Jan. 14, 1930. J. ANDREWS 1,743,516

AEROPLANE

Filed Oct. 6, 1927

Fig. 1.

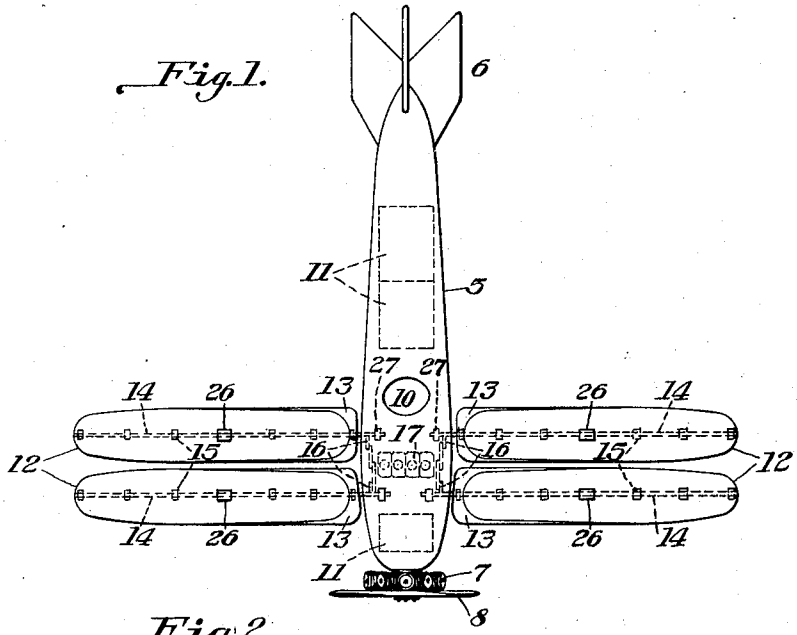


Fig. 2.

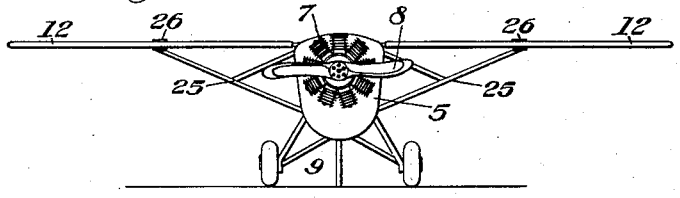


Fig. 3.

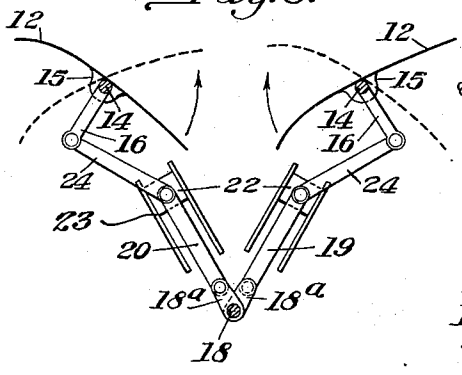
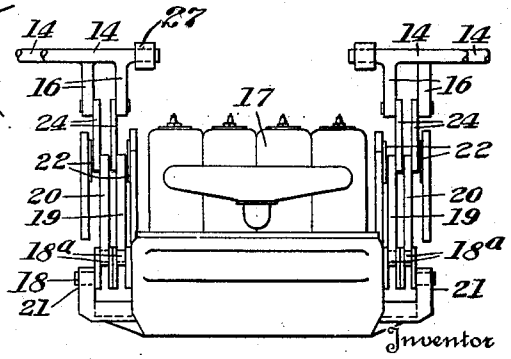


Fig. 4.



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UNITED STATES PATENT OFFICE

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AEROPLANE

Application filed October 6, 1927. Serial No. 224,356.

My invention relates to improvements in aeroplanes.

One of the main objects of the present invention is to provide in an aeroplane construction, planes or wings of such character and assemblage that they will be highly advantageous in launching and landing the machine, and which may be utilized in the usual manner in conjunction with the usual propeller and other well known parts and mechanisms employed in aeroplane constructions.

My invention contemplates the employment of a plurality of movable planes or wings connected up and driven by a motor independent of the motor employed for moving the propeller.

In the accompanying drawings, which illustrate an application of my invention:

Fig. 1 is a top plan view of an aeroplane embodying my invention;

Fig. 2, a front elevational view thereof;

Fig. 3, a diagrammatic sectional view, particularly showing the plane or wing actuating mechanism; and

Fig. 4, a front elevational view, particularly showing a motor for actuating the movable wings and intermediate mechanism interposed between the motor and the wings.

Referring to the drawings, 5 designates a fuselage or body of any well known type, and 6 the rudder or tail construction of the aeroplane. Disposed within the fuselage is a rotary motor 7 positioned preferably at the nose of the machine and coupled up with a propeller 8 of the usual type. As illustrated, 9 resignates a landing gear, 10 a cock-pit, and 11 fuel tanks.

In place of the usual fixed planes or wings now so generally employed in aeroplane construction, I provide a plurality of movable planes or wings designated generally by the numeral 12. As shown and as preferred, these wings are arranged in pairs on opposite sides of the body and formed of some suitable sheet metal material, preferably reinforced as indicated by the numeral 13. The preferred contour of the wings is particularly shown by Fig. 3, and, as there shown, they include a slightly curved cross section. Each wing is provided with a longitudinally extending rotatable or oscillating shaft 14 rigidly secured to the under side of the wings by brackets 15. Each shaft 14 is provided with a depending arm or crank 16 formed integral therewith.

The movement of the wings is effected by means of an independent motor of the stationary aeroplane type, mounted with its axis perpendicular to the longitudinal axis of the aeroplane, and intermediate mechanism connecting the motor and the said wings. As illustrated, 17 designates the said motor, and 18 its crank shaft. Shaft 18 is projected beyond the base of the motor and the projected ends are each provided with spaced-apart and offset crank arms 18^a disposed for engagement with connecting rod members 19 and 20, respectively, as particularly shown by Fig. 4. The outer ends of shaft 18 are designed to be supported in auxiliary bearings 21 extending upwardly from and connected with the base of the motor 17. Each of the said connecting rods 19 and 20 are in turn connected with a sliding cross-head 22, said cross-heads being mounted in suitable ways 23 carried on the framework of the body 5. Extending upwardly from each of the cross-heads 22 and pivotally connected thereto and with a depending arm 16 of each of the rotatable shafts 14 is a connecting rod 24. It will, of course, be understood that similar wing or plane actuating mechanism is employed for the wings located on the opposite side of the body 5.

By means of the mechanism just described, rotation of the shaft 18 of the motor 17 will impart a reciprocating motion to the wings 12. This reciprocating or oscillating motion

produces a propelling and lifting action, and, as the said mechanism is directly connected to the crank shaft of the motor 17, the wings may be variably actuated, depending upon the speed of the motor. By varying the speed of the motor a variation in the lifting and propelling action may be obtained. It will be further understood that, during flight, the wings may be maintained stationary in the desired horizontal position. In practice, the motion imparted to the wings is a rapid one when launching the aeroplane and also when it is desirous of landing the plane. During flight, the wings, as stated above, may be stationary or moved at the desired rate of speed.

The wings are designed to be reciprocated in opposite directions, as indicated by the arrows in Fig. 3, the forward set or pair of wings operating in one direction and the rear pair or set of wings in the opposite direction.

The wings may be supported from the framework of the fuselage by means of braces 25, said braces at their outer ends having suitable bearings 26 in which the shafts 14 of the wings are free to rotate.

27 designates bearings for the inner ends of the respective shafts 14; said bearings 27 may be supported in any suitable manner from the framework of the fuselage.

Instead of two pairs of wings located on opposite sides of the body of the plane, as shown, my invention contemplates the employment of one pair only, i. e., a single movable wing and its operative mechanism disposed at each side of the plane.

I claim:

1. In an aeroplane, a plurality of wings mounted to oscillate, said wings arranged in pairs, transversely extending oscillating shafts on which the wings are mounted, and means for positively and simultaneously oscillating the wings of each pair through said shafts in opposite directions, including an independent motor having a projecting crank-shaft, cross-heads, link connections between the cross-heads and the shaft, rigid members depending from the oscillating shafts, and linkage between the rigid members and the cross heads.

2. In an aeroplane, a plurality of wings mounted to oscillate, said wings arranged in pairs, transversely extending oscillating shafts upon which the wings are mounted, and means for positively and simultaneously oscillating the said shafts and the wings of each pair in opposite upward and downward directions in the line of flight, said means including an independent motor and operating mechanism disposed between the motor and the wings.

3. In an aeroplane, an oscillatory wing disposed at one side of the body, a second oscillatory wing disposed at the opposite side of the body, oscillating shafts disposed at opposite sides of the body upon which the wings are mounted, a motor, and positively operable means connecting the motor and said wings for effecting a complete movement thereof, said operable means including a cross-head, a rigid member depending from the oscillating shaft and linkage between the rigid member and the cross-head.

In testimony whereof I affix my signature.

JOHN ANDREWS.