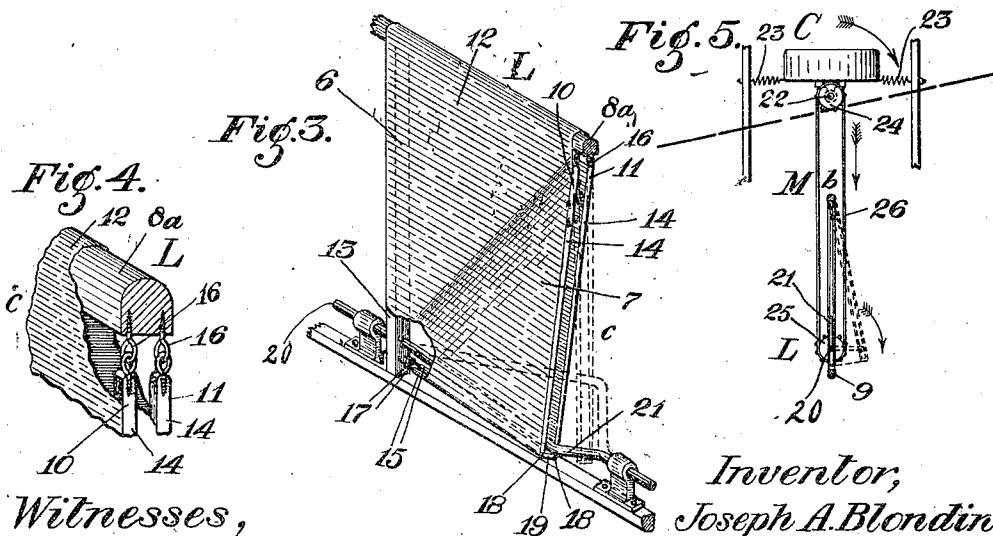
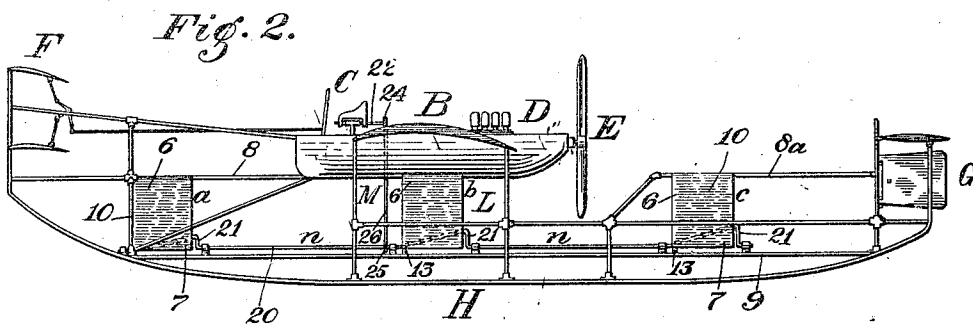
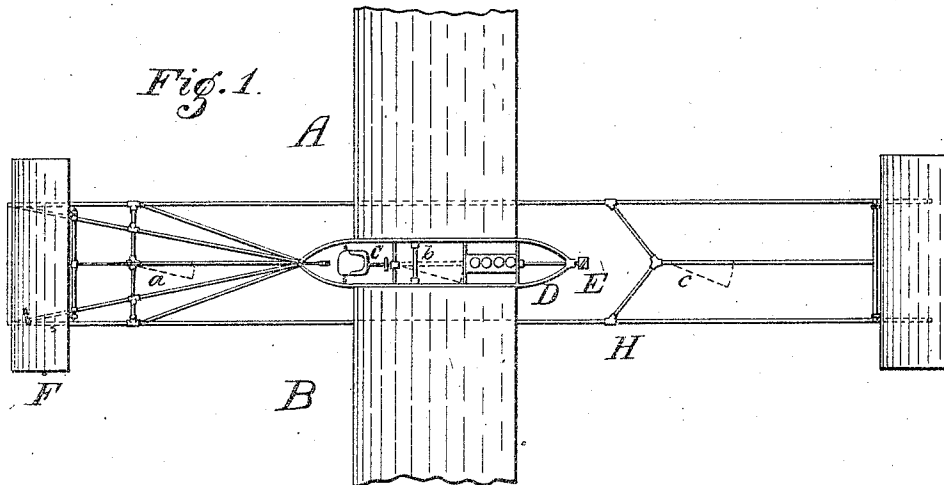


J. A. BLONDIN.
FLYING MACHINE.
APPLICATION FILED SEPT. 28, 1910.

1,001,120.

Patented Aug. 22, 1911.



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UNITED STATES PATENT OFFICE.

JOSEPH A. BLONDIN, OF LOS ANGELES, CALIFORNIA.

FLYING-MACHINE.

1,001,120.

Specification of Letters Patent. Patented Aug. 22, 1911.

Application filed September 28, 1910. Serial No. 584,324.

To all whom it may concern:

Be it known that I, JOSEPH A. BLONDIN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Flying-Machines, of which the following is a specification.

This invention has for its object to provide improvements in flying machines, particularly directed at the restoration and maintenance of transverse equilibrium or stability; and to that end seeks to provide improvements in lateral or transverse stabilizing means which will be superior in point of relative simplicity and inexpensiveness of construction, facility of installation and control, positiveness and accuracy in operation, adaptability to a wide range of flying machines of varying types and structural organizations; and which will be generally superior in point of serviceability and efficiency.

The invention consists in the novel provision; construction, formation, combination, and relative arrangement of parts, members and features, all as hereinafter described, shown in the drawing, and finally pointed out in the claims.

In the drawing:—Figure 1 is a partial top plan view of a flying machine provided with the improvements constituting the invention; Fig. 2 is a side elevation of the same; Fig. 3 is an enlarged detail fragmentary view, illustrating essential features of the invention; Fig. 4 is a still further enlarged detail fragmentary view of a portion of the construction shown in Fig. 3; Fig. 5 is a detail fragmentary view, partly diagrammatic, illustrating the method of operation of the invention.

Corresponding parts in all the figures are designated by the same reference characters.

Referring with particularity to the drawing, a flying machine is therein illustrated as organized with some of the main features of construction and combination disclosed in an application for Letters Patent filed by me August 8, 1910, Serial No. 576,211, for flying machines; but it will be understood that the present invention relates solely to the lateral stabilizing means, which is adaptable to flying machines of varying types of general construction and organization.

In said drawings A and B designate re-

spectively aerocurves or supporting structures upon which the atmosphere reacts to sustain the flying machine in flight; C designates the aviator's seat accommodated by the car or body D rearwardly of which is disposed the propelling means E.

F designates the forward elevator, and G designates the rear vertical rudder.

H designates a frame or skid, in connection with which the elevator and vertical rudder are mounted and supported; and L designates the lateral stabilizing means embodying the invention the same being mounted upon or in connection with the frame or skid H, in the present instance, and beneath the center of gravity of the entire flying machine.

M designates operative connections between the lateral stabilizing means and the aviator's seat C.

Of all the above features recited as parts of a suggested provision of members and elements of a flying machine organization, the only features which are concerned in the present invention are the lateral stabilizing means L, the operative connection M and the aviator's seat C, and therefore such latter three members or elements, and the essential features thereof will only be described.

The lateral stabilizing means L, in the specific form disclosed in the drawing, comprises a plurality of separate members, *a*, *b* and *c* respectively, of which the members *a* and *c* are respectively located forwardly and rearwardly of the vertical turning axis of the entire flying machine, and the member *b* is located substantially at said vertical turning axis. Each of said members *a* and *b* comprises a relatively fixed portion or fin 6 and a relatively movable portion 7, both of said portions 6 and 7 in each instance lying normally in a vertical plane, or in the same vertical plane of the flying machine or the frame H thereof. The operative connections M include actuating means *n* for the relatively movable portion 7. The members *a*, *b* and *c* are disposed between upper frame members 8 and 8^a and the body or car D, and a lower frame member 9, in the former frame illustrated. Each of the members *a*, *b* and *c* comprises two spaced plane portions, 10 and 11 respectively, which normally lie in parallelism, and comprise a common textile or other fabric covering 12, the same being maintained in proper formation by a frame consisting of a forward upright 13,

rearward spaced uprights 14, and lower spaced bars 15. The uprights 14 are loosely connected with the frame member 8 or 8^a, as the case may be, as at 16, and the lower bars 15 are loosely connected with the respective upright 13, as at 17; but in the case of the member *b*, the uprights 14 are loosely connected with the bottom of the car or body D, or a bar connected therewith, and the textile fabric 12 is suitably connected with the body or said bar. The outer ends of the uprights 14 and of the bars 15 are connected together, as at 18, in pairs, and each upright 14 and its bar 15 is connected with the other upright 14 and bar 15, at the points of connection, by a link 19. Each upright 14 and its connected bar 15, together with the frame member 8^a or the car or body D or rod connected therewith, as the case may be, and the upright 13, constitutes a frame for one of the portions 14 of the respective members *a*, *b* or *c*; the fabric 12 being stretched over both frames and secured to the lower bars 15. The portions of the frames rearwardly of a line drawn between the loose connections 16 and 17, are capable of movement relative to the remaining portions of the frames, thus constituting together with the fabric 12, the relatively movable portions 7 and 6 of the members. The actuating means *n* comprise a continuous shaft 20 suitably journaled upon the frame member 9 and extending through suitable openings in the uprights 13, and being provided between two portions 14 of each of the members *a*, *b* and *c* with a crank 21. The aviator's seat C is mounted upon a rock shaft 22 so as to be capable of lateral oscillation, being normally held in horizontal position by springs 23. The operative connections M include a sprocket wheel 24 upon the rock shaft 22, a sprocket wheel 25 upon the shaft 20 and a link belt 26 passing around both of the sprocket wheels.

Normally, the cranks 21 together with the portions 7 of the members *a*, *b* and *c*, and the portions 6 thereof, lie in vertical planes of the flying machine or frame II, as shown in full lines in Fig. 5. When one of the aerocurves A or B is elevated by a disturbance of lateral stability of the flying machine, the seat C is inclined toward the same side, causing the operative connection M to rock the shaft 20 in such manner that the cranks 21 are thrown to the elevated side of the machine, as indicated in dotted lines in Fig. 5. The cranks 21 are enlarged progressively rearwardly of the machine, that of the member *a* being the smallest or having the least arc of travel and that of the member *c* being the largest or having the greatest arc of travel, and that of the member *b* being intermediate of the others in size and arc of travel. All of the cranks are set in the same plane radially of the

shaft 20. All of the cranks being thrown at the same time, to equal degrees of angularity, but being of different size and arc of travel relatively movable portions of the members *a*, *b* and *c* are given progressively greater lateral deflection, commencing with the member *a* and counting rearwardly through the member *b* and the member *c*. As the air-streams caused by relative movement of the flying machine and the atmosphere are less unbroken and have more kinetic force at the forward portion of the machine than at the rearward portion, lessening by a more or less constant variant, it requires less lateral deflection of the relatively movable portion 7 of the member *a* than of the relatively movable portion of the member *b*, and less lateral deflection of the relatively movable portion 7 of the member *b* than of the relatively movable portion 7 of the member *c*, to produce the same amount of reaction at each of said members, resultant upon impingement of the atmosphere upon the relatively movable portions of said members, to produce equivalent stabilizing effect throughout all the members.

It will be understood that the rearwardly moving air-streams, passing along the faces of the fins 6, will strike the deflected portions 7, and tend to urge said deflected portions laterally in such manner as to restore transverse equilibrium or stability of the machine. Likewise, when the disturbance of transverse stability is resultant upon certain lateral or transverse atmospheric disturbances, the deflection of the relatively movable portions 7 will allow the air currents less impeded movement at such points, releasing the members *a*, *b* and *c* from the excessive pressure so caused. As soon as lateral stability has been restored the seat C is restored to normal balanced position, and the entire members *a*, *b* and *c* return to flat normal condition, the cranks 21 being moved through the operative connection M to the inert positions, as shown in Fig. 2, and in full lines in Fig. 5. In Fig. 3 the parts are shown in inert positions in dotted lines and in active positions in full lines.

As the members *a*, *b* and *c* are mounted beneath the horizontal plane of the center of gravity, it will be understood that lateral pressure or the incidence upon the same will act to restore the machine to lateral stability, in the manner above specified.

I do not desire to be understood as limiting myself to the specific provision, construction, combination, association and relative arrangement of parts, members and features shown and described; but reserve the right to vary the same, in adapting the improvements to varying conditions of use, without departing from the spirit of the invention and the terms of the following claims.

Having thus described my invention, I claim and desire to secure by Letters Patent:

1. A flying machine provided with lateral stabilizing means comprising a plurality of
5 normally plane members disposed in a series longitudinally of the machine and beneath the center of gravity thereof, each of said members comprising relatively movable portions, a movably mounted aviator's seat, and
10 operative connections between the aviator's seat and said members whereby the portions of said members are relatively moved, throughout all of said members, simultaneously, and to varying degrees.
15 2. A flying machine provided with stabilizing means arranged longitudinally thereof and both forwardly and rearwardly of the vertical turning center of the machine; said

stabilizing means comprising a plurality of members, and means for laterally moving 20 the same to varying degrees.

3. A flying machine provided with stabilizing means comprising a plurality of members disposed beneath the center of gravity thereof and longitudinally thereof both forwardly and rearwardly of the vertical turning axis thereof, and means for laterally moving said members to varying degrees. 25

In testimony whereof, I have signed my name to this specification in the presence 30 of two subscribing witnesses.

JOSEPH A. BLONDIN.

Witnesses:

C. P. WARDEN,
R. I. BLAKESLEE.