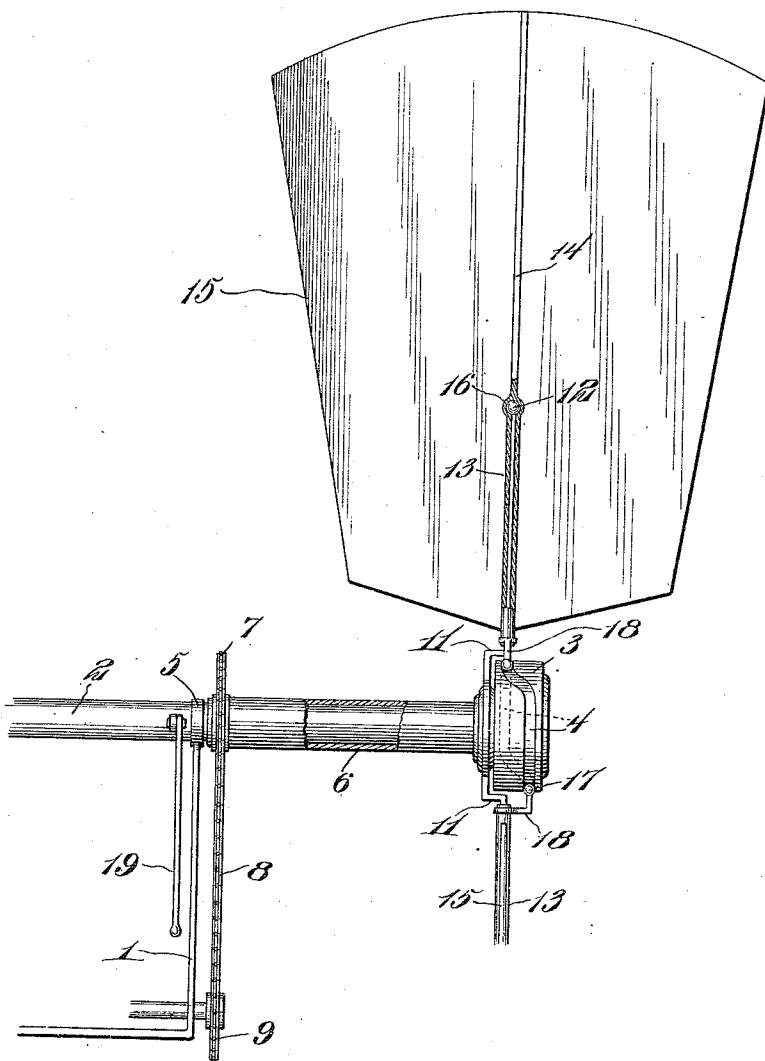


J. O. WRENN.
AERIAL PROPELLER.
APPLICATION FILED JULY 26, 1909.

995,512.

Patented June 20, 1911.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN O. WRENN, OF PORTLAND, OREGON.

AERIAL PROPELLER.

995,512.

Specification of Letters Patent. Patented June 20, 1911.

Application filed July 26, 1909. Serial No. 509,649.

To all whom it may concern:

Be it known that I, JOHN OTTO WRENN, a citizen of the United States, and resident of Portland, county of Multnomah, and State of Oregon, have invented certain Improvements in Aerial Propellers, of which the following is a specification.

This invention relates to new and useful improvements in feathering blades for aerial navigation, and it is an object of the invention to provide a novel device of this character which is capable of lifting the car or machine or to propel the same, as may be desired.

It is also an object of the invention to provide a novel device of this character wherein a blade rotates in such a manner that while the blade is moving to a point to take advantage of the lifting or propelling power of the same, it will move in such position as to offer the least resistance to the air.

It is also an object of the invention to provide a novel device of this character which will be simple in construction, efficient and advantageous in practice and comparatively inexpensive to manufacture.

With the above and other objects in view the invention consists in the details of construction and in the novel arrangement and combination of parts to be hereinafter more particularly referred to.

In describing the invention in detail reference will be had to the accompanying drawings forming part of this specification wherein is shown a view partly in elevation and partly in section of the invention.

In the drawings 1, denotes the body of the machine carrying the axle 2, which projects beyond the body a sufficient distance to permit the rotation therearound of the blades carried thereby. The free end portion of the projected part of the axle 2, has fixed thereto the hub-block 3, having in its periphery the eccentric groove 4, for a purpose to be hereinafter referred to. Between the bearing 5, of the axle 2, and the hub 3, the axle 2, is surrounded by a sleeve 6, carrying a sprocket wheel 7, engaged by the chain 8, which also passes around the sprocket 9, fixed to a suit-

able driven shaft 10. In lieu of this arrangement any other means may be employed for rotating the sleeve 6.

Carried by the sleeve 6, adjacent the outer end thereof are a plurality of spokes 11, each terminating in a ball 12, there being a spoke for each blade. The spoke is embraced by a sleeve 13 constituting a part of the rib 14, of the blade 15. The upper portion of the sleeve 13, is formed into a socket 16, to embrace the ball 12, to effectually hold the blade to the spoke but permitting the blade to rotate about the same.

The groove 4, hereinbefore referred to, is for the purpose of feathering the blade 15, and to perform such function the groove 4, is engaged by the ball 17, carried on the free end of the L-shaped arm 18, fixed to the sleeve 13. To reduce friction the sides of the groove 4, may be provided with anti-friction balls, as is well known.

In order to vary the position of the eccentric groove 4, in the hub 3, the axle 2, is provided with the lever 19. As the hub 3, is fixed to the axle 2, it is believed to be obvious that any rotation of the axle will vary the position of the groove 4.

I claim:

1. In a device of the character described, the combination with an axle and a hub fixed thereto having an eccentric groove; of a sleeve surrounding the axle, means for rotating the sleeve, a spoke carried by the sleeve, a sleeve embracing the spoke, a blade carried by the second sleeve, and an arm carried by the second sleeve extending within the groove of the hub.

2. In a device of the character described, the combination with an axle and a hub fixed thereto having an eccentric groove; of a sleeve surrounding the axle, means for rotating the sleeve, a spoke carried by the sleeve terminating in a ball, a sleeve embracing the spoke having a socket in one end to receive the ball of the spoke, a blade carried by the second sleeve and an arm carried by the second sleeve extending within the groove of the hub.

3. In a device of the character described, the combination with an axle and a hub fixed

thereto having an eccentric groove; of a sleeve surrounding the axle, means for rotating the sleeve, a spoke carried by the sleeve, a sleeve embracing the spoke, a blade
5 carried by the second sleeve, an arm carried by the second sleeve extending within the groove of the hub, and means for rotating the axle to change the position of the groove of the hub.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
