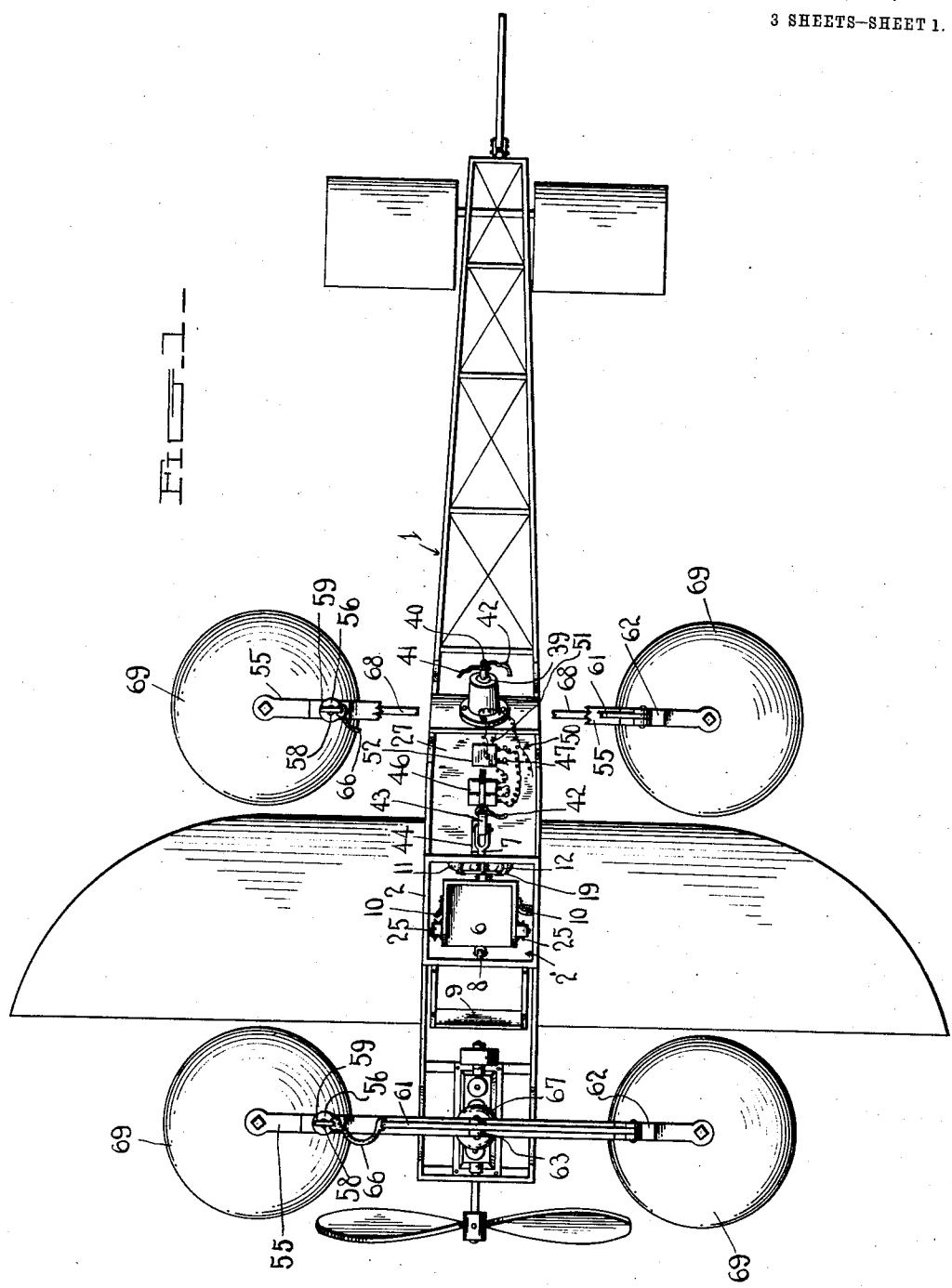


M. TODISCO.
 AERIAL VEHICLE.
 APPLICATION FILED AUG. 24, 1911.

1,032,966.

Patented July 16, 1912.
 3 SHEETS—SHEET 1.



Witnesses
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3 SHEETS-SHEET 2.

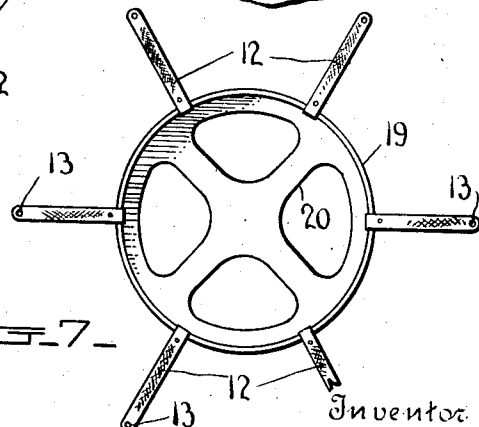
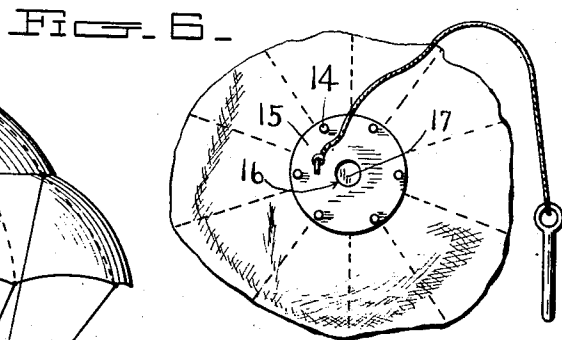
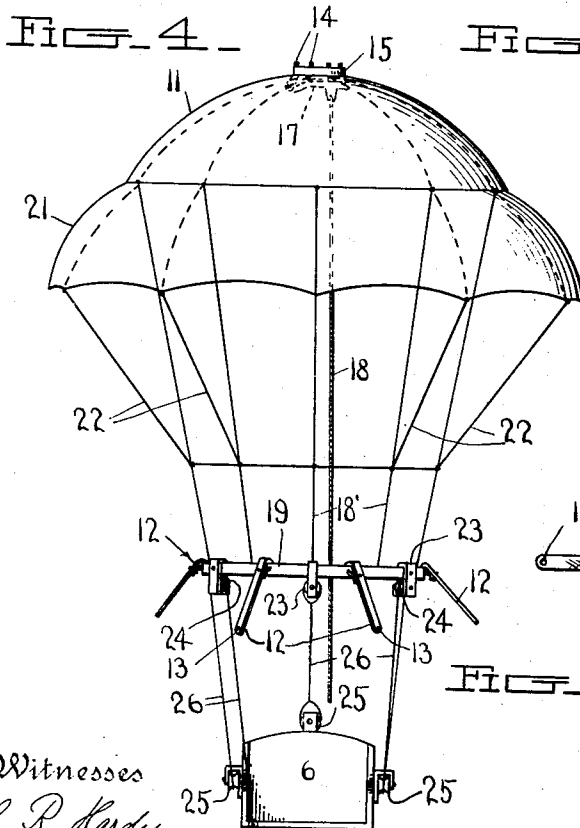
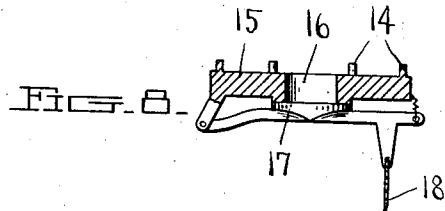
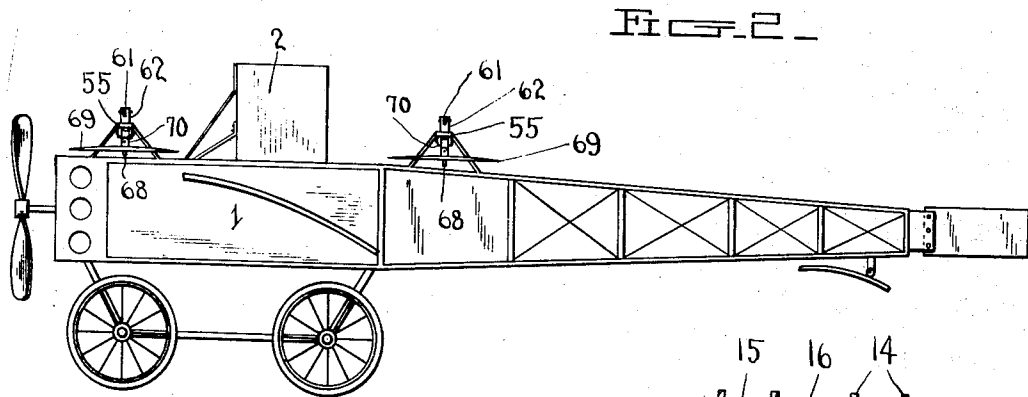


Fig. 7 -

Witnesses
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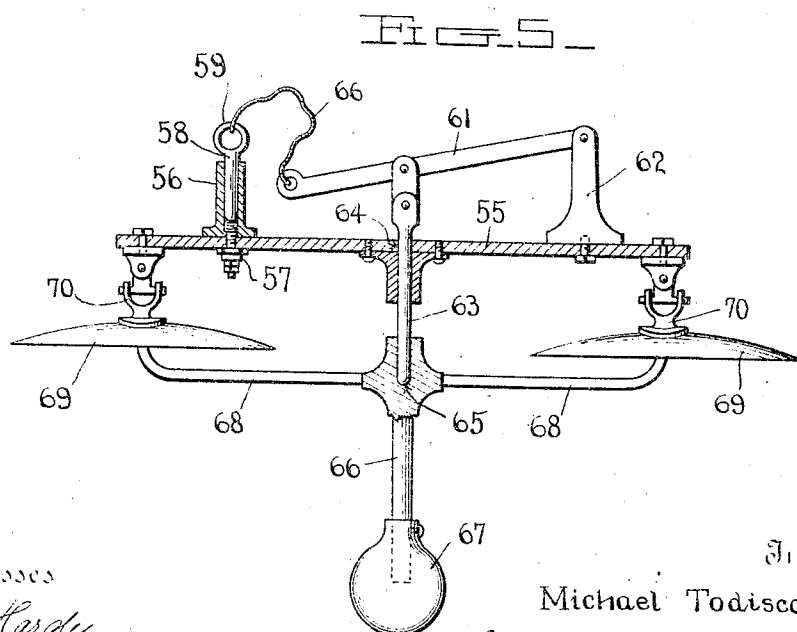
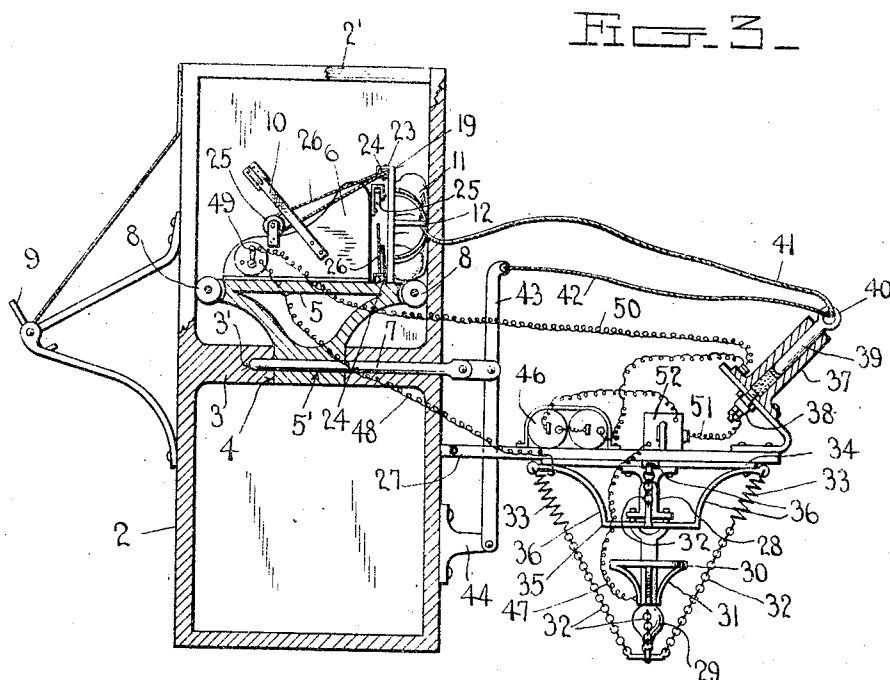
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3 SHEETS-SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

MICHAEL TODISCO, OF BROOKLYN, NEW YORK.

AERIAL VEHICLE.

1,032,966.

Specification of Letters Patent.

Patented July 16, 1912.

Application filed August 24, 1911. Serial No. 645,760.

To all whom it may concern:

Be it known that I, MICHAEL TODISCO, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Aerial Vehicles; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in aerial vehicles, and more especially in life saving or safety attachments therefor.

The main object of the invention is to provide simple and efficient life saving mechanism operable on the tilting of the vehicle at a dangerous angle to release the aviator from the vehicle and simultaneously to throw into operation means for suspending and gradually lowering the released aviator.

Another object is to provide reliable balancing means for preventing an aeroplane from dropping suddenly.

With these and other objects in view, the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be more fully described and claimed.

In the accompanying drawings: Figure 1 is a top plan view of an aeroplane equipped with these improved attachments; Fig. 2 is a side elevation thereof; Fig. 3 is a side elevation on an enlarged scale of the seat supporting frame and the releasing mechanism for the seat; Fig. 4 is a similar view showing the seat removed from the vehicle and with a parachute operatively connected therewith; Fig. 5 is an enlarged detail sectional view of the balancing means for the vehicle; Fig. 6 is a plan view of a portion of the top of the parachute and the valve supporting mechanism; Fig. 7 is a similar view of the member to which the cords of the parachute and the parachute seat are attached; Fig. 8 is an enlarged vertical sectional view of the parachute valve.

In the embodiment illustrated, an aeroplane 1 of any suitable construction is shown having a vertically disposed frame 2 mounted therein, said frame being open at its upper and lower ends and the upper openings 2' therein being sufficiently large to permit the seat to be described with the aviator strapped thereto to pass freely out through

said openings. Arranged intermediately of the ends of said frame 2, preferably at a point midway its length is a transversely arranged seat support 3, having an opening 4 therein to receive the standard or base 5 of the seat 6, said standard 5 and support 3 having registering sockets or bores 3' and 5' opening through one side wall of the frame 2 and adapted to receive a sliding bar 7 designed to secure the seat 6 in operative position. This seat 6 is provided on its side edges with a plurality of rollers as 8 arranged to engage the inner faces of the side walls of the frame 2 to guide said seat during its insertion into or removal from said frame. The front of the frame 2 is preferably open and is provided with a foot rest 9 disposed in convenient position to support the feet of the aviator. Suitable straps 10 are secured to the seat 6 and are designed for securing the aviator to the seat and preventing him from falling therefrom on the tilting of the vehicle.

A parachute 11 is mounted in the frame 2 preferably at the rear of the seat 6 and is arranged in folded position therein, being held in said position by any suitable means, such for instance, as straps 12 which are held in engagement with said parachute by eyelets as 13 formed at the free ends of said straps, which are designed to engage studs as 14 secured to the top of the parachute at the center thereof. These studs 14 are preferably secured to a centrally disposed member 15 having an aperture 16 therein closed by a spring pressed valve 17 to which a cord or other flexible element 18 is connected and extended into convenient position for actuation by the aviator when it is desired to release the air under the parachute and permit it to descend more rapidly. As shown, the supporting cords 18' of the parachute are secured at one end to the parachute and at their other ends to an annular member 19 within which is arranged a disk 20 composed of metal or other suitable material and preferably having apertures to reduce its weight. An auxiliary parachute 21 is secured to the lower edge of the parachute 11 and forms an extension therefor, the supporting cords 22 thereof being secured to the cords 18' intermediately of the ends of said cords 18'.

Depending from the annular member 19 are a plurality of brackets as 23 in which pulleys as 24 are revolubly mounted and

which are designed to support the seat 6 when it has been released from the vehicle when the parachute is in open or operative position. A plurality of pulleys as 25 are secured to the seat 6 and supporting ropes or chains as 26 are connected with said pulleys 25 and pass over the pulleys 24 which depend from the annular member 19 and by means of which the seat 6 is reliably connected with the parachute and when the parachute is in operative position, the seat 6 will swing into vertical position therebelow.

A bracket 27 is secured to and extends laterally from the frame 2 and a universal joint 28 depends from the lower face of this bracket. A balance weight 29 is suspended from said universal joint 28 and has a copper ring 30 connected therewith, said ring being preferably connected with said weight by a plurality of arms 31. A plurality of flexible elements as 32 are connected at one end to said weight 29 and are connected with the bracket 27 by coiled springs as 33. These springs 33 are preferably connected with said bracket 27 by means of a cross-shaped member 34 secured to the lower face of the bracket 27 and to the center of which the universal joint 28 is also preferably connected. This cross 34 is employed to provide an extended surface for connecting the springs 33 thereto, whereby the weight or balance 29 is held against swinging idly, the springs, however, being sufficiently yieldable to permit said weight to move when the vehicle is tilted at an angle of 90° or more. Another copper ring 35 is spaced vertically above the ring 30 and is rigidly connected with the arms of the cross 34 preferably by means of arms 36 and is designed to form one contact of an electric circuit hereinafter to be described.

A cannon is secured to the outer end of the bracket 27 and has an igniting device 38 arranged therein preferably in the form of a spark plug. This cannon 37 is normally closed by a suitable plug or capsule 39 at the outer end of which is formed an eye 40. This eye 40 is connected with the top of the parachute 11 by means of a cord 41 or other flexible element and it is also connected by a similar cord 42 with the free end of a lever 43 which is fulcrumed at its other end on a bracket 44 which projects laterally from the frame 2. The sliding bar 7 is connected at one end to the lever 43 at a point intermediately of the ends thereof, said bar being adapted to slidably engage the sockets 3' and 5' of the standard 5 and the seat support 3, and by means of which the seat 6 is normally locked in operative position within the frame 2.

Mounted on the bracket 27 is a suitable electric battery 46 which is designed to supply the electricity for firing the cannon 37

and also for supplying electricity to the contact members 30 and 35. The copper ring 30 is connected by a suitable wire 47 with one pole of the electric battery and the ring 35 is connected by a wire 48 to a switch 49 arranged on the seat 6 in convenient position for actuation by the aviator. This switch 49 is also connected with a ground wire 50. A secondary wire 51 connects the spark plug 38 with an electric coil 52. It is to be understood, of course, that the cannon 37 is first filled with an explosive powder before the plug 39 is inserted therein and is normally kept in this position during the flight of the vehicle.

In the operation of this safety device, when the parts are in normal position, as shown in Fig. 3, the parachute is collapsed and held in collapsed position by the straps 12 which are engaged with the studs 14, the releasing cord 41 being arranged under said straps, as shown in said figure, so that a jerk or pull exerted on said cord will disengage the straps from the studs. Should the vehicle to which this device is attached be tilted to an angle of 90° or more, the weight 29 will swing outward and cause the copper ring 30 connected therewith and to the battery to come in contact with the ring 35 thereby forming a circuit which will produce an electric spark in the plug 38 which will ignite the explosive charge in the cannon 37. This explosion will cause the plug 39 to be violently ejected from the cannon which will exert a sufficient pull on the cords 41 and 42 to simultaneously withdraw the sliding bar 7 from its engagement with the seat 6 and release the straps 12 which hold the parachute 11 in collapsed position. After the seat and parachute have been released, a further dropping of the vehicle will cause the parachute to pass out through the opening in the upper end of the frame 2 and to expand into operative position. This dropping of the vehicle will also cause the frame 2 to pass out of engagement with the seat 3, said seat being guided in the frame by the rollers 8 and when freed from the vehicle, the seat with the aviator strapped therein will be held suspended in the air by means of the parachute and by actuating the valve outlet in the top thereof, the aviator may then guide himself safely to earth.

A balancing device for this aeroplane 1 is also preferably provided and as shown, preferably comprises a supporting plate 55, on which is mounted a cannon 56 similar to the cannon 37 above described, having an igniting plug 57 arranged in the bottom thereof, and a suitable plug 58 normally mounted therein over the explosive charge and which is provided with an eye 59 with which a flexible element 60 is connected. This element 60 is also connected with one end of a lever 61 fulcrumed at its opposite

end on a standard 62 secured to the plate 55. A pin 63 is connected at one end with said lever 61 intermediately of the ends thereof and said pin projects through an opening 5 64 in the plate 55 and is adapted to engage a socket 65 formed in the upper end of a stem 66 to which a balance weight 67 is secured. This stem 66 is connected to a bar 68 midway the length thereof and to 10 the opposite ends of this bar, suitable planes as 69 are connected, the upper faces of these planes being connected with the plate 55 by suitable universal joints 70. This pin 63 locks the weight and the planes 69 con- 15 nected therewith in rigid relation to the plate 55 and when it is desired to throw said weight into operation, the spark plug 57 is actuated and the explosive charge in the cannon is thereby ignited which causes 20 the plug 58 to be violently ejected and thereby force the lever 61 outward. This outward movement of the lever 61 withdraws the pin 63 from the socket 65 of the weight 67, whereby said weight is released and left 25 free to swing by gravity into suitable position to balance the machine and to prevent the aeroplane from falling too suddenly.

From the foregoing description taken in connection with the accompanying drawings, 30 the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may 35 be resorted to without departing from the principle or sacrificing any of the advantages of the claimed invention.

I claim as my invention:

1. A safety attachment for aerial vehicles 40 comprising a seat, a parachute connected therewith and normally held in collapsed position, means for locking said seat to said vehicle, and means for releasing said seat 45 locking means and said parachute by the tilting of the vehicle beyond a predetermined angle.

2. A safety attachment for aerial vehicles comprising a frame adapted to be connected 50 with a vehicle and having a seat support therein provided with sockets, one of said sockets opening through the side wall of said frame, a seat mounted in said frame and having a standard engaged with said support and provided with a bore arranged 55 to register with the sockets in said support, a lever fulcrumed at one end on said frame, a slidable locking bar connected at one end with said lever and adapted to slide in said seat and support bores, a parachute con-

nected with said seat, and force exerting 60 means connected with said parachute and with the free end of said lever, said means being operable by the tilting of the vehicle beyond a predetermined angle.

3. A safety attachment for aerial vehicles 65 comprising a frame, a seat, means for detachably connecting said seat to the frame, a parachute connected with said seat, means for holding said parachute normally in collapsed position, a cannon having a pro- 70 jectile therein, said projectile being connected with said parachute and with the means for connecting the seat to said frame, and means for firing said cannon operable by the tilting of the vehicle beyond a predeter- 75 mined angle.

4. A safety attachment for aerial vehicles comprising a frame, a seat, means for detachably connecting said seat to the frame, a parachute connected with said seat, means 80 for holding said parachute normally in collapsed position, a cannon having a projectile therein, said projectile being connected with said parachute and with the means for connecting the seat to said frame, a sta- 85 tionary contact element carried by said frame, and a movable contact element carried by the frame and operable on the tilting of the vehicle beyond a predetermined angle to close a circuit and actuate the 90 cannon.

5. In an aerial vehicle having a supporting plate, a weight movably connected with said plate, means for locking said weight 95 in rigid relation to said plate, pivoted planes operatively connected with said weight, and means for releasing said locking means operable on the tilting of the vehicle beyond a predetermined angle.

6. A balancing device for an aerial ve- 100 hicle comprising a supporting plate, planes pivotally connected with said plate, a weight rigidly connected with said planes, a sliding member operable through said plate and adapted to engage said weight to 105 lock said weight and planes stationary in relation to said plate, and means for releasing said locking means operable on the tilting of the vehicle beyond a predetermined angle. 11

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

MICHAEL TODISCO.

Witnesses:

VINCENT SAVOIX,
LOUIS RUH.