July 29, 1941. J. H. WEST 2,251,090

TOY AIRPLANE

Filed July 12, 1939 8 Sheets-Sheet 1

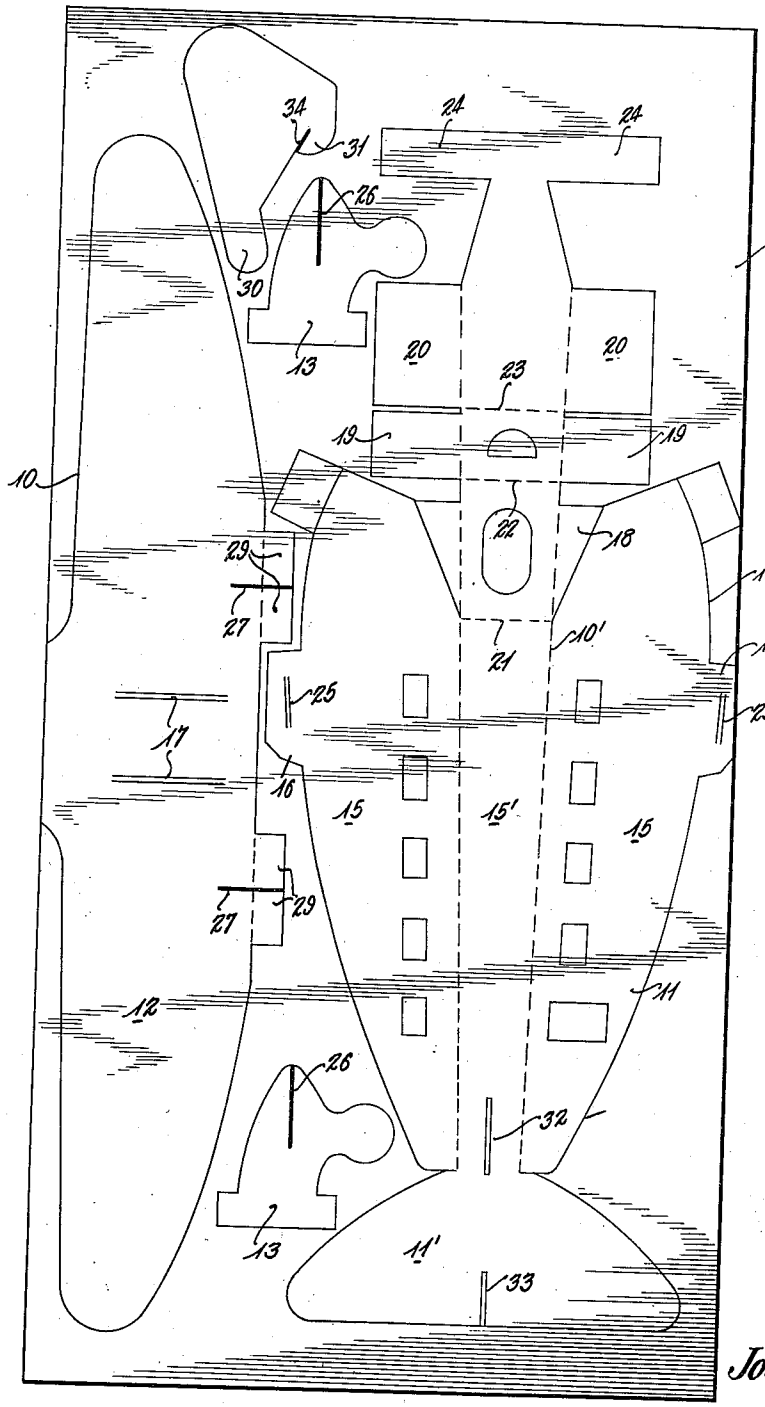


Fig. 1.

Inventor
Joe H. West

By Stevens & Davis
Attorneys

July 29, 1941. J. H. WEST 2,251,090

TOY AIRPLANE

Filed July 12, 1939 8 Sheets-Sheet 2

Fig. 2.

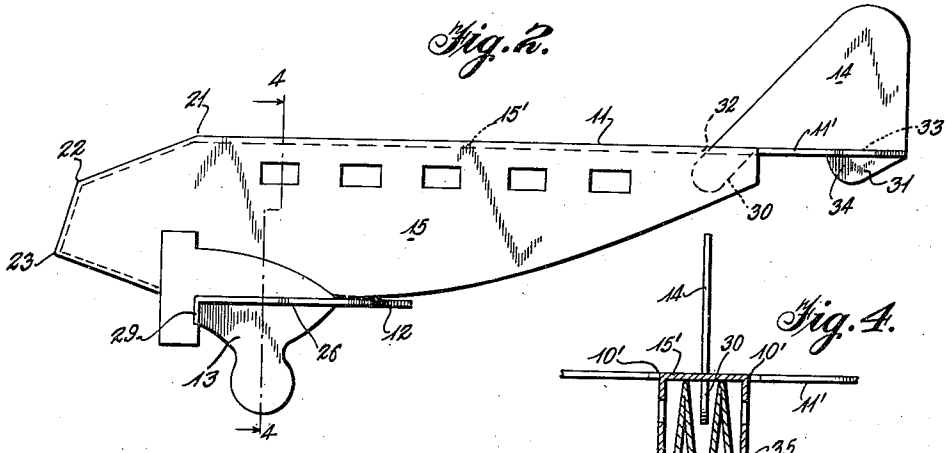


Fig. 4.

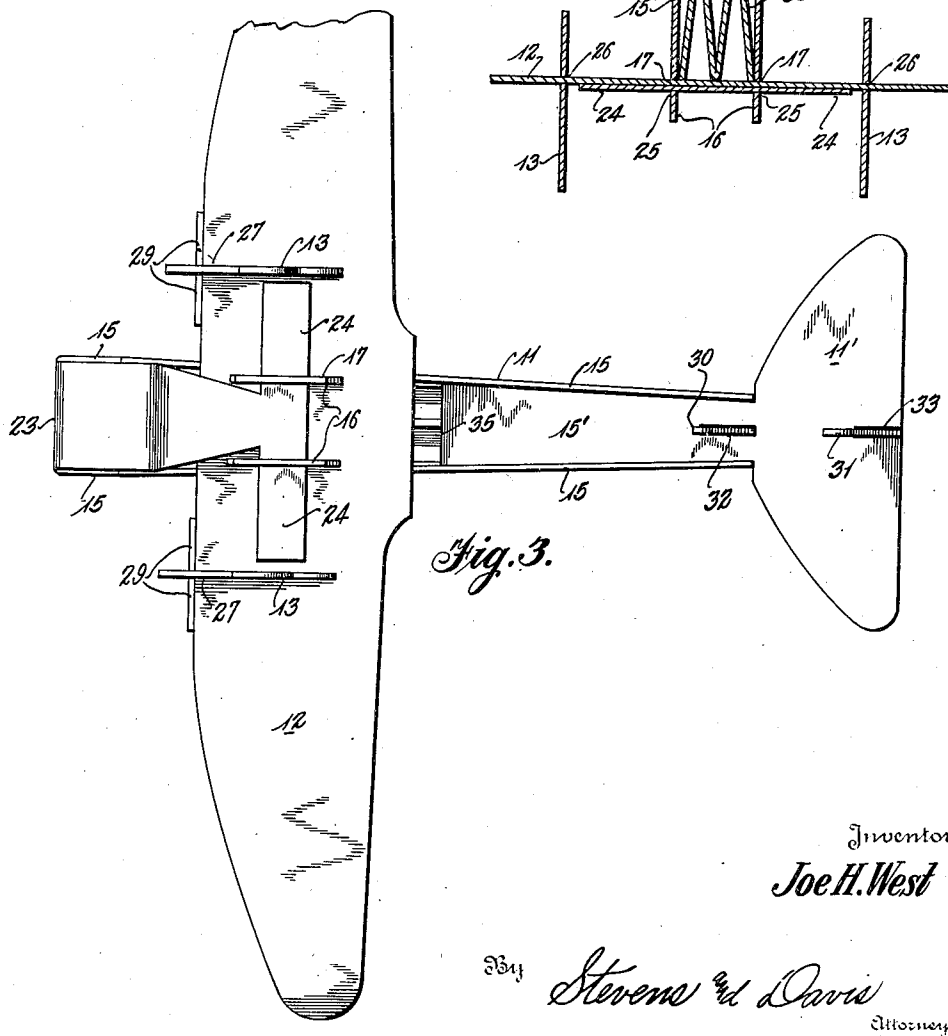


Fig. 3.

Inventor

Joe H. West

By Stevens and Davis

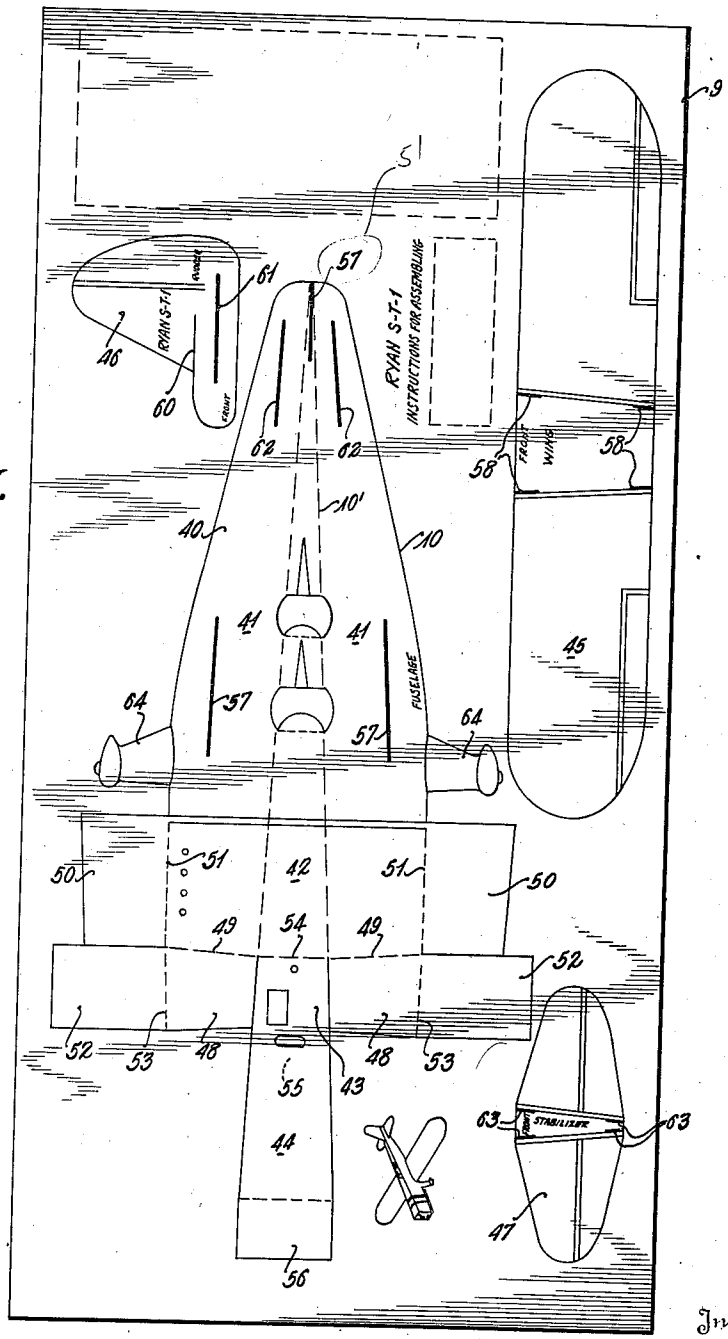
Attorneys

July 29, 1941. J. H. WEST 2,251,090

TOY AIRPLANE

Filed July 12, 1939 8 Sheets-Sheet 3

Fig. 5.



Inventor

Joe H. West

By Stevens and Davis

Attorneys

July 29, 1941. J. H. WEST 2,251,090

TOY AIRPLANE

Filed July 12, 1939 8 Sheets-Sheet 4

Fig. 6.

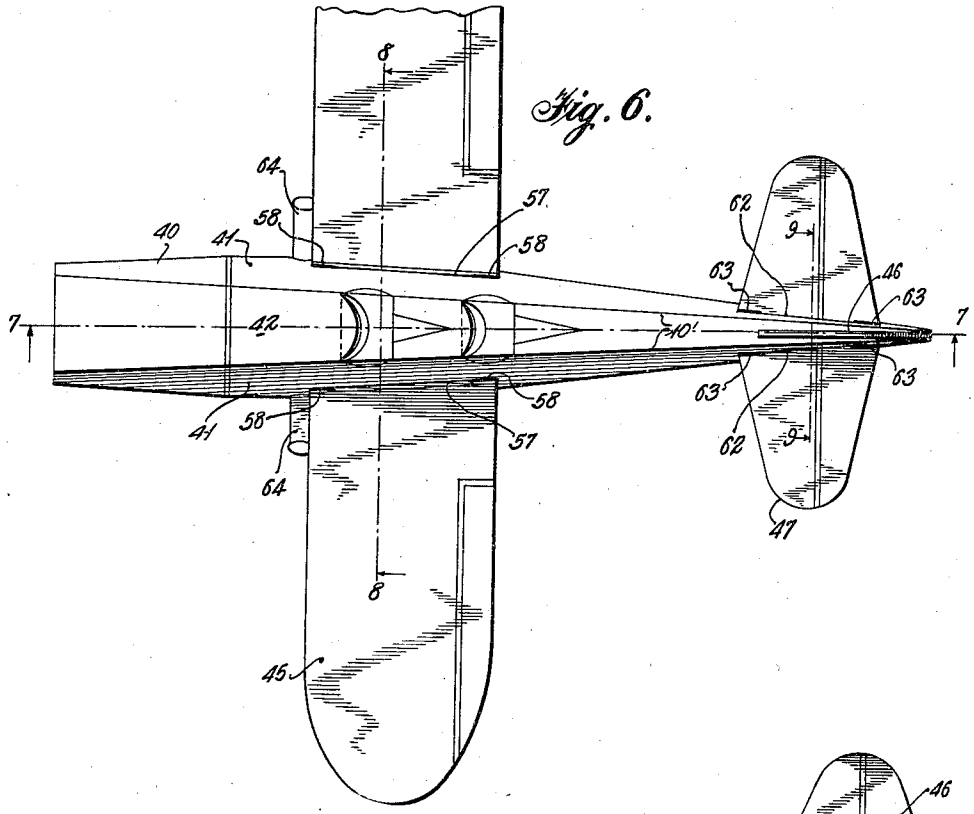


Fig. 7.

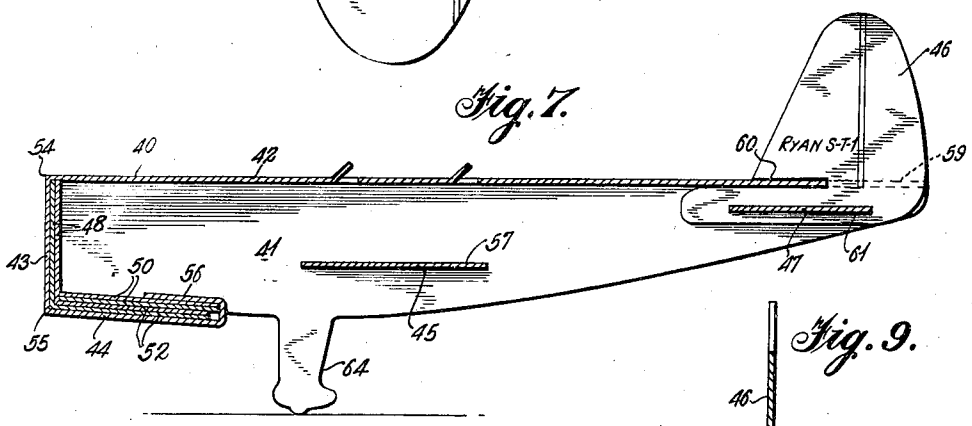


Fig. 9.

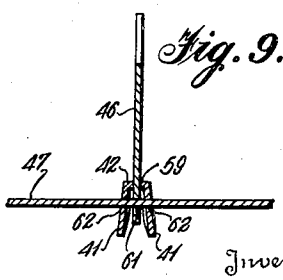
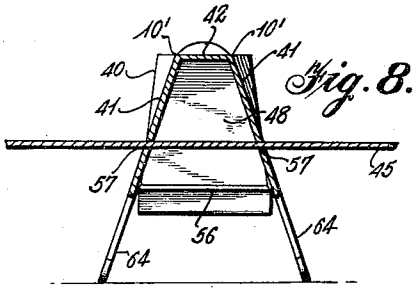


Fig. 8.



Inventor

Joe H. West

By Stevens & Davis

Attorneys

July 29, 1941. J. H. WEST 2,251,090

TOY AIRPLANE

Filed July 12, 1939 8 Sheets-Sheet 5

Fig. 10.

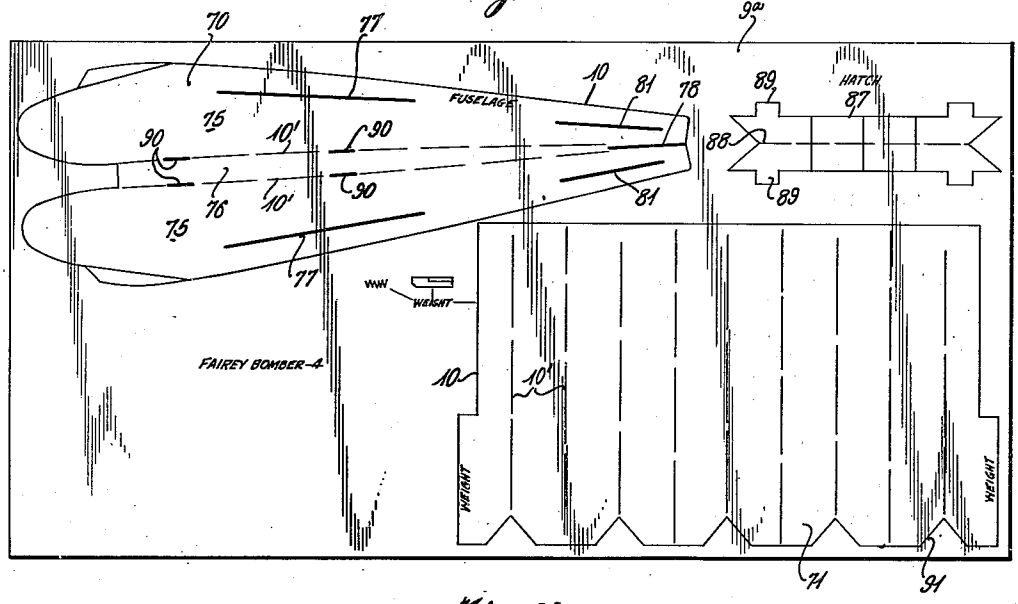
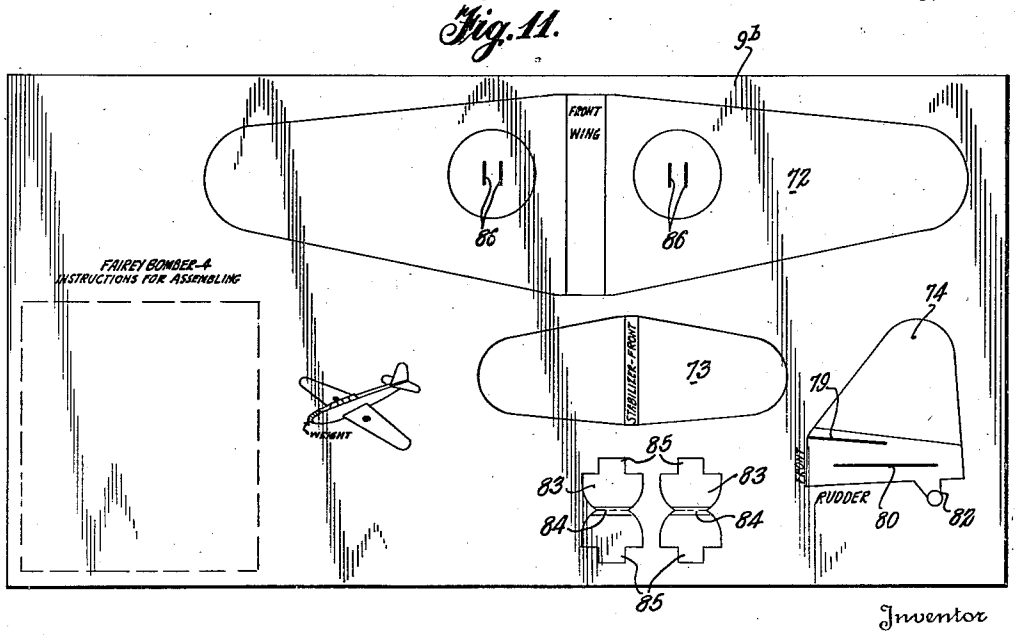


Fig. 11.



Inventor

Joe H. West

By Stevens and Davis

Attorneys

July 29, 1941. J. H. WEST 2,251,090

TOY AIRPLANE

Filed July 12, 1939 8 Sheets-Sheet 6

Fig. 12.

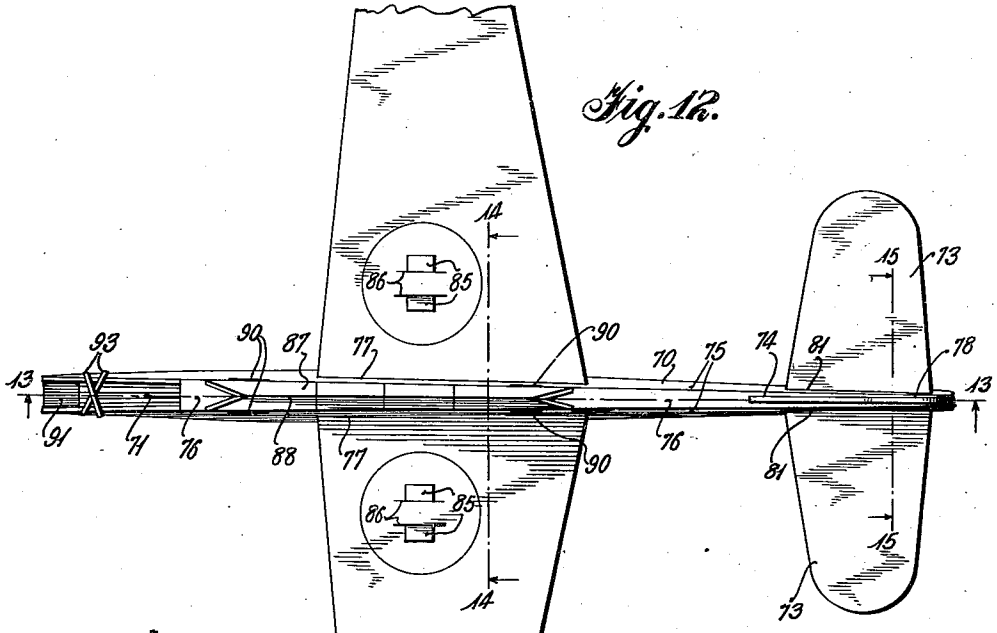


Fig. 15.

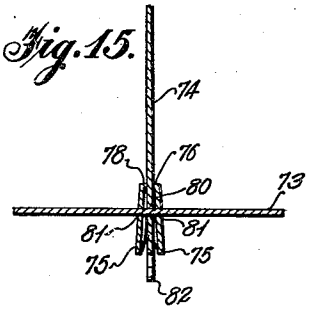


Fig. 13.

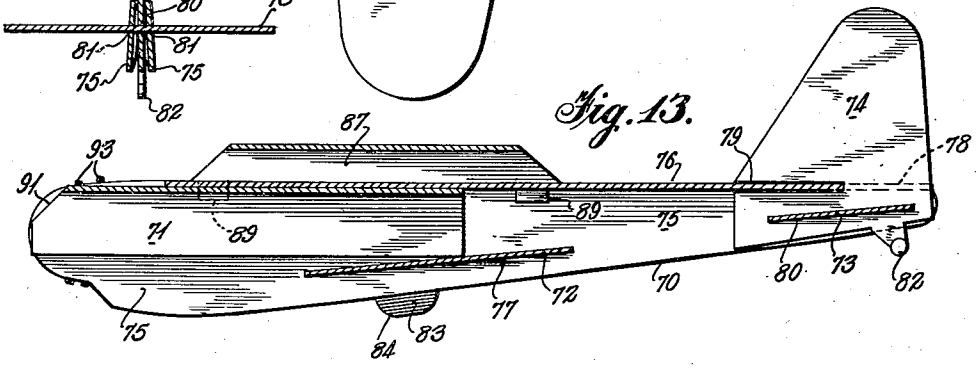
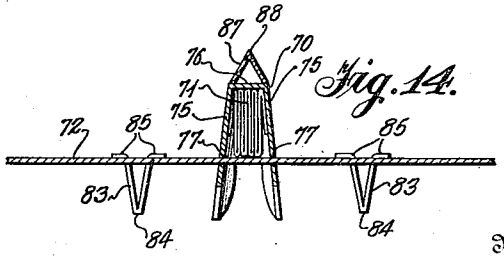


Fig. 14.



Inventor

Joe H. West

By Stevens & Davis

Attorneys

July 29, 1941. J. H. WEST 2,251,090

TOY AIRPLANE

Filed July 12, 1939 8 Sheets-Sheet 7

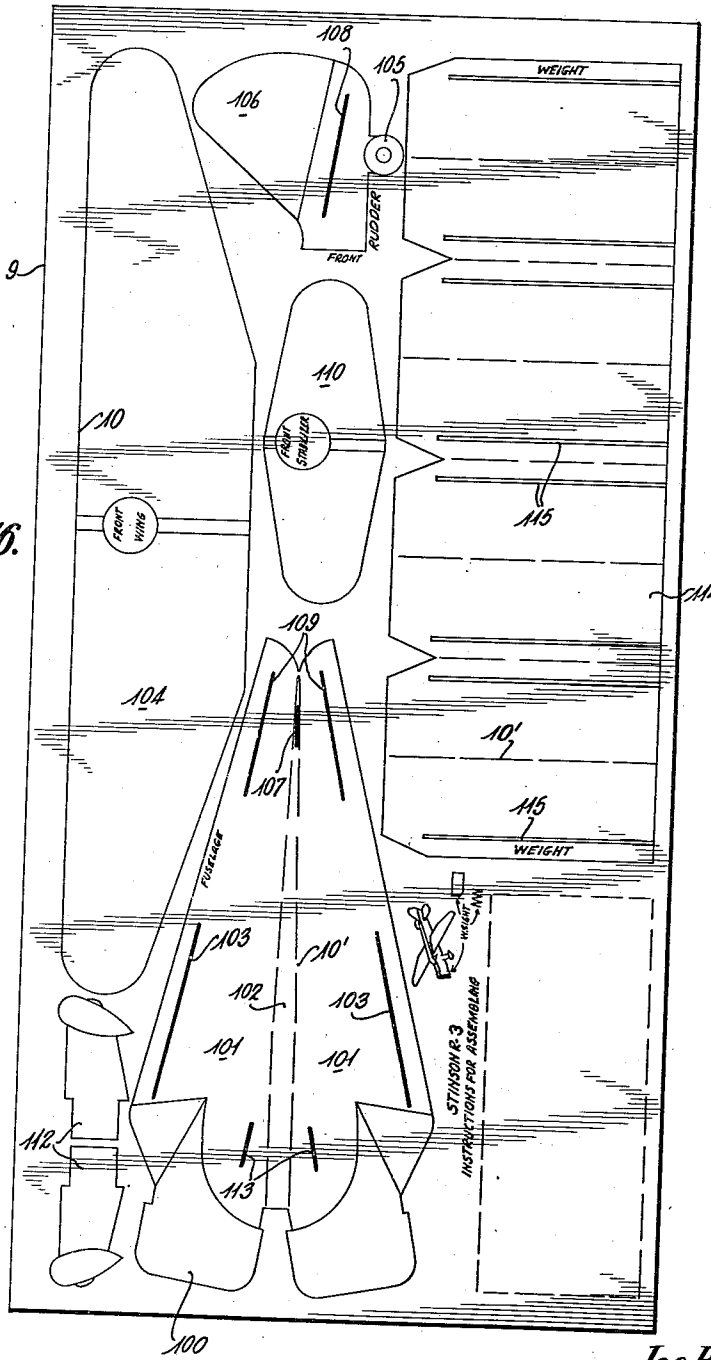


Fig. 16.

Inventor

Joe H. West

By Stevens and Davis

Attorneys

July 29, 1941. J. H. WEST 2,251,090

TOY AIRPLANE

Filed July 12, 1939 8 Sheets-Sheet 8

Fig. 17.

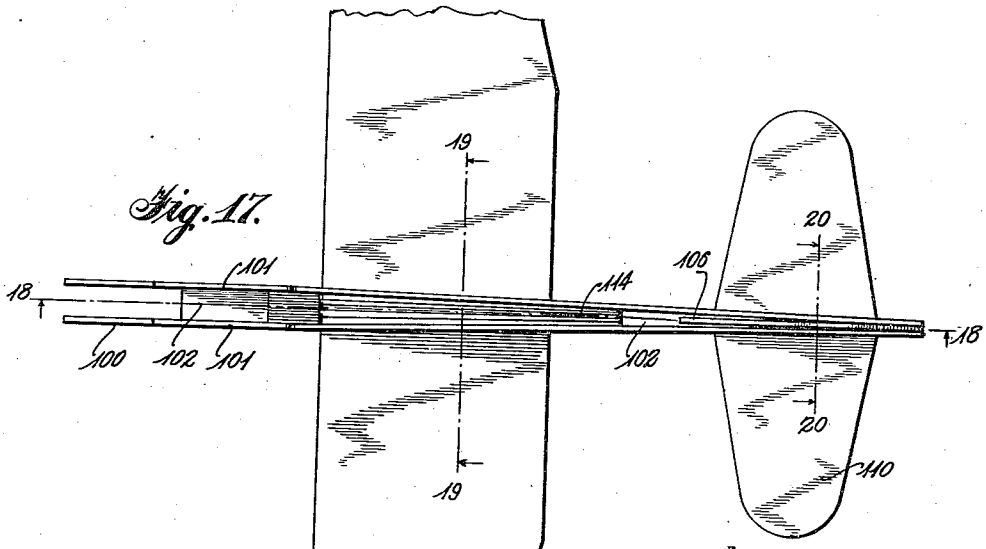


Fig. 19.

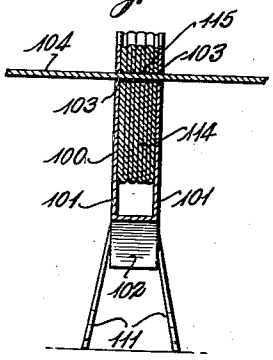


Fig. 20.

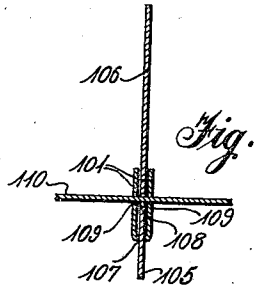
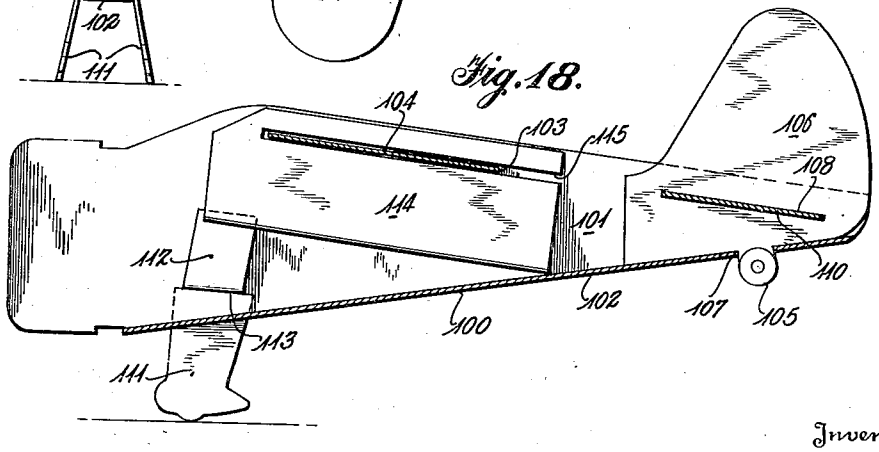


Fig. 18.



Inventor

Joe H. West

By Stevens and Davis

Attorneys

Patented July 29, 1941 2,251,090

UNITED STATES PATENT OFFICE

2,251,090

TOY AIRPLANE

Joe H. West, Tulsa, Okla.

Application July 12, 1939, Serial No. 284,085

8 Claims. (Cl. 46—79)

This invention relates to toys and more particularly to airplane models which may be constructed from sheet material and are capable of gliding. This application forms a continuation-in-part of application Serial No. 250,072, filed January 9, 1939, by the present inventor.

Due to the increased interest in aviation in the past few years, a large number of model airplanes of all types and descriptions have been designed and marketed. These models have had various drawbacks, however, due to the fact that those that were capable of actually gliding were too expensive and complicated in structure for general use and assembly by the average child. In contrast to this, simplified models have been available but these models have not been capable of extended gliding flights and/or have been so fragile that they were readily damaged.

In view of this situation, the present invention comprises a model glider that is simple and inexpensive in construction, is capable of extended gliding performances and is sufficiently sturdy to withstand the hard use to which it would be subjected in the hands of a child. Likewise, it is contemplated that this toy airplane may be assembled by the average child without the use of knives, scissors, or other dangerous implements. Moreover, the various parts of the assembly may be formed from a single sheet of material and without the necessity of extra parts or materials such as metal clips, glue or the like. Furthermore, the model airplanes constructed in accordance with this invention are provided with an adjustable means for changing the balance of each model thereby regulating its gliding ability so as to obtain the maximum flight according to the circumstances of each individual performance. In addition, the sheet material from which these models may be constructed, may be subject to other original uses such as disclosed in the aforementioned parent application and may comprise shirt boards for use in laundries, packaging cartons or other commercial items so that the models may be of secondary interest as a premium.

Briefly, the present invention comprises a model airplane, the parts of which are formed of cardboard or other suitable materials. The parts may be outlined upon a sheet of material, the outlines of the parts being perforated or sufficiently weakened so that they may be readily removed from the sheet and properly folded by even a small child. These parts are arranged so as to interlock when in position and thereby preclude the necessity of clips or adhesive materials. A balancing weight may be located within the fuselage of the plane, which weight may be formed by repeatedly folding some of the sheet material in the manner of an accordion pleat. When this weight is inserted within the fuselage the natural resiliency of the sheet material provides sufficient friction with the inner walls of the fuselage so that the weight will be retained in its adjusted position to properly balance the model.

The above and other objects will appear more clearly from the following detailed description when taken in connection with the accompanying drawings which illustrate by example various means and modifications for carrying out the principles of the present invention and in which like reference characters indicate like parts throughout.

Figures 1, 5, 10, 11 and 16 are all plan views of sheets which are printed, scored and/or perforated to define parts adapted to form various type model airplanes, which parts may be readily removed, folded and assembled;

Figure 2 is a side view in elevation of an airplane model assembled from parts removed from the sheet shown in Figure 1;

Figure 3 is a bottom plan view of the model shown in Figure 2;

Figure 4 is a view in cross-section taken on lines 4—4 of Figure 2;

Figure 6 is a top plan view of a model formed from the parts removed from the sheet shown in Figure 5;

Figure 7 is a view in cross-section taken on the line 7—7 of Figure 6;

Figure 8 is a view in cross-section taken on the line 8—8 of Figure 6;

Figure 9 is a view in cross-section taken on the line 9—9 of Figure 6;

Figure 12 is a top plan view of the model which may be assembled from the parts removed from the sheets shown in Figures 10 and 11;

Figure 13 is a view in cross-section taken on the line 13—13 of Figure 12;

Figure 14 is a view in cross-section taken on the line 14—14 of Figure 12;

Figure 15 is a view in cross-section taken on the line 15—15 of Figure 12;

Figure 17 is a top plan view of a model formed from parts removed from the sheet shown in Figure 16;

Figure 18 is a view in cross-section taken on the line 18—18 of Figure 17;

Figure 19 is a view in cross-section taken on the line 19—19 of Figure 17; and

Figure 20 is a view in cross-section taken on the line 20—20 of Figure 17.

Referring specifically to the drawings, as shown in Figure 1, the parts of a model airplane may be printed on a sheet 9 of any suitable material. This sheet preferably comprises a light-weight but relatively stiff material which is preferably inexpensive, such as ordinary cardboard, although other materials such as wood or cellulose derivatives may be used for this purpose. This sheet may be provided in a suitable shape or form so as to originally function in a separate use, such as the shirt board shown and described in the copending parent application hereinbefore mentioned. The heavy printed lines 10 define the parts of a model airplane such as a fuselage portion 11 and stabilizer 11', wing 12, auxiliary gear simulating parts such as the motor and/or wheel units 13, and rudder 14. The heavy lines 10 may be perforated or otherwise weakened so that a child may remove these portions from the sheet without the use of knives, scissors, or other dangerous implements. If desired, the doors, windows, cockpits and the like may either be printed in light lines or may be completely removed in the original preparation of the sheet thus avoiding possible injury to the cutout in the process of removing these small areas.

To assemble the particular model shown in Figures 1 through 4 of the drawings, the parts are first removed from the sheet by tearing or cutting along the heavy solid lines 10. The fuselage portion 11 may then be folded along the heavy dotted lines 10' to form side walls 15 and a top wall 15'. The dotted lines 10' are preferably scored or otherwise weakened so that the parts may be readily folded in the proper places by a small child. Lugs 16 extend downwardly from the fuselage side walls 15 and are adapted to be inserted through slots 17 which are cut in the wing 12. The wing 12 is arranged so that the tapered face thereof is toward the front of the fuselage 11, as best shown in Figure 3.

Flaps 18, 19 and 20 on the forward part of the fuselage are all bent downwardly and the extended top wall of the fuselage is bent along lines 21, 22 and 23 so as to form the nose of the fuselage, all of the flaps 18, 19 and 20 being fitted inside of the fuselage walls 15. When these parts are so folded the laterally extending lugs 24 are juxtaposed so as to extend through the slots 25 cut through the lugs 16 thereby locking the fuselage 11 in assembled position and the wings 12 to the fuselage 11. The motor and wheel assemblies 13 are slipped onto the wings 12 so that the slots 26 fit over the wings and the slots 27 in the front of the wings fit over the assemblies 13. Lugs 29 are then folded downwardly from the front edges of the wings 12 so as to prop the assemblies 13 in an upright position and to prevent their turning sidewise when the model lands.

The rudder 14 is then positioned by respectively inserting the lugs 30 and 31 in the slots 32 and 33 cut in the rear of the top fuselage wall 15' and stabilizer 11', the slot 34 in the rudder 14 adjacent the lug 31 fitting over the stabilizer 11' to lock the rudder 14 in position. In addition to cooperating and locking the rudder 14 in position, the lug 31 also acts as a tail skid. When the parts are finally assembled to form the model shown in Figures 2 and 3, the surplus portions of the sheet 9 or other strips of material may be folded several times to form a pleated member 35, best shown in Figure 4, which may be inserted within the fuselage to form a balancing weight. This balancing member 35 may be loosely fitted within the fuselage 11 so that it may be readily moved to adjust the balance of the plane to increase its gliding ability.

As shown in Figure 5 the sheet 9 may be printed with heavy lines 10 and scored or dotted lines 10' to define parts which are adapted to form a modification of the hereinbefore described model. The modification as shown in Figures 5 through 9, inclusive, comprises a fuselage 40 comprising side walls 41, a top wall 42, a front wall 43 and an under-wall 44. Other parts include a wing 45, tail piece 46, and a stabilizer 47. When these parts are removed from the sheet 9, the side walls 41 of the fuselage 40 are bent downwardly along the scored lines 10'. The flaps 48 which extend forwardly from the side walls 41 are folded inwardly along lines 49 to overlie each other. Flaps 50 extending downwardly from the side walls 41 are then folded inwardly along lines 51 so as to overlie each other and flaps 52 extending from flaps 48 are folded along lines 53 so as to overlie each other and also overlie flaps 50.

The front wall 43 of the fuselage 40 is then folded downwardly along line 54 to overlie flaps 48 and the under-wall 44 is folded rearwardly along line 55 to overlie flaps 50 and 52, after which flap 56 extending from the under-wall 44 may be folded around the rear edges of flaps 50 and 52 and forwardly into the nose of the fuselage 40 to lock these portions together. Due to the fact that flap 56 is slightly wider than the interior of the fuselage 40, it will be firmly held in locked position. The side walls 41 of the fuselage 40 are provided with slots 57 which are adapted to receive the main wing 45. This front wing may be slightly wider than the length of the slots 57 and may have slots 58 extending into its edges which are adapted to fit over the walls 41 of the fuselage adjacent the ends of the slots 57 whereby the wing 45 is locked in position, and the walls 41 of the fuselage 40 are definitely spaced.

The rudder 46 is then positioned within the slot 59 in the rear end of the fuselage top wall 42, the slot 60 in the rudder 46 fitting around said top wall 42. When the rudder 46 is so positioned, the slot 51 thereof coincides in position with the slots 62 in the rear portions of the fuselage side walls 41 so that the rear stabilizer wing 47 may be inserted through the slots 61 and 62, the stabilizer 47 being provided with slots 63 adapted to fit around the walls 41 of the fuselage and thereby lock the whole assembly in position. Wheel portions 64 may be integrally formed with the side walls 41 and extend downwardly therefrom. The various flaps and tabs of the parts may be identified and the assembly may be described in printed directions upon one portion of the sheet 9. After assembly, this portion containing the directions may be folded to provide a balancing weight 35 to be inserted within the fuselage 40.

Still another modification is shown in Figures 10 through 15. This arrangement is such that two sheets are required to supply the various portions of the model as shown in Figures 10 and 11. The fuselage 70 and balancing weight 71 may be printed upon one sheet 9a as shown in Figure 10, and the wing 72, stabilizer 73 and rudder 74 may be printed upon a second sheet 9b as shown in Figure 11. Other portions such as wheels 83, hatches 87 and the like, and the

directions for assembly may be printed upon the sheets in suitable places. In this modification the fuselage 70 comprises side walls 75 and a top wall 76, the structure being somewhat simplified in that it does not include front and bottom walls. The side walls 75 of the fuselage 70 are provided with slots 77 through which the wings 72 may extend.

The tail assembly is similar to that shown in the last described modification in that the rudder 74 is inserted in the slot 78 in the rear of the top wall 76, the slot 79 of the rudder 74 fitting around said top wall 76. The slot 80 of the rudder 74 is then aligned with the slots 81 located in the side walls 75 of the fuselage 70, whereupon the rear stabilizer wing 73 may be inserted through the slots 80 and 81 to lock the assembly in position. A rear skid member 82 may be carried by the rudder piece 74 so that it is rigidly held in upright position by the tail assembly. Front wheels or skid members 83 may be folded along lines 84 to form V-shaped members and the tabs 85 carried thereby may be inserted through the slots 86 located in the wing 72 on either side of the fuselage. The tabs 85 are folded flat against the top of the wing as best shown in Figure 14 so that the supporting members 83 are rigidly secured in position.

A hatch 87 may be folded centrally thereof along line 88 and the tabs 89 carried thereby inserted through slots 90 located in the lines 10'—10' along the top corners of the fuselage 70. The weight member 71 is provided with notches 91 so that when it is folded along lines 10' the corner is bevelled so as to not project beyond the side walls of the fuselage as best shown in Figure 13. This weight 71 is inserted within the side walls 75 of the fuselage 70 and between the top wall 76 of the fuselage 70 and the wing 72. In this position it is held within the fuselage and is provided with sufficient friction to retain it in any preferred position. If desired, an ordinary rubber band or elastic 93 may be wrapped around the nose of the fuselage to form a more compact assembly.

Still another modification is shown in Figures 16 through 20. The parts for forming this modified model are all arranged on one sheet 9 as shown in Figure 16. This modification is also provided with a simplified fuselage 100 which comprises merely side walls 101 and a horizontal wall 102, that forms the bottom wall of the fuselage 100 which is open at the top. Slots 103 are located near the top edges of the side walls 101 and are adapted to receive a wing 104. The tail assembly is slightly different in that the rear skid member 105 carried by the rudder 106 is adapted to be inserted through a slot 107 located near the rear end of the bottom wall 102.

When the skid 105 is inserted through the slot 107, the slot 108 cut in the rudder 106 is then arranged in juxtaposition with the slots 109 located in the rear portions of the side walls 101. The rear stabilizer wing 110 may be inserted through these slots 108 and 109 to lock the tail assembly in position. Front skid members 111 are provided with tabs 112 which are adapted to extend through slots 113 located in the lower front portions of the side walls 101 of the fuselage 100. A balancing weight 114 is provided to be folded and inserted between the side walls 101. The front skids 111 may be positioned by the tabs 112 which are held between the balancing weight 114 and the side walls 101 as best shown in Figure 18.

The balancing weight 114 is provided with a plurality of slots 115 which are adapted to coincide, when the weight is folded, and fit around the wing 104 when the weight 114 is positioned within the fuselage 100, as best shown in Figure 18. The slots 115 are open at one end and are considerably longer than the width of the wing 104 so as to permit adjustment of the weight 114 to secure the proper balance of the plane. It will be understood that these slots do not have to be opened at one end, just so they are long enough to permit adjustment of the weight and thereby regulate the balance of the model. In this manner the balancing weight is retained in position within the fuselage when the fuselage is not large enough to completely house the weight.

It has been found that by forming the herein described model planes from a light-weight but substantially rigid material, that these models are capable of prolonged gliding flights provided they are properly balanced. As it is desired to provide these models as cheaply as possible it would be impractical, and virtually impossible, to provide a prearranged weight that would be suitable for all models to obtain the maximum performance. Accordingly, by providing a weight formed of folded material comprising the same sheet as the parts of the plane, no extra parts are required. Moreover, the weight may be adjusted and frictionally maintained in adjusted position so as to secure the maximum performance from each individual model or to regulate each individual performance, according to the surrounding circumstances. Actual tests have proven that these models are capable of unusually long flights ranging from 50 to 200 feet and that the planes make a proper landing so that they are not damaged. These planes are reasonably indestructible so that they are not too readily damaged or demolished due to their use by small children. It should be noted that these models are complete in themselves in that all the necessary parts may be provided upon a single sheet and that the parts may be arranged and interlocked so that no additional means such as clips, glue or the like is necessary to the assembly to form a capable flying model airplane.

Although certain specific embodiments of the present invention have been shown and described, many modifications thereof are possible according to the specific need of each case. The individual features of the several models hereinbefore described may be variously combined within any one model. The invention, therefore, is not to be restricted except insofar as is necessitated by the prior art and by the spirit of the appended claims.

I claim:

1. A toy airplane made from sheet material folded to form a fuselage, a wing extending therefrom, the front end of the fuselage being formed by a portion of the sheet material which extends under the wing, said portion being adapted to engage lugs on the lower part of the fuselage that extend through the wing, thus locking the wing in place on the fuselage and locking the fuselage in assembled relation.

2. A toy airplane made from sheet material which comprises a fuselage having two side walls, a wing secured thereto, a rudder positioned between the two side walls of the fuselage and having a slot therein, said rudder being arranged so that the said slot coincides with slots located in the said side walls, and a stabilizer wing inserted through said slots in said side walls and said rudder to lock the parts in assembled relation.

3. A toy airplane made from sheet material which comprises a fuselage having two side walls, a wing secured thereto, a rudder positioned between the two side walls of the fuselage and having landing gear mounted thereon, said rudder having a slot therein and being arranged so that the said slot coincides with slots located in the said side walls, and the landing gear projects below said side walls, and a stabilizer wing inserted through said slots in said side walls in said rudder to lock the parts in assembled relation.

4. A toy airplane made from sheet material which comprises a fuselage having two side walls and a cross wall, a wing secured thereto, a rudder extending through said cross wall and positioned between the two side walls of the fuselage, said rudder having a slot therein and being arranged so that the said slot coincides with slots located in the said side walls, and a stabilizer wing inserted through said slots in said side walls in said rudder to lock the parts in assembled relation.

5. A toy airplane made from sheet material which comprises a fuselage having spaced side walls, a balance weight positioned within said fuselage between said side walls, slots in said side walls and said weight, and a wing extending through said slots.

6. A toy airplane made from sheet material which comprises a fuselage having spaced side walls, a balance weight positioned within said fuselage between said side walls, slots in said side walls and said weight, and a wing extending through said slots, the slots in said weight being longer than the widith of said wing to permit adjustment of said weight.

7. A toy airplane made from sheet material which comprises a fuselage having spaced side walls, a crosswall between and along one edge of said side walls, a wing attached to said side walls adjacent the opposite edge of said side walls, and a balance weight adjustably positioned between said side walls and said cross wall and wing.

8. A toy airplane made from sheet material which comprises a fuselage, a wing attached to said fuselage, and separate simulated auxiliary gear formed of sheet material attached to said wing by cooperating slots in said wing and said gear respectively.

JOE H. WEST.