

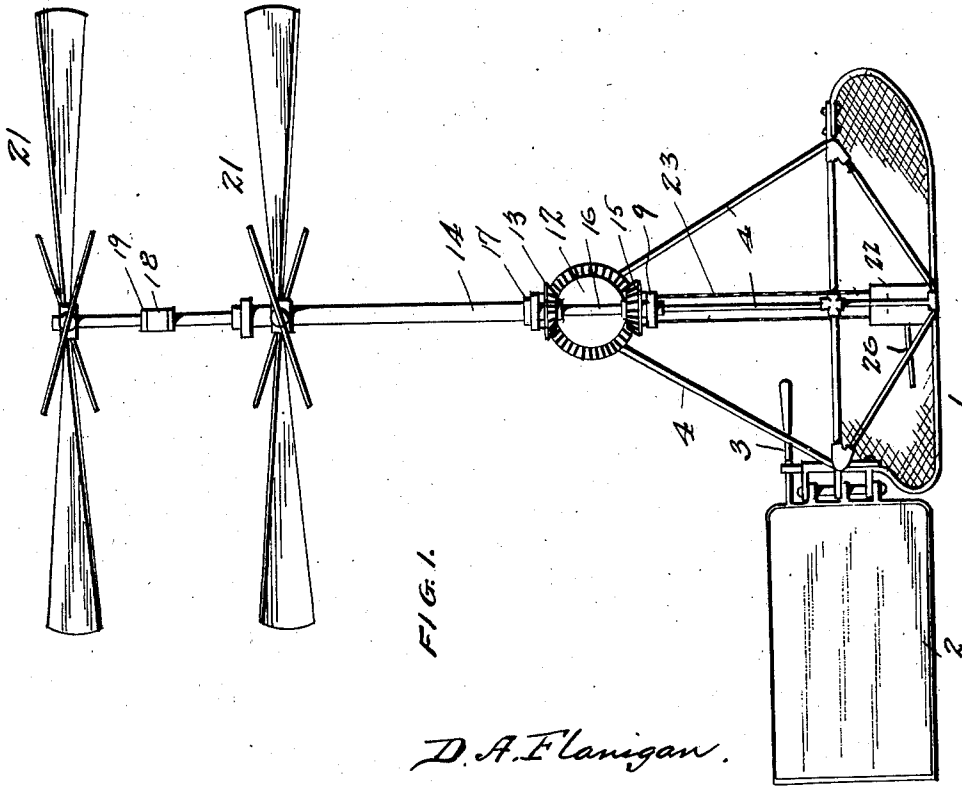
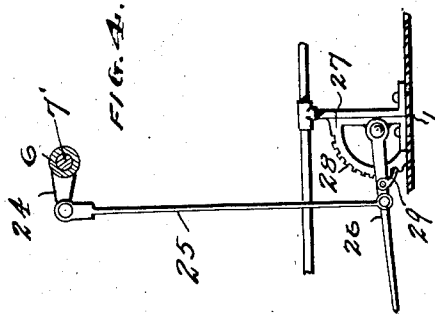
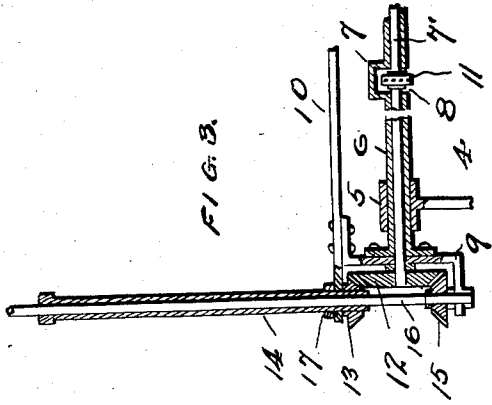
D. A. FLANIGAN.
AIRSHIP.

APPLICATION FILED FEB. 14, 1911.

Patented Oct. 29, 1912.

2 SHEETS-SHEET 1.

1,043,004.



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INVENTOR

WITNESSES

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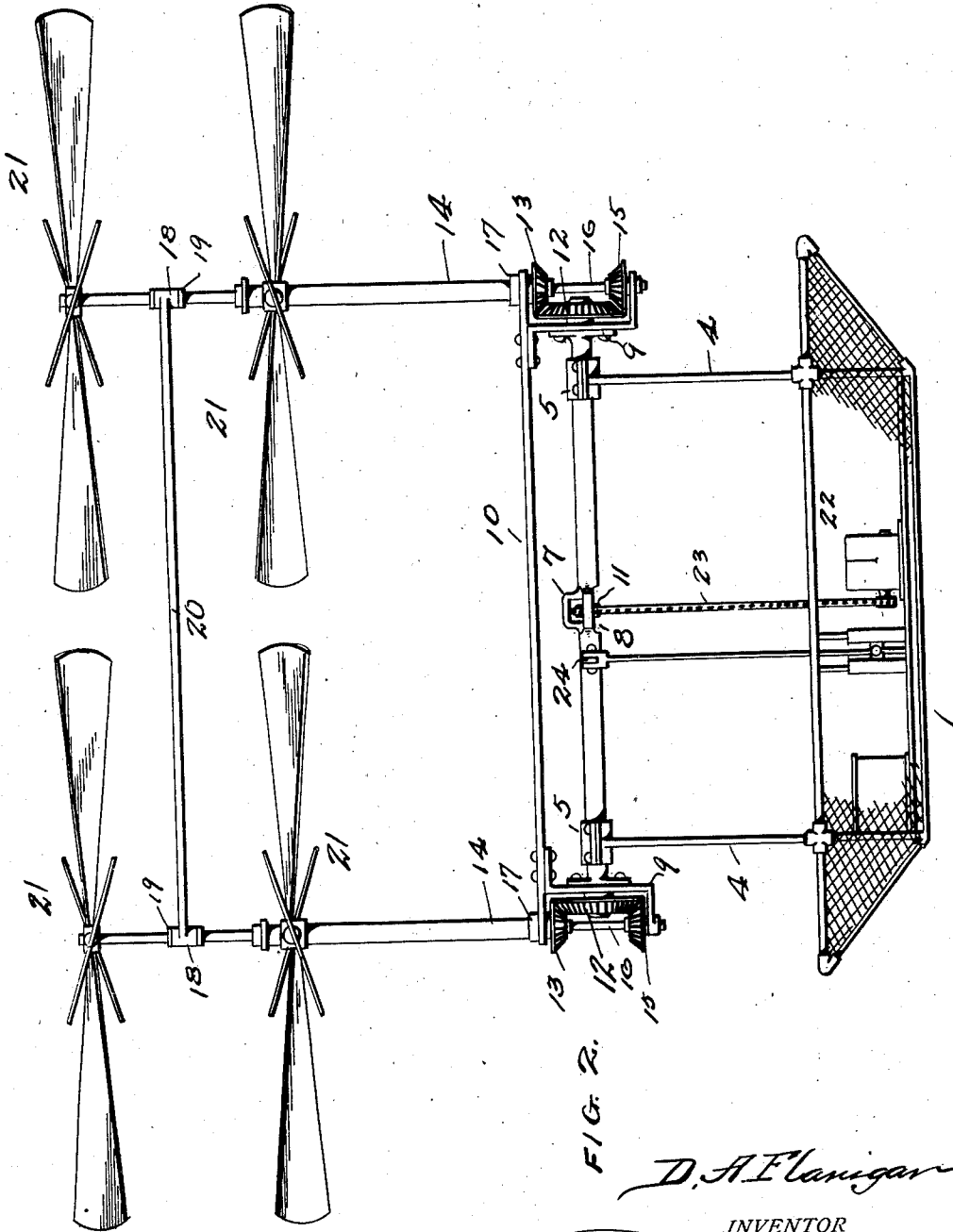


FIG. 2.

WITNESSES

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AIRSHIP.

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To all whom it may concern:

Be it known that I, DAVID A. FLANIGAN, a citizen of the United States, residing at Springville, in the county of Utah and State of Utah, have invented certain new and useful Improvements in Airships, of which the following is a specification.

My invention relates to improvements in mechanical movements, and the leading object of my invention is the provision of improved mechanism for the transmission of power which shall be particularly adapted for use in driving flying machines of the helicopter type.

A further object of my invention is the provision of a machine of this character which shall be adapted either for use in elevating weights as a helicopter or for the production of power through the medium of air or other fluid currents impacting against the vanes or blades carried by the shafts.

Another object of the invention is the provision of strong, simple and durable mechanism of a light but efficient type which may be interchangeably employed for use in lifting a flying machine and sustaining the same or for a power motor.

To attain the desired objects, my invention comprises mechanism for attaining certain mechanical movements, said mechanism comprising a tubular shaft having a second shaft journaled therein, each of said shafts being provided with vanes or blades, and a shaft connected by gearing to the other end of said pair of shafts in such manner that the tube and shaft journaled therein revolve in opposite directions while the other shaft revolves in a constant direction and serves either to drive the pair of shafts or be driven thereby, the invention further residing in the novel features of construction and combination and arrangement of parts for service substantially as described and as illustrated in the accompanying drawings.

Figure 1 represents a side elevation of my complete machine. Fig. 2 represents a front view thereof. Fig. 3 represents a sectional view of the bearings for the shafts, the tubular shaft being shown in section, and, Fig. 4 represents a detailed view of the shaft adjusting mechanism.

In the drawings, the numeral 1 designates the body of the car having located at the rear the rudder 2 operated by the handle 3, and rising from the body of the machine are

the braces 4 which support the bearings 5 having rotatably mounted therein the hollow shaft or sleeve 6 which extends the width of the body of the car, said sleeve having an enlarged central portion 7 having a slot 8 in the lower or under side thereof. On the ends of the sleeve are the heads to which are secured the brackets 9, while connecting the brackets is a brace bar 10.

Journaled in the sleeve 6 is a shaft 7' having a sprocket wheel 11 located in the enlarged portion 7 of the sleeve, while mounted on each end of the shaft is a beveled gear wheel 12, said gear being in mesh with the beveled gear wheel 13 of the tubular shaft 14 and the gear 15 of the solid shaft 16, the shaft 14 passing through an opening in the end of the bar 10 and held by a collar 17 bearing against the said bar, while the shaft 16 is journaled in the tubular shaft 14 and has its lower end supported by the bracket 9. To retain the shafts in correct position, I mount upon each shaft 16 the loose sleeve 18 held in position upon the shaft by the collars 19, said sleeves being connected by the brace rod 20 which serves in connection with the shafts and bar 10 to form a strong rectangular frame.

It will be observed that I have mounted upon the upper end of each of the shafts the blades or vanes 21, while leading from the sprocket wheel 11 to a power supplying device 22 is the chain 23 which serves to revolve the shaft 7', which shaft through the medium of the beveled gears causes the tubular shaft and solid shaft journaled therein to revolve in opposite directions and thus create through the blades a strong lifting force for operating the flying machine, as will be readily understood by reference to the drawings.

To aid in controlling the ascent and descent of my air ship when equipped with the above described lifting fans, I secure to the sleeve 6 the rock arm 24 having pivotally secured to its outer end the link 25 pivoted at its other end to the lever 26 pivoted to the bracket 27 carried by the base of the body, said bracket being also provided with a segment 28 adapted to be engaged by a dog 29 carried by the lever to lock the same in adjusted position. In operation, the adjustment of the lever 26 serves to swing the sleeve 6 and thus the brackets and shafts at an angle to the car, the direction in which

said shafts are swung varying the movement of the flying machine as will be readily understood.

It will be apparent to all that I have provided an improved mechanism for the transmission of power which while especially adapted for use in an air ship can be used for many varied purposes, and while I have shown the shaft 7' as driven by a motor or engine it will be seen that a driving impact may be directed against the blades or vanes, such as a wind or water current, and that said impact will cause the revolution of the blades and their shafts and that in this manner the force thus applied to the series of blades will all serve to aid in revolving the shaft 7' and that I thus create a strong driving force which may be connected by the sprocket and chain with a dynamo, mill or any machinery for driving the same.

I claim:

1. In power transmission mechanism, the combination with the basket, rudder and supports, of a shaft mounted therein, and carrying gear wheels upon its outer ends meshing with gear wheels secured at diametrically opposite points, respectively, upon tubular shafts having journaled therein solid shafts, the said pairs of shafts being adapted to be either revolved in opposite directions by the main shaft or to revolve the main shaft in a constant direction, said pairs of shafts being connected at their upper and lower extremities, respectively, by a pair of brace rods secured thereto, blades secured upon said pairs of shafts, and means for adjusting the angle of the pairs of shafts with respect to the body of the machine, said means comprising a rock arm having one end fastened to a sleeve mounted on the main shaft and having pivotally secured to its other end a link, said link being pivoted to an operating lever also pivotally secured to a bracket carried by the base of the body, said bracket being provided with a segment adapted to be engaged by said lever to lock same in adjusted position.

2. In an air ship, the combination with the body, rudder and supports, of a main shaft rotatably journaled in a sleeve carried by said supports, means for rotating said shaft, gears secured upon the outer extremities of said shaft and meshing with gears secured upon the lower ends of pairs of tubular and solid shafts, said tubular shafts having solid shafts journaled therein and having blades mounted upon their upper ends whereby a lifting impact is given the machine, brace rods connecting said tubular shafts at their upper and lower portions and forming a frame of substantially rectangular form, the said pairs of shafts being adapted to be either revolved in opposite directions by the main shaft or to revolve the main shaft in a constant direction, and

means for adjusting the angle of the pairs of shafts with respect to the body of the machine.

3. In an airship, the combination with the car body and rudder, of a plurality of braces rising therefrom, a sleeve supported by the braces, said sleeve having an enlarged slotted central portion and a drive shaft, brackets secured upon each end of the sleeve, a brace bar connecting said brackets, a sprocket wheel journaled in the enlarged portion of the sleeve, a gear mounted at each end of the shaft, a pair of tubular shafts supported by the brackets and brace bar at right angles to the drive shaft, gears carried thereby meshing with the gears on the tubular shaft, solid shafts journaled in the tubular shafts, gears carried by said solid shafts meshing with said drive shaft gears, loose sleeves carried at the upper ends of the solid shafts, a brace rod connecting the two shafts and forming with the lower brace rod a substantially rectangular frame, vanes upon the upper ends of each of the tubular and solid shafts, driving means connected to the sprocket wheel on the sleeve, and means for controlling the ascent and descent of the airship, said means comprising a rock arm mounted upon the sleeve, a link pivotally secured to its outer end, an operating lever pivoted to the other end of the link, a bracket to which the lever is pivoted and a segmental rack carried thereby and adapted to be engaged by a dog upon the lever, the arrangement of the drive and driven shafts being such that the tubular and solid shafts are revolved in opposite directions or that the drive shaft may be revolved by the driven shafts when desired.

4. In an airship, the combination with a basket, of supports rising therefrom, bearings carried by said supports, a sleeve journaled therein, a horizontally disposed shaft in said sleeve, brackets secured to said sleeves, a connecting brace rod for said brackets, a bevel gear mounted on each end of said shaft, vertical shafts rising from said brackets, bevel gears carried thereby meshing with said gears on the horizontal shaft, a brace rod connecting the upper ends of said vertical shafts, blades secured upon said vertical shafts, and means for adjusting the angle of said shafts with respect to the body of the airship.

5. In an airship, the combination with a basket, of supports rising therefrom, a horizontally disposed shaft journaled thereon, gear wheels carried by said shaft, pairs of tubular and solid shafts arranged adjacent said horizontal shaft, gear wheels carried by said tubular and solid shafts meshing with said gears on the horizontal shaft, horizontal brace rods connecting the upper and lower extremities of the vertical shafts, blades carried by said shafts, and means for

adjusting the angle of said shafts with respect to the body of the machine.

6. In an airship, the combination with a platform, driving means thereon, supports
 5 rising from the platform, bearings on the upper ends of said supports, a sleeve mounted therein and formed with an enlarged central portion, a horizontally disposed shaft
 10 journaled therein, a sprocket carried by said sleeve and connected with the driving means by a sprocket chain, brackets secured to said
 15 sleeve, a horizontally disposed brace rod secured to said brackets, a brace rod thereabove, collars on said brace rods, vertically
 20 disposed solid and tubular shafts operatively connected with the horizontal shaft, sleeves on the solid shafts engaged by the
 collars on the upper horizontal brace rod, the lower ends of the tubular shafts being
 engaged by the collars on the lower brace rod, and blades carried by said vertical
 shafts.

7. In an airship, the combination with a platform, driving means thereon, supports
 25 rising from the platform, bearings on the upper ends of said supports, a sleeve mount-

ed therein and formed with an enlarged central portion, a horizontally disposed shaft
 journaled therein, a sprocket carried by said
 30 shaft within the enlarged portion of the sleeve, and connected with the driving means by a sprocket chain, brackets secured to said
 sleeve, a horizontally disposed brace rod secured to said brackets, a brace rod there-
 35 above, collars on said brace rods, vertically disposed solid and tubular shafts operatively connected with the horizontal shaft, sleeves on the solid shafts engaged by the
 collars on the upper horizontal brace rod, the
 40 lower ends of the tubular shafts being engaged by the collars on the lower brace rod, blades carried by said vertical shafts, a rock arm secured to the sleeve of the horizontal
 shaft and arranged parallel to the sprocket
 45 chain connecting said shaft and the driving means, and means connected therewith for adjusting the angle of the vertical shafts.

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

DAVID ALMA FLANIGAN.

Witnesses:

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 J. D. BAGLEY.