Sept. 25, 1951 M. ALEXANDRE 2,569,273

AIRPLANE PROPELLER

Filed June 20, 1947

FIG. 1

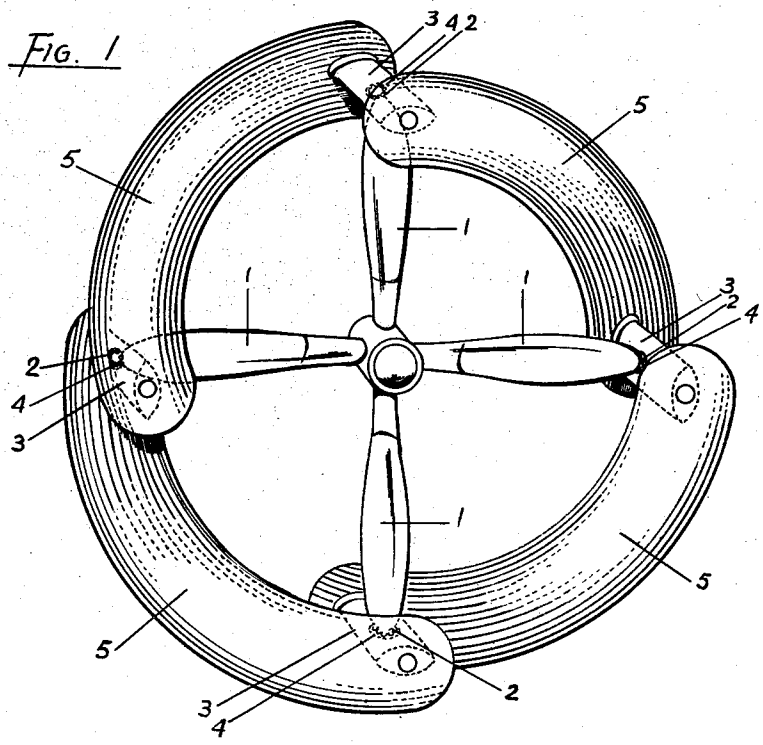


FIG. 2

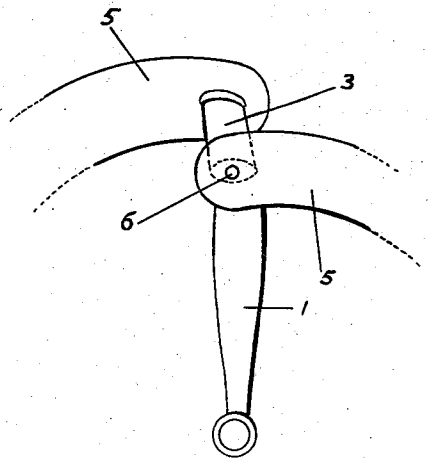
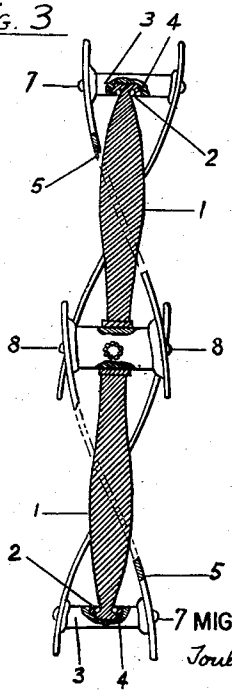


FIG. 3



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AIRPLANE PROPELLER

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5 Claims. (Cl. 170—168)

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This invention relates to improvements in airplane propellers and the like and, has for its primary object to provide a propeller of increased efficiency.

In principle, the present invention is applicable to airplane propellers as now used, being hereunder described and illustrated in connection with one such airplane propeller, but evidently it may also be adapted to other types of propellers.

In general, airplane propellers comprise a plurality of blades of slightly helical form which are suitably mounted on a hub or the like secured to one end of the transmission shaft the other end of which is connected to the motor of the airplane.

After a series of extensive studies, I have observed that the airplane propellers now in use, although generally satisfactory, reveal a number of deficiencies, such as:

The rotation of the propeller in general, but particularly at high speeds, puts a considerable strain on the motor, whereby the efficiency of the latter diminishes in a short time;

The screw-like arrangement of the propeller blades in the air leaves a relatively large space between the blades without direct resistance to the air so that the air passes between the blades contributing nothing to the propellent power of the propeller.

The arrangment of known propeller blades does not always make it possible with utmost rapidity and precision to vary the propeller pitch, starting from zero or dead point.

Furthermore, the usual way of securing the blades one by one to the ordinary hub which is mounted on the end of the transmission shaft permits one or more blades to work loose by an unforeseen accident with grave danger to the plane and its pilot.

Accordingly, it is an object of the present invention to eliminate the above mentioned drawbacks and deficiencies.

It is another object of this invention to provide a propeller which, when driven by a motor, will allow said motor to operate at a higher efficiency than heretofore obtainable.

It is a further object to provide a propeller for airplanes which will increase the force of propulsion.

Another object of this invention consists in the provision of a propeller construction which will assure greater rigidity and safety for the propeller blades.

It is a still further object of this invention

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to provide a propeller construction which will permit a quicker and better controlled variation of the propeller pitch from the dead point than was heretofore obtainable.

These and other objects and advantages of the invention will appear more clearly from the following description in connection with the accompanying drawings in which:

Figure 1 is a front view of an airplane propeller according to the present invention.

Fig. 2 is a part view, showing the preferably hollow crosspiece which connects one end of the propeller blade with the opposite ends of two connecting rods oppositely directed; and

Fig. 3 shows in longitudinal profile a propeller blade connected at its ends with two opposite hollow crosspieces, provided with roller bearings, illustrating how the connecting rods are secured to each two consecutive propeller blades according to the invention.

As is clearly seen from these figures, the usual helical blades 1 of the airplane propeller or the like are provided at their free ends 2 with a preferably hollow crosspiece 3 which is placed transversely to the said free end 2 and projects horizontally from the opposite sides of this free end 2, as shown in Fig. 3. At the central portion of the inwardly directed side of each crosspiece 3 there is provided an anti-friction bearing 4 consisting of small rollers or steel balls in which is journalled the tip of the adjacent propeller blade in order to facilitate the adjustment of the propeller pitch. However, if desired, these bearings may be omitted or may be replaced by any other construction serving the same purpose. Connecting rods, preferably consisting of narrow, helical blades 5, are secured at one end by screws 6 or some other means to one of the ends of the crosspiece 3, as shown by 7 in Fig. 3, the other end being secured to the end of the crosspiece 3 of the next following propeller blade, as shown by 8 in the same Fig. 3. In this way one end of each rod 5 rests securely on the left-hand side of the crosspiece 3 of a propeller blade, whereas the other end of the same rod rests firmly on the right hand side of the crosspiece 3 of the subsequent propeller blade. Fig. 3 shows clearly the relative position of the rods and the propeller blades, as described above.

It should be noted that the helical curves of the rods 5 correspond, in general, to the helical curves of the propeller blades.

As will be clear from the above, the propeller arrangement according to the present invention

will not only give a better performance than propellers heretofore known but will also make it possible to effect a landing of the airplane with the propeller blades at zero pitch by the sole means of the propelling rotation of the rods 5. If desired the plane may also continue its flight only using for propulsion the said rods which, as indicated, constitute helical blades.

It is, of course, understood that the present invention is by no means limited to the particular construction shown in the drawings but comprises any modifications within the scope of the appended claims.

What I claim is:

1. An airplane propeller comprising in combination, a hub, a plurality of angularly spaced propeller blades having one end thereof supported by said hub, a plurality of cross members corresponding in number to the number of said blades and respectively associated with said blades, each of said cross members being arranged substantially transverse to the longitudinal axis of the adjacent blade and being supported by the tip of the adjacent blade, and a plurality of connecting members corresponding in number to the number of said cross members for interconnecting said cross members, each of said cross members having one of its ends connected to one end of one of said connecting members and having its other end connected to one end of another connecting member.

2. An airplane propeller comprising in combination, a hub, a plurality of angularly spaced propeller blades having the base of said blades supported by said hub, a plurality of supporting members respectively supported by the tips of said blades, each of said supporting members having a wing profile, and a plurality of connecting members, each of said connecting members connecting one end of one supporting member with the opposite end of an adjacent supporting member.

3. An airplane propeller comprising in combination, a hub, a plurality of angularly spaced propeller blades having the base of said blades supported by said hub, a plurality of supporting members respectively supported by the tips of said blades, and a plurality of helically shaped connecting members with the helical curves thereof corresponding to the helical curves of said blades, each connecting member connecting one end of one supporting member with the opposite end of the next following supporting member.

4. An airplane propeller comprising in combination, a hub, a plurality of propeller blades having the base of each propeller blade adjustably connected to said hub, a plurality of supporting members corresponding in number to the number of said blades, a plurality of antifriction bearings respectively supported by the tips of said propeller blades and carrying said supporting members, and a plurality of helical shaped connecting members, each of said connecting members connecting one end of one supporting member with the opposite end of the next following supporting member.

5. An airplane propeller comprising in combination, a hub, a plurality of propeller blades having the base of each propeller blade adjustably mounted on said hub, a plurality of hollow supporting members respectively associated with each of said blades and arranged substantially transverse to the longitudinal axis of the adjacent blade, each of said supporting members being supported by the tip of the adjacent blade and being relatively rotatable with respect thereto and a plurality of helically shaped connecting members, each of said connecting members connecting one end of one supporting member with the opposite end of the next following supporting member.

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