

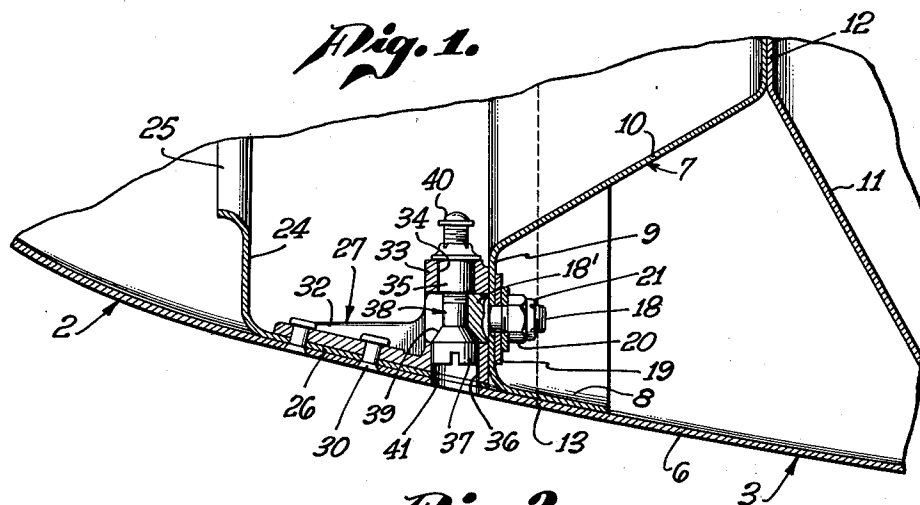
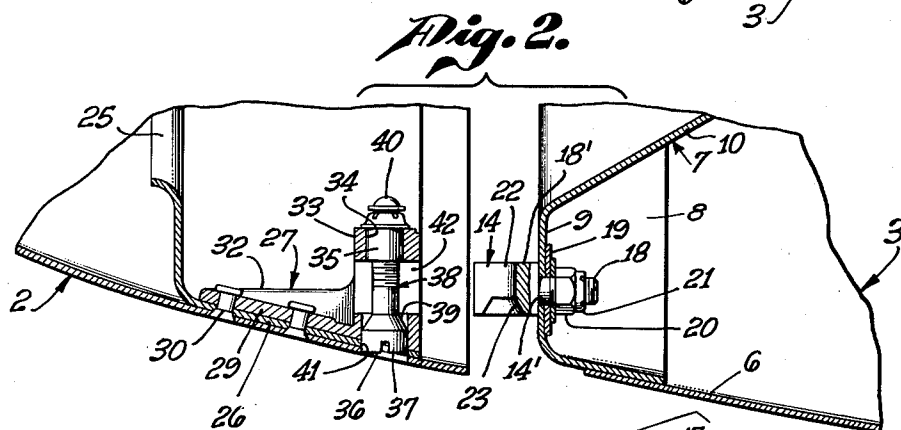
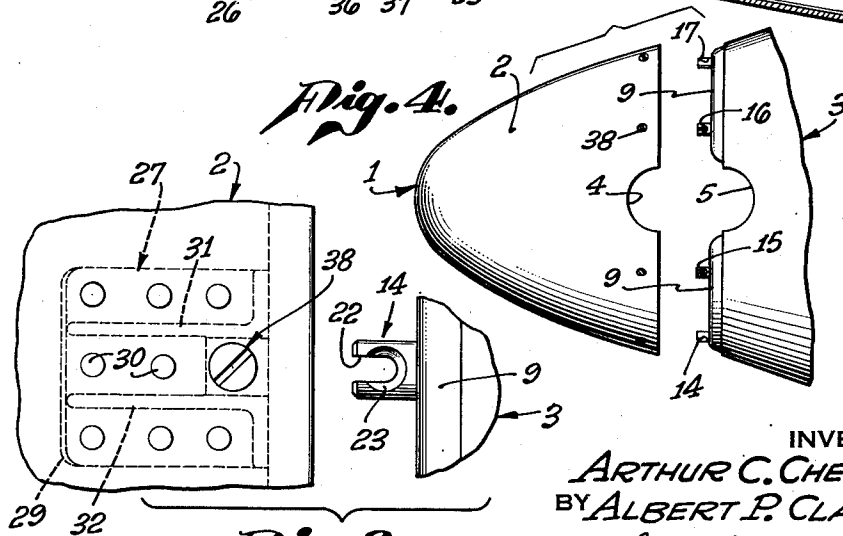
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PROPELLER SPINNER ATTACHING DEVICE

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PROPELLER SPINNER ATTACHING DEVICE

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2 Claims. (Cl. 170—159)

It has heretofore been proposed to employ a spinner, that is a hollow streamline body, over the hub of the propeller of an aircraft. However, the means for attaching the spinner in position on the propeller has made it rather difficult to either assemble the spinner, or to take it apart in case that access to the hub of the propeller is necessary. This is particularly difficult with certain types of planes.

The invention relates to an improvement in a propeller spinner attaching device and has for an object to increase the facility with which the spinner may be assembled on the propeller, or disassembled therefrom. More particularly, an object of the invention is to make it possible to lock the spinner sections from the exterior of the spinner without making it necessary to gain access to the interior of the spinner as heretofore. This is accomplished by providing locking means having operating heads accessible from the exterior of the sections to be locked.

For further details of the invention reference may be made to the drawing wherein Fig. 1 is a sectional view with parts broken away, of the spinner attaching device of this invention, showing the front spinner section attached to the rear spinner section.

Fig. 2 is a sectional view corresponding to Fig. 1, but with the attaching device disconnected and the front and rear spinner sections separated.

Fig. 3 is a plan view with parts broken away of the attaching device as it appears when the front and rear spinner sections are separated.

Fig. 4 is a view either in plan or elevation, in reduced scale, of the two spinner sections separated and having the attaching device of this invention.

Referring in detail to the drawing, the spinner 1 comprises a front section 2 and a rear section 3 which are metal streamline bodies to be fastened together and having several cutaway portions such as 4 and 5 to accommodate the blades of the propeller. The sections 2 and 3 are hollow streamline bodies, the rear section 3 being imperforate so far as concerns apertures to gain access to a device to lock the two sections together. Rear section 3 at the right end thereof not shown, terminates in a plane at right angles to the spinner axis, and that right end merges with the streamline of the cowlings.

The rear section 3 comprises a shell 6 inside of which is a web 7 having a flange 8 which fits and extends around the inside of the left end of shell 6 as shown in Figs. 1 and 2. The flange 8 is spotwelded to the shell 6 and projects beyond

the end of shell 6 where it has a flat portion 9 which extends in a plane at right angles to the spinner axis and forms a base for a part of the attaching device of this invention. The base 9 is depressed adjacent the cutaway portion 5 to fit around the propeller. The base 9 slopes inwardly as indicated at 10 where it meets another web 11, as indicated at 12 where these webs are welded together. The web 11 continues to the rear of shell 3 and has a flanged portion not shown extending around and fitting the inside thereof and welded thereto.

The front section 2 and rear section 3 meet and fit on the flange 8, the parting line being indicated at 13 in Fig. 1.

Mounted on the base 9, which in effect forms an end wall portion of the section 3, is an array of bifurcated studs one of which is shown at 14 in Fig. 2, and others are indicated at 15, 16 and 17 in Fig. 4. Preferably there is a pair of studs such as 14, 15 for each propeller blade.

As shown in Fig. 2, the studs such as 14 are mounted in apertures such as 14' in base 9 and extend generally along the spinner axis. Stud 14, etc., have a threaded portion 18 having suitable washers 19, nut 20 and lock nut 21 at one side of the base 9. At the other side of base 9 the studs 14, etc., have an enlarged head 18' with a slot or bifurcation 22 shown in Fig. 3, and with a conical or tapered portion 23 conjoining or opening into the slot 22. The axis of each of the tapered portions 23 in the various studs such as 14, extends radially with respect to the spinner axis.

The front section 2 is reinforced by a web 24 having a central aperture 25 through which projects an extension of the propeller shaft, that extension centering in a bearing not shown, inside the nose of the front section 2.

The web 24 has a flange 26 which fits around the inside of the right end of the front section 2, as shown in Figs. 1 and 2. The flange 26 is spotwelded to the end of the section 2.

Arranged inside of and adjacent the end of the front section 2 is an array of brackets 27 each carrying a locking device 28 which is a companion for one of the studs 14, etc. The bracket 27 has a base 29 which fits on and is riveted to the flange 26 as indicated at 30. Bracket 27 has two spaced inwardly projecting portions 31, 32 which merge with a cross piece 33 having an aperture 34 in which is press fitted a threaded collar 35. The base of the bracket 27 is provided with aperture 36 in which fits the head 37 of the bolt 38 which is screw threaded into the collar

35. The head 18' of the stud 14 fits in the recess between the parts 31, 32, 33.

The bolt 38 is provided with a tapered portion 39 which fits the tapered portion 23 in the stud 14. Also the slot 22 is wide enough to receive the shank of the bolt 38. Bolt 38 is provided with a stop washer 40 so that bolt 38 cannot be entirely removed and lost. The front section 2 and the web 24 have an aperture 41 which aligns with the aperture 36 in the bracket 37, so that access to the head of bolt 38 may be had from the exterior of the front section 2.

When the spinner sections 2 and 3 are separated, the attaching device cannot be misplaced because the studs such as 14 are fixed to the rear section 3 and the companion locking bolts such as 38 are movable in but not removable from the front section 2.

When it is desired to attach the two sections 2 and 3 together about the propeller, these two sections are placed on opposite sides of the propeller, with each pair of cutaway portions 4 and 5 in line with a propeller blade and with the studs such as 14 lined up with their corresponding lock bolts such as 38. The two sections 2 and 3 are then fitted together as shown in Fig. 1, the slot 22 passing over the shank of the bolt 38, the bolt 38 at this time being retracted from the position shown in Figs. 1 and 2, the studs 14 fitting in the recess 42. Then the bolt 38 is screwed in and the tapered or conical portion 39 cooperates with the mating tapered or conical portion 23 to act as a cam or wedge and pull the two sections together longitudinally.

When it is desired to unfasten the two sections, the bolts such as 38 are unscrewed until the tapered portion 39 is withdrawn from recess 42, and then the slot 22 will pass the shank of bolt 38, and permit front section 2 to be separated from rear section 3. By means not shown and which forms no part of the present invention, the rear section 3 of the propeller spinner is bolted directly to the hub of the propeller and rotates with it. The front section 2 of the spinner is attached by means of the device of this invention to the rear section 3, the front section 2 being centered and supported at its front end by means not shown and which forms no part of

the present invention, namely by means of a collar in the front bulkhead of the spinner engaging a lug in the front end of the propeller.

It will therefore be apparent that we have provided a spinner attaching device which is simple in operation, which is effective to properly align the two sections together, wherein the parts of the attaching device cannot be misplaced, and wherein the attaching device is accessible from the exterior of the spinner.

Various modifications may be made in the invention without departing from the spirit of the following claims.

We claim:

1. In a hollow spinner having front and rear sections fitting together with the propeller therebetween, means for attaching said sections, said means comprising an array of studs each having an outwardly facing conical surface conjoining a bifurcation, said rear section having an end wall, means securing each of said studs so that they project outwardly from said end wall with the axis of each conical surface radial of the spinner axis, a corresponding array of movable bolts each having a head, means secured to the front section supporting each of said bolts for radial movement inside of said front section, each of said bolts having a shank smaller than said bifurcation and an inwardly facing conical surface fitting said stud conical surface, said front section having an aperture for the head of each of said bolts to permit access thereto from the exterior of said front section.

2. Attachment means for a hollow spinner having front and rear sections, said means comprising an array of brackets inside of and secured to said front section, each of said brackets having a radially inner threaded portion, a cam bolt threaded in each of said brackets for radial movement with the head of the bolt out, each of said brackets having a recess, and cam studs fixed to and extending lengthwise of said rear section and each fitting one of said recesses, said front section and each of said studs having a recess for the head of each of said bolts.

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