

July 1, 1930.

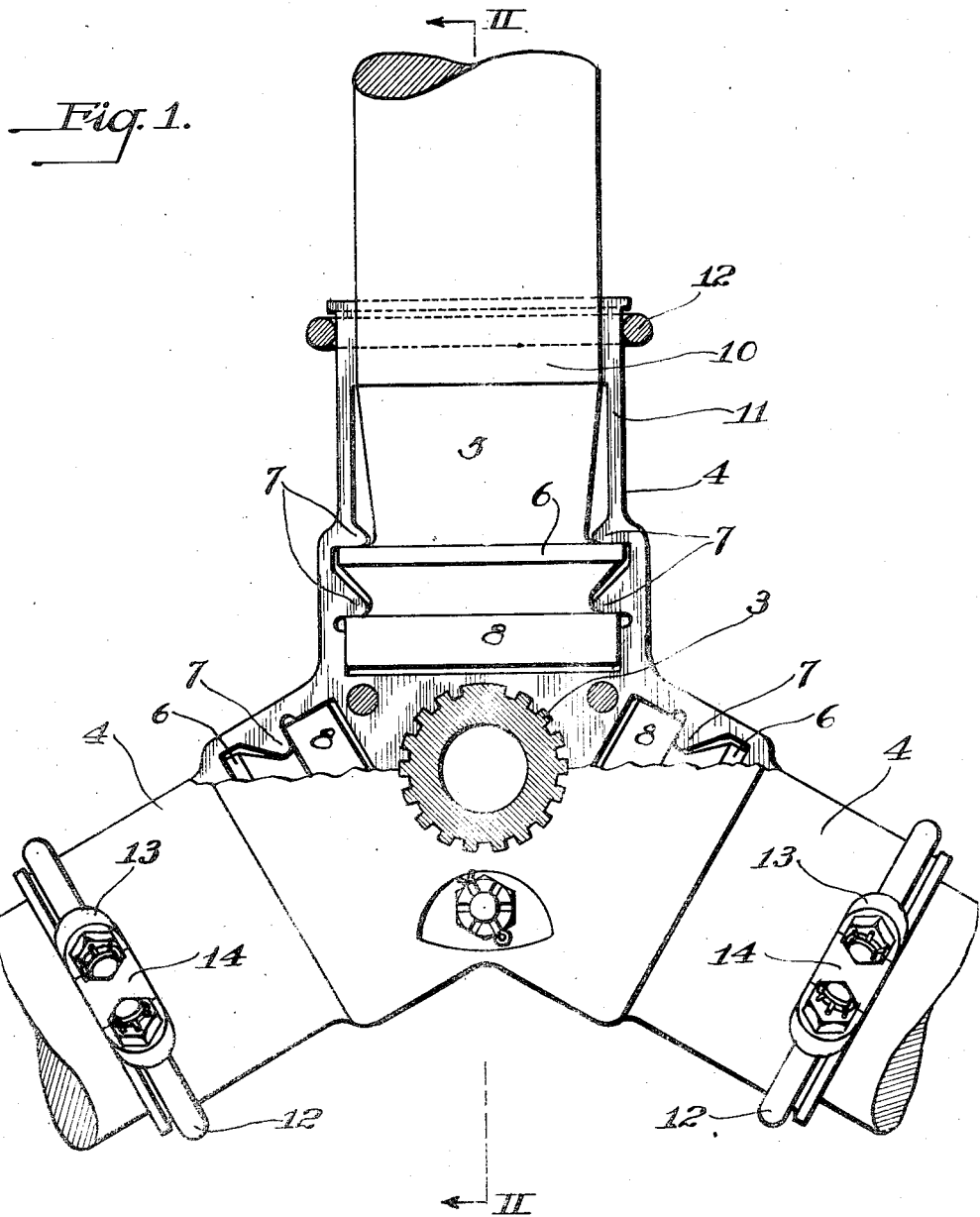
T. A. DICKS

1,769,775

HUB FOR PROPELLERS

Filed Oct. 22, 1926

2 Sheets-Sheet 1



WITNESS
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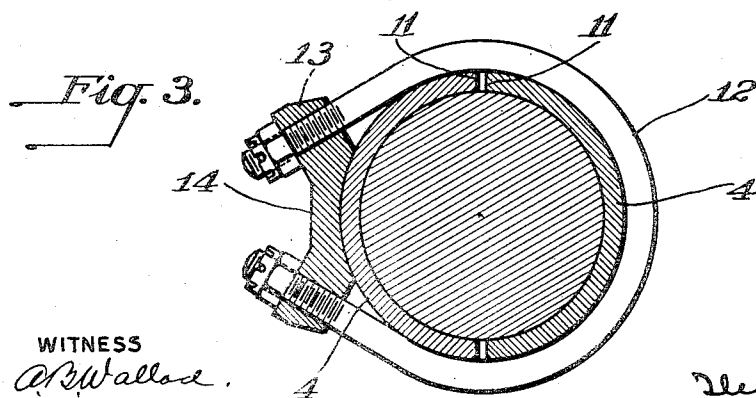
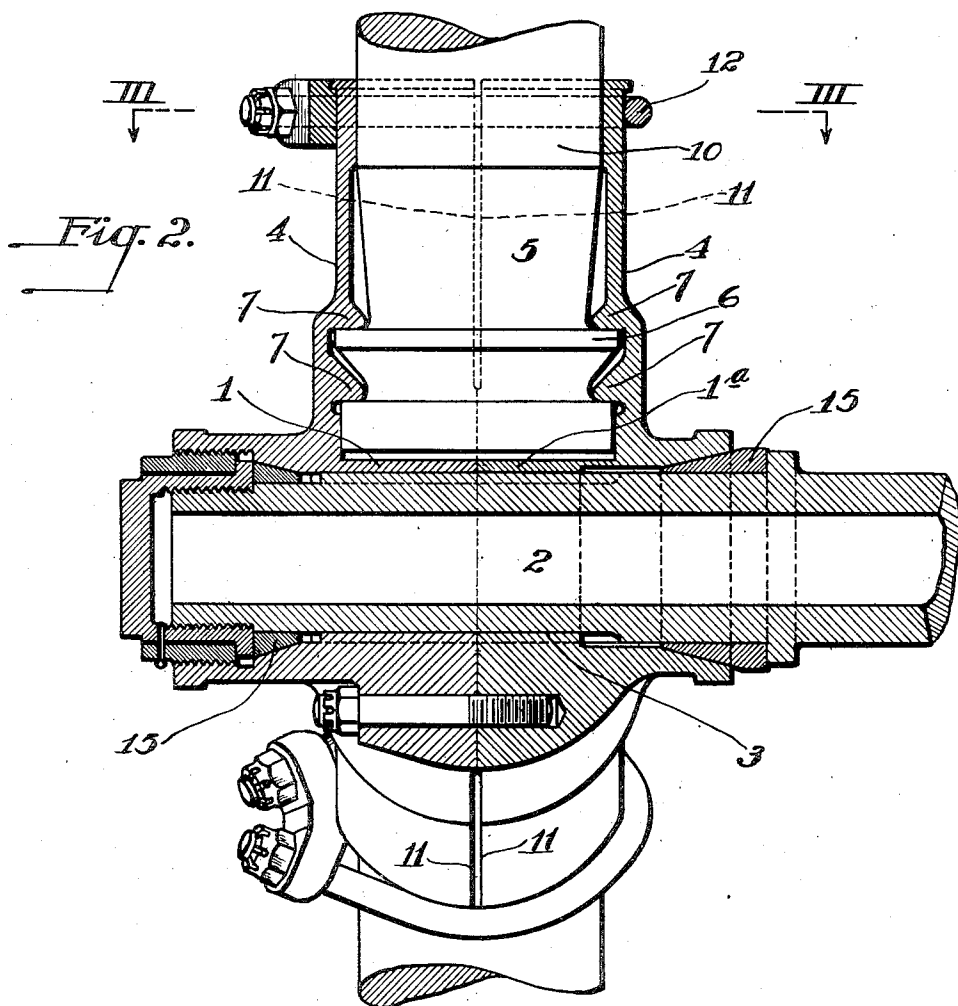
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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HUB FOR PROPELLERS

Application filed October 22, 1926. Serial No. 143,365.

The invention described herein relates to certain improvements in the construction of hubs for aeroplanes. Two methods of constructing such hubs are now in use. According to one method the hub consists of a tubular portion adapted to receive and be secured on the propeller shaft and has radially arranged projections formed integral with the tubular body portions, said radial projections being formed with sockets for the reception of the stems or shanks of the propeller blades.

The second method forms the subject matter of Patent No. 1,569,800 granted to me January 12, 1926. As set forth in said patent, the hub consists in a tubular body portion adapted to receive the ends of the propeller shaft and a cross arm consisting of two semi-circular sections having openings there-through intermediate their ends for the reception of the body portion and having their end portions so constructed as to form, when the sections are placed on the body portion, sockets for the reception of the shanks of the propeller blade.

The invention described herein has for its object a construction in which the tubular body portion consists of two longitudinal sections and each section has formed thereon radial projections having their end portions shaped to form sectional sockets for the reception of the shanks of the blades. It is a further object of the invention to so construct the socket forming sections that the outer portions thereof may be drawn together so as to tightly grip the propeller shanks.

In the accompanying drawings forming a part of this specification, Fig. 1 is an end elevation of a propeller embodying the improvement claimed herein, a portion of one of the sections being broken away; Fig. 2 is a sectional view on a plane indicated by the line II—II, Fig. 1; and Fig. 3 is a sectional view on a plane indicated by the line III—III, Fig. 2.

In the practice of the invention the hub or tubular body portion is formed in two longitudinal sections 1 and 1^a. These sections are adapted to fit over the end of the propeller shaft 2 and are locked as against rotation on

the shaft by any suitable means such for example as interlocking serrations 3 formed on the inner surfaces of the tubular sections and the outer surfaces of the shaft as clearly shown in Figs. 1 and 2.

Each of the hub sections has a plurality of semi-circular radially disposed projections 4 formed integral therewith, said projections being so located on the hub sections that when the latter are placed on the shaft the projections on one section will match with projections on the other section, thereby forming cylindrical sockets for the reception of the stems or shanks 5 of the propeller blades. Suitable means are provided for securing the shanks of the blades in the sockets, such for example as that shown consisting of enlarged peripheral collars 6 on the shanks 5 adapted to project behind internal ribs 7 formed on the projections 4. As shown in Figs. 1 and 2 the ribs project behind the collars when the parts are congregated and as the surfaces of the ribs and collars in contact one with the other are at right angles to the axes of the shanks and sockets the blades may be adjusted to vary their angular position without any longitudinal movement of the blades. The inner ends of the shanks are provided with enlarged cylindrical end portions 8 which fit snugly a recess formed at the inner ends of the sockets. The sections are held in position longitudinally on the shaft and properly centered by means of wedges 15 which are forced along the shaft by a nut screwing onto the engine shaft. In order that the portions of the shanks beyond the collars may be tightly gripped by the sockets, such portions of the shanks indicated at 10 are made cylindrical and the internal diameter of the sockets bearing on such portions have a diameter to snugly fit the portions 10. In order to obtain a gripping action, the adjacent edges 11 of the semi-circular projections are spaced apart as shown in Figs. 2 and 3, so that the walls of the socket may be drawn tightly and firmly against the cylindrical portions 10. While any suitable means may be employed for the purpose, it is preferred to employ bars 12 encircling the sockets and having their ends inserted through the out-

wardly projecting ends 13 of the blocks 14. The ends of the block are at such angles that the end portions of the bars may be straight and tangential to the socket. In addition to forming an effective means for causing the sockets to grip the shanks, the described construction affords means for correcting the balance of the propeller, as by loosening the nuts on the bars the blocks can be slid around the socket sufficiently far to restore rotating balance.

I claim herein as my invention:

1. An aeronautical propeller assembly having in combination a propeller blade and a hub therefor, the hub comprising a tubular portion formed of longitudinal substantially semi-circular sections each section being provided with comparatively deep annular inwardly projecting ribs or ridges adapted to engage complementary ribs or ridges on an enlarged circular head of the propeller blade shank, and a compression ring adapted to clamp the hub sections at their outer ends against the blade shank.

2. In an aeronautical propeller assembly, the combination of a propeller blade having a cylindrical inner end, a deep annular groove adjacent the end, an annular non-angular collar beyond the groove, the blade shank tapering outward beyond said collar to a substantially cylindrical portion, a hub for said blade comprising a cylindrical radially positioned sleeve for said blade end, the sleeve being in semi-circular longitudinal sections and having inwardly projecting ribs adapted to engage the blade shank, and a compression ring adapted to clamp the sleeve sections on the blade shank.

3. An aeronautical propeller assembly comprising a blade having a substantially cylindrical shank, an inner circular terminal head on said shank, the head being of materially greater diameter than the shank and comprising a plurality of annular shoulders with non-angular transition portions therebetween, a hub construction comprising complementary semi-circular sleeve members adapted to fit over the head and shank of the blade, the sleeve members having inwardly projecting ribs adapted to engage the shoulders of the blade head to prevent withdrawal thereof, and a compression ring around the hub sections adapted to clamp them on the blade.

4. In an aeronautical propeller the combination of a longitudinal split hub having annular internal ribs, means for encircling and compressing the hub sections, and a blade having a shank adapted to be engaged by the hub sections, said shank terminating in an enlarged circular head portion free from angular cuts and adapted to be retained by the internal ribs of the hub.

5. A single blade for aeronautical propellers comprising a cylindrical shank portion

terminating in an enlarged head, the head being grooved to form a deep faced shoulder for engagement by a hub sleeve and free from internal angles.

6. A blade for aeronautical propellers having a shank comprising a cylindrical portion, a reduced tapered circular portion, and an enlarged terminal head portion, said head having an annular non-angular groove therein, whereby to provide outwardly facing annular abutments on the head for engagement by a hub sleeve.

7. An aeronautical propeller comprising a split hub having sockets or sleeves for retaining blade shanks, said sleeves comprising interior cylindrical portions adapted to receive and engage the ends of blade shanks, and annular ribs adapted to extend into grooves in the shanks of blades adjacent said cylindrical portions, said shoulders extending inward beyond the said cylindrical portion, and having their inner faces at right angles to the axis of the said cylindrical portions.

8. A blade for aeronautical propellers comprising a circular shank terminating in a cylindrical head adapted to fit into a cooperating hub sleeve, the shanks having a deep annular non-angular groove adjacent said cylindrical portion, an annular shoulder adjacent said groove formed by said groove on the inner side and a tapered reduced portion beyond the said shoulder, whereby to attach the blade to a cooperating hub.

9. A blade for aeronautical propellers comprising a circular shank terminating in a cylindrical head portion adapted to fit into a cooperating hub sleeve, the shank having a deep annular non-angular groove adjacent said cylindrical portion, an annular shoulder adjacent said groove formed by said groove on the inner side and a tapered reduced portion beyond the said shoulder, and a split hub having socket portions adapted to fit around said blade ends and having internal annular ribs adapted to engage the outer faces of the said abutments on the blade and the cylindrical portion thereof, and means to clamp the outer ends of the sockets to the blade shank.

In testimony whereof, I have hereunto set my hand.

THOMAS A. DICKS.