No. 875,484. PATENTED DEC. 31, 1907.

A. A. ANDERSON.

PROPELLER.

APPLICATION FILED JULY 26, 1907.

Fig. 1.

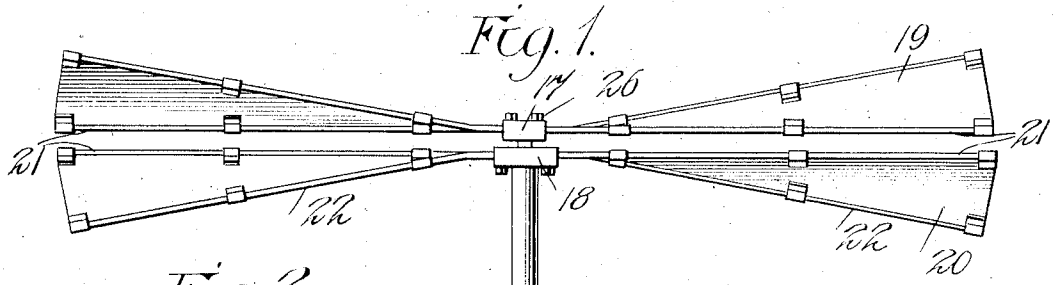


Fig. 3.

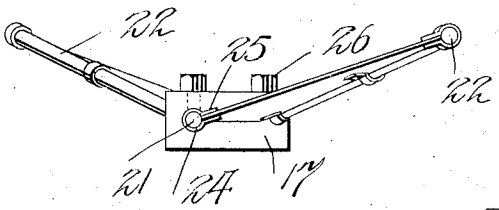
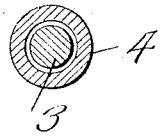


Fig. 4.



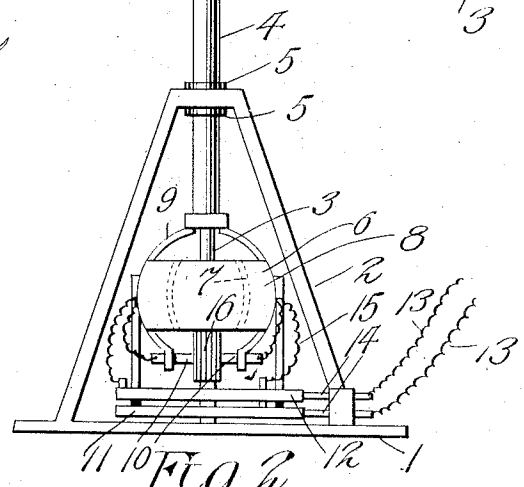
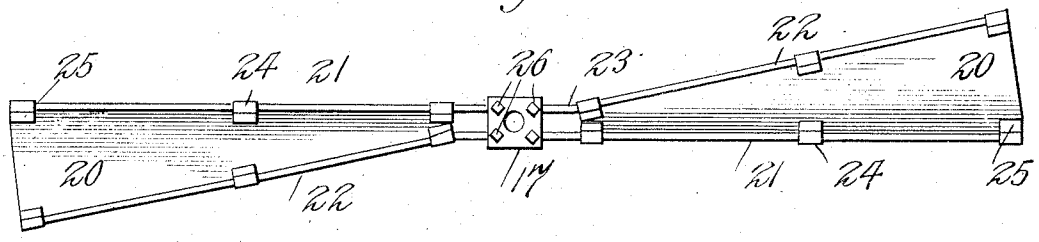


Fig. 2.



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PROPELLER.

No. 875,484. Specification of Letters Patent. Patented Dec. 31, 1907.

Application filed July 26, 1907. Serial No. 385,702.

To all whom it may concern:

Be it known that I, ALBIN A. ANDERSON, a citizen of the United States, residing at Mead, in the county of Saunders and State of Nebraska, have invented new and useful Improvements in Propellers, of which the following is a specification.

This invention relates to an improvement in propellers, designed primarily for use on flying machines or air ships.

The main object of the present invention is the provision of means for mounting the propellers for operation in reverse directions and to so connect the blades of the respective propellers as to permit their convenient adjustment to alter their relative inclinations.

The invention will first be described in the following specification, reference being had particularly to the accompanying drawings, in which:—

Figure 1 is a view in elevation illustrating my improved propelling mechanism. Fig. 2 is a plan of one of the head blocks showing the means for attachment of the blades thereto. Fig. 3 is a side elevation of the same. Fig. 4 is an enlarged section on line 4—4 of Fig. 1.

Referring particularly to the drawings, wherein similar reference numerals indicate like parts throughout the several views, my invention comprises a main frame including a base-plate 1 designed to be secured to any structure, and a skeleton supporting frame 2 rising from the base-plate. A main shaft 3 is revolubly supported in the base-plate rising through and projecting beyond the supporting frame 2. A sleeve 4 is arranged to encircle the main shaft, being revolubly supported in the frame 2 and held against independent longitudinal movement by collars 5, which, if desired, may form cones or caps of an ordinary ball bearing to guard against undue friction in the revolution of the same. An electromotor 6 is mounted within the skeleton frame 2, the armature 7 of said motor being fixed to the main shaft 3, and the field 8 being relatively fixed to the sleeve 4 and through the medium of hangers 9, the latter preferably extending below the field and being arranged to support the brushes 10, being properly insulated therefrom. Collector rings 11 and 12 are mounted on the main shaft 3, to which rings a current is supplied from any source of energy through conductors 13 and brushes 14. The current is led from the collector rings 15 to the field and to the brushes 10 connecting with the ordinary commutator 16 of the motor. As thus arranged, both the motor and armature are free to revolve and in the energization of the field and armature, said field and armature will be reversely rotated, as will be obvious.

The shaft 3 terminates at its relatively free or other end slightly above the adjacent end of the sleeve, and each of these parts are provided with a head block, 17 and 18 respectively, secured to the respective shaft and sleeve. Blades 19 are secured to the head blocks, these blades being mounted in each block in an identical manner.

Referring particularly to Fig. 2, it will be noted that the blade comprises an approximately triangular strip 20, preferably of aluminium or similar material secured at the side edges to rods 21, 22 terminally mounted in the block. The rod 21 is approximately straight from its connection with the block to the outer terminal, while the rod 22 is formed with a bend at 23 adjacent its connection with the block. The blade 20 terminates at its inner end adjacent the end 23 of the rod 22, the side edges of the blade being secured to the rods through the medium of holding members 24. These members comprise elongated strips bent into ring form to encircle the rods and projected from the ring to form leaves 25 to bear upon the respective upper and lower surfaces of the blade, as clearly shown in Fig. 3. The inner ends of the rods 21 and 22 seat in holes drilled through the head block, and set screws 26 are threaded through the upper surface of the block to bear upon the socket receiving ends of the rods. It is thus obvious that the rods may be turned in their socket bearings secured in adjustable position through the medium of the set screws 26. The bend 23 in the rod 22 projects the blade supporting portion of said rod at an angle to the rod 21, so that turning of the rod 22 in its socket will alter the elevation of the free end of said rod, and thereby vary the angular inclination or pitch of the blade, as will be obvious.

The construction described, therefore, provides a propelling mechanism comprising two series of blades, one mounted upon a shaft and the other upon an enveloping sleeve. The motive power for the respective series of blades is provided in the use of a motor having the armature supported upon

the shaft and the field supported upon the sleeve, though the reverse of this arrangement is obviously equivalent and contemplated herein.

The specific connection of the blades to the head blocks provides for the ready and convenient adjustment of any or all of said blades to alter their pitch or inclination with particular regard to the work to be performed.

The head blocks shown are square in plan, with but two blades connected to each block. It is, however, obvious that said blocks may, without departing from the spirit of the invention, be varied in outline and in number of blades be separated from the same block.

Having thus described the invention, what I claim is:—

1. A propeller comprising a main shaft and enveloping sleeve therefor, an electromotor having the field connected to the sleeve and the armature connected to the shaft, a head block secured to the shaft, a head block secured to the sleeve, and a blade projecting from each of said blocks, said blade comprising spaced rods and a strip secured between the rods, one of the rods being straight throughout its length and the other formed with a bend adjacent the connection with the block.

2. A propeller comprising a revolving element, a head block secured thereon, and a blade projecting from said block, said blade comprising spaced rods and a strip secured between the rods, one of the rods being straight throughout its length and the other formed with a bend adjacent the connection with the block, and means for permitting independent adjustment of the rods.

3. A propeller comprising a revolving element, a head block secured thereon, and a blade projecting from said block, said blade comprising spaced rods and a strip secured between the rods, one of the rods being straight throughout its length and the other formed with a bend adjacent the connection with the block, means for mounting the rods in the block to permit their independent adjustment, and means for securing said rods against movement at will.

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

ALBIN A. ANDERSON.

Witnesses:
ANTON A. WICKLUND,
G. SODERBERG.