when so threaded and attached but only slightly longer than necessary to avoid being under tension.

2. A control mechanism for a kite comprising a bridle, a control rod and right and left-hand control cords each attached at their upper ends to the bridle approximately midway of the ends of the bridle and at their lower ends to the ends, respectively, of the control rod, and a lead cord connecting approximately the midpoint of the bridle to the mid point of the control rod, a winder rod and substantially parallel guide cords connecting the ends of the control rod to the ends of the winder rod, the control cords being threaded through eyes positioned at points near the outer lateral edges of the flying surface of the kite and the control cords being of such a length as, when the kite is in normal flight, to be slack when so threaded and attached but only slightly longer than necessary to avoid being under tension.

3. A kite having a bridle attached to the face thereof in flying position, screw eyes attached to the outer lateral edges of the flying surface of the kite, a control rod and right and left-hand control cords each attached at their upper ends to the bridle approximately midway of the ends of the bridle, then threaded through the eyes of the screws respectively and attached at their lower ends to the ends, respectively, of the control rod, and a lead cord connecting the bridle to the mid point of the control rod.

4. A kite having a bridle attached to the face thereof in flying position, screw eyes attached to the outer lateral edges of the flying surface of the kite, a control rod and right and left-hand control cords each attached at their upper ends to the bridle approximately midway of the ends of the bridle, then threaded through the eyes of the screws respectively and attached at their lower ends to the ends, respectively, of the control rod, and a lead cord connecting the bridle to the mid point of the control rod, a winder rod and substantially parallel guide cords connecting the ends of the control rod to the ends of the winder rod.

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