

July 7, 1953

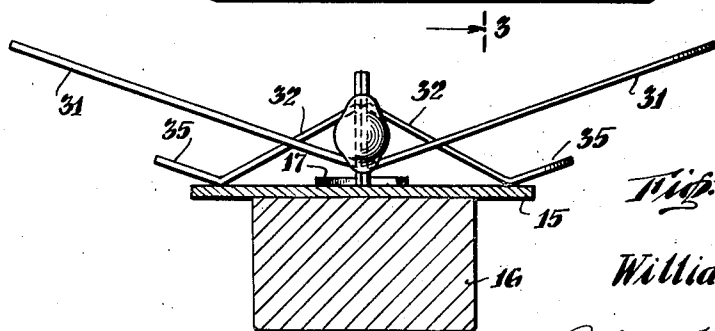
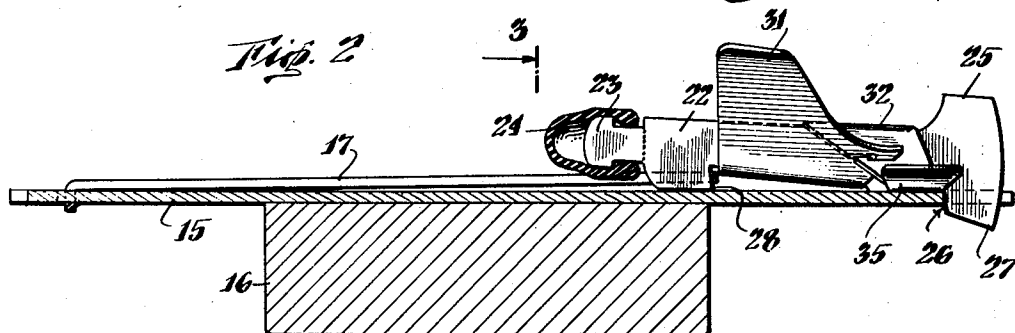
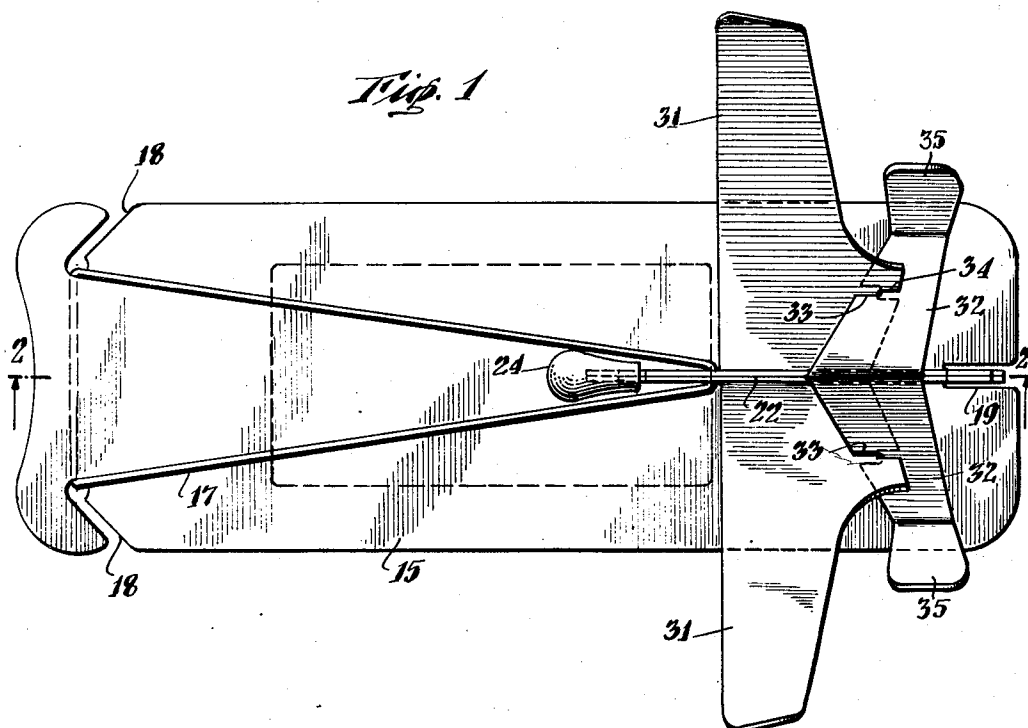
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2,644,271

TOY GLIDER AND LAUNCHING PLATFORM

Filed May 29, 1947

2 Sheets-Sheet 1



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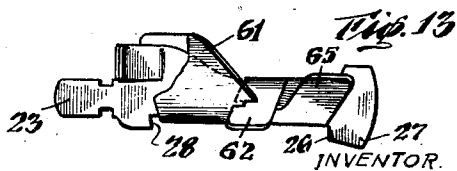
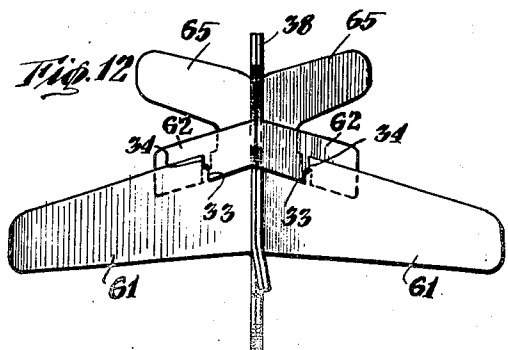
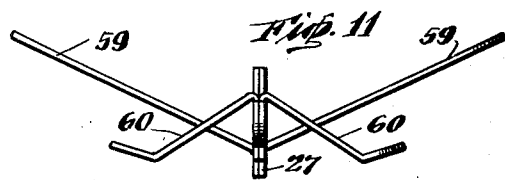
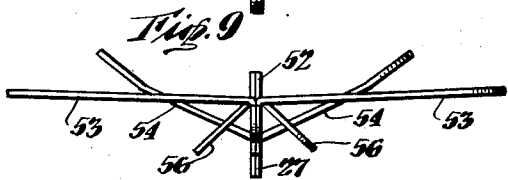
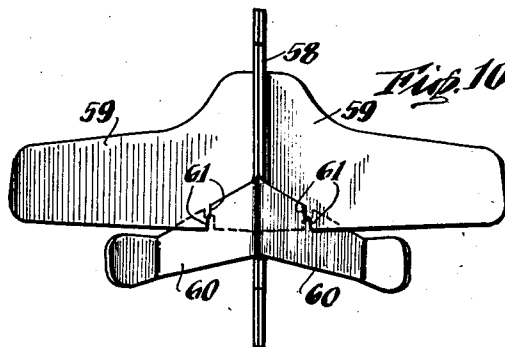
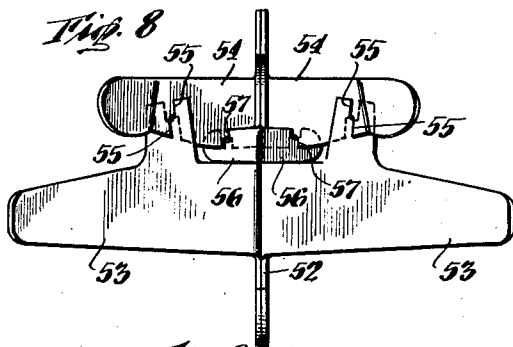
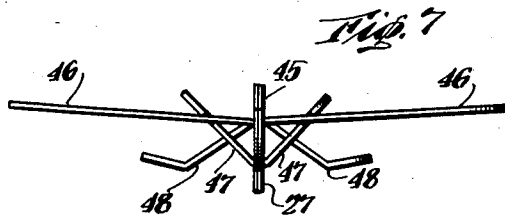
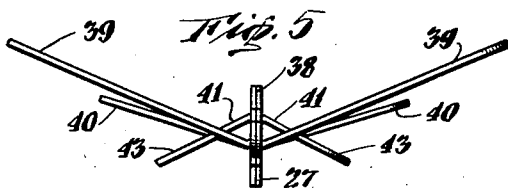
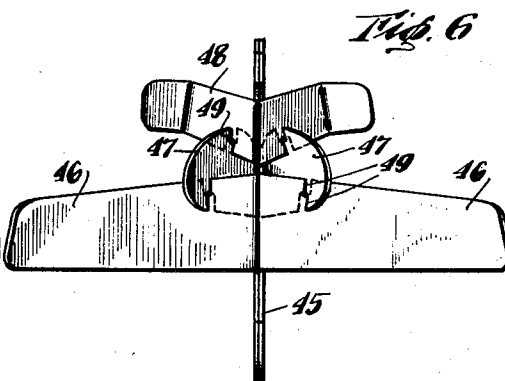
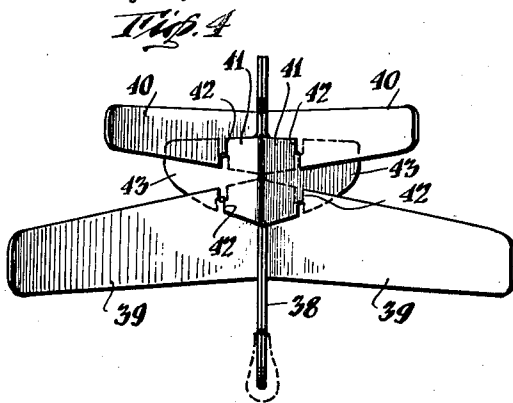
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TOY GLIDER AND LAUNCHING PLATFORM

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UNITED STATES PATENT OFFICE

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TOY GLIDER AND LAUNCHING PLATFORM

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Application May 29, 1947, Serial No. 751,437

32 Claims. (Cl. 46—81)

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The invention relates to a toy aeroplane or glider which is projected for flight by some resilient means such as a rubber band. In its preferred operation the plane or glider is released from a launching platform although this particular type of launching operation is not essential.

It is an object of the invention to construct a new and novel toy glider or aeroplane made of sheet material such as heavy paper or cardboard in which bracing means is provided for each wing to support it in horizontally extended position, which brace also serves as a tripod element for engagement with a launching platform.

Another object of the invention is to construct a toy aeroplane or glider in which a stabilizer means is provided for each side of the glider which stabilizer means also serves the function of bracing a wing in laterally extended position and the wing in turn braces the stabilizer means in laterally extended position.

Another object is to construct a toy glider or plane in which stabilizer means is provided upon each side thereof which serves two additional functions, namely, as a brace for a wing of the glider with the wing likewise bracing the stabilizer means and as a tripod element when launched from a launching platform.

A still further object is to construct a toy glider in which a single bracing means upon each side thereof is utilized to brace a wing and a horizontal stabilizer means.

Another object is to construct a toy glider in which a single bracing means upon each side thereof has three functions, namely, to serve as a brace for the wings, as a brace for the horizontal stabilizer means and as a tripod element when being launched from a launching platform.

A further object is to construct a toy glider which can be controlled by turning the nose or a tab provided upon the glider.

A still further object is to construct a toy glider which may be retained upon a launching platform with the projecting means or rubber band stretched and the glider triggered off into flight when desired by a simple construction.

Another object is to construct a toy glider having a reinforced or braced fuselage.

Another object is to construct a glider which is assembled correctly particularly with respect to the angular relation of wings, stabilizers and braces if the latter are provided.

Other objects of the invention will be more apparent from the following description when taken in connection with the accompanying

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drawings illustrating preferred embodiments thereof in which:

Figure 1 is a plan view of a launching platform with a glider projecting rubber band and a toy glider positioned thereon ready for release.

Figure 2 is a section of the launching platform taken on line 2—2 of Figure 1 and a side elevation of the glider.

Figure 3 is a front view of a glider mounted on the launching platform shown in Figures 1 and 2 taken on line 3—3 of Figure 2.

Figure 4 shows a plan view of a glider having a single brace upon each side for supporting a wing and a horizontal stabilizer.

Figure 5 is a front view of the glider of Figure 4.

Figure 6 is a plan view of a toy glider with a single brace means upon each side supporting a wing and stabilizer means and in which the latter serves as a tripod element.

Figure 7 is a front view of the glider of Figure 6.

Figure 8 is a plan view of another toy glider with the horizontal stabilizer means and wings interlocking for joint support thereof, which glider is of the high wing type.

Figure 9 is a front view of the glider of Figure 8.

Figure 10 is another form of toy glider in which horizontal stabilizer means and the wings interengage for locking both of these elements in horizontally extended position but with the stabilizer means in front of the wings.

Figure 11 is a front view of the glider of Figure 10.

Figure 12 is a plan view of a toy glider in which the wings and stabilizer means are interconnected laterally of the fuselage or are integral and brace means interlock with the wings for supporting these elements and the brace means in laterally extended position and with a steering means or tab carried by the fuselage.

Figure 13 is a side elevation of the glider of Figure 12.

The gliders are preferably projected from a launching platform which constitutes a flat surface 15. The flat surface may have a block 16 secured thereto which serves as a handle for holding the launching platform and also simulates an aircraft carrier with the block resting upon the floor. Projecting means of any suitable kind may be used, that shown being a rubber band 17 which is retained upon the launching platform by passing through slots 18 extending from each side and at one end thereof. A hold-

ing slot 19 is provided at the other end of the launching platform as will appear more fully hereinafter.

The toy glider or plane may be made from two pieces of sheet material such as heavy paper or cardboard which are glued or otherwise secured together to form a fuselage 22 which extends vertically. The lower edge of the fuselage is that portion which rests upon the launching platforms. The front of the fuselage has a nose 23 which carries a soft rubber nipple 24 to provide a weight for the glider as well as a soft nose so that the glider will not damage furniture or break glass when struck during its flight. Any suitable weight may be used although the rubber bumper is desirable. The fuselage may carry an upwardly extending portion at its rear end which forms a vertical fin or rudder 25. The rudder also extends downwardly and forms a locking shoulder 26 which abuts against the end of the slot 19 in the launching platform to hold the glider in position with the rubber band 17 stretched ready for launching and projection. The lower end of the rudder carries a trigger portion 27 extending angularly downward for lifting the shoulder 26 upwardly from holding engagement with the end of the slot 19. A notch or shoulder 28 is provided in the fuselage to receive the rubber band 17.

The toy glider has a wing 31 extending from each side of the fuselage and attached thereto and is shown as integral therewith and bent outwardly on a substantially horizontal axis although better flight is secured if its axis of attachment with the fuselage is inclined at a slight angle upwardly from rear edge to leading edge. Horizontal stabilizer means 32 also extend outwardly from each side of the fuselage and are attached thereto and are shown as being integral therewith. Each horizontal stabilizer means is carried by the fuselage or is bent from the fuselage upon a horizontal or substantially horizontal axis spaced vertically with respect to the point of attachment of the wings thereto. In the glider of Figures 1, 2, and 3, the axis or point of attachment is above the point of attachment of the wing.

Means or devices are provided to interlock each wing with a horizontal stabilizer means so that the latter performs two functions, namely it provides horizontal stabilizer means for the glider and braces the wings in laterally extended position. Each horizontal stabilizer means is also braced in laterally extending position by the wing upon the same side of the fuselage so that each braces the other in outwardly extending position. Any suitable interlocking means may be utilized, that particularly illustrated being a slot 33 in the leading edge of the horizontal stabilizer means which interengages with a slot 34 in the rear edge of the wing. In order to position the horizontal stabilizer means rearwardly of the wings the wings are shown particularly as having a rearwardly extending portion. It is clear that either part may have a portion extending to the other or each may extend partly towards the other.

In the construction of the glider shown in Figures 1 through 3, each horizontal stabilizer means is directed downwardly and extended far enough so that it approximately engages the launching platform when the glider rests thereon or approximately to the lower edge of the fuselage which rests on the platform as shown in Figure 3. It will be noted therefore that each stabilizer means so extended also serves a

third function in that it forms a leg which with the leg provided by the extension of the other stabilizer means form leveling legs to retain the glided level on the launching platform and the leveling legs with the lower edge of the fuselage form a tripod for retaining or supporting the glider in horizontal position both during preparation for launching and during the forward projection of the glider. The stabilizers may have upwardly extending tabs 35, if desired for greater stability in flight, although these are not essential.

It should be noted too, that each laterally extending stabilizer means may be a separate part and a brace provided with its end extending downwardly to approximately engage the launching platform so that the brace serves a double function, namely to lock a wing or stabilizer means in laterally extended position and as a tripod element. The glider illustrated is a low wing type with the wings extending from the lower edge of the fuselage. The glider may be constructed as a high wing type without change of the essential construction and merely requiring a change in the relative vertical position of wings and stabilizer means.

In Figures 4 and 5, the glider is formed of two like blanks or pieces with fuselage 38 being formed by gluing or securing together the two portions or halves thereof so that the fuselage is of double thickness. Each wing 39 is attached to the fuselage such as by being integral with its portion of the fuselage and extends laterally outward. Separate horizontal stabilizer means 40 also are provided integral with its fuselage half and extend laterally outward. A brace or brace means 41 is carried by each half of the glider and is located vertically from the point of attachment of the wings and horizontal stabilizer means with the fuselage, and in the form particularly illustrated it is attached to the fuselage above the point of attachment of the wing and stabilizer means. Each brace means is also located between the wing and stabilizer means with reference to its horizontal position. These braces are shown as integral parts of their respective half of the glider and are bent angularly downward on a substantially horizontal axis at the point of attachment with the fuselage. Although the brace means 41 is shown as a single element which is its more desirable form it is to be understood that this is not essential.

Interengaging means or devices in the form of slots 42 are carried by opposite edges of the brace means which interengage with corresponding slots in the rear edge of the wing and the forward edge of the stabilizer means. With this construction the wings are located in outwardly extended position by the brace means as is also the horizontal stabilizer means all of which cooperate to brace all parts in horizontally extended position.

Preferably each brace carries an extension or its ends 43 are extended so that they approximately engage the launching platform or reach downwardly approximately to the plane of the lower edge of the fuselage which engages the platform so that it also serves as a tripod element with the lower edge of the fuselage.

Figures 6 and 7 show a construction similar to that illustrated in Figures 4 and 5, except that the wings 45 are located or attached to the fuselage at or adjacent the upper edge thereof and upon a substantially horizontal axis to form a high wing type of glider. The brace means 47

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are carried by the respective halves of the glider and extend upwardly. Each horizontal stabilizer means 48 extends angularly downwardly to a point approximately engaging the launching platform or approximately to the plane of the lower edge of the fuselage so that it serves as a leg or tripod element or portion. The stabilizers with the fuselage form a tripod. Interengaging means or devices in the form of slots 49 are carried by the edges of the brace or brace means 47, the forward edge of the stabilizer means 48 and rear edge of the wings 49. A single brace again is used so that all parts are interrelated to brace each other. In this construction, however, each horizontal stabilizer means serves as a tripod element or portion. Although the brace means upon each side is shown as a single element it is to be understood that this is not essential but is the more desirable form thereof.

Figures 8 and 9 show a high wing type of glider formed by two cardboard or paper blanks secured together in the fuselage portion as in the other forms of gliders. This glider is of the high wing type in that the wings 53 are attached to or adjacent the upper edge of the fuselage. Horizontal stabilizer means 54 are attached to each half of the fuselage at a point spaced vertically below the point of attachment of the wings thereto so that the stabilizer means extend angularly upwardly. Interlocking means or devices in the form of slots 55 interengage to lock the wings and the stabilizer means in horizontally extended position.

The glider is complete with the wings and stabilizing means and each bracing the other through the interlocking means or slots. The glider so constructed however, has no tripod feature. A tripod can be added by providing brace means 56 having interengaging slots 57 upon each brace means and each stabilizer means and the former extending angularly downwardly to approximately the lower edge of the fuselage to engage a launching platform. In this form the brace means serves primarily as tripod elements and it receives its support from the stabilizer means since the latter is primarily supported by the wing.

Figures 10 and 11 show a glider made of two portions or blanks of paper or cardboard and having a fuselage 58 formed by securing together the fuselage portions of both blanks. A wing 59 extends outwardly from each side thereof. In this construction the horizontal stabilizer means 60 is located in front of the glider wings and interlocking or interengaging means or devices in the form of slots 61 are carried respectively by the forward edge of the wing and the rear edge of the stabilizer means for interengagement to interlock both parts in horizontally extended position. The stabilizing means may extend angularly downwardly to a point adjacent the lower edge of the fuselage or a launching platform to form tripod elements. The stabilizer means are attached to the fuselage such as by being integral therewith upon a substantially horizontal axis.

Figures 12 and 13 show a glider in which the wings 61 and the stabilizer means 65 are interconnected. This construction can be used when the point of attachment of wings and stabilizer means to the fuselage are in line or correspond. Brace means 62 are carried by the fuselage, such as by being integral therewith on a substantially horizontal axis at a point spaced vertically from the point of attachment of the wings and stabilizer means thereto. With the low wing glider

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particularly illustrated, the braces are attached to the fuselage above the point of attachment of the wings and stabilizer means and extend angularly downward. The interlocking means or devices may be notches 33 and 34. With the wings and stabilizer means integral the brace supports both in the proper laterally extended position. The downwardly extending brace may be extended to engage the launching platform or to a point adjacent the plane of the lower edge of the fuselage and hence serve as legs or tripod elements or means.

The gliders may be constructed of any suitable light weight material and an inexpensive sheet material is heavy paper or cardboard. When slots are used as the interengaging means or devices a certain amount of flexibility in the material is needed to bring the slots into interengagement. The gliders are shown as constructed of two separate and distinct parts because it is economical of material; however, they could be formed of halves connected together at a joint folding axis so that they can be folded upon each other and secured together.

Each of the gliders described carries a nose at the forward end of the fuselage which may receive weight means of any kind, however the rubber nipple 24 is preferred which is pushed over the nose and recesses may be provided to more securely retain the same thereon. It is clear that the weight may be carried elsewhere than on the nose in which case a nose may be dispensed with. Each of the gliders has also a notch or shoulder such as 28 in Figure 2 to receive the rubber band as well as a holding shoulder 26 as shown in Figure 2 for retaining the glider upon the launching platform with the projecting means or rubber band 17 stretched rearwardly for launching. Each shoulder 26 for each glider may also extend angularly downwardly to form a releasing trigger.

The interengaging means or devices in each of the gliders are shown as interengaging or interlocking slots. Any suitable form of interlocking means may be used however. Such interlocking means are located at a point spaced from the point or axis of attachment of the wing or stabilizer means with the fuselage. The stabilizer means in each plane may have its line or axis of attachment with the fuselage parallel with the axis of attachment of the wing or may be at a slight angle with respect thereto. Although each of the gliders shows the fuselage of two parts fastened together any form of fuselage is contemplated with wings, stabilizer means, and braces attached thereto.

The terms horizontal stabilizer, stabilizer, stabilizer means and horizontal stabilizer means are used herein to designate the laterally extending planes which may extend horizontally or obliquely either upwardly or downwardly and are distinct from the wings.

It is to be noted too that the stabilizers and wings or the stabilizers, wings and braces are attached to the fuselage in horizontally overlapping relation, that is, for example in the gliders of Figures 1 and 10 the forward edge of the stabilizer 32 is attached to the fuselage forwardly of the rear edge of the wing 31. In other constructions illustrated in the other figures the brace overlaps and provides a particularly effective reinforcing feature. In addition the interlocking of parts provides a triangular construction which not only braces the wings, stabilizers and braces but provides a structure in which each of these parts and the fuselage pro-

vides rigidity or bracing for the others irrespective of whether or not there is an overlapping construction. The usual point of weakness in toy gliders is the fuselage between wings and tail elements and in all of the constructions illustrated herein the fuselage is doubly reinforced and braced both by the overlapping of parts as well as by the interlocking between parts.

In all constructions of gliders illustrated the tripod, whether it be the stabilizer or a separate brace which performs this function, extends downwardly to a point level with the bottom edge of the fuselage and spaced therefrom on each side of the fuselage.

This invention is presented to fill a need for improvements in a toy glider. It is understood that various modifications in structure, as well as changes in mode of operation, assembly and manner of use, may and often do occur to those skilled in the art, especially after benefiting from the teachings of an invention. Hence, it will be understood that this disclosure is illustrative of preferred means of embodying the invention in useful form by explaining the construction, operation and advantages thereof.

What is claimed is:

1. A toy glider and the like such as of heavy paper or cardboard comprising a fuselage, a wing extending outwardly from each side of the fuselage and attached thereto, means extending from each side of the fuselage and attached thereto upon a substantially horizontal axis and at a point spaced vertically with respect to the point of attachment of the wing to the fuselage, said means having at least a portion of the attachment thereof with the fuselage axially spaced along the fuselage from the attachment of the wing to the fuselage, the said means having an edge thereof adjacent to an edge of the wing, and interlocking devices carried by each of the said means and by each wing on adjacent edges thereof spaced from the attachment thereof with the fuselage whereby each wing and the said means are interlocked in laterally extending position and also give the fuselage lateral rigidity and bracing in at least that portion of the fuselage corresponding with the axial spacing of the said means along the fuselage from the wing.

2. A toy glider as in claim 1 in which the interengaging means include a slit in adjacent edges of the wing and said means.

3. A toy glider or the like such as of heavy paper or cardboard adapted to be set into flight comprising a fuselage having a lower edge, a wing attached to the fuselage and extending outwardly from each side thereof, means extending from each side of the fuselage and attached thereto upon a substantially horizontal axis at a point spaced vertically with respect to the point of attachment of the wing and having an edge thereof adjacent to an edge of a wing, the means serving at least one of the functions of bracing and stabilizing, said means extending angularly downwardly to the plane of the lower edge of the fuselage to provide a leveling leg, and interengaging devices carried by each of the said means and by each wing at adjacent edges thereof and spaced from the points of attachment of the said means and wing with the fuselage to interlock a wing and said means in laterally extending position.

4. A toy glider or the like of sheet material such as heavy paper or cardboard adapted to be set into flight comprising a fuselage, wing means extending outwardly from each side of the fuse-

lage and attached thereto, stabilizer means attached to the fuselage and extending laterally outwardly from each side thereof, brace means extending from each side of the fuselage and attached thereto upon a substantially horizontal axis at a point spaced vertically with respect to the point of attachment of at least one of the wing means and the stabilizer means to brace at least one thereof, one of the means including the brace means and the stabilizer means extending approximately to the plane of the lower edge of the fuselage to provide leveling legs, and interlocking means carried by each brace means and by at least one of the wing means and stabilizer means spaced from the point of attachment with the fuselage to lock the same in laterally extending position.

5. A toy glider of sheet material such as heavy paper or cardboard adapted to be set into flight comprising a fuselage having a lower edge, a wing attached to the fuselage and extending outwardly from each side thereof, a combined wing brace and leveling leg extending outwardly from each side of the fuselage and attached thereto upon a substantially horizontal axis at a point spaced vertically and above with respect to the point of attachment of the wings and having an edge adjacent an edge of a wing portion, a slit in each brace spaced from its point of attachment with the fuselage and extending from an edge thereof, a slit extending from the edge of each wing portion spaced from its point of attachment with the fuselage and receiving the slit in the brace to interlock the wing and brace together with the latter at a downward angle in laterally extending position, and the end of each brace extending beyond the slit to the plane of the lower edge of the fuselage.

6. A toy glider of sheet material such as heavy paper or cardboard comprising a fuselage, a wing attached to the fuselage and extending outwardly from each side thereof, a combined brace and stabilizer extending laterally outwardly from each side of the fuselage and attached thereto upon an approximately horizontal axis at a point spaced vertically with respect to the point of attachment of the wing and at least a portion thereof being axially spaced from the attachment of the wing to the fuselage, the combined brace and stabilizer having an edge adjacent an edge of the wing, and interlocking means carried by each combined brace and stabilizer and each wing spaced from the point of attachment with the fuselage and at adjacent edges thereof which interengage to lock the wing and the combined brace and stabilizer in laterally extending position.

7. A toy glider of sheet material such as heavy paper or cardboard comprising a fuselage, a wing attached to the fuselage and extending outwardly from each side thereof, a combined brace and stabilizer extending laterally outwardly from each side of the fuselage and attached thereto upon a substantially horizontal axis at a point spaced vertically with respect to the point of attachment of the wing and at least a portion thereof being axially spaced on the fuselage from the attachment of the wing thereto, the combined brace and stabilizer having an edge thereof adjacent an edge of the wing, a slit in each combined brace and stabilizer spaced from its point of attachment with the fuselage and extending from an edge thereof, and a slit extending from an edge of each wing and receiving the slit in the combined brace and stabilizer to lock the wing and

the combined brace and horizontal stabilizer in laterally extending position.

8. A toy glider of sheet material such as heavy paper or cardboard comprising a fuselage having a lower edge, a wing attached to the fuselage and extending outwardly from each side thereof, a combined brace and stabilizer means extending laterally outwardly from each side of the fuselage and attached thereto upon an approximately horizontal axis at a point spaced vertically and above with respect to the point of attachment of the wings and at least a portion thereof being axially spaced on the fuselage from the attachment of the wing thereto, the combined brace and stabilizer means having an edge adjacent to the wing, interlocking means in each combined brace and stabilizer means spaced from its point of attachment with the fuselage and in an edge thereof and in each wing adjacent an edge thereof spaced from its point of attachment with the fuselage, the interlocking means interengaging to lock the wing laterally and the combined brace and stabilizer means in laterally and downwardly extending position, and at least a portion of the combined brace and stabilizer means extending downwardly to the plane of the lower edge of the fuselage to serve as a leveling leg.

9. A toy glider of sheet material such as heavy paper or cardboard comprising a fuselage, a wing attached to the fuselage and extending outwardly from each side thereof, stabilizer means attached to the fuselage and extending laterally outwardly from each side thereof and axially spaced on the fuselage from the attachment of the wings thereto, a single brace means extending from each side of the fuselage and attached thereto upon a substantially horizontal axis at a point spaced vertically with respect to the point of attachment of at least one of the wing and stabilizer means and between an edge of the wing and an edge of the stabilizer means, interlocking means carried by each brace means and by each wing and by each stabilizer means at an edge thereof and spaced from the point of attachment with the fuselage to interlock each wing and stabilizer means in laterally extending position.

10. A toy glider of sheet material such as heavy paper or cardboard comprising a fuselage having a lower edge, a wing attached to the fuselage and extending outwardly from each side thereof, stabilizer means attached to the fuselage and axially spaced on the fuselage from the attachment of the wings thereto and extending laterally outwardly from each side of the fuselage, brace means extending from each side of the fuselage and attached to the fuselage upon a substantially horizontal axis at a point spaced vertically with respect to the attachment of the wing and stabilizer means and between an edge of the wing and an edge of the stabilizer means, one of the aforesaid means extending angularly downwardly approximately to the plane of the lower edge of the fuselage to provide a leveling leg, and interlocking means carried by each brace means and by a wing portion and by the stabilizer means spaced from the point of attachment with the fuselage to interlock the wing and stabilizer means in laterally extending position.

11. A toy glider of sheet material such as heavy paper or cardboard comprising a fuselage having a lower edge, a wing attached to the fuselage and extending outwardly from each side there-

of, stabilizer means attached to the fuselage and extending laterally outwardly from each side thereof and axially spaced on the fuselage from the attachment of the wings thereto, a single brace means extending from each side of the fuselage and attached thereto upon a substantially horizontal axis at a point spaced vertically with respect to the point of attachment thereto of at least one of the wings and stabilizer means and between an edge of a wing and an edge of the stabilizer means, one of said means extending angularly downwardly approximately to the plane of the lower edge of the fuselage to provide a leveling leg, and interlocking means carried by each brace means and by each wing and by each stabilizer means at an edge thereof and spaced from the attachment thereof with the fuselage to lock a wing and stabilizer means in laterally extending position.

12. A toy glider or sheet material such as heavy paper or cardboard comprising a fuselage having a lower edge, a wing attached to the fuselage and extending outwardly from each side thereof, stabilizer means attached to the fuselage and extending outwardly from each side thereof, brace means extending from each side of the fuselage and attached thereto upon a substantially horizontal axis at a point spaced vertically with respect to the point of attachment of the stabilizer means to brace the same, one of said means extending angularly downwardly to the plane of the lower edge of the fuselage to provide a leveling leg, interlocking means carried by each brace means and by the stabilizer means spaced from the attachment with the fuselage to lock the stabilizer means and brace means in laterally extending position.

13. A toy glider of sheet material such as heavy paper or cardboard comprising a fuselage having a lower edge, a wing attached to the fuselage and extending outwardly from each side thereof, stabilizer means attached to the fuselage and extending laterally outwardly from each side thereof, brace means extending from each side of the fuselage and attached thereto upon a substantially horizontal axis at a point spaced vertically above with respect to the point of attachment of the stabilizer means, the brace means extending angularly downwardly approximately to the plane of the lower edge of the fuselage to provide a leveling leg, and interlocking means carried by each brace means and by the stabilizer means spaced from their points of attachment with the fuselage to lock the stabilizer means and brace means in laterally extending position.

14. A toy glider of sheet material such as heavy paper or cardboard as in claim 9 in which the stabilizer means is attached to the fuselage at a point vertically spaced with respect to the attachment of the wings to the fuselage, the interlocking means carried by each wing and stabilizer means interlocking the same together in outwardly extending position, and the brace means being attached to the fuselage at a point spaced vertically above with respect to the point of attachment on the fuselage of the horizontal stabilizer means, and the interlocking means carried by each brace means and by each stabilizer means interlocking the stabilizer means and brace means in laterally extending position.

15. A toy glider of sheet material such as heavy paper or cardboard as in claim 14 including the brace means extending angularly downwardly to

the plane of the lower edge of the fuselage to provide a leveling leg.

16. A toy glider of sheet material such as heavy paper or cardboard and a launching means combination comprising a launching platform having projecting means at one end and a holding slot at the other end, a glider having a fuselage, the fuselage having a lower edge, a wing attached to the fuselage extending outwardly from each side thereof, means extending laterally outwardly from each side of the fuselage upon a substantially horizontal axis at a point spaced vertically with respect to the point of attachment of the wings thereto, interlocking means carried by each means and by the wings spaced from the attachment thereof with the fuselage to lock the means and wings in laterally extending position, a notch upon the fuselage to receive the projecting means, a retaining notch carried by the fuselage rearwardly of the notch for the projecting means and upon the underside thereof extending below the lower edge of the fuselage, the retaining notch being received in the slot in the platform and engaging the end thereof to hold the glider upon the platform with the projecting means charged ready for projecting the glider, and an inclined extension extending downwardly from the retaining notch below the launching platform.

17. A toy glider of sheet material such as heavy paper or cardboard and a launching means combination comprising a launching platform having projecting means at one end thereof and a holding slot at the other end, a glider having a fuselage, the fuselage having a lower edge, a wing attached to the fuselage and extending outwardly from each side thereof, means extending laterally outwardly from each side of the fuselage upon a substantially horizontal axis at a point spaced vertically with respect to the point of attachment of the wings thereto, interlocking means carried by each means and by the wings spaced from their points of attachment with the fuselage to interlock the means and wings in laterally extending position, means extending angularly downwardly from each side of the fuselage and to the plane of the lower edge of the fuselage to provide leveling legs, a notch upon the fuselage to receive the projecting means, a retaining notch upon the underside of the fuselage rearwardly of the notch for the projecting means and extending below the lower edge of the fuselage and received in and engaging the end of the holding slot in the platform to hold the glider upon the platform with the projecting means charged ready for projecting the glider, and an inclined extension extending from the retaining notch below the lower edge of the fuselage.

18. A toy glider of sheet material such as heavy paper or cardboard comprising a fuselage, a wing attached to the fuselage and extending outwardly from each side thereof, means extending laterally outwardly from each side of the fuselage and attached thereto upon a substantially horizontal axis at a point spaced vertically with respect to the attachment of the wings thereto, a portion of said means being attached to the fuselage axially spaced rearwardly from the attachment of the wings thereto to reinforce the fuselage to the rear of the wings, a portion of said means overlapping the attachment of the wings on the fuselage to reinforce the latter, and interlocking means carried by each said means and by the wings on the overlapping portions thereof and spaced from their points of at-

tachment with the fuselage to lock the means and wings in laterally extending position.

19. A toy glider such as of heavy paper or cardboard adapted to be set into flight comprising a fuselage, a wing attached to the fuselage and extending outwardly from each side thereof, means extending from each side of the fuselage and attached thereto upon a substantially horizontal axis spaced vertically with respect to the point of attachment of the wing thereto, said means having at least a part thereof attached to the fuselage spaced axially thereon with respect to the attachment of the wing to the fuselage, said means having an edge thereof adjacent to an edge of the wing, said means serving at least one of the functions of bracing and stabilizing, and means securing the wing and the aforesaid means together at a point spaced from the points of attachment thereof with the fuselage and at adjacent edges thereof to form a triangular interbracing between the wing, the said means and the fuselage and interbracing the fuselage between the said means and the wing.

20. A toy glider as in claim 19 in which the interlocking means includes slits in adjacent edges of the said means and the wing which interengage to interlock the same together.

21. A launcher for a toy glider comprising a platform, resilient projecting means attached at one end of the platform, and a slot at the other end of the platform having a shoulder at the end thereof to retain a glider upon the platform and align the same with the resilient means.

22. A toy glider and the like such as of heavy paper or cardboard comprising a fuselage having a lower edge, a wing means extending outwardly from each side of the fuselage and attached thereto, stabilizer means extending from each side of the fuselage and attached thereto at a point axially spaced from the wing, a brace extending from each side of the fuselage and attached thereto upon a substantially horizontal axis and at a point spaced vertically with respect to the point of attachment to the fuselage of at least one of the parts including the wing means and the stabilizing means, the brace having at least a portion of the attachment thereof with the fuselage axially spaced along the fuselage between the attachment of the wing means and the stabilizing means to the fuselage, the brace having an edge thereof adjacent to an edge of one of the aforesaid means, and interlocking devices carried by at least one of the said means and by the brace on adjacent edges thereof spaced from the attachment with the fuselage whereby at least one of said means and the brace are interlocked in laterally extending position and also giving the fuselage lateral rigidity and bracing between the wing means and the stabilizing means.

23. A toy glider as in claim 22 in which the brace is attached to the fuselage above the attachment of one of said means and extends angularly downwardly, and an extension on each brace extending to the lower edge of the fuselage to form a leveling leg.

24. A toy glider and the like such as of heavy paper or cardboard comprising a fuselage, a wing extending outwardly from each side of the fuselage and attached thereto, a stabilizer extending from each side of the fuselage and attached thereto upon a substantially horizontal axis and at a point spaced vertically with respect to the

point of attachment of the wing to the fuselage, said stabilizer having at least a portion of the attachment thereof with the fuselage axially spaced along the fuselage from the attachment of the wing to the fuselage, said stabilizer having an edge thereof adjacent to an edge of the wing, and interlocking means carried by each stabilizer and by each wing on adjacent edges thereof spaced from the attachment thereof with the fuselage whereby each wing and stabilizer are interlocked in laterally extending position and also giving the fuselage lateral rigidity and bracing between the stabilizer and the wing.

25. A toy glider as in claim 24 in which the stabilizer is spaced axially on the fuselage rearwardly of the wing.

26. A toy glider as in claim 24 in which the fuselage has a lower edge, the stabilizer is attached to the fuselage at a point vertically above the attachment of the wing thereto, and the ends of the stabilizer extend to the lower edge of the fuselage.

27. A toy glider and the like such as of heavy paper or cardboard comprising a fuselage, a wing extending outwardly from each side of the fuselage and attached thereto, a stabilizer extending outwardly from each side of the fuselage and attached thereto at a point spaced axially from the wing, a single brace extending from each side of the fuselage and attached thereto upon a substantially horizontal axis and at a point spaced vertically above the point of attachment of the wing to the fuselage, the brace being attached to the fuselage between the attachment of the wing and stabilizer to the fuselage, the brace having an edge thereof adjacent to an edge of the wing and the stabilizer, and interlocking means carried by each brace, stabilizer and wing on adjacent edges thereof spaced from the attachment with the fuselage whereby each wing, stabilizer and brace are interlocked in laterally extending position and the fuselage receives lateral rigidity and bracing between the stabilizer and wing.

28. A toy glider as in claim 27 in which the fuselage has a lower edge, and each brace extends to the plane of the lower edge of the fuselage to provide a leveling leg.

29. A toy glider and the like such as of heavy paper or cardboard as in claim 22 in which the brace is spaced vertically below the point of at-

tachment of the wing and stabilizer to the fuselage, the brace being attached to the fuselage between the attachment of the wing and the stabilizer to the fuselage, the brace having an edge thereof adjacent to an edge of the wing and an edge of the stabilizer and interlocking means carried by each brace and by each wing and stabilizer on adjacent edges thereof and spaced from the attachment thereof with the fuselage whereby each wing, stabilizer and brace are interlocked in laterally extending position and the fuselage is given lateral rigidity and bracing between the wing and stabilizer.

30. A toy glider as in claim 29 in which the fuselage includes a lower edge, and each stabilizer extends to the plane of the lower edge of the fuselage to provide a leveling leg.

31. A toy glider and the like such as of heavy paper or cardboard as in claim 22 in which the stabilizer and wing are combined, the brace being attached to the fuselage at a point spaced vertically above the attachment of the combined wing and stabilizer, the brace having an edge thereof adjacent to an edge of the wing, and the interlocking means interlocking each combined wing and stabilizer in laterally extending position and also giving the fuselage lateral rigidity and bracing between the wing and stabilizer.

32. A toy glider as in claim 31 in which the fuselage has a lower edge, and the end of each brace extending to the plane of the lower edge of the fuselage to provide a leveling leg.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
182,330	Robinson	Sept. 19, 1876
1,052,187	Stranders	Feb. 4, 1913
1,374,000	Dunn	Apr. 5, 1921
1,382,009	Nemethy	June 21, 1921
1,470,934	Ross	Oct. 16, 1923
1,644,362	Wilson	Oct. 4, 1927
1,699,092	Caldwell et al.	Jan. 15, 1929
2,009,858	Riopelle	July 30, 1935
2,059,131	McGall	Oct. 27, 1936
2,059,418	Thompson	Nov. 3, 1936
2,396,312	Blandford	Mar. 12, 1946
2,408,984	Lawson	Oct. 8, 1946