A. JACOBSON.

AIRSHIP PROPELLER.

APPLICATION FILED SEPT. 5, 1917.

1,274,886. Patented Aug. 6, 1918.

Fig. 1.

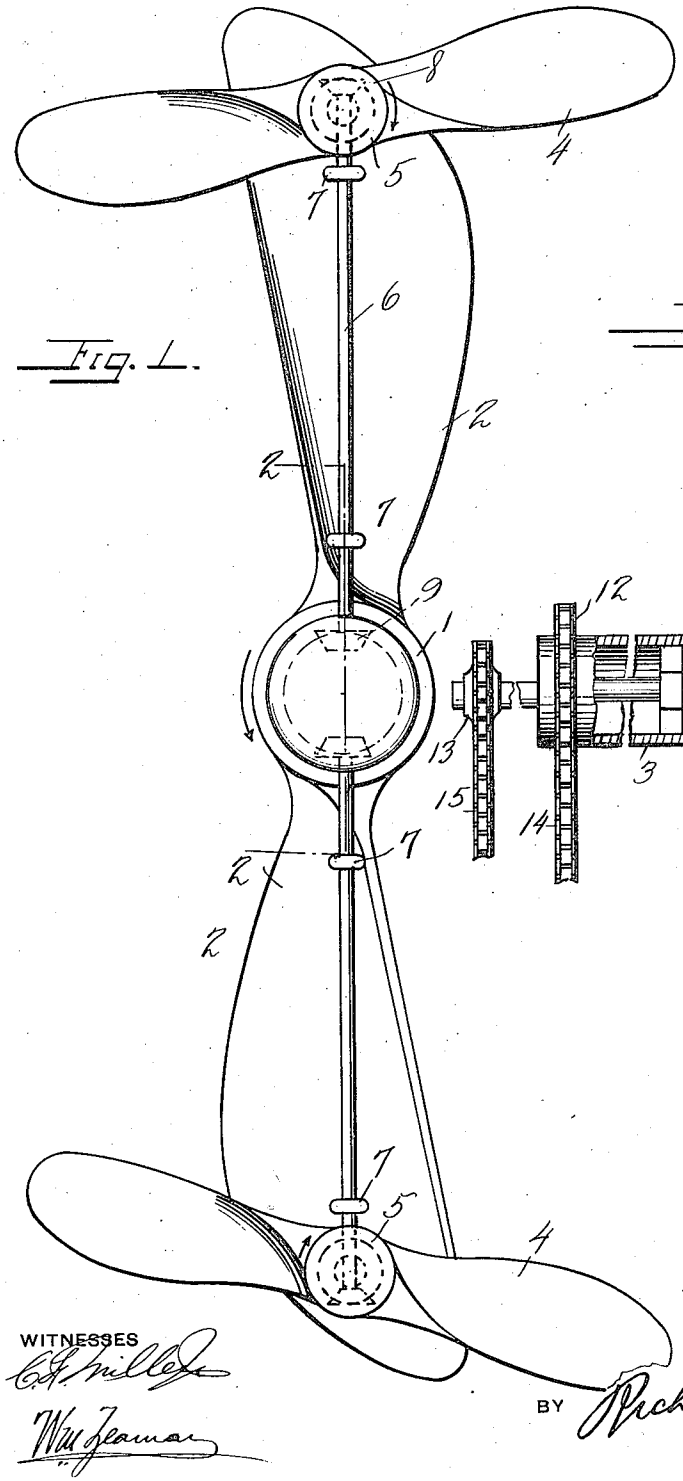
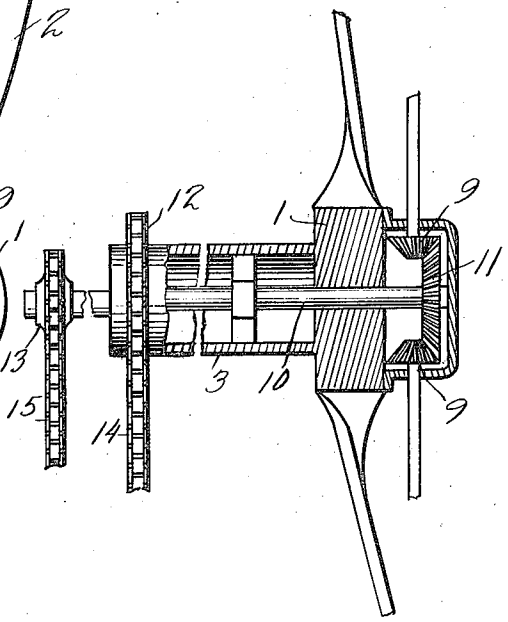


Fig. 2



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AIRSHIP-PROPELLER.

1,274,886. Specification of Letters Patent. Patented Aug. 6, 1918.

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To all whom it may concern:

Be it known that I, AUGUST JACOBSON, a citizen of the United States, residing at Alvina, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Airship-Propellers, of which the following is a specification.

This invention has relation to propellers for aeroplanes, airships, or the like, and the nature and objects thereof will be readily apparent to those skilled in the art to which it appertains in the light of the following explanation of the accompanying drawings, illustrating what I now believe to be the preferred embodiment, or mechanical expression, of my invention, from among other forms and arrangements within the spirit thereof, or the scope of the appended claims.

However, an object of the invention is to provide a propeller for the purpose set forth and including a main propeller constructed substantially in a conventional manner, but embodying and having associated therewith one or more auxiliary propellers, an independently operating means therefor whereby the speed of the main propeller and the auxiliary propeller or propellers may be varied with relation to each other, so as to acquire various degrees of traction for the machine, or for utilizing all of said propellers simultaneously so as to gain the aggregate of the tractive effect on each propeller.

In addition to the foregoing, my invention comprehends improvements in the details of construction, and arrangement of the correlated parts to be hereinafter more fully described and particularly pointed out in the appended claims.

In the accompanying drawings in which similar and corresponding parts are designated by the same characters of reference throughout the several views in which they appear:

Figure 1, is a view in front elevation of a propeller arrangement constructed after the manner of my invention, and

Fig. 2, is a detail sectional view taken on the line 2—2 of the preceding figure.

With reference to the drawings, 1 indicates the hub of an aeroplane or airship propeller, and 2 the oppositely directed and alined blades thereof, constituting the main propeller of my invention. For the purposes of the present invention, the main propeller shaft 3 is of a tubular construction for a purpose which will be presently obvious.

Adjacent the outer extremity of each blade, and upon the forward faces thereof, I provide an auxiliary propeller 4 journaled for rotation about an axis, preferably parallel to the axis of the main propeller shaft 3. Each auxiliary propeller 4, is provided with an auxiliary propeller bevel gear 5 rotatable therewith and secured to the under side of each propeller, and an auxiliary propeller operating shaft 6 is extended longitudinally along the forward face of each main propeller blade 2, and mounted for rotation in bearings 7 secured to said blades 2.

The outer terminal of each shaft 6 adjacent its corresponding auxiliary propeller is provided with an auxiliary propeller operating shaft bevel gear 8 adapted for meshing engagement with the adjacent bevel gear 5, while the opposite end of each shaft is provided with a bevel gear 9. An auxiliary propeller shaft 10 is extended centrally through the tubular main propeller shaft 3, through the hub 1, and its projected end provided with a bevel gear 11 adapted for meshing engagement at diametrically opposite points with the aforesaid gears 9. The main propeller shaft 3 may be provided at its rearward end with a sprocket 12, and the auxiliary propeller shaft 10 with a sprocket 13 each independently operable through the medium of chains 14 and 15 respectively from a source of power. It is not considered necessary to illustrate the mechanism whereby each of said shafts is rotated independently, the object and operation of the invention will be readily understood, if it is borne in mind that the shafts are independently operable, and either may be rotated, while the other is stationary.

In view of the foregoing, it will be obvious that if the main propeller is rotated through the medium of its tubular shaft 3, in the direction of the arrow as indicated in Fig. 1, and the central shaft 10 held stationary, the auxiliary propellers will have imparted thereto a rotative motion in the direction of the arrows. It will be quite evident therefore that the tractive effect of

the main propeller is amplified by the rotation of the auxiliary propellers which in their turn exert a certain amount of tractive force depending upon their dimensions and speed of rotation.

Should it become desirable to increase the speed of the aeroplane, airship, etc., over that imparted to it by operating the main and auxiliary propellers as above set forth, the central shaft 10 may have imparted thereto rotation in a direction opposite to the rotation of the main shaft 3, thereupon the auxiliary propellers will have imparted thereto an increased speed of rotation, adding their tractive force to the traction of the main propeller.

This arrangement of propellers admits of a further method of operation to cause a reduction of speed of the aeroplane, etc., during rotation of the main and auxiliary propellers without stopping rotation of the main propeller. Thus, assuming that the main propeller is in rotation, with the auxiliary propeller shaft 10 held stationary, so as to cause rotation of the auxiliary propeller according to the method first set forth if the auxiliary propeller shaft 10 is set in motion in a direction corresponding to the motion of the main propeller shaft, the auxiliary propeller shafts will be retarded in their motion relative to the blades on which they are mounted, to such an extent as to either entirely preclude such relative motion, or to produce a motion of the auxiliary propellers in an entirely opposite direction thereby exerting what may be termed a back pressure upon the aeroplane, etc., thereby reducing its speed, without reducing the speed of rotation of the main propeller. The relative relation of the main and auxiliary propellers as herein illustrated, is suitable for either the monoplane type of aeroplane wherein the propeller is located at the forward end, or the biplane type wherein the propeller is located at the rear of the machine and is designed to urge the same forward by a repelling reaction upon the air.

While I have illustrated and described my invention with some degree of particularity, I realize that in practice various alterations thereof may be made, and I therefore reserve the right and privilege of changing the form of the details of construction, or otherwise altering the arrangement of the correlated parts without departing from the spirit of the invention or the scope of the appended claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. An airship propeller including a main propeller, auxiliary propellers revolubly mounted upon the blades thereof, and means for rotating said auxiliary propellers independently of the main propeller.

2. An airship propeller including a main propeller, auxiliary propellers revolubly mounted upon the blades thereof, and means for rotating the auxiliary propellers simultaneously, and independently of the main propeller.

3. An airship propeller including a main propeller, auxiliary propellers revolubly mounted upon the blades thereof, and means for rotating the auxiliary propellers in unison, and independently of the main propeller.

4. An airship propeller including a main propeller, auxiliary propellers revolubly mounted upon the blades thereof, and means for rotating the auxiliary propellers in unison and independently of the main propeller, whereby the tractive effect of the main propeller may be partly counteracted by rotation of the auxiliary propellers.

5. An airship propeller including a main propeller, auxiliary propellers revolubly mounted on the blades thereof, an auxiliary propeller shaft concentrically disposed with relation to the axis of rotation of the main propeller, and means operable by rotation of said auxiliary propeller shaft for rotating the propellers.

6. An airship propeller including a main propeller, auxiliary propellers rovolubly mounted on the blades thereof, an auxiliary propeller shaft mounted concentrically with relation to main propeller, a bevel gear on said propeller shaft, auxiliary propeller operating shafts, extending longitudinally of the main propeller blades, gears on the inner ends of said shafts meshing with the aforesaid bevel gears, bevel gears fixedly secured to the opposite ends of said auxiliary propeller operating shaft, and bevel gears on each auxiliary propeller, rotatable therewith, and having meshing engagement with the last mentioned bevel gears whereby said auxiliary propellers may be rotated by rotation of said auxiliary propeller shaft independently of the main propeller.

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

AUGUST JACOBSON.

Witnesses:
H. J. MAHLARD,
H. V. NURMI.