Sept. 26, 1933. G. W. KELLOGG 1,927,835

GLIDER KITE

Filed June 10, 1931 2 Sheets-Sheet 1

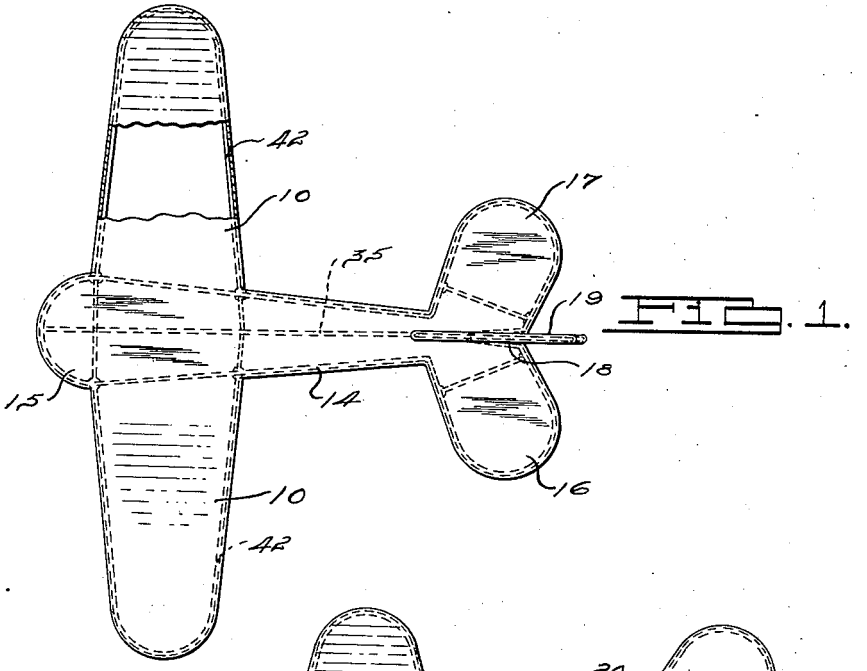

Fig. 1.

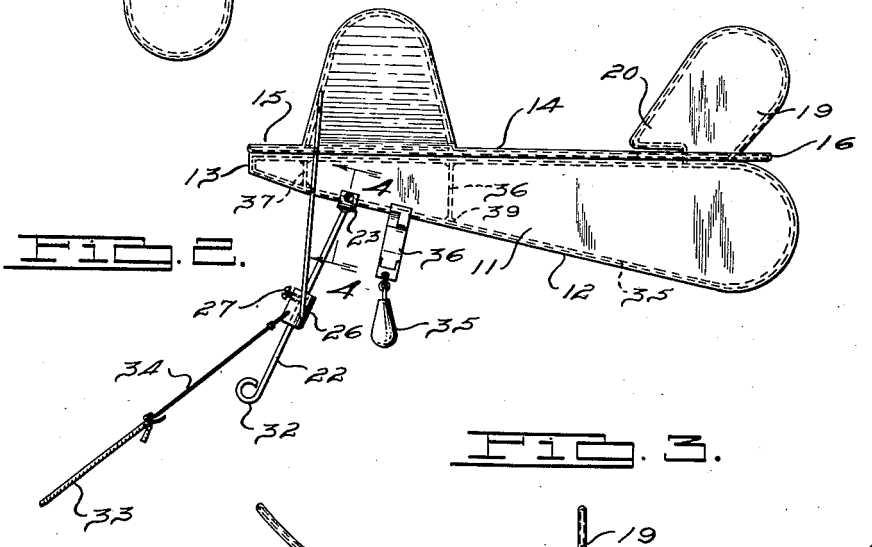

Fig. 2.

Fig. 3.

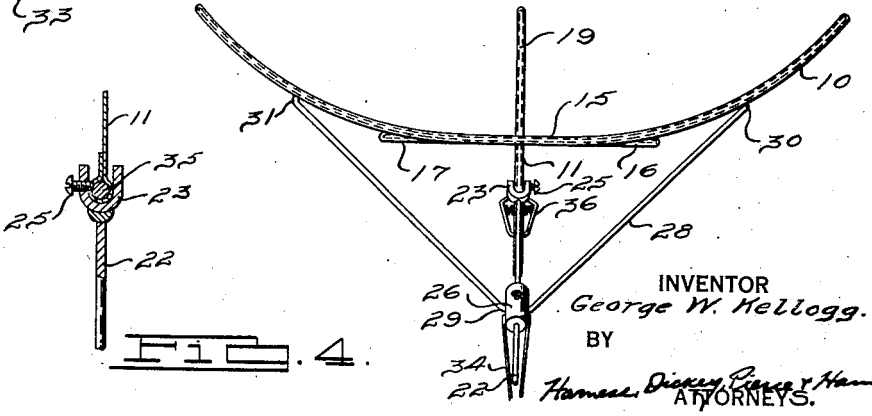

Fig. 4.

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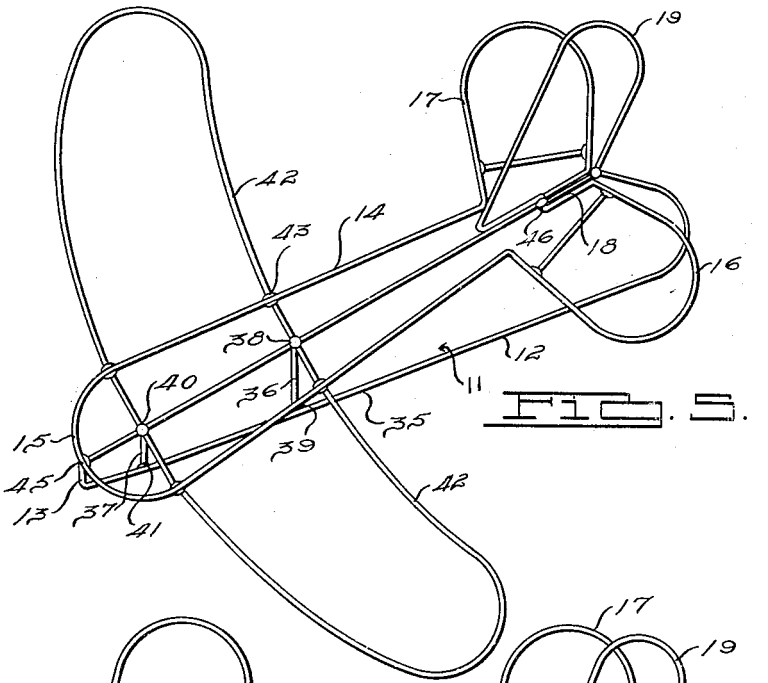

Fig. 5.

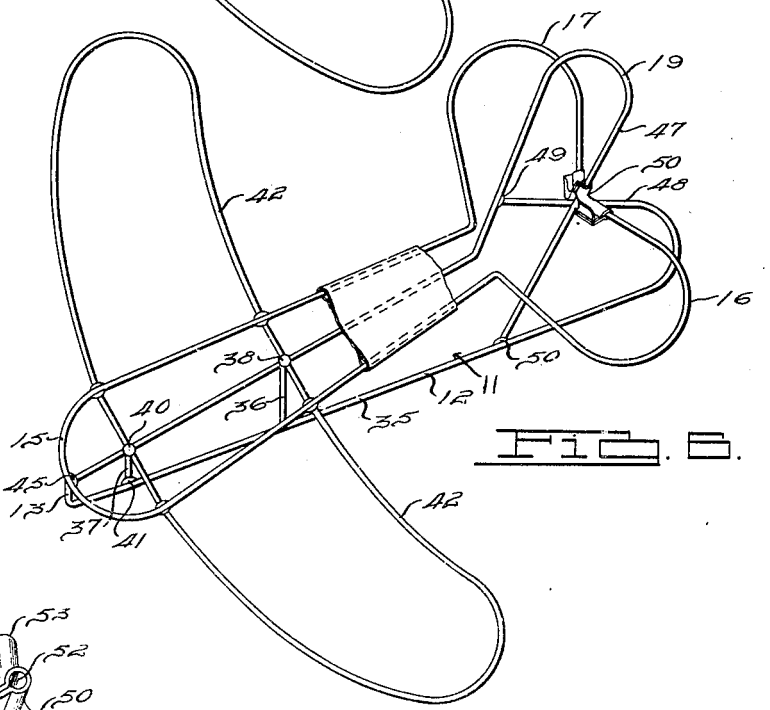

Fig. 6.

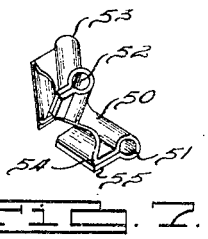

Fig. 7.

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UNITED STATES PATENT OFFICE

1,927,835

GLIDER KITE

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Application June 10, 1931. Serial No. 543,352

9 Claims. (Cl. 244—22)

The invention relates to kites and it has particular relation to a kite of the airplane glider type.

The principal objects of the invention are to provide a kite of the above mentioned character, of very inexpensive construction which can be flown through the air in a manner similar to that in which airplane gliders function; to provide a glider type of kite which can be flown through the air by means of a string attached thereto and extending to a point of remote control such as the ground and which can be released at will, for the purpose of allowing the kite to glide in a free manner; to provide a glider type of kite having a novel means of fastening a string thereto which can be released from a point of remote control such as the ground; to provide a kite of this character having a suspended string fastening structure which is of such character that the position of the glider in the air can properly be controlled by the string extending to the point of remote control such as the ground; to provide a string fastening structure on a glider kite which is so adjustable that the position of the glider in the air can be varied and controlled by the string; to provide a glider type of kite having an adjustable balancing means thereon, the adjustment of which can be utilized for controlling the gliding characteristics of the kite; to provide a glider kite which can be manufactured substantially from wire and covering material; and to provide a novel and inexpensive method of manufacturing a glider type of kite to be used as a toy.

For a complete understanding of the invention, reference may be had to the accompanying drawings, forming a part of the specification, wherein:

Fig. 1 is a plan view of a glider type of kite constructed according to one form of the invention;

Fig. 2 is a side elevational view of the construction shown by Fig. 1;

Fig. 3 is a front elevational view of the construction shown by Fig. 1;

Fig. 4 is a cross sectional view on a larger scale taken substantially along line 4—4 of Fig. 2;

Fig. 5 illustrates the wire frame of the construction shown by Fig. 1, prior to the application of covering material thereto;

Fig. 6 is a view similar to Fig. 5, illustrating a slightly different type of frame work which may be used in lieu of the frame work shown in the last mentioned figure;

Fig. 7 is a plate metal fastening means which may be used for securing certain parts of the frame work together.

Referring to Figs. 1, 2 and 3, the glider comprises a wing 10 which is secured centrally thereof, to the upper edge of a vertically disposed, stabilizing and guiding portion 11, having a lower edge 12 which tapers downwardly and rearwardly. The forward end of the portion 11 terminates in a nose 13 which projects slightly beyond the forward edge of the wing. The upper edge of the portion 11 also is secured to a body portion 14 arranged in a horizontal plane or in other words normal to the vertical body portion 11, which terminates at its forward end in a curved portion 15 extending over the nose 13. The horizontal portion 14 at its rear end, terminates in laterally and oppositely projecting, horizontally arranged stabilizers 16 and 17. A slot 18 is formed in the rear part of the portion 14, between the horizontal stabilizing portions 16 and 17, and this slot is adapted to receive a vertical stabilizer 19 forming a part of the vertically arranged body portion 11. The vertical stabilizer 19 projects forwardly beyond the forward end of the slot 18, as indicated at 20, to provide a sort of flexible portion in the stabilizer which may be bent if this is found desirable.

As best shown by Fig. 3, the wing 10 is deflected upwardly at opposite sides of the body portion 14, in an arcuate manner to provide a structure which is substantially curved from one end of the wing to the other. Curving the wing in this manner is of considerable importance because the kite, during flight thereof, maintains its position in the air in a more satisfactory manner. Opposite end portions of the wing also are flexible with respect to the body portion 14 and during flight of the kite the parts of the wing will flex depending on air currents which vary considerably. When the kite is flown in a particularly strong wind, the end portions of the wing will bend upwardly and toward each other, while when the wind is not so strong the wing will assume the position substantially shown by Fig. 3.

For securing a string to the kite, a relatively stiff wire 22 is adjustably secured to the lower edge 12 of the vertical body portion 11 adjacent the nose 13, and as best shown by Fig. 4 the upper end of the wire 22 terminates in a bifurcated portion 23 which is adapted to receive the lower edge 12 and particularly enclose a wire forming a part of a frame work structure comprising the body portion. A screw 25 threaded through one leg of the bifurcated portion 23 is utilized for retaining the latter in adjusted position on the lower edge of the body portion. It is important that the wire 22 maintain its adjusted position without bending

to any substantial extent because the rigidity of the wire controls the flight of the kite to a considerable extent. Adjacent its lower end, the wire 22 projects through a small cylinder 26 and is adjustably associated with the cylinder by means of a screw 27 threaded through one wall of the latter and engaging the wire. A V-shaped wire 28 having a straight apex portion 29 extending through an opening in the cylinder 26 has its opposite ends secured to the forward edges of the wing 10 as indicated at 30 and 31. The wire 28 is relatively flexible with respect to the wire 22 and under certain circumstances, a string instead of a wire may be utilized for connecting the forward edges of the wing to the cylinder. Preferably, however, the V-shaped member comprises a wire of smaller gauge than that of the wire 22, and the latter, as stated previously, is much more rigid. The lower end of wire 23 terminates in a reversely curved portion 32 for limiting movement of the cylinder 26 downwardly during adjustment and also for preventing any injury to a person flying the kite, which might otherwise occur if the lower end of the wire were sharp. A string 33 utilized for flying the kite and which extends to a point of remote control such as the ground, is connected to the cylinder 26 by means of a light thread 34 which may be broken during the flight of the kite, by exercising a sharp pull on the string from the point of remote control. When the thread 34 breaks, the kite is allowed to glide and eventually will reach the ground in a gliding movement.

When the kite is used as a glider, that is, when the person flying the kite desires to disconnect the string 33 during its flight by breaking the thread 34, it is desired that an adjustable weight be secured to the body portion 11 because during the flight of the kite under its own control, a weight adds to its gliding characteristics and preserves its balance. In the particular construction shown, as illustrated by Fig. 2, the weight is indicated at 35 and is suspended from a clip 36 which may be secured to the lower edge of the vertical body portion 11 in an adjustable manner. The size of the weight 35 and grip 36 are somewhat exaggerated and it is to be understood that the sizes of these elements may be varied according to the size of the kite and the weight necessary to insure proper gliding characteristics. When the kite is flown only by the string 33 and it is not desired to break the thread 34, preferably the weight 35 and clip 36 are not secured to the kite because the use of these elements appears desirable particularly when the kite is used as a glider or in other words when the thread 34 is broken and the kite is allowed to glide to the ground. Preferably the point of attachment of the relatively rigid wire 22 to the kite is at the wind balance point of the latter, or in other words if the lower end of the rod 22 is used for pulling the kite through the air, the resistance of the latter to moving the kite surfaces against the air will be substantially equal on longitudinally opposite sides of the point of connection, and on transversely opposite sides of the point of connection.

In constructing the kite, only wire and a suitable covering material such as paper, cellophane or the like, are used, and consequently the kite may be manufactured very inexpensively. Initially, as shown by Fig. 5, a wire is bent to form the vertical body portion 11 and the vertical stabilizer 19 at the rear end thereof and it is apparent that a single wire may be used for this purpose and bent in the necessary manner. Short wires 36 and 37 however are used for reinforcing the framework thus constructed and are soldered at opposite ends indicated at 38, 39, 40 and 41 to the upper and lower wires thereof. The horizontal body portion 14 similarly is constructed of a wire which is bent at its rear end to form the horizontal stabilizers 16 and 17 and the slot 18 between these portions. A wire 42, then is bent in the form of the wing 10, and is soldered or welded as indicated at 43 to the side wires of the body portion 14. Then the frame works are positioned in the manner shown in Fig. 5, and the wires of the wing are soldered at the points 38 and 40 to the upper wire of the vertical body portion 11. Also the nose portion 13 is soldered as indicated at 45 to the forwardly projecting portion 15 of the body portion 14. The rear end of the upper wire of the vertical body portion 11, at the forward end of the slot 18, is soldered as indicated at 46, to the forward ends of the wires of the stabilizers 16 and 17 defining the slot. Hence, the wires comprising the frame work are positively secured together by soldered connections. Then the frame work is covered with paper, cellophane, or other suitable covering material as previously mentioned and the string fastening means are fastened to the kite.

In the construction shown by Fig. 6, the rear end of the vertical body portion 11 including the vertical stabilizer 19, are formed by crossing wires 47 and 48, which are secured at their forward ends as indicated at 49 and 50 to the inclined wire at the forward edge of the stabilizer and the lower edge wire 12 of the body portion. The horizontal part 14 of the body is formed substantially the same as previously described in connection with Fig. 5, with the exception that no slot 18 is provided. In assembling the frame works thus provided the vertical stabilizer 19 is moved upwardly through the space between the horizontal stabilizers 16 and 17 and then the parts of the frame work are secured either by soldering or by means of a clip 50 which is particularly shown by Fig. 7. This clip has three openings 51, 52 and 53 for receiving the three wires at the point of connection and flanges 54 and 55 which then are pressed together to insure retention of the wires in the openings. A clip of this general character may be used at various points of connection in the kite in lieu of soldering if this is found desirable.

Under certain circumstances it may be desirable to have the vertical stabilizer 19 pivot to a certain extent about a vertical axis or, in other words, pivot in a horizontal plane, and either permit the stabilizer to move freely in this manner as the kite is flown, or have means for holding the stabilizer in an adjusted position. To a certain extent, this result may be obtained by bending the portion 20 of the stabilizer shown by Fig. 2, as indicated previously. It is apparent that at one point the stabilizer may thus be mounted on a vertical pivot secured to the rear end of body portion 11, and be adjustably secured for example to one of the horizontal stabilizers and that this adjustable connection may or may not permit limited free pivotal movement of the vertical stabilizer.

In flying a kite of the character previously described, it has been found that its path of movement through the air can be controlled in a highly satisfactory manner by means of the string 33 connected to the kite by means of the relatively rigid wire 22. During flight of the kite, the end

portions of the wing will be deflected according to the force of the wind while at the same time the vertical and horizontal body portions 11 and 14 and the several stabilizers provided insure maintenance of the kite in a desirable position. Should it be desired to use the kite as a glider, it is only necessary to give the string 33 a quick pull and the thread 34 will break, or in lieu of the small thread 34, a suitable releasable connection may be used which releases upon pulling the string 33 quickly. Use of a variable connection between the rod 22 and the kite enables flying the latter at various inclinations to its path of movement forwardly and enables maintaining the kite in more or less of a horizontal position or in a position inclined variably with respect to the horizontal. The use of a variable weight when the kite is used as a glider balances the latter during its gliding movement to the ground and may be used for causing the descent of the kite more or less gradually, depending on the position of the weight. The relatively flexible wires or strings connecting the edge of the wing to the cylinder 26 on the rigid wire 22, stabilize the entire construction and assist in maintaining the kite in position during its flight.

Although various forms of the invention have been shown and described, it will be apparent to those skilled in the art that various modifications may be made without departing from the scope of the appended claims.

I claim:

1. A glider kite comprising a body portion having a transversely extending wing, and a substantially rigid rod element on the kite, which projects downwardly from a point substantially central of the transverse length of the kite, for attaching a string thereto at its lower end.

2. A glider kite comprising a body portion having a transversely extending wing, and a substantially rigid rod element on the kite which projects downwardly from a point substantially central of the transverse length of the kite, for attaching a string thereto at its lower end, and elements connected to the wings at points spaced from the body portion and to a lower portion of the first mentioned element.

3. A glider kite comprising a plane body portion disposed in a horizontal plane, a plane portion disposed in a vertical plane, and a flexible wing extending transversely of the body and having opposite preformed end portions curved upwardly and transversely with respect to a body portion.

4. A aerial toy comprising a body defined by plane portions directed substantially at right angles to each other in substantially T shape, in which one plane portion during flight of the toy is disposed in a substantially vertical plane, a wing extending transversely of the body and secured intermediate its ends thereto, and vertical and horizontal stabilizers at the rear end of the body, said parts being constructed of wire, covered with thin covering material.

5. An aerial toy comprising a body defined by plane portions directed substantially at right angles to each other in substantially T shape, in which one plane portion during flight of the toy is disposed in a substantially vertical plane, a wing extending transversely of the body and secured intermediate its ends thereto, and vertical and horizontal stabilizers at the rear end of the body, said wing having portions at opposite sides of the body, of flexible character and which are adapted to curve upwardly during flight of the toy, said parts being constructed of wire with thin covering material, and the wire in the wing being of piano wire character so as to make it strongly resilient for the purpose of insuring return of the wing to its normal position after flexing.

6. An aerial toy comprising a body portion, a wing extending transversely thereof, vertical and horizontal stabilizing means on the body, a string, and a quickly releasable means adjacent the kite connecting said string to said kite whereby the toy may be flown as a kite or as a glider separate from the string, said toy being so constructed and balanced and the string being connected thereto at such point, that the toy may be flown as a kite by means of the string, and then upon releasing the string, it may glide downwardly.

7. An aerial toy comprising a T shaped body defined by thin, covered plane portions, the leg plane portion normally being disposed in a vertical plane when the toy is in flight, and having its lower edge tapering with respect to its upper edge, from the front to the back, vertical and horizontal stabilizing means at the rear end of the body, a wing extending transversely of the body and being connected intermediate its ends to the cross plane portion thereof, and string means connected to the body substantially at the wind balance point of the toy.

8. An aerial toy comprising a T shaped body defined by thin, covered plane portions, the leg plane portion normally being disposed in a vertical plane when the toy is in flight, and having its lower edge tapering with respect to its upper edge, from the front to the back, vertical and horizontal stabilizing means at the rear end of the body, a wing extending transversely of the body and being connected intermediate its ends to the cross plane portion thereof, and string means connected to the body substantially at the wind balance point of the toy, said wings having portions on opposite sides of the body resiliently flexible and being normally curved upwardly.

9. An aerial toy comprising a T shaped body defined by thin, covered plane portions, the leg plane portion normally being disposed in a vertical plane when the toy is in flight, and having its lower edge tapering with respect to its upper edge, from the front to the back, vertical and horizontal stabilizing means at the rear end of the body, a wing extending transversely of the body and being connected intermediate its ends to the cross plane portion thereof, and string means connected to the body substantially at the wind balance point of the toy, said wings having portions on opposite sides of the body resiliently flexible and being normally curved upwardly, said string means being releasably connected to the body so that the toy may be flown as a kite and then the string released to allow it to glide in the manner of a glider.

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