

No. 634,386.

Patented Oct. 3, 1899.

C. ZIMMERMAN.  
TOY FLYING MACHINE OR KITE.

(Application filed Dec. 12, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

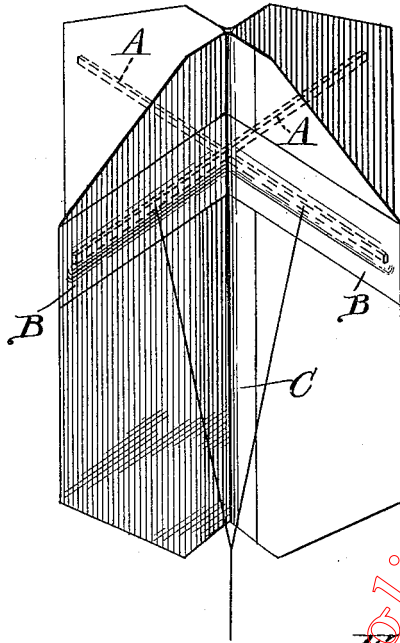


Fig. 2.

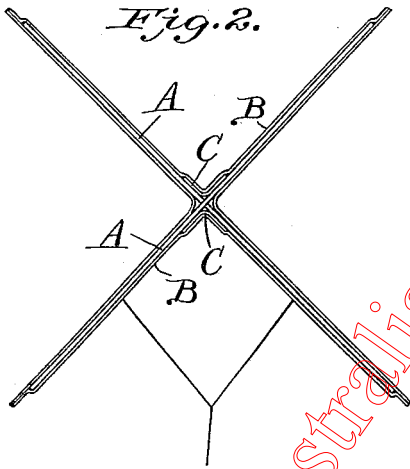
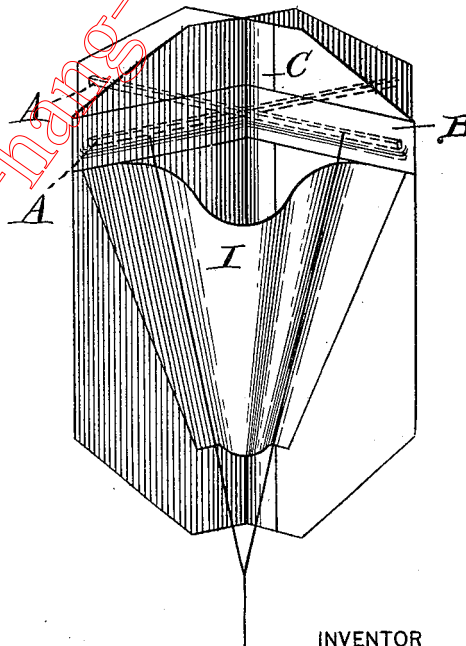


Fig. 3.



WITNESSES:

*Edwin A. McKee.*  
*Geo. M. Anderson*

INVENTOR

*Charles Zimmerman*  
BY  
*E. W. Anderson*  
*his* ATTORNEY.

No. 634,386.

Patented Oct. 3, 1899.

C. ZIMMERMAN,  
TOY FLYING MACHINE OR KITE.

(Application filed Dec. 12, 1898.)

(No Model.)

3 Sheets—Sheet 2.

Fig. 4.

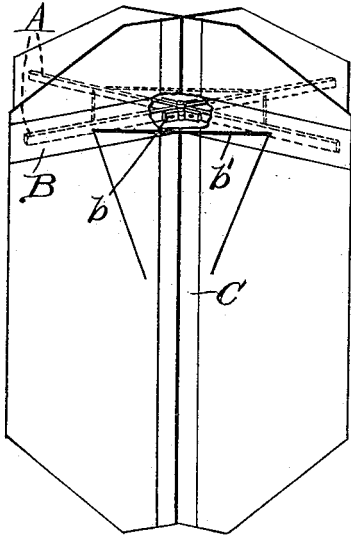


Fig. 5.

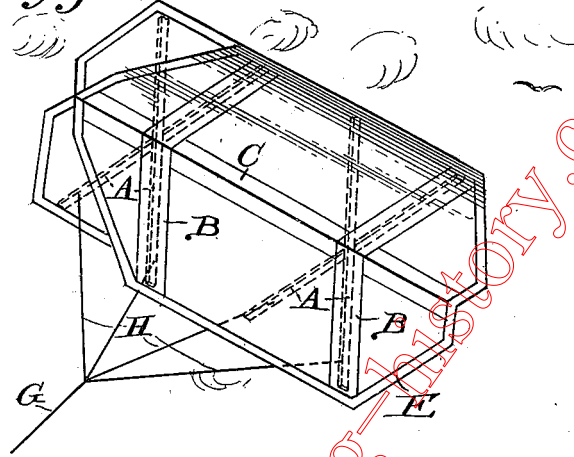


Fig. 6.

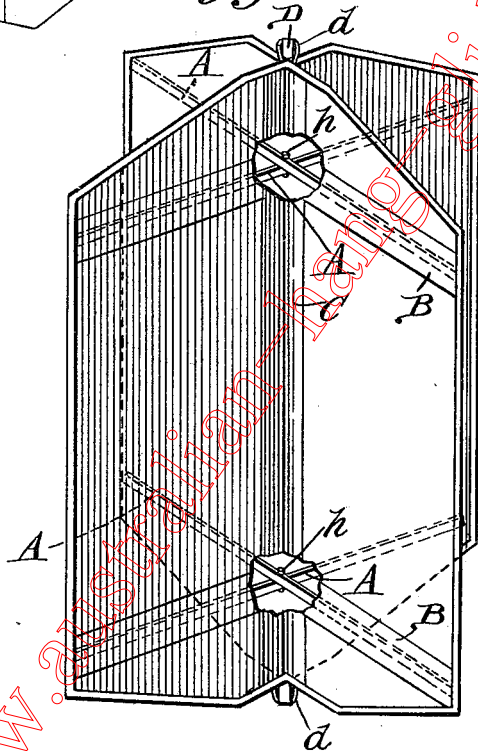
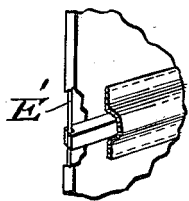


Fig. 13.



WITNESSES:

*Edwin McKee.*  
*Geo. M. Anderson*

INVENTOR

*Charles Zimmerman*

BY

*E. W. Anderson*  
*his* ATTORNEY.

No. 634,386.

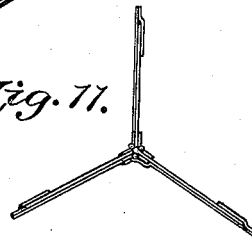
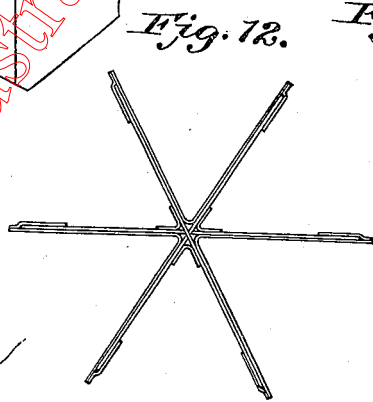
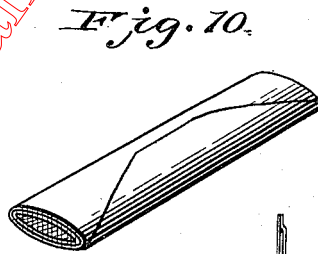
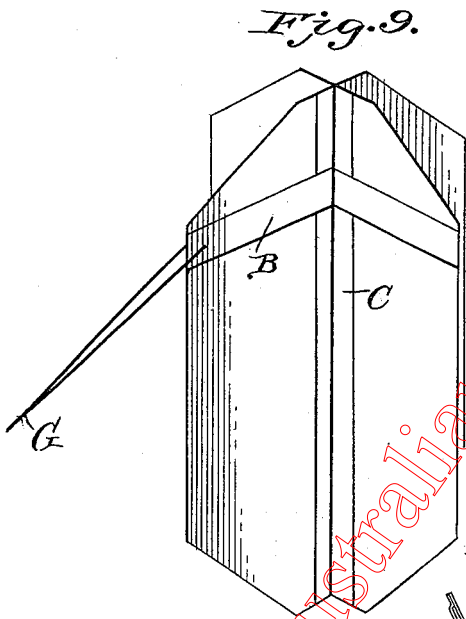
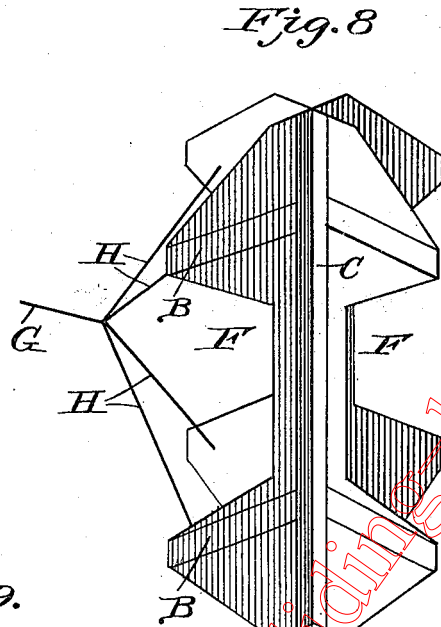
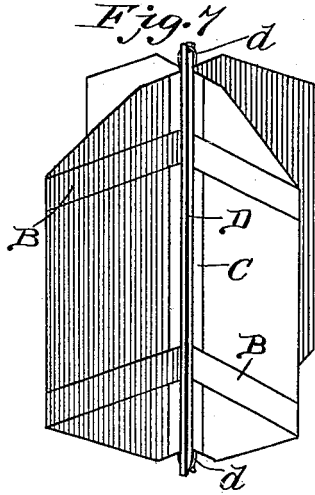
Patented Oct. 3, 1899.

C. ZIMMERMAN.  
TOY FLYING MACHINE OR KITE.

(Application filed Dec. 12, 1898.)

(No Model.)

3 Sheets—Sheet 3.



WITNESSES:  
*Edwin McKee*  
*Geo. M. Anderson*

INVENTOR  
*Charles Zimmerman*  
 BY  
*E. W. Anderson*  
 his ATTORNEY.

# UNITED STATES PATENT OFFICE.

CHARLES ZIMMERMAN, OF FREDERICK, MARYLAND, ASSIGNOR OF TWO-THIRDS TO HARRY ZIMMERMAN, OF SAME PLACE, AND GEORGE ZIMMERMAN, OF FREMONT, OHIO.

## TOY FLYING-MACHINE OR KITE.

SPECIFICATION forming part of Letters Patent No. 634,386, dated October 3, 1899.

Application filed December 12, 1898. Serial No. 699,038. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES ZIMMERMAN, a citizen of the United States, and a resident of Frederick, in the county of Frederick and State of Maryland, have invented certain new and useful Improvements in Toy Flying-Machines or Kites; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

In the drawings, Figure 1 is a perspective view of kite. Fig. 2 is a front view of same. Fig. 3 is a perspective view of kite provided with the pocket. Fig. 4 is a perspective view of kite provided with stay-cords for wings. Fig. 5 is a perspective view of kite having stiffening-arms at each end and the edges reinforced or bound. This view represents the usual position of kite in flying. Fig. 6 is a perspective view showing kite as when made of cloth, the longitudinal stiffening-arm being removed. Fig. 7 is a perspective view of same with longitudinal stiffening-strip in place. Fig. 8 is a perspective view of kite with wings cut away centrally. Fig. 9 is a perspective view of kite with loop G attached to one wing of kite only. Fig. 10 is a perspective view showing the kite as rolled up for shipment. Fig. 11 is a front view of kite having three wings. Fig. 12 is a front view of kite having six wings. Fig. 13 is a perspective view showing a portion of kite having edges bound with cord.

This invention is designed to provide a kite of novel character which can be flown without a tail and which is so constructed as to secure automatic equilibrium in all directions and stable flight under varying conditions of wind. It is also designed to provide a kite of this character which can be folded or rolled in a small compact bundle for purposes of shipment or for storage when not in use.

With these objects in view the invention, broadly considered, consists in a kite having

a number of wings arranged in different planes, which intersect each other at the axis of the kite.

The invention also consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claims.

In the preferred form of the kite four wings are employed arranged in two planes which intersect each other at the axis. In the construction shown in Fig. 1 of the drawings, which is that employed for smaller kites made of paper, these wings are stiffened by two arms A, which are placed near the upper or front end of the kite, each arm extending from the tip of one wing to the tip of the opposite wing and crossing the other arm at the center. These arms may consist of small sticks or light wires and are conveniently secured in place by having paper strips B pasted thereover, these paper strips stiffened by the paste employed or by starching also aiding in giving stiffness and support to the wings. If desired, however, each arm A may be formed in two sections, one for each wing, as shown in Fig. 4, and the sections connected at their inner ends by means of suitable hinges *b*. In this construction it is necessary to connect the several wings by brace-cords *b'*, which extend across the angles between the wings. A simple way in which to construct the kite is to take two sheets of paper cut to the desired shape and bent along their longitudinal centers, so that each will form two wings, as shown in Fig. 2. The two sheets are then placed against each other and secured by means of pasted strips C, said strips also serving to stiffen and reinforce the kite axially and longitudinally.

In the larger sizes of kites, such as shown in Figs. 5, 6, 7, and 8, it is desirable to employ the stiffening-arms A at both end portions of the kite, as shown, and when the construction is of cloth the kite should be stiffened longitudinally at its axis by means of a suitable stick or wire or tubing D, placed in the apex of the angle between two of the wings, preferably the upper ones, as shown in Fig. 7. This stick is preferably removable

and is held in place by means of loops *d* on the kite, which are engaged with the end portions of said stick or by any other suitable means, so that it can be readily detached and the kite rolled or folded about it in the manner hereinafter described. In the cloth kites it is also advisable to connect the arms at the point of intercrossing by means of a pin *h*, (see Fig. 6,) which will prevent the arm from pushing or moving in an endwise direction.

The larger sizes of paper kites may be reinforced at the outer edge portions of the wings to prevent their tearing easily by a suitable binding or stiffening *E*, while the cloth kites may be reinforced at the edges by cords *E'*, the arms *a* being notched or grooved at the ends to receive the same. The wings may also, when desired, be cut away at their central portions, as shown at *F* in Fig. 8, to form a kite having eight wings, four at each end.

The kites constructed as above described may be flown in two different positions—that is to say, with the wings crossing each other in oblique planes in the form of the letter *X*, the top and bottom angles being acute, or with the wings in places perpendicular to each other or in the form of an upright cross. In the former case, which is preferred, the retaining-cord *G* is connected to a short cord *H*, which forms a loop across the lower angle of the kite, its ends being connected to the arms *A* at points about midway between the axis of the kite and the tips of the wings. If the ends of this cord *G* are attached too near the axis, the wings will tend to close upon each other horizontally in flight, while if attached too far from the axis the wings will tend to close vertically upon each other for the reason that in the first place the air-pressure will raise the tip portions of the lower wings and depress the upper wings, while in the second case the air-pressure will raise the axial portion of the kite and the resulting tension on the retaining-cord will tend to pull the wings together toward a vertical plane. For the larger kites the retaining-cord may be attached to similar loops *G* at each end portion of the kite, as shown in Fig. —, but is preferably attached at one end only. When flown in this position—*i. e.* with the wings in oblique planes—these planes are, as will be readily understood, mutually opposed to each other in such a manner as to prevent the kite sliding in the wind to either side; but it must go ahead, and by reason of the flexibility of the wings upon both sides of the arms *a* and the angle formed the kite is prevented from taking a “header” or “cropper” or diving forward. The wind-pressure upon the kite, it will be seen, tends constantly to close the wings horizontally upon each other, while the tension on the retaining-cord when properly attached tends to prevent such action. Consequently in flight the wings are more or less in vibration, as the pressure of the wind varies.

When the kite is flown in position with its

wings in vertical and horizontal planes and the horizontal wings acting as a supporting-plane, the lower vertical wing acts as a keel and the upper vertical wing as a fin, the retaining-cord *G* being connected to the arm *a* of the lower vertical wing, as shown in Fig. 9.

To further guard against any tendency of the kite to take a header, a pocket *I* may be formed in its lower angle, as shown in Fig. 3. This, however, is not necessary, as without it the kites will ordinarily fly steadily.

The arrangement of the wings, it will be seen, gives the kite considerable stiffness, both transversely and axially, although for larger kites made of cloth an axial strip should be employed, as above stated, to prevent any tendency of the kite to double up longitudinally.

For purposes of shipment or for storage when not in use the wings can be folded flat upon each other and the kite then folded or rolled up from end to end into a small compact package.

Fig. 11 shows a form of kite having three wings, and Fig. 12 a form having six wings.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A kite having three or more isometric wings or planes which meet at the longitudinal axis of the kite, substantially as specified.

2. A kite having three or more isometric wings or planes which meet and are movably connected at the longitudinal axis of the kite, said wings or planes having a vibrating movement, substantially as specified.

3. A kite consisting of two or more planes intersecting along a common axis, and forming a plurality of radial wings isometrically disposed with reference to such axis and automatically movable with reference to each other when the kite is flying, substantially as specified.

4. A kite consisting of two or more planes intersecting along a common axis, and forming a plurality of radial wings isometrically disposed with reference to such axis, and automatically movable with reference to each other when the kite is flying, and stiffening-arms for the said wings, substantially as specified.

5. A kite consisting of two or more planes meeting at a common axis and forming a plurality of movable wings isometrically and radially disposed with reference to such axis and upon opposite sides thereof, and movable radial stiffening-arms to stiffen said wings transversely substantially as specified.

6. A kite consisting of two or more planes intersecting along a common longitudinal axis, and forming a plurality of wings isometrically, radially, and movably disposed about said axis, substantially as specified.

7. A kite consisting of two or more planes intersecting along a common longitudinal axis, and forming a plurality of wings isometrically, radially, and movably disposed

about said axis, and sticks which stiffen said wings both longitudinally and transversely, substantially as specified.

8. A kite consisting of two or more planes intersecting along a common longitudinal axis and forming a plurality of wings isometrically, radially, and movably disposed about said axis, and tie-cords connecting adjacent wings across the angles formed thereby, substantially as specified.

9. A kite consisting of two planes intersecting along a longitudinal axis thereof and forming four wings isometrically disposed with reference to said axis and automatically movable when the kite is flying, the cords which connect adjacent wings across the angles formed thereby, and a retaining-cord, substantially as specified.

10. A kite having four wings arranged in intersecting planes, and transverse stiffening-arms each of which is common to two of said wings and crosses the other arm, together with a retaining-cord connected to said arms upon two of said wings, substantially as specified.

11. A kite consisting of two planes which intersect and are flexibly connected to each other along a common longitudinal axis and form four wings isometrically disposed with reference to said axis, transverse stiffening-pieces each of which is common to two of said wings and which loosely cross each other at the said axis, whereby said wings may be folded flat upon each other with the said pieces in adjacent parallel position to permit the wings to be rolled thereon, substantially as specified.

12. A kite having radial wings, and an air-pocket arranged in the angle between two of said wings, substantially as specified.

13. A kite consisting of two planes which intersect and are flexibly connected to each other along a common longitudinal axis and form four wings isometrically disposed with reference to said axis, transverse stiffening-pieces each of which is common to two of said wings and which loosely cross each other at the said axis whereby said wings may be folded flat upon each other with the said pieces in adjacent parallel position to permit the wings to be rolled thereon together with a removable axially-arranged stiffening-stick, substantially as specified.

14. A kite having radial intersecting wings reinforced axially, radially and at the outer edge portions thereof, substantially as specified.

15. A kite consisting of two planes intersecting along a longitudinal axis, forming four wings isometrically disposed with reference to said axis, and automatically movable with reference to each other when the kite is flying, substantially as specified.

16. A kite having radial wings provided with stiffening-arms intercrossing at the common center of said wings, and pivotally or hingedly connected at the point of intercrossing, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES ZIMMERMAN.

Witnesses:

LESLIE CRAMER,  
GEO. T. BAUMGARDNER.

www.australian-hair.com