C. E. DARROW.

AUTOMATIC CONTROLLING DEVICE FOR AEROPLANES.

APPLICATION FILED APR. 20, 1910.

1,007,926.

Patented Nov. 7, 1911.

2 SHEETS—SHEET 1.

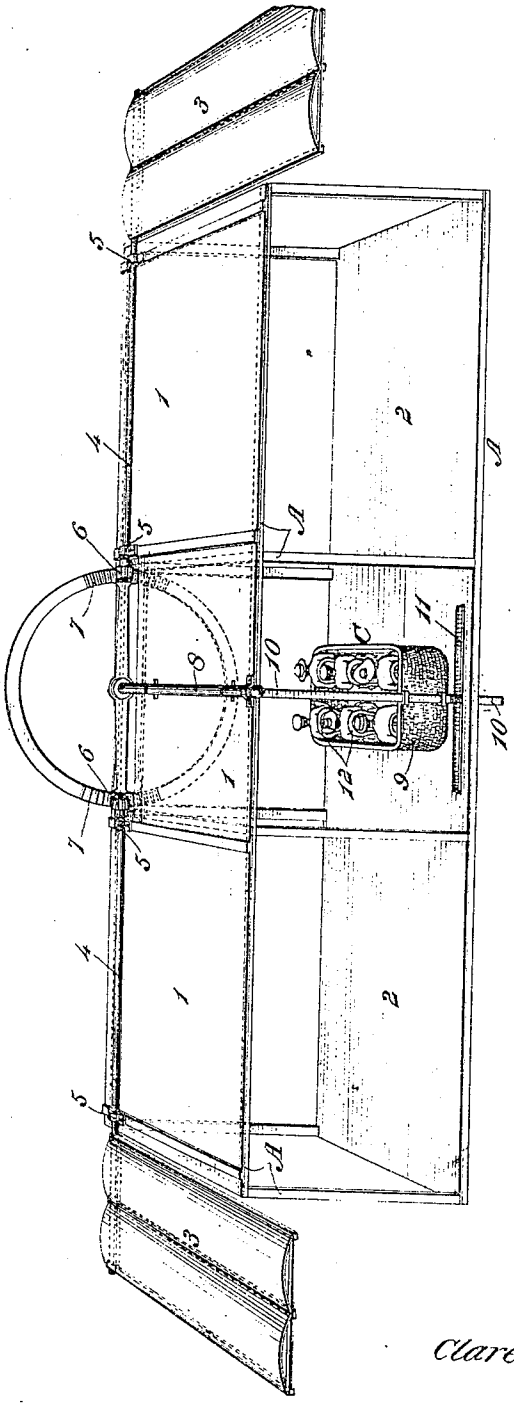

Fig. 1.

Witnesses

Harry King

C. Bradway

Inventor

Clarence E. Darrow.

By Victor J. Evans

Attorney

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2 SHEETS—SHEET 2.

Fig. 2

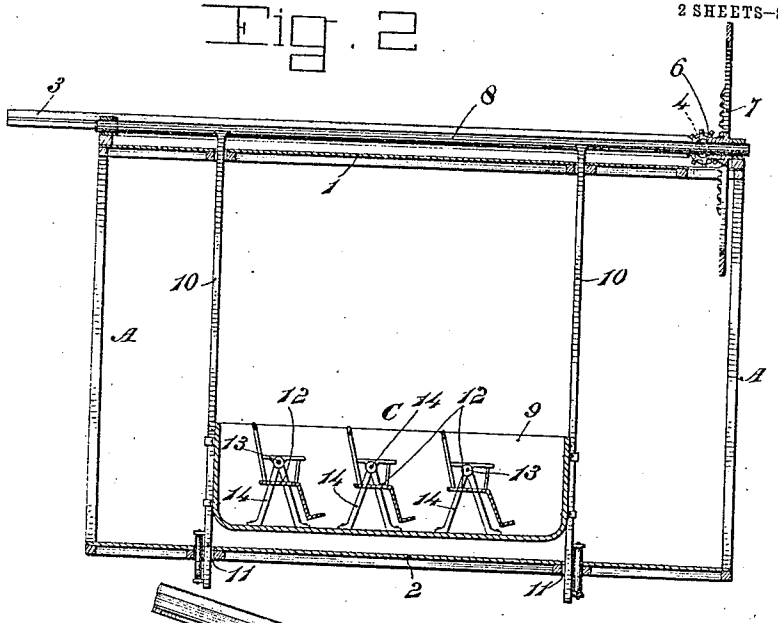
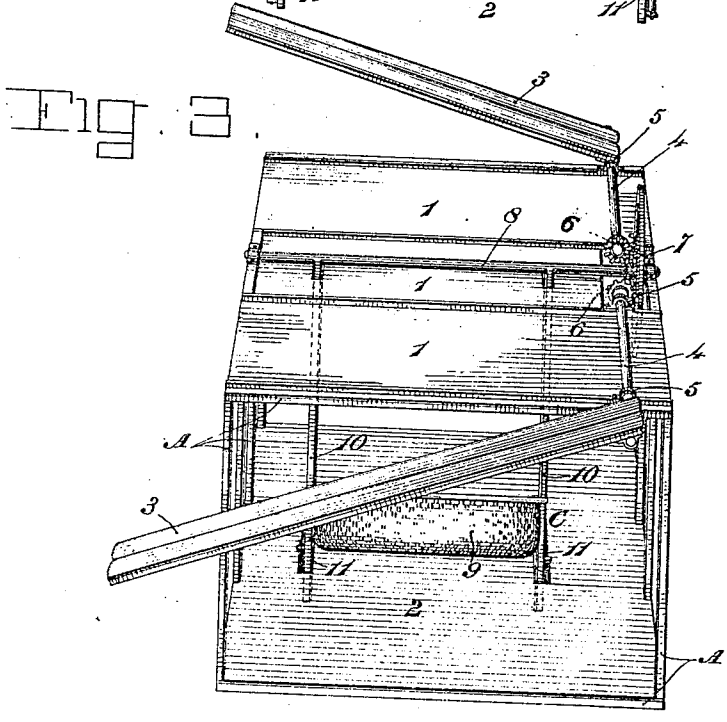


Fig. 3.



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Attorney

UNITED STATES PATENT OFFICE.

CLARENCE E. DARROW, OF FAIRBURY, NEBRASKA.

AUTOMATIC CONTROLLING DEVICE FOR AEROPLANES.

1,007,926. Specification of Letters Patent. Patented Nov. 7, 1911.

Application filed April 20, 1910. Serial No. 556,481.

To all whom it may concern:

Be it known that I, CLARENCE E. DARROW, a citizen of the United States, residing at Fairbury, in the county of Jefferson and State of Nebraska, have invented new and useful Improvements in Automatic Controlling Devices for Aeroplanes, of which the following is a specification.

This invention relates to flying machines of the heavier-than-air type and relates more particularly to means for automatically maintaining the balance of the flying machines.

The invention has for one of its objects to improve and simplify the construction and operation of machines of this character so as to be comparatively simple and inexpensive to manufacture, thoroughly reliable and efficient in use and automatic in maintaining the horizontal balance of the machine.

Another object of the invention is to provide for the lateral stabilizing of the flying machine by vanes at the ends of the main plane or planes to swing oppositely on horizontal axes whenever the air-ship tends to tilt, the said vanes being connected with a pendulum passenger basket or car, which has a limited swinging movement with respect to the body of the machine.

With these objects in view, and others as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawing, which illustrates one embodiment of the invention;—Figure 1 is a perspective view of the air-ship constructed in accordance with the invention. Fig. 2 is a central transverse section thereof. Fig. 3 is an end view of the machine showing the stabilizing planes or auxiliary planes in operation.

Similar reference characters are employed to designate corresponding parts throughout the several views.

In the present instance, I have illustrated the invention as applied to a bi-plane machine, but it is not necessarily limited to this type.

Referring to the drawing, A designates the framework of the machine which supports upper and lower main planes 1 and 2, there being any desired form of propelling and steering device (not shown). At the ends of the main plane 1 are auxiliary or stabilizing planes or vanes 3, which have their front ends secured to rock shafts 4 journaled in bearings 5 on the bars of the upper main frame. The inner ends of these rock shafts are provided with miter gears or pinions 6 that mesh at diametrically opposite points with a gear wheel 7 that is arranged at the front of the machine and secured to a horizontal shaft 8 disposed in the transverse vertical center plane of the machine. By this gearing device, the vanes 3 are adapted to simultaneously move in opposite directions, one swinging upwardly from its normal position, and the other downwardly so as to effect a balancing of the machine when there is a tendency to tilt.

The movement of the vanes 3 is controlled automatically by a pendulum device C, which, in the present instance, consists of the passenger basket or car 9 that is disposed between the two planes and suspended from the shaft 8 by rods 10 or equivalent devices rigidly secured to the shaft 8 so that as the basket sways with respect to the main planes it will cause the gear 7 to turn and thus throw the auxiliary planes respectively above and below the upper main plane, the angle of incidence of the wind on the auxiliary vanes being controlled by the extent to which the machine tends to tilt. The relative swinging movement between the car and frame of the machine is limited by the suspending rods 10 working in slots 11 in the frame-work of the lower plane 2, the said rods extending downwardly below the car and into the said slots. In the car may be arranged seats 12 for the passengers, which are pivotally mounted at 13 on supporting brackets 14 so that in ascending or descending, the seats can be maintained horizontally.

From the foregoing description taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention relates, and while I have described the principle of operation of the invention, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative and that such changes may be made when desired as are within the scope of the claims.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a flying machine, the combination of a main plane, a longitudinal shaft journaled on the main plane, a gear carried by said shaft, transversely extending shafts mounted upon the wings of the main plane and extending beyond the ends thereof, pinions upon the inner ends of said transverse shafts meshing with said gear, oppositely movable, vertically swinging stabilizing planes upon the extended ends of the transverse shaft, rods fixed to and depending from the longitudinal shaft, means for guiding and sustaining the lower ends of said rods, said guiding and sustaining means serving to limit the lateral tilting motion of the machine relative to said rods, and a passenger car carried by the rods to operate with its load weight as a pendulum for maintaining the rods and longitudinal shaft in a fixed position and establishing relative motion between the same and the transverse shafts through the described gearing when the machine tilts laterally, whereby the stabilizing planes will be automatically adjusted.

2. In a flying machine, the combination of superposed planes, said planes being provided with guide slots extending in the direction of length thereof, a longitudinal shaft journaled upon the upper plane, a gear wheel mounted upon said shaft, transverse shafts journaled upon the wings of the upper plane and extending at their outer ends beyond said plane, vertically movable stabilizers mounted upon the extended end of the transverse shafts, rods fixed to the longitudinal shaft and depending therefrom and movable in the slots in the planes, guide rollers upon the lower ends of said rods engaging the walls of the slots in the lower plane, pinions upon the inner ends of the transverse shafts meshing with the gear on the longitudinal shaft, and a car disposed between the rods and mounted thereon between the main planes.

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

CLARENCE E. DARROW.

Witnesses:
C. H. DENNEY.
R. E. RILEY.