June 14, 1927. 1,632,158

H. V. ALEXANDER

AEROPLANE

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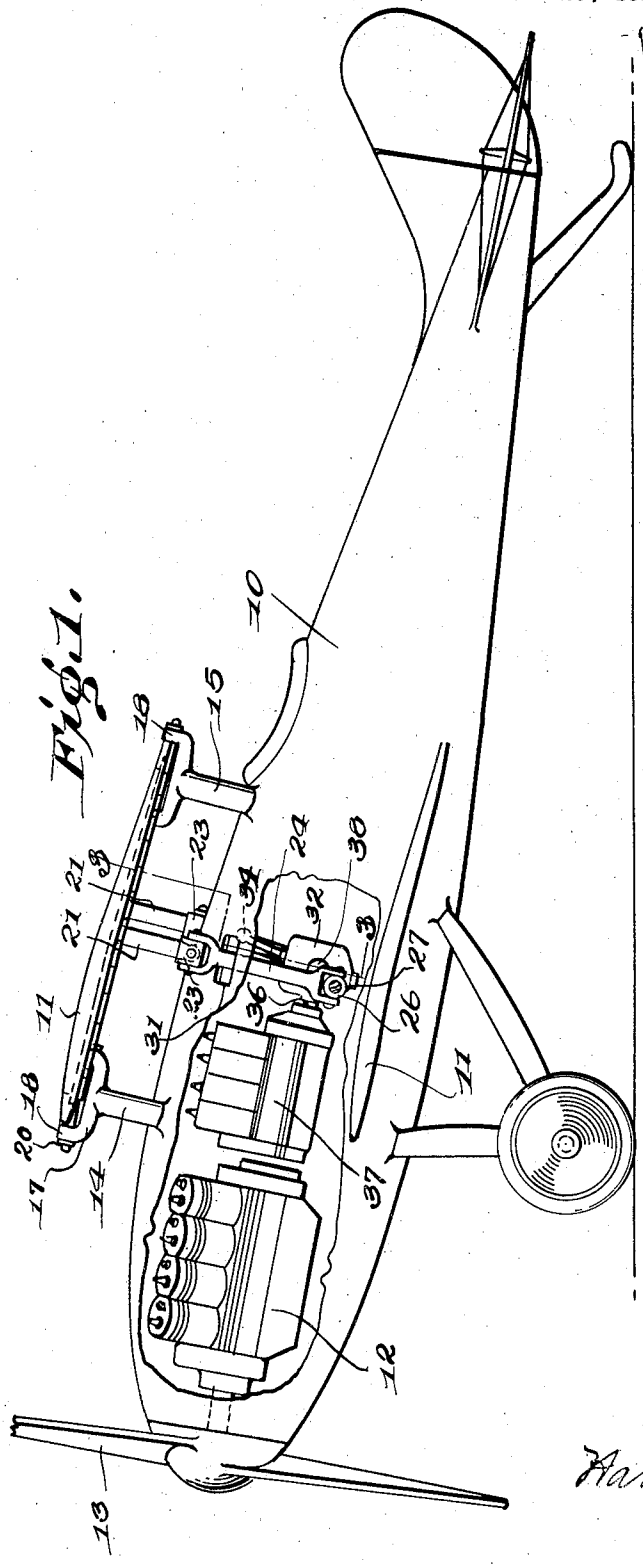


Fig. 1.

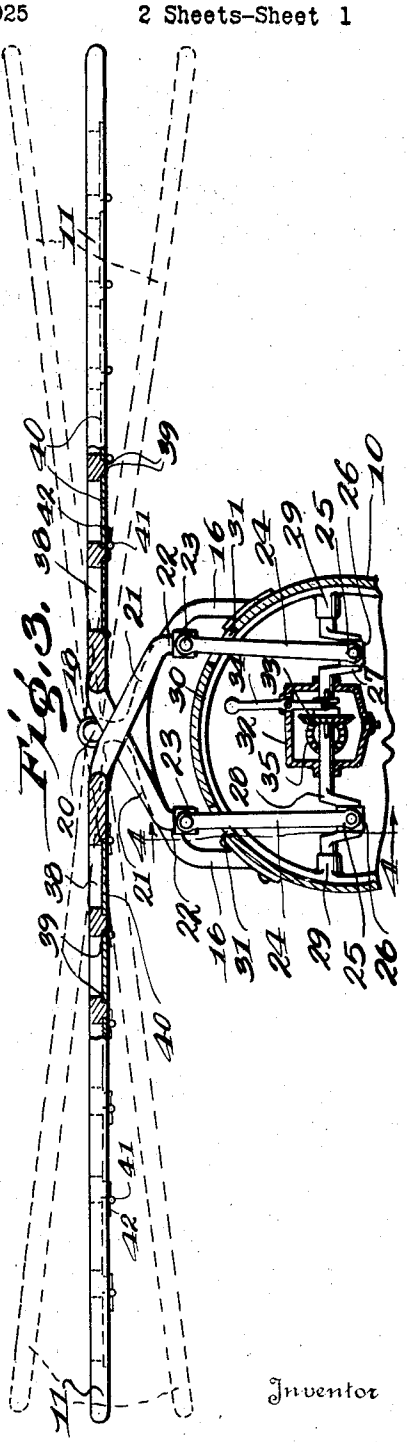


Fig. 3.

Inventor

Harry V. Alexander

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Fig. 2.

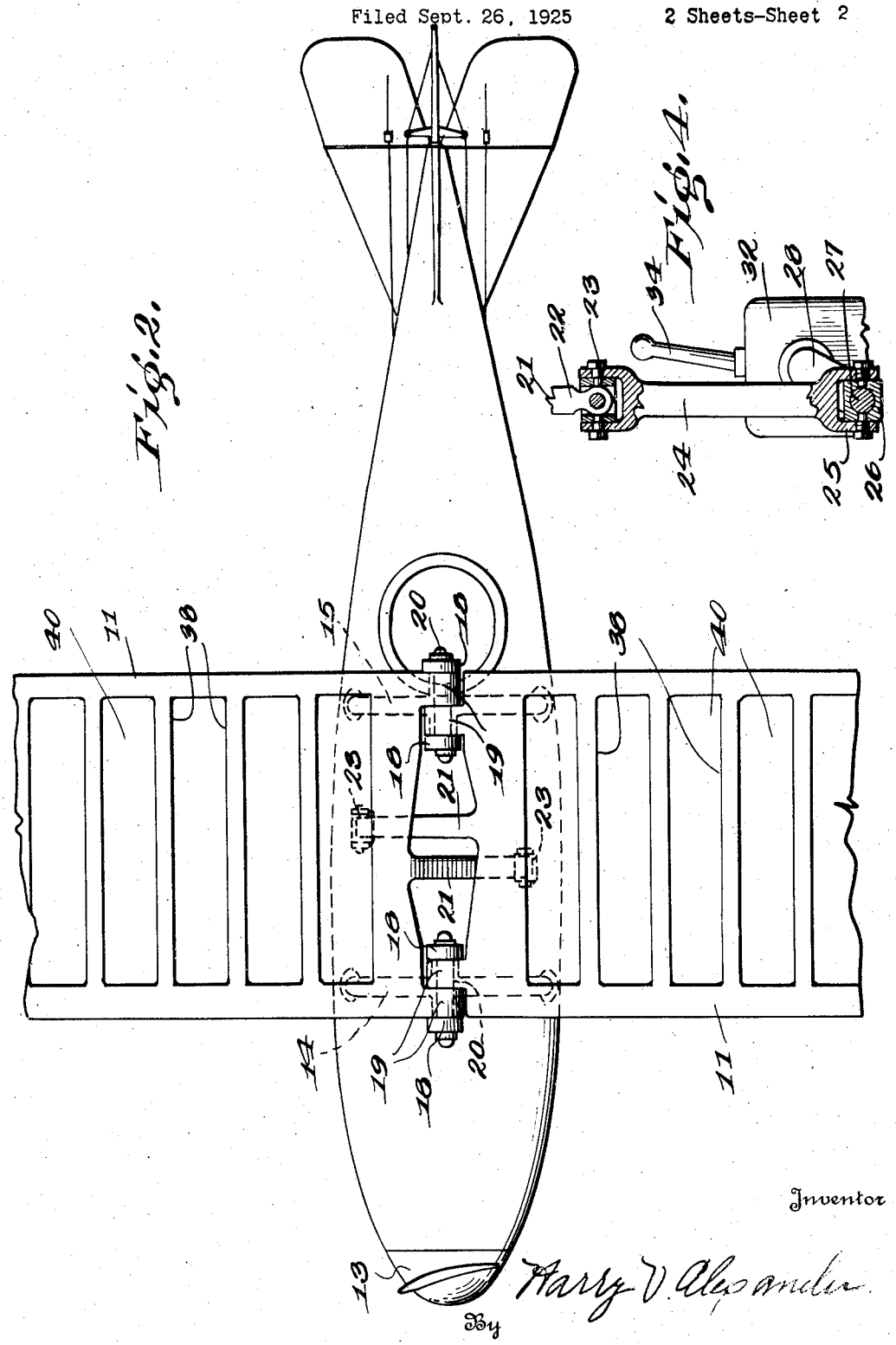


Fig. 4.

Inventor

Harry V. Alexander

By

Attorney

Patented June 14, 1927. 1,632,158

UNITED STATES PATENT OFFICE.

HARRY V. ALEXANDER, OF BONNE TERRE, MISSOURI.

AEROPLANE.

Application filed September 26, 1925. Serial No. 58,818.

The present invention relates to aeroplanes and aims to provide a novel and improved machine of this character having wings thereof hingedly connected to the fuselage and power operated means arranged in the fuselage for moving the wings in a vertical manner on their pivots in order to produce a lifting motion to elevate or retain the aeroplane in their air in case the motor for driving the plane forward ceases to properly function.

Another object of the invention is the provision of arms carried by the wings arranged to extend beyond the point of pivot of the wings, said arms being connected to a power operated crankshaft by means of connecting rods, the offset portions of said crankshaft being arranged so that both wings will be raised and lowered at the same time, simulating the movement of the wings of a bird.

It is also an object of the invention to provide a machine of the above indicated character, which is relatively simple and substantial in construction, which can be manufactured economically, and which will be thoroughly efficient and practical in use.

With the foregoing and other objects in view, which will be apparent as the description proceeds, the invention resides in the construction and arrangement of parts, as hereinafter described and claimed, it being understood that changes can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation of my improved aeroplane, showing a portion of the fuselage broken away,

Figure 2 is a fragmentary top plan of the same,

Figure 3 is a vertical cross section taken on line 3—3 of Figure 1, and

Figure 4 is a fragmentary section taken on line 4—4 of Figure 3.

Referring to the drawings, the numeral 10 designates the fuselage of an aeroplane, which has attached on each side thereof a pair of wings 11. Mounted in the forward end of the fuselage is a gasoline engine 12 which is adapted to rotate an air propeller 13 for driving the aeroplane in a forward direction. In carrying out my invention, I have provided a pair of supporting members 14 and 15, each of which is provided with downwardly extending legs 16 which engage the upper surface of the fuselage 10 and are attached thereto. Intermediate the legs 16 of said supporting members and arranged at right angles to said supporting members are portions 17 which have both ends thereof provided with upturned lugs 18 which pivotally support inwardly directed lugs 19 formed on the inner ends of the uppermost of each pair of wings 11. A lug 19 on each wing is positioned between the upstanding lugs 18 formed on the supporting members 14 and 15 and has extending therethrough a pivot bolt 20, which bolts have their ends supported in the lugs 18. From the foregoing it can be seen that the upper most of each pair of wings are pivotally supported by the supporting brackets 14 and 15 for movement in a vertical manner.

Extending inwardly from each of said pivotally mounted wings is an arm 21 which also extends slightly downwardly and has provided on its extremity a downturned portion 22. The downturned portions 22 of the arms 21 are connected to universal joints 23 carried by the upper ends of connecting rods 24, said connecting rods 24 having their lower ends arranged to provide yokes 25 which are pivotally connected to collars 26 rotatably mounted upon the crank portions 27 of a crankshaft 28. The crankshaft 28 has its ends rotatably supported in bearings 29 formed on a hoop-shaped member 30 arranged within the fuselage 10. The connecting rods 24 extend through openings 31 provided in the fuselage as they extend upwardly to connect to the arms 21.

The crankshaft 28 extends through a casing 32 and has slidably mounted thereon and keyed thereto a beveled gear 33, which is adapted to be slid by a lever 34 extending through the casing 32 for moving said gear 33 into mesh with a gear 35 also arranged within the casing 32 and carried by the rear end of a power shaft 36 connected to an auxiliary gas engine 37 also mounted in the fuselage slightly in rear of the main gas engine 12 for driving the propeller 13. The engine 37 is of a smaller size than the engine 12 and its sole purpose is for operating the pivotally connected wings so as to move the same in a vertical manner.

The pivotally mounted wings 11 are provided with a series of relatively large openings 38 therein which are slightly enlarged at their lowermost portion, as at 39, for re-

ceiving hingedly connected flap valves 40. The flap valves 40 are hinged, as at 41, and have small springs 42 for normally holding said flap valves in a closed position. From the foregoing it can be seen that when the wings are swung on their pivots in a vertical manner, that the flap valves will be opened upon upward movement of the wings and closed by the springs 42 when the wings are moved downwardly so as to cause an elevating or raising movement of the aeroplane, the openings of the valves permitting the wings to readily move upwardly with the least resistance.

Should the main propelling engine 12 cease to properly function, the auxiliary engine 37 is at once started, which will rotate the beveled gear 35 which in turn rotates the beveled gear 33 when said gear 33 is in mesh therewith. Such movement of the gear 33 will rotate the crankshaft 38 moving the connecting rods 24 in a reciprocating manner, which will in turn swing the arms 21 carried by the wings in an up and down movement, thus swinging the wings on their pivots in a vertical manner so that the wings will either elevate or retain the aeroplane in the air against falling movement. By such movement of the wings, the aviator will be permitted to select a desirable landing spot in a very large area, thus eliminating to a great extent the loss of life and damaging of the aeroplane.

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

1. An aeroplane of the character described comprising a fuselage, means for driving said aeroplane in a forward direction, a pair of brackets mounted upon said fuselage and extending slightly thereabove, spaced lugs carried by said brackets and extending upwardly, a pair of wings, lugs formed on the inner ends of said wings and received between the spaced lugs of said brackets, pins extending through said lugs of said wings and through said lugs of said brackets for pivotally connecting said wings to said brackets, an auxiliary engine mounted in said fuselage, and means operated by said auxiliary engine and connected to said wings for moving said wings in an up and down movement as said auxiliary engine operates.

2. An aeroplane of the character described comprising a fuselage, means for driving said aeroplane in a forward direction, a pair of brackets mounted upon said fuselage and extending slightly thereabove, spaced lugs carried by said brackets and extending upwardly, a pair of wings, lugs formed on the inner ends of said wings and received between the spaced lugs of said brackets, pins extending through said lugs of said wings and through said lugs of said brackets for pivotally connecting said wings to said brackets, an auxiliary engine mounted in said fuselage, arms formed on said wings and extending beyond the points of pivot thereof, a crankshaft operated by said auxiliary engine, and connecting rods operatively connected with said crankshaft and attached to said arms for moving said wings in an up and down movement as said auxiliary engine operates.

3. An aeroplane of the character described comprising a fuselage, means for driving said aeroplane in a forward direction, a pair of brackets mounted upon said fuselage and extending slightly thereabove, spaced lugs carried by said brackets and extending upwardly, a pair of wings, lugs formed on the inner ends of said wings and received between the spaced lugs of said brackets, pins extending through said lugs of said wings and through said lugs of said brackets for pivotally connecting said wings to said brackets, an auxiliary engine mounted in said fuselage, a crankshaft mounted in said fuselage, a gear slidably mounted on said crankshaft and keyed thereto, a second gear carried by the drive shaft of said auxiliary engine and adapted to mesh with said first mentioned gear when said first mentioned gear is moved in engagement therewith, arms carried by said wings and extending beyond the points of pivot thereof, and connecting rods attached to said arms and operatively connected with said crankshaft for moving said wings in an up and down movement when said crankshaft is rotated by said auxiliary engine.

4. An aeroplane of the character described comprising a fuselage, means for driving said aeroplane in a forward direction, a pair of brackets positioned above said fuselage and having depending legs connected to said fuselage adjacent the sides thereof, upstanding spaced lugs carried by said brackets directly above the center line of said fuselage, wings, inwardly extending lugs formed on said wings, one lug on each wing being adapted to be received between the upstanding lugs formed on each bracket, pivot bolts extending through the lugs on said wings and through the upstanding lugs of said brackets for pivotally connecting said wings to said brackets, an auxiliary gas engine, a crankshaft operated by said auxiliary gas engine, arms carried by said wings and extending beyond the points of pivot of said wings, connecting rods attached to the extremities of said arms and operatively connected with said crankshaft for moving the wings in an up and down movement when said auxiliary engine is operated.

In testimony whereof, I have affixed my signature.

HARRY V. ALEXANDER.