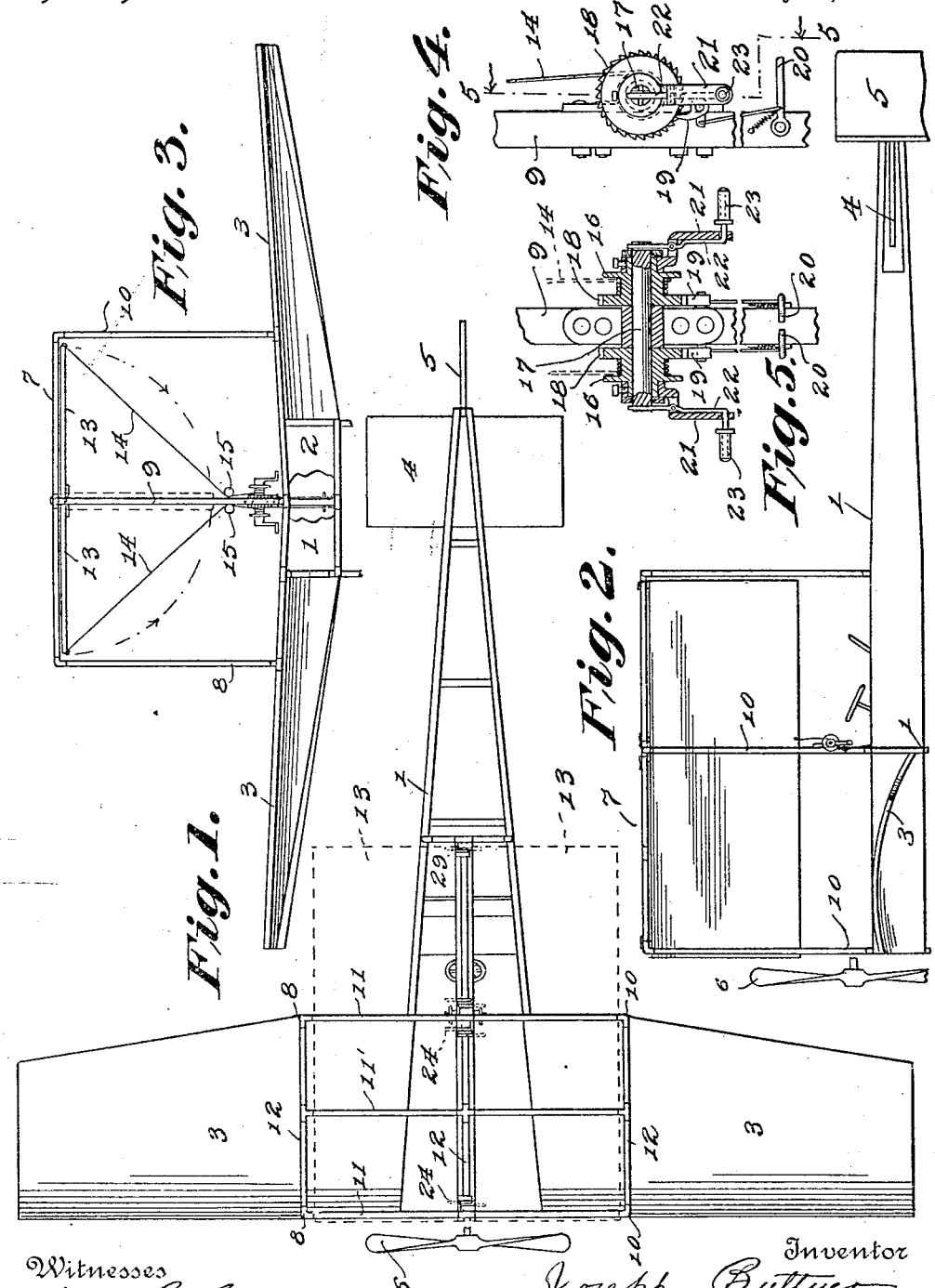
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J. BUTTNER.

AEROPLANE.

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AEROPLANE.

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To all whom it may concern:

Be it known that I, JOSEPH BUTTNER, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Aeroplanes, of which the following is a specification, reference being had therein to the accompanying drawing.

The invention relates more particularly to balancing or stabilizing devices for aeroplanes.

The principal object of the invention is to provide a device which is adapted, when in normal position, to serve as a vertical plane to prevent lateral slipping or skidding when the aeroplane is sharply inclined transversely, and which is adapted, upon being moved or adjusted, to provide additional supporting planes to be used in case of emergency.

Further objects of the invention are to provide certain improved details of construction for supporting and controlling the principal parts of the balancing and stabilizing device.

In the accompanying drawings I have indicated diagrammatically an aeroplane of the monoplane type and have shown attached to this aeroplane a device embodying my invention.

It will be understood that the details of the aeroplane form no part of my invention and are therefore not shown. It is further to be understood that while I have illustrated a monoplane, a device embodying my invention is not limited to use with an aeroplane of this type.

Of the drawings, Figure 1 is a plan view; Fig. 2 is a side view; Fig. 3 is a front view; Fig. 4 is an enlarged fragmentary elevation of the controlling mechanism for the supplemental planes; Fig. 5 is an enlarged fragmentary sectional view taken along the line 5—5 of Fig. 4.

Referring to the drawings, 1 represents as a whole the aeroplane. A monoplane has been illustrated, but, as stated above, my invention is not limited to an aeroplane of this type. As shown, the aeroplane is provided with a main frame 2: with the main supporting planes 3, 3, which extend laterally and are separated from each other at their inner edges; with the supplemental guiding and controlling planes 4 and 5; with the propeller 6; and with a suitable motor and control devices which, for the sake of simplicity, have been omitted from the drawings.

Secured to the main frame 2 is an upstanding frame 7 which, in the preferred form shown, comprises three pairs of uprights 8, 8, 9, 9, and 10, 10. The uprights 9, 9 are placed at the center line of the main frame, and the uprights 8, 8 and 10, 10 are arranged, respectively, at the sides. Transverse and longitudinal bars 11, 11 and 12, 12 connect the upper ends of the uprights. Preferably a supplemental transverse bar 11′ is provided between the bars 11, 11. Pivoted to the upper ends of the central uprights 9, 9 are two planes 13, 13, which have substantially the same area, respectively, as the main planes 3, 3.

During the normal operation of the aeroplane, the planes 13, 13 are intended to be carried in the positions shown by full lines in Figs. 1 and 2 and by dotted lines in Fig. 3. When in these positions the two planes coöperated to stabilize or balance the aeroplane and to prevent lateral movement. It is well known that when an aeroplane tilts transversely to an angle of approximately forty-five degrees, the tendency toward lateral movement can no longer be overcome by the forward driving force and the machine slips or skids. This transverse slipping or skidding, however, will be prevented by the planes 13, 13 when they are in the normal lower position. It frequently happens in a case of emergency, such, for instance, as the stopping of the engine or the breaking of one or both of the main supporting planes, that additional supporting surface is required. When such an emergency is met with, the operator can spread the wings or planes 13, 13 and move them to the position shown by full lines in Fig. 3 and by dotted lines in Fig. 1. When the planes are in this position, they coöperate with the main planes for supporting the machine. As stated above, they are of substantially the same area as the main planes and are therefore sufficient to enable the operator to make a safe descent even if the main planes were to be entirely destroyed. In fact, the operator, by moving only one of the planes 13 to its upper position and keeping the other in its lower position, can properly balance the machine in case one main plane is destroyed and the other remains intact. It

will be noted that because of the pivoting of the planes 13 at their upper or inner edges, they are adapted to be automatically opened by the air in the case of a too rapid descent of the machine. This is an important feature as, in an emergency, the operator would have little or no time for manually moving the planes.

The upper part of the supplemental framework 7 is positioned above the planes and both serves to engage and hold them in place in case the other mechanism, provided for this purpose, fails. In fact, this supplemental framework coöperates with the supplemental planes to form a device of the nature of a parachute which, in the case of extreme emergency, would serve to gradually lower the operator and the mechanism to the ground. For controlling the supplemental planes, I have shown in the drawings for purposes of illustration, one form of mechanism. While this has features of advantage, I wish it to be understood that my invention is not limited to this particular form of mechanism, and that other forms adapted for the purpose may be used, if desired. As shown, cords or ropes 14, 14, are connected to the outer edges of the planes and extend downward over pulleys 15, 15, mounted on the rear upright 9. At their lower ends the ropes 14, 14, are wound upon drums 16, 16, which are loosely mounted on a shaft 17. This shaft 17 is journaled in a suitable bearing secured to the rear upright 9. Each drum 16 has secured to it a ratchet wheel 18 and pawls 19, 19, are provided for engaging the ratchet wheels. The pawls 19, 19, are connected with foot levers 20, 20, by means of which they can be released. Each drum 16 also has secured to it a crank arm 21. Pivotally mounted on each crank arm 21 is a lever 22 which carries at its outer end a handle 23. The inner end of the lever 22 is adapted to engage with or be disengaged from a groove or slot in the corresponding end of the shaft 17. It will be clear that when the planes are in the position shown in Fig. 3, and the operator desires to lower them, he can do so by turning either of the cranks 23. This will be clear from a reference to Fig. 5. The pawls 19, 19, will engage the ratchet wheels 18, 18, and hold the planes in any position to which they may be lowered. If for any reason the operator desires to lower but one of the planes, he can do so by pushing in on the handle 23 before starting to turn. In this way he disconnects the lever 22 from the shaft 17 and is thus enabled to turn only the one drum to which the corresponding arm 21 is connected.

The force of the air will, under most circumstances, be sufficient to raise the planes, but I prefer to provide mechanism for raising them independently of the air. Any preferred mechanism can be used but, for the sake of illustration, I have shown coil springs 24, 24. These springs tend normally to press the planes outward and upward, and their action can be overcome by means of the ropes 14, 14, and the mechanism which has been described.

What I claim is:—

1. The combination in an aeroplane, of the main lifting and supporting planes all fixed against relative movement and all having their transverse lines substantially horizontal, and the two supplemental planes mounted above the main planes symmetrically with respect to the central longitudinal axis of the aeroplane, the two supplemental planes having substantially the same area as the main planes and being movable simultaneously about longitudinal axes to vertical positions in which they serve as guiding planes to prevent lateral movement or to horizontal positions in which they serve as supporting planes.

2. The combination in an aeroplane, of the main lifting and supporting planes all fixed against relative movement and all having their transverse lines substantially horizontal, and the two supplemental planes mounted above the main planes symmetrically with respect to the central longitudinal axis of the aeroplane, the two supplemental planes having substantially the same area as the main planes and being movable simultaneously about longitudinal axes at the edges thereof respectively to vertical positions below the said axes in which they serve as guiding planes to prevent lateral movement or to horizontal positions in which they serve as supporting planes.

3. The combination in an aeroplane, of the main lifting and supporting planes all fixed against relative movement and all having their transverse lines substantially horizontal, and two supplemental planes mounted above the main planes symmetrically with respect to the central longitudinal axis of the aeroplane, the two supplemental planes having substantially the same area as the main planes and each being pivoted at one edge about a longitudinal axis near the center of the aeroplane, and means for simultaneously moving the two supplemental planes to vertical positions in which they serve as guiding planes to prevent lateral movement or to horizontal positions in which they serve as supporting planes.

4. The combination in an aeroplane, of the main lifting and supporting planes all fixed against relative movement and all having their transverse lines substantially horizontal, the two supplemental planes mounted above the main planes symmetrically with respect to the central longitudinal axis of the aeroplane, the two supplemental planes having substantially the same area as

the main planes and being movable simultaneously about longitudinal axes at the edges thereof respectively to vertical positions below the said axes in which they serve as guiding planes to prevent lateral movement or to horizontal positions in which they serve as supporting planes, and means above the supplemental planes for engaging them to prevent their movement above their horizontal positions.

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

JOSEPH BUTTNER.

Witnesses:
FREDERICK BETZ,
CHARLES H. PLANTHOTT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."