T. D. GREER.

STABILIZATOR.

APPLICATION FILED JAN. 12, 1912.

1,041,620.

Patented Oct. 15, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

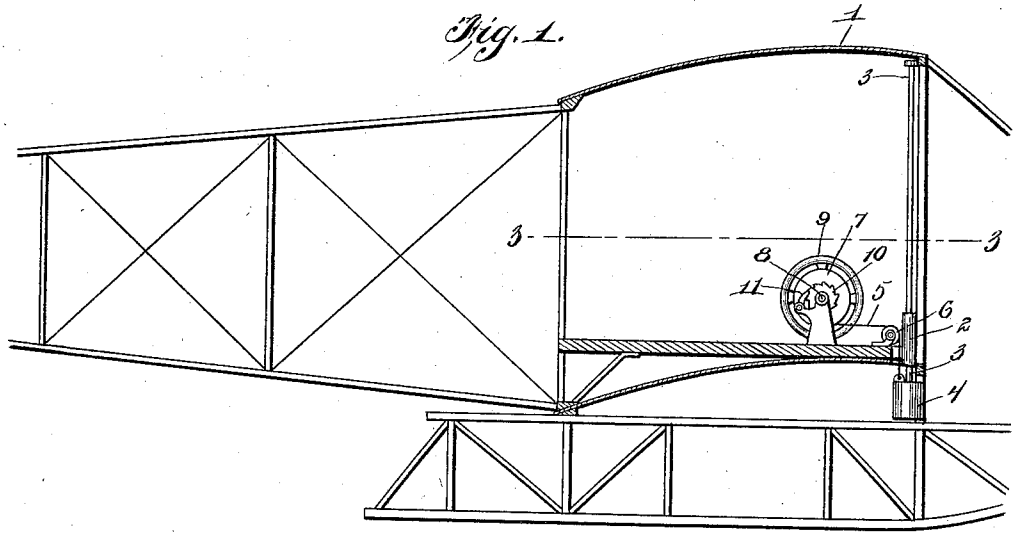
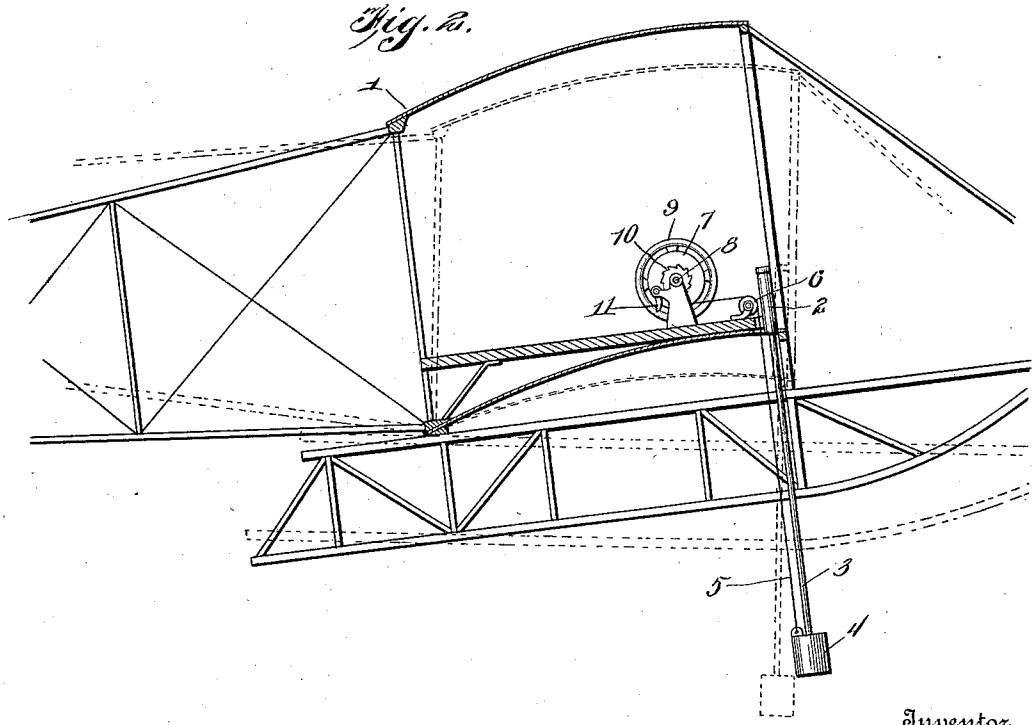


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

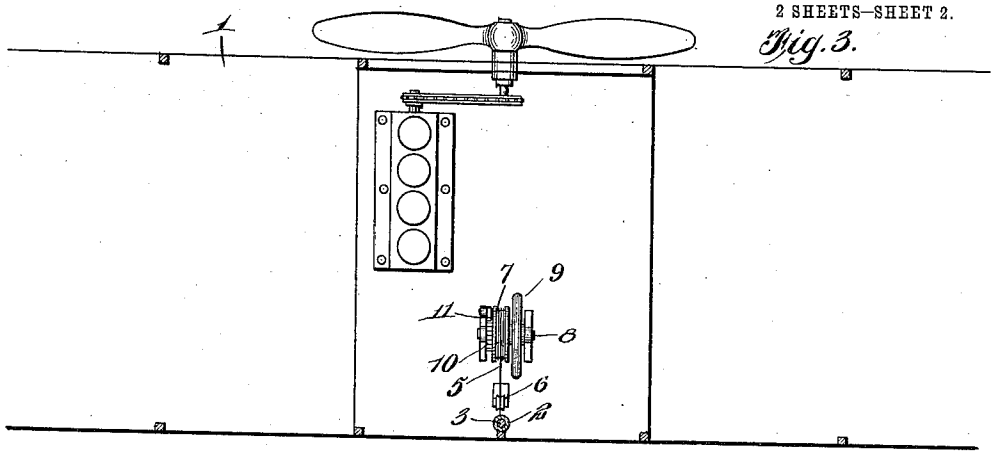
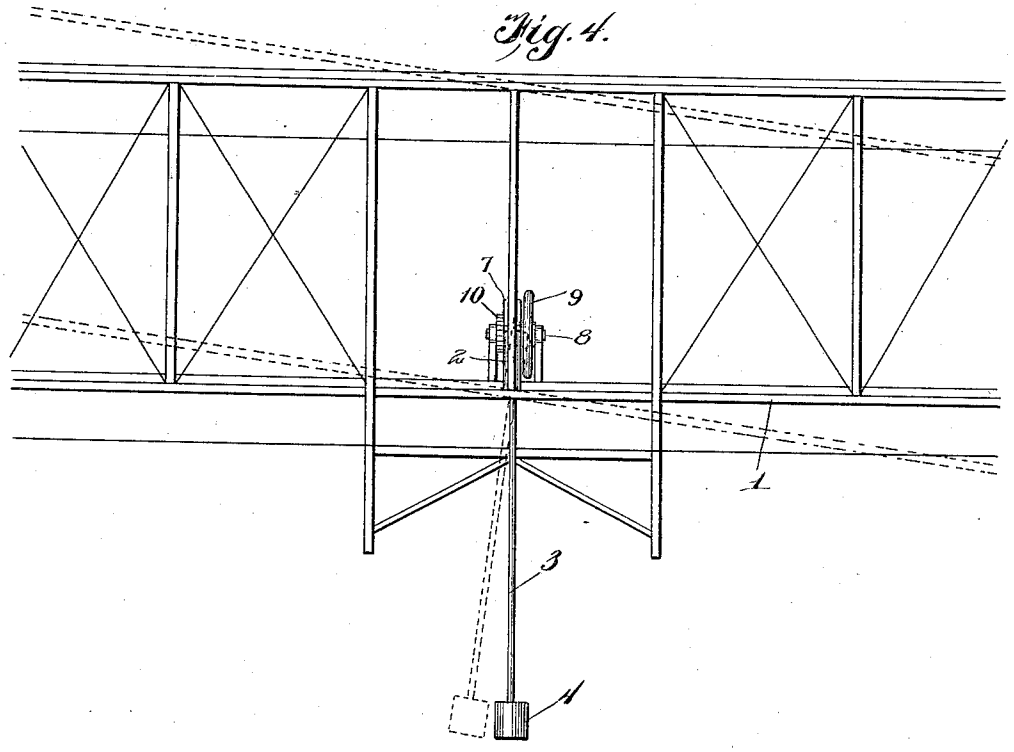


Fig. 4.



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THOMAS D. GREER, OF NORTON, KANSAS.

STABILIZATOR.

1,041,620. Specification of Letters Patent. Patented Oct. 15, 1912.

Application filed January 12, 1912. Serial No. 670,809.

To all whom it may concern:

Be it known that I, THOMAS D. GREER, a citizen of the United States, residing at Norton, in the county of Norton and State of Kansas, have invented new and useful Improvements in Stabilizators, of which the following is a specification.

This invention relates to stabilizators for flying machines, the primary object of the invention being to provide a simple, reliable and effective type of stabilizator under the control of the pilot or aviator, whereby the lateral and longitudinal balance of the machine may be preserved, the construction being such that the device may be thrown into operation whenever a possibility of danger exists to right the machine and prevent it from overturning in either a lateral or longitudinal direction.

A further object of the invention is to provide a stabilizator which may be applied to any existing type of machine, and which when adjusted to position for operation will act as a plumb lever to exert pressure on the machine through the force of gravity to bring it back to a state of equilibrium.

The invention consists of the features of construction, combination and arrangement of parts, hereinafter fully described and claimed, reference being had to the accompanying drawings, in which:—

Figure 1 is a vertical longitudinal section through a flying machine embodying my invention. Fig. 2 is a similar view illustrating the action of the stabilizator when the machine tilts longitudinally in one direction. Fig. 3 is a sectional plan view on the line 3—3 of Fig. 1. Fig. 4 is a front elevation illustrating the action of the stabilizator when the machine tilts laterally in one direction.

Referring to the drawings, 1 designates a flying machine of any conventional type, which may be provided with any of the usual steering and balancing controls. Fixed at a suitable point to the machine is a tube or guide member 2, secured in position in any preferred manner, and of any length and diameter suitable for the purpose. Arranged to slide vertically in this tube or guide member, or perpendicularly to the plane of the machine, is a rod 3, provided with a weighted lower end 4. This rod is rigid against deflection, and is movable in a fixed plane. The weight 4 may be of any suitable shape and size as occasion may demand in the application of the invention to different types and sizes of flying machines.

A cord or cable 5 is attached at one end to the weight or lower end of the rod and passes upwardly around a guide pulley or sheave 6, and thence extends to and winds around a drum 7 mounted on a control shaft 8 provided with a hand wheel 9, whereby the stabilizer rod and weight may be vertically adjusted. The shaft 8 carries a ratchet wheel 10 adapted to be engaged by a dog or pawl 11, whereby the shaft may be locked in fixed position to hold the stabilizer rod and weight elevated or in position of adjustment.

By means of the elevating or raising and lowering mechanism the rod and weight may be held elevated in a normal or neutral position, in which the leverage action thereof on the machine is substantially *nil*, in which position the stabilizator will not interfere with the ordinary control of the machine in steering and banking said machine, which may be listed longitudinally or laterally without resistance from the stabilizator.

The rod and weight form a plumb lever adjustable perpendicularly to the plane of the machine, and to a greater or less extent below the body of the machine, whereby when the machine tilts either longitudinally or laterally said lever, operating through the force of gravity, will restore the machine to a balanced position.

By reference to Fig. 1, showing in dotted lines the machine tilted longitudinally in one direction, it will be seen that the lever when lowered, owing to its path of movement perpendicularly to the plane of the machine, will lie at an angle to the vertical and operate through its leverage force in returning to a vertical position to right the machine. Similarly when the machine tilts laterally in one direction or the other, as shown in dotted lines in Fig. 4, the lowered lever in shifting laterally therewith will assume a position at an angle to the vertical and through its leverage force in returning to normal position will right the machine. It will, of course, be understood that the length and weight of the lever may be varied to suit different contingencies of service, depending upon the size and weight of the machine to which it is applied, and that the aviator by adjusting it downward to a

greater or less extent may vary its leverage force to the amount required depending upon the weight of the machine and the degree to which it tilts out of balanced position. In practice, any suitable means for adjusting or raising and lowering the lever may be employed, and any suitable type of means adopted for locking it in adjusted position. If desired, the cable may be wound one or more times around the pulley or sheave 6, which may be made of less diameter than the drum 7, so that in the motion of the drum the motion of the pulley or sheave will be multiplied to enable the weight to be quickly raised or lowered.

Having thus described the invention, what I claim as new is:

A flying machine including a main frame carrying a pair of superposed planes, the lower plane having an opening therein at or adjacent to its front edge, a guide tube secured to the main frame adjacent to said lower plane and extending at its lower end through said opening, a guide pulley arranged in proximity to the opening and guide tube, a winding drum mounted upon the lower plane in rear of said pulley, said drum being provided with a hand wheel, means for locking the drum against rotary movement, a rod slidable through said tube, said rod being provided with a head at its upper end for contact with said tube and with a weight at its lower end, and a cable terminally attached to the drum and weight and extending through the opening and over said guide pulley.

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

THOMAS D. GREER.

Witnesses:
F. W. KIDDER,
J. R. HAMILTON.