

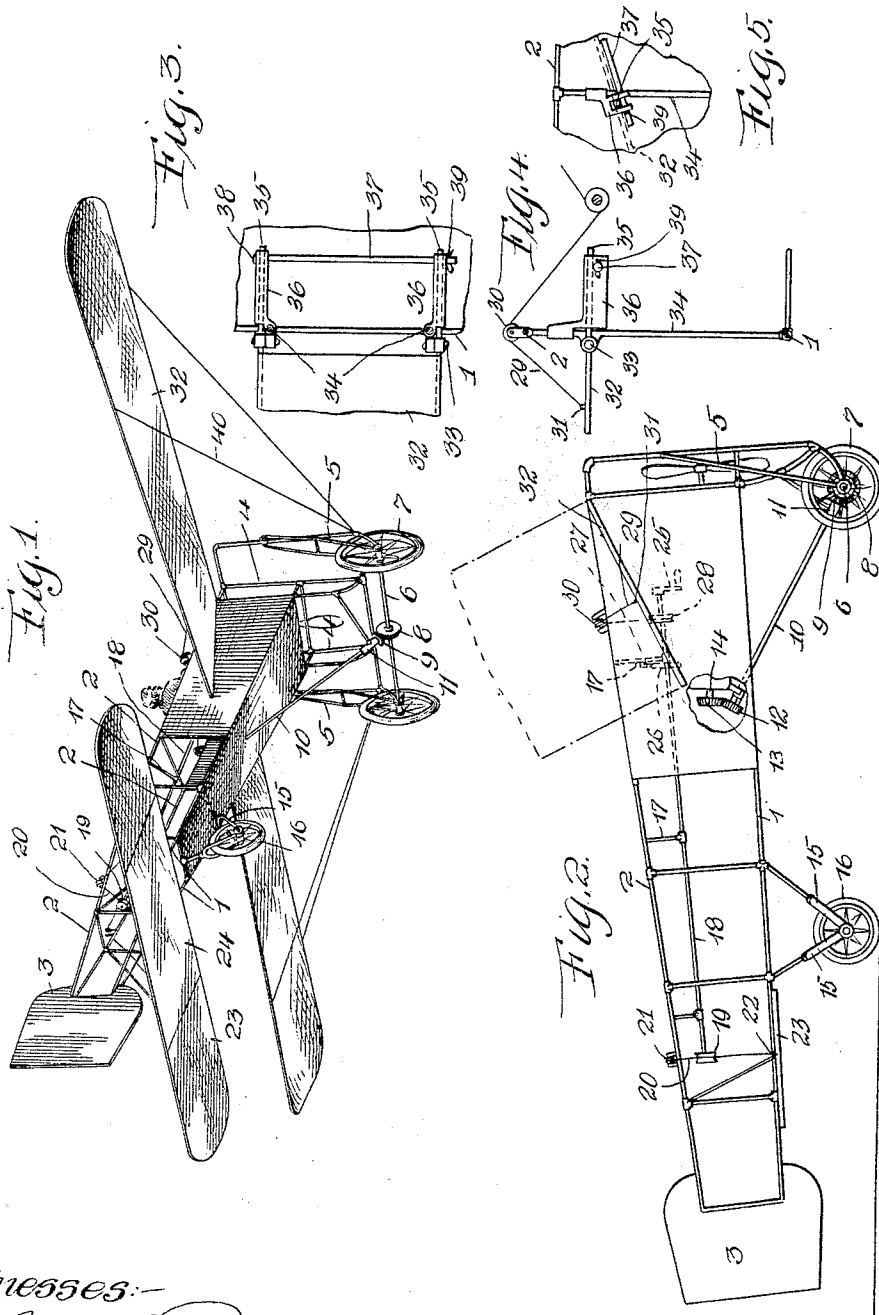
J. J. RECTENWALD.

AEROPLANE.

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Witnesses:-

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UNITED STATES PATENT OFFICE.

JOHN J. RECTENWALD, OF PITTSBURG, PENNSYLVANIA.

AEROPLANE.

996,363.

Specification of Letters Patent. Patented June 27, 1911.

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To all whom it may concern:

Be it known that I, JOHN J. RECTENWALD, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Aeroplanes, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to monoplanes, biplanes, and other types of air crafts, and the invention has for its primary object to provide an air craft with foldable planes that can be swung to a vertical, horizontal, oblique or any other desired position, whereby the craft can be moved in a narrow passage, as a street, a road or an open space in a forest without the planes or wings thereof being injured.

Another object of the invention is to provide an air craft of the above type with foldable planes that will permit of the aviator folding the same and traveling along streets or roads, particularly to his home.

Another object of the invention is to provide foldable planes or wings that can be advantageously used in connection with monoplanes of a European type, the planes when folded permitting of the monoplane being easily and quickly moved.

A further object of the invention is to furnish a monoplane or other air craft with simple and effective means for raising the planes thereof.

A still further object of the invention is to provide an air craft with means operable by a source of power on the air craft for moving the air craft over the ground or streets, particularly when the craft is disabled for air flight or when aerial conditions are unfavorable for a safe flight. The same source of power for moving the air craft upon the ground can be employed for giving the same sufficient impetus whereby it will leave the ground for a flight.

The invention in its broadest aspect involves foldable planes, together with means for folding the planes, irrespective of just what type of means is employed. With this understanding of the broad idea of my invention, reference will now be had to the drawing forming a part of this specification, wherein there is illustrated a preferred embodiment of the invention, but it is to be understood that the structural elements

thereof are susceptible to such changes as fall within the scope of the appended claims.

In the drawing:—Figure 1 is a perspective view of a monoplane in accordance with this invention, Fig. 2 is a side elevation of the monoplane, Fig. 3 is a plan of a portion thereof, illustrating one of the locks for the planes, Fig. 4 is a front elevation of the same, and Fig. 5 is an end view.

A conventional form of monoplane has been illustrated showing the adaptability of the invention to this particular type of air craft, the monoplane comprising a tapering frame having longitudinal rods 1 and 2 converging to a tail-piece 3, the forward ends of said rods being connected to uprights 4, and these uprights are supported by a carriage, comprising trucks 5 supporting a revoluble axle 6 upon the ends of which are mounted wheels 7. The axle 6 has a beveled gear wheel 8 meshing with a similar wheel 9 mounted upon the end of an angularly disposed shaft 10, journaled in a bearing 11 supported from the trucks 5 of the monoplane. The shaft 10 extends upwardly into the frame and is provided with a beveled gear wheel 12 meshing with a similar wheel 13 mounted upon the engine shaft 14 of the monoplane. In lieu of the shaft 10 and the beveled gear wheels, sprocket chains and wheels or any other transmission can be employed. The frame adjacent to the tail-piece has depending trucks 15 supporting a revoluble wheel 16, said wheel coöperating with the wheels 7 in supporting the monoplane upon the ground, and it is only necessary to start the engine to move the monoplane about and give it sufficient impetus to ascend. It is in this connection that the monoplane or air craft can be used as a vehicle upon the ground or as a craft in the air, it being possible for the aviator to make a trip both by land and air, using the land when conditions are unfavorable in the air and vice versa.

The longitudinal rods 2 are provided with V-shaped hangers 17 and journaled in said hangers is a longitudinal shaft 18. The rear end of this shaft has a drum 19 to which cables 20 are connected and adapted to wind thereon, said cables passing over revoluble sheaves 21 mounted upon the rods 2 and having their ends thereof connected, as at 22 to the foldable extensions 23 of a rear plane 24. The forward end of the

shaft 18 has a crank 25 whereby it can be manually rotated, or any other source of power, for instance the engine of the monoplane can be employed for rotating said shaft. The shaft 18 adjacent to one of the hangers 17 has a ratchet wheel 26 and engaging said ratchet wheel is a pivoted pawl 27, carried by the hanger 17 adjacent to said wheel, the pawl preventing a reverse rotation of the shaft 18, and consequently the lowering of the extensions 23 after they have been once set in a vertical position. The ratchet wheel 26 and the pawl 27 constitute one means for locking the planes in a vertical position, this means being employed in connection with the rear plane 24, insomuch that the extensions of said plane are not as heavy and large as the other planes of the monoplane. Upon the shaft 18 adjacent to the crank handle 25 is another drum 28 to which are attached cables 29 adapted to be wound thereon, said cables passing over revoluble sheaves 30 carried by the longitudinal rods 2, said cables being attached, as at 31 to the main planes or blades 32 of the monoplane, these planes being pivotally connected, as at 33 to up-rights 34 connecting the rods 1 and 2. The main supporting rods of the planes 32 extend inwardly to provide arms 35 adapted to enter sockets 36 mounted upon the up-rights 34, said sockets limiting the downward movement of the planes 32. To prevent an upward movement of the planes when the arms 35 are within the sockets 36, a longitudinal bar 37 extends through the ends of the sockets beneath the arms 35, said bar having one end thereof provided with a head 38 and the other end with a cotter pin 39. The shaft 18 cannot be revolved as long as the bar 37 is in the sockets 36, consequently the planes will be firmly held during a flight of the machine.

To fold the planes it is only necessary to release the stay-cables 40, remove the bars 37 and then turn the shaft 18, said shaft through the medium of the cables 20 and 29 simultaneously swinging the planes 32 and 33 to a vertical or upright position, permitting of the air craft being readily moved about an aviation field or in a narrow passage.

The invention is not limited to the angle or type of planes to be folded or to the manner of bracing the same when in a folded or extended position. I reserve the right to provide the planes with ball and socket and detachable connections, whereby they can be swung rearwardly along the sides or over the top of the machine while traveling upon land.

What I claim is:—

1. An air craft comprising a frame, a truck supporting said frame, planes carried by said frame and adapted to be folded upwardly, means arranged longitudinally of said frame for folding said planes, sockets arranged within said frame and adapted to receive the ends of some of said planes, and means adapted to lock the ends of said planes in said sockets.

2. An air craft comprising a frame, a rear plane having foldable extensions, flexible members connected to said extensions, a revoluble shaft arranged longitudinally of said frame and connected to said members for winding these latter thereon, thereby folding the extensions, and means for rotating said shaft.

3. An air craft comprising a frame, a rear plane having foldable extensions, flexible members connected to said extensions, a revoluble shaft arranged longitudinally of said frame and connected to said members for winding these latter thereon thereby folding the extensions, means for rotating said shaft, and means to prevent rotation of said shaft thereby locking the extensions in an extended position.

4. An air craft comprising a frame, trucks supporting said frame, a rear plane having foldable extensions, said rear plane carried by the frame, means arranged longitudinally of said frame and connected with the extensions for folding these latter, means for locking said extensions in an extended position, and means for locking said extensions in a folded position.

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

JOHN J. RECTENWALD.

Witnesses:

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