R. WILCKE.

PROPELLER FOR AERIAL VEHICLES.

APPLICATION FILED SEPT. 19, 1910.

996,547. Patented June 27, 1911.

Fig. 1

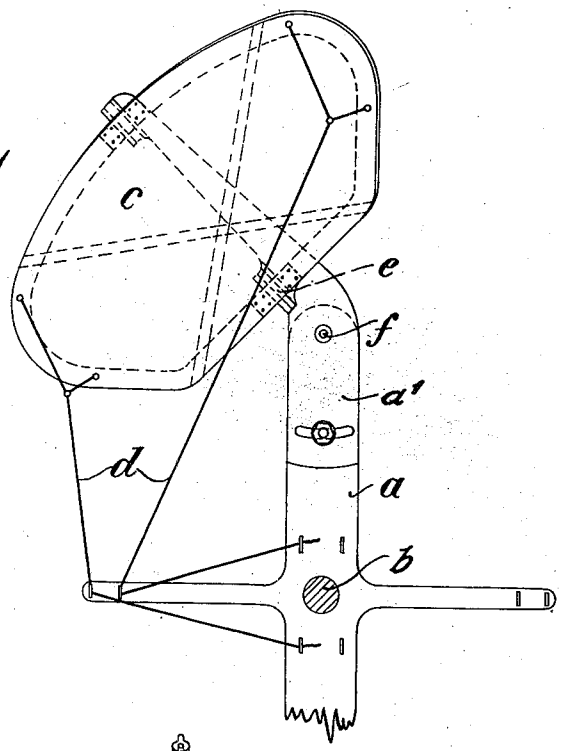
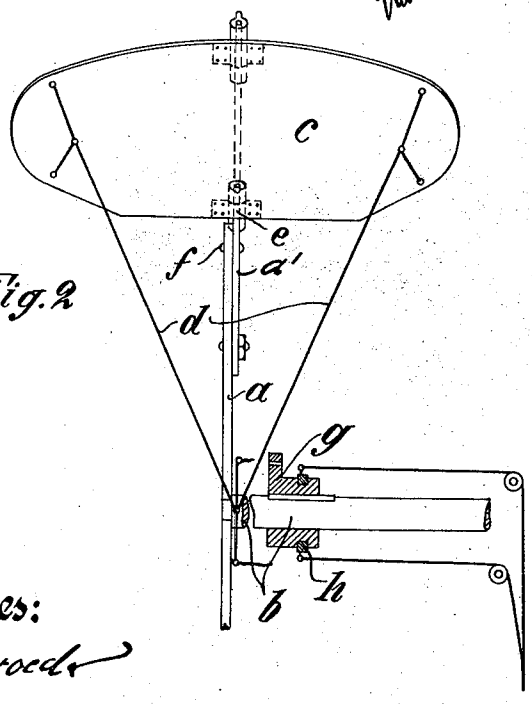


Fig. 2



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PROPELLER FOR AERIAL VEHICLES.

996,547. Specification of Letters Patent. Patented June 27, 1911.

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To all whom it may concern:

Be it known that I, RICHARD WILCKE, a subject of the German Emperor, and residing at Friedenau, near Berlin, Germany, have invented certain new and useful Improvements in Propellers for Aerial Vehicles, of which the following is a specification.

My invention relates to propellers, particularly for aerial vehicles, and a primary object is to provide a propeller of very high efficiency, and one in which the propelling action can be varied and reversed. To this end I impart to the driving planes or blades of the propeller, in addition to the well-known inclination relatively to the plane at right angles to its axis, an inclination relatively to an imaginary cylindrical surface around the axis, in such manner that the planes exercise an inwardly-directed pressure. In consequence of this inwardly-directed component the air is not thrown to the rear in the form of a cone as when the well-known propellers are used, but in the form of a cylinder parallel to the axis of the propeller. Besides increasing the efficiency this has the additional advantage that disturbing currents of air are not caused laterally of the propeller. When the propeller is arranged in this novel manner the driving planes may be made practically as large as may be desired. As the operative surface is located farther from the axis of the propeller than in the case of well-known propellers the speed may be less. When the driving planes are pivoted on their supports they can be adjusted, preferably by means of ropes, in such manner that they drive backward or forward or not at all.

One constructional form of my invention is represented by way of example in the accompanying drawing, wherein:—

Figure 1 is a side elevation showing my propeller, and Fig. 2 is a cross-section through the same.

Referring to the drawing, each driving plane or blade *c* is pivotally mounted on an arm *a'* of a spoke *a* carried by the propeller shaft *b*. These planes are inclined both relatively to the propeller shaft and the spokes and can be rocked on the hinges *e* by means of the ropes *d* or the like. The ropes also serve for anchoring the planes in their adjusted positions. Now by swinging each plane or blade *c* about its appertaining pivot *f* I can adjust the inclination of the planes radially inwardly or outwardly and relatively to the spokes or to an imaginary cylinder around the axis of the propeller before starting the journey. The adjustment by means of the ropes *d* can also be made while traveling.

The ropes may be led along outside or through the hollow propeller shaft to adjusting devices. For example, in order to prevent the ropes being twisted by the motion of the propeller shaft, I may attach the ropes to a ring *g* which participates in the rotation of the propeller shaft and is displaceable longitudinally of the shaft. This ring can be shifted by a non-rotatable fork or ring *h* which engages in the former ring, whereby the ropes can be adjusted.

I claim:—

1. In an aerial propeller of the character described, the combination of a spoke having a slanting arm pivoted thereto, a blade or plane pivoted on said arm, and means attached to the blade or plane for inclining the same relatively to a plane at right angles to the axis of the propeller and relatively to an imaginary cylinder around the same axis for the purpose of acting radially inwardly on the air.

2. An aerial propeller comprising in combination, a propeller shaft, propeller arms radiating from said shaft, a blade arm pivotally mounted on one of said propeller arms and having its free end inclined with respect to the longitudinal axis of said propeller arm, a blade hinged to swing on the inclined free end of said blade arm, and means for adjusting said blade on its hinged mounting to impart a radial inward movement to the air.

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

RICHARD WILCKE.

Witnesses:
ROLLEN KUHN,
WOLDEMAR HAUPT.