

O. WILL.
 GYROSCOPE PROPELLER.
 APPLICATION FILED JUNE 11, 1917.

1,270,998.

Patented July 2, 1918.
 2 SHEETS—SHEET 2.

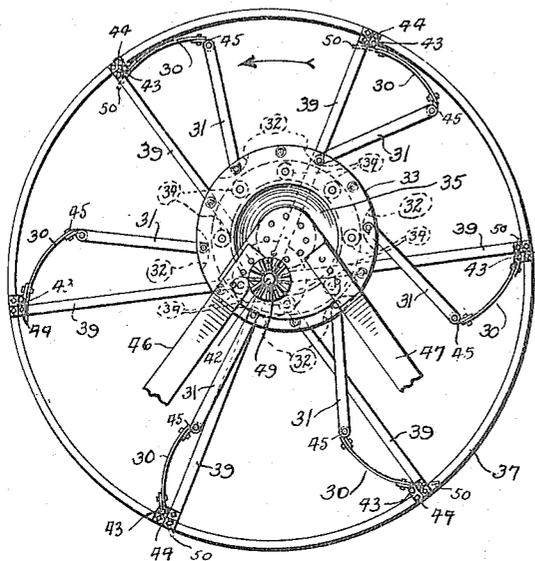


Fig. 3.

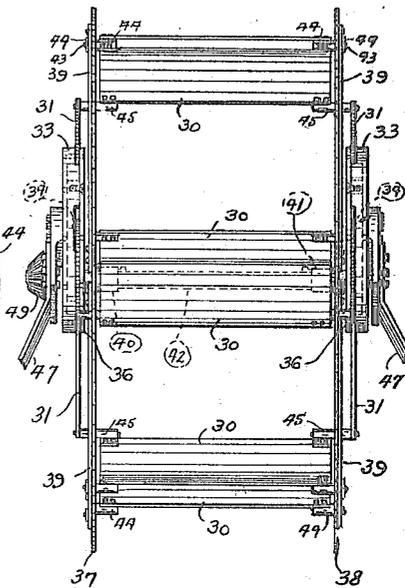


Fig. 4.

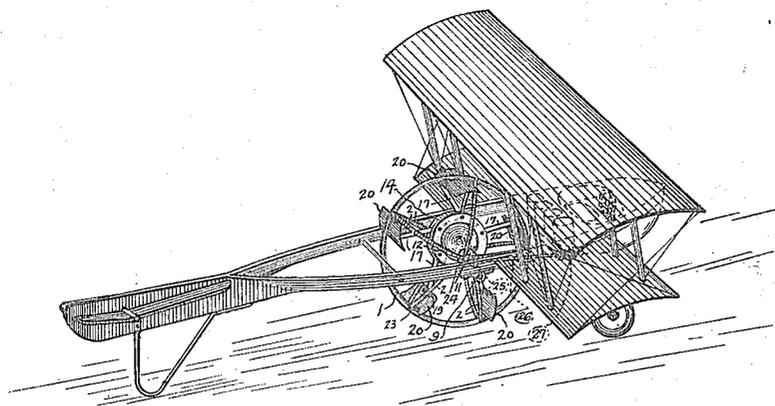


Fig. 5.

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GYROSCOPE-PROPELLER.

1,270,998.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, OTTO WILL, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented a new and useful Gyro-
scope-Propeller, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to a gyroscope propeller for aeroplanes and its object is to produce a pusher type of a transverse bladed propeller that will at the same time act as a stabilizer. The wide blades have a reciprocating movement being actuated by links connected to a rotatable ring upon a central stationary eccentric bearing, which operate the blades into a vertical pushing position, thence to a horizontal plane oppositely; at the latter position offering little or no resistance. Blades of great width and area are possible. The revolving rim and the several blades connected thereto produce the gyroscopic effect.

Other objects of the invention will appear as the description proceeds.

Figure 1 is a side elevation of the single eccentric type propeller.

Fig. 2 is a cross sectional view on line 2-2, Fig. 1.

Fig. 3 is a side elevation of the double eccentric type propeller.

Fig. 4 is an end elevation of Fig. 3.

Fig. 5 is a perspective view of an aeroplane with the single eccentric type propeller installed thereon.

Various features of the invention follow in which the same numeral is applied to the same portion throughout; however I am aware that there may be several modifications thereof.

Numeral 1 indicates a circular rim, and has secured thereto equally spaced, arms 2 leading to a disk 3 seated in a grooved portion 4 of a stationary shaft 5 secured in a bearing 6. At one end of the shaft 5 is a female recessed portion 7 having rotatable therein a stub shaft 8 from a rotatable shaft 9 mounted in a bearing 10. Secured upon the shaft 9 is a hub 11 for the purpose of connecting to the arms 2 and the rim 1. Fastened to the stationary shaft 5 is a central stationary eccentric bearing 12 having ball bearings 13 for the operation of the outer ring 14 having a cover plate 15 secured thereto. Within the outer ring 14 are

semicircular grooves 16 for the free movement of the connecting links 17, which are pivoted at 18 to the outer ring 14 and connect to the bearings 19 on a plurality of reciprocating transversely curved blades 20 having bearings 21 supporting a shaft 22 rotatable in bearings 23 secured to the rim 1 and arms 2. It is to be understood that any number of blades may be used, for example five has been shown in the single eccentric type propeller and six in the double eccentric type, which are considered the most efficient when propeller is turning at one thousand revolutions per minute. A gear 24 secured on the rotatable shaft 9 meshes with a similar gear 25 on the drive shaft 26 from a suitable source of motive power, as for example, a gasolene engine 27. The blades are slightly curved in the manner shown to correspond to their planetary movement around the central stationary eccentric bearing producing the reciprocating motion for the pushing effect of the blades and also lifting force at the driving position and to offer little or no resistance in their opposite travel. In Figs. 3 and 4 is shown a modified form of a double eccentric type in which the reciprocating blades 30 operate in a double eccentric type, in which 31 indicate the connecting links pivoted in the recessed portions 32 in a rotatable ring 33 having roller bearings 34 upon a stationary eccentric bearing 35, a cover plate 36 retaining bearings and connecting links in place. As both eccentric bearings are alike no description of the other is necessary. Two rims 37 and 38 secure arms 39 leading to and fastened to the hubs 40 and 41 keyed to the rotatable shaft 42 operating the reciprocating blades 30. The blades are pivoted at 43 to bearings 44 secured to the rims 37, 38 and the arms 39, and similarly pivoted to bearings 45 on the connecting links 31. Braces 46 and 47 may be secured at any angle upon a sector bearing 48, and connect to a suitable place upon the aeroplane side members, or, may be supported in the same manner, in fact used for the same purpose as the single eccentric type propeller as shown in Fig. 5. A gear 49 connects to the drive shaft of the engine, meshing with a gear similar to the one in Fig. 2. It is to be noted that the blades may be extended as per dotted line form shown at 50, thus giving a greater pushing area. The center of the central eccentric bearing on both or all types,

is set at an angle of forty degrees or more off the center of the driving shaft, this having a tendency to produce a lifting effect in addition to the pushing efficiency.

5 Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States, is as follows:

10 1. In a gyroscope propeller having a stationary shafting; a rotatable shaft with a stub bearing in a recessed portion of said stationary shaft; a hub secured to said rotatable shaft having extending arms connecting to a circular rim; similar connect-
15 ing arms to said rim secured to a disk in a grooved bearing portion on said stationary shafting; a central eccentric secured to said stationary shafting between said disk and hub; said eccentric provided with ball bear-
20 ings for mounting thereto a rotatable ring; said ring having links pivoted thereto; curved blades pivoted to said links and to the circular rim; means to operate the rotatable shaft and hub thereon with arms there-
25 from, for revolving the circular rim, which actuates connecting links to the rotatable ring in a reciprocating movement upon the

central eccentric; said eccentric set on an angle off center of driving shaft to produce a lifting and pushing force for said curved 30 blades when in their operation.

2. In a gyroscope propeller having a central rotatable shafting; a hub secured there-
on having extending arms connecting to a circular rim; a stationary eccentric bearing 35 having thereon a rotatable ring provided with ball bearings; links pivoted to recessed portions in said rotatable ring; a cover plate secured thereon for retaining said ball bear-
40 ings and links; curved blades pivoted to said links and to circular rim; said central shafting set on an angle off the center of said stationary eccentric bearing; means to operate said central shafting, hub and connect-
45 ing rim to produce a reciprocating movement to said links and curved blades.

In testimony whereof I have hereunto set my hand on this 6th day of June A. D. 1917, in the presence of the two subscribed witnesses.

OTTO WILL.

Witnesses:

W. W. HEALEY,
M. E. EWING.

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