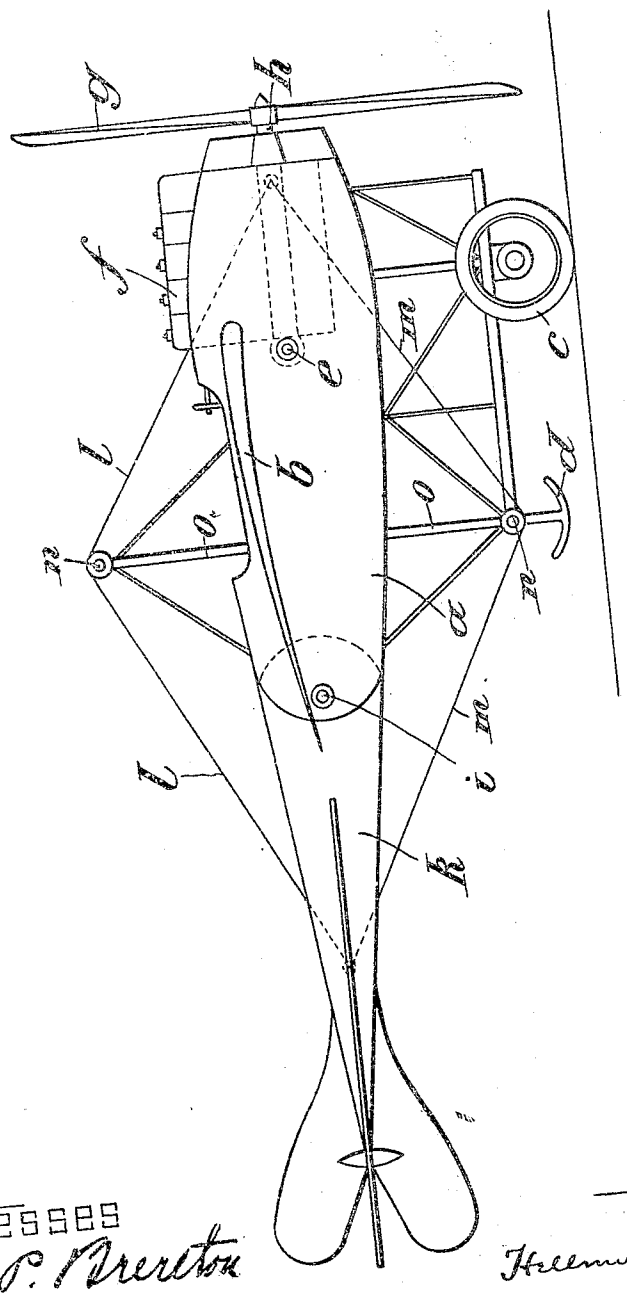
H. HIRTH.

FLYING MACHINE.

APPLICATION FILED APR. 9, 1913.

Patented Apr. 28, 1914.

1,094,898.



Witnesses

Grace C. Brereton

Albert Coffans

Inventor

Heemuth Hirth

By Sturtevant Pearson

Attys

UNITED STATES PATENT OFFICE.

HELLMUTH HIRTH, OF JOHANNISTHAL-BERLIN, GERMANY.

FLYING-MACHINE.

1,094,898. Specification of Letters Patent. Patented Apr. 28, 1914.

Application filed April 9, 1913. Serial No. 760,023.

To all whom it may concern:

Be it known that I, HELLMUTH HIRTH, a subject of the German Emperor, residing at Johannisthal-Berlin, in the Empire of Germany, have invented certain new and useful Improvements in and Relating to Flying-Machines, of which the following is a specification.

This invention relates to a flying machine arranged so that the lifting power may be rapidly and easily adapted to the load carried and the speed of flight to the local circumstances, for instance those present in landing and so-forth, in a manner hitherto impossible.

A flying machine can generally only be suitably calculated or arranged for a certain given load, as the load to be carried and also the speed of flight is determined by the adjustment of the supporting plane or surface relatively to the propeller, on the one hand, and the stabilizers and balancing planes on the other hand. It is indeed possible to temporarily carry even an overload on an ordinary flying machine, if the horizontal rudder be suitably adjusted. The aviator has then however to permanently overcome a comparatively high pressure on the horizontal rudder, which renders the steering considerably more difficult. It has therefore already been proposed to displace the supporting planes relatively to the framework of the flying machine. Such a displacement is however very difficult to carry out in practice, which is evident if it be considered at how many points and by how many parts such extended surfaces must be connected with the frame. Each arrangement for altering the position of those surfaces relatively to the frame will also considerably reduce the safety of operating.

Now by this invention an easy adaptation of the flying machine to the most varied conditions, even during flight itself, is rendered possible in that the supporting surfaces or planes remain securely connected with the actual body of the flying machine in the correct position, but the part provided with the balancing planes, on the one hand, and the part carrying the propeller shaft bearings, and preferably also the motor itself, on the other hand, are made displaceable in such a manner relatively to the actual body of the flying machine, that both these parts remain approximately parallel in adjustment. As the balancing planes always adjust themselves in the direction of flight (that is to say substantially horizontally), it results as the action of the adjustment that the supporting planes are inclined more or less relatively to the direction of traveling (or rather to the horizontal), and this is obtained without the supporting planes having to be displaceably arranged on the part carrying them (which preferably also receives the seat for the aviator and passenger and so-forth). Now it is important that in spite of the displacement of the balancing planes, the propeller shall not act in a different direction than in the direction of travel prescribed by the said planes, as only thus can the best efficiency be got from the propeller and motor. This is very important in long distance flights with a heavy load and also for rising in the case of a restricted starting place. For this reason, according to this invention, not only are the balancing surfaces displaced, but the propeller shaft also preferably together with the motor is always so displaced, that it remains substantially parallel with the balancing planes. This may be attained in a simple manner in the case of a suitably jointed flying machine by means of a suitable kinematic connection of the two parts to be displaced.

The present invention is more particularly described with reference to the construction shown in the accompanying drawing by way of example.

a indicates the actual body of the flying machine. The supporting surfaces or planes *b* with the necessary struts or stays and the traveling frame with wheels *c* and skids *d* are secured to this body *a*, and the seat for the aviator and also that for the passenger is provided thereon. The motor *f* with its accessories is also connected to it by means of a suitable joint *e* in such a way that the motor together with its shaft *h* which carries a propeller *g*, can be raised or lowered on the joint *e* out of the horizontal. A similar joint is located at *i* between the main part *a* and the rear part *k* of the framework. Wires or the like *l*, *m*, are attached to the motor, and run preferably over pulleys or the like *n* on the stretcher supports *o* for the supporting planes *b* to the rear part *k* of the framework, which cords act in such a

manner that they raise the rear part when the motor and propeller are lowered and vice versa.

The details of construction of the flying machines may be altered in various ways. The novel and characteristic jointing of the flying machine is the essential feature of the invention which gives it a hitherto unattainable adaptability. If, for instance, a larger load than the normal one is to be conveyed, the machine may be adapted in a simple manner to do this, if the motor and propeller are lowered and the rear part of the frame raised. The balancing planes then adjust themselves substantially horizontally and the propeller shaft remains, as is preferable, parallel with the balancing planes, while the actual body of the flying machine with the supporting planes is elevated at the front and thereby has a greater lifting power. A similar adjustment with a similar action allows the machine to rise in a very short run with full utilization of the power of the motor. Vice versa by employing this invention, the run out on landing may be greatly reduced, as by the previously mentioned adjustment of the flying machine, the supporting planes are placed obliquely and the efficiency of the motor so far reduced that the flying machine descends slowly. The speed of flight is thereby considerably diminished, even while the motor is still working, while hitherto the speed was practically invariable.

I declare that what I claim is:—

1. In a flying machine, the combination of a part carrying the main planes, a part carrying the engine and propeller in front of said main planes, pivotal means connecting said part to said part carrying the main planes, a part carrying the tail behind said main planes, pivotal means connecting the said tail part to said part carrying the main planes and means for keeping the longitudinal axis of said part carrying the engine and propeller always parallel to the longitudinal axis of said tail part.

2. In a flying machine, the combination of a front member carrying the engine and propeller, a main member carrying the supporting planes, a tail member, pivotal means connecting said front and tail members to said main member, means for keeping the longitudinal axis of said tail member and the longitudinal axis of said front member always substantially parallel to one another, and means for displacing said members relatively to said main member.

3. A flying machine consisting of a chassis, supporting planes on said chassis, landing gear mounted on said chassis, a member pivoted to said chassis, an engine and propeller connected to said member, a tail pivoted to said chassis, means for connecting said tail to said member and means for displacing the longitudinal axes of said tail and said member parallel to one another relatively to said chassis.

4. A flying machine consisting of a chassis, supporting planes on said chassis, landing gear mounted on said chassis, stretcher bars on said chassis, a part carrying the engine and propeller pivoted to said chassis, a tail member pivoted to said chassis, wires or the like connected to said pivoted part and to said tail and passing freely over the ends of said stretcher bars, and means for displacing the said member and said tail part relatively to said chassis.

In witness whereof, I have hereunto signed my name this 20 day of March 1913, in the presence of two subscribing witnesses.

HELLMUTH HIRTH.

Witnesses:

WOLDEMAR HAUPT,

HENRY HASPER.