Oct. 9, 1956 L. E. HARDY 2,765,858

MODEL AIRPLANE PROPELLER HUB AND COWL CONSTRUCTION

Filed Nov. 4, 1952

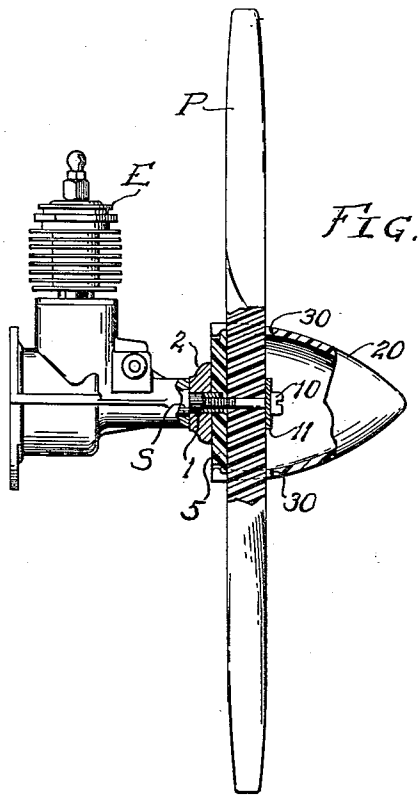


FIG. 1.

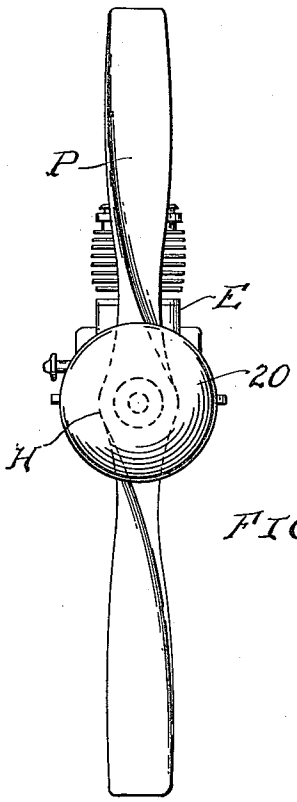
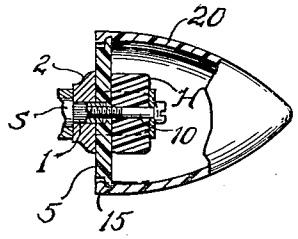


FIG. 2.

FIG. 3.



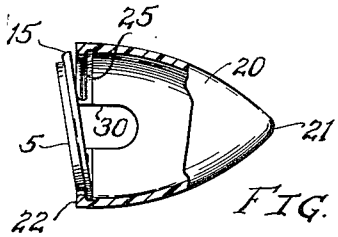


FIG. 4.

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2,765,858

Patented Oct. 9, 1956

2,765,858

MODEL AIRPLANE PROPELLER HUB AND COWL CONSTRUCTION

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Application November 4, 1952, Serial No. 318,630

2 Claims. (Cl. 170—159)

This invention relates to a propeller hub cowl or nose, popularly known as a spinner, for power-driven model airplanes.

Objects of the invention include the provision of such spinner or a cowl construction and mounting therefor that it may be associated with a simple, effective propeller mounting securing the propeller to the shaft of the model airplane engine.

Other objects include simplicity of construction, and convenience of assembly and dis-assembly of the cowl member from its supporting means.

Other objects include so constructing a conoidal or projectile-nose shaped hub cap or cowl that it may be resiliently snapped into its position on the propeller and into engagement with a supporting member for the cowl, and further that it may be accurately aligned and centered to prevent any vibration resulting from eccentricity, and may be firmly held in place.

Still another specific object includes the so designing of such a cowl or hub cap that it may be cheaply manufactured of relatively inexpensive thermo-plastic material, may be light in weight and accurate in dimensions to afford interchangeability.

Heretofore, such propeller nose members or cowls have been so constructed that they could be attached in front of the propeller after the propeller is assembled on and fixed to the engine shaft, by such means as pairs of screws engaging threads in a disk member behind and adjacent to the propeller, or by threading the inside of the cup forming the propeller nose, and screwing it onto special threads on the propeller hub. See, for example, patent to Barkley, 2,535,527.

Where separate screws are used, a thin, light, rigid disk is secured on the propeller shaft and behind the propeller, and projects beyond the propeller hub between blades, while screw-carrying bosses are provided in the hub cap or spinner through which screws may be inserted from the front and be caused to engage threaded openings in the supporting disk.

Essential advantages of my present invention over such devices, as above indicated, include further simplicity of manufacture and greater convenience of assembly.

In carrying out my invention I provide a member presenting an annular flange behind the plane of the propeller, and also provide a thin shell-like cone-shaped nose having openings adapted to pass over the propeller blades' shanks adjacent to the hub. I provide grooves adapted to embrace said flange to hold the hub cap or cowl in position.

A preferred embodiment of my invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a side elevation of a model airplane engine and propeller with a portion of the hub cowl and propeller hub shown in section;

Fig. 2 is a front elevation of the cowl and propeller;

Fig. 3 is a longitudinal section of the propeller hub and cowl supporting member, a portion of the cowl being shown in section; and

Fig. 4 shows the cowl partly in section, and the supporting means in the position of being engaged by it when assembling.

Referring to the drawings by the use of reference characters, a standard type of model airplane engine is designated E. P indicates the propeller mounted on the engine shaft S.

The propeller shown is of the molded thermo-plastic type in which the blades and hub section H are formed in one unitary piece, the hub section having flat sides at the front and back of the hub portion, as shown.

Engines and propellers of this type are now in extensive use, and it is customary to provide the propeller with a central opening which may receive the engine shaft or a screw coaxially fitted therein, and whereby the propeller is driven by the engine.

In the construction shown, the shaft S has a reduced fluted portion **1** onto which is fitted a collar **2**, and which preferably flares outwardly somewhat and presents a flat surface to a cowl supporting disk **5** forming a part of the present invention. As shown, the disk **5** is fitted over the end of the shaft extension **1**, and the propeller disk **5** and collar **1** are securely held in position by a screw **10** having its head bearing against a washer **11**, and its inner end threaded into an axial threaded opening in the extension **1** of the engine shaft.

The supporting disk **5** is provided with a flange **15** at its forward edge to engage a groove formed in the cowl proper (i. e., spinner) which is shown as comprising a rounded cone or torpedo-nose-shaped hollow cup-like member having a rounded central forward point **20** and open at its opposite end **22**. A groove **25** is formed on the inside surface near the end **22** which is adapted to embrace and tightly fit the flange **15**.

In the case of the straight two blade propeller, two diametrically opposite notches **30** embrace and extend over the inner ends or shanks of the propeller blades adjacent the hub, and permit the open end **22** to pass over and embrace the disk **5** when the flange **15** is pressed into engagement with the groove **25**.

Outside of the groove **25** the inner edge of the cap is preferably rounded somewhat to facilitate swinging the disk **5** inwardly from the position shown in Fig. 4 to that shown in Figs. 1 and 2.

The notches **30** facilitate permitting the segments between the notches to spread somewhat, to spring over and embrace the flange **15**, while the resiliency of the material of the cap causes the tight re-engagement with the disk when in position. Thus, the nose or cowl member **20** may be assembled with the notches **30** embracing the propeller, and by slight movement, having first engaged the flange **15** in the groove **25** at one side, an inward pressing and tipping action may bring the cowl to its proper position where it remains in centered and balanced position with relation to the propeller and its rotation.

I have found that the disk **5** may be made of any suitable thermo-plastic material, and, likewise, the cowl **20** may be injection molded of cellulose acetate or comparatively resilient and yet normally rigid material. Such materials are light in weight and relatively inexpensive.

The disk and cowl may be made of any suitable thickness, it being desirable, of course, to reduce the "flying weight" of the model airplane by every possible fraction of an ounce.

In practice, if the diameter of the base of the cowl is approximately one inch, the thickness of the body of the cup or cone-shaped portion of the cowl may be one-sixteenth of an inch, more or less. Slightly thickened portions may form the outer ridge and inner wall of the rib receiving groove **25**.

From the foregoing it will be seen that when in position the base disk **5** is rigid with the propeller and hub assembly, and when sprung into engagement therewith, the

cowl will be accurately centered and will form the desirable air foil and give the neat appearance so desirable in model airplanes.

Obviously, if a propeller has three blades, three notches 30 would be equally spaced and shaped to embrace the propeller blades, while the intervening segments would carry grooves engaging the flange 15.

Modifications may be made in the structure shown without departing from the essence of the present invention, which, as indicated above, involves the yielding engagement of spreadable segments carrying grooves for embracing a rigid flange concentric with the engine shaft and propeller hub.

Having thus described my invention, what I claim is:

1. In combination with a model airplane engine having a propeller shaft, a propeller having a hub portion fitted to the shaft and rigidly mounted thereon, a rigid disk having a flange concentric with the propeller and positioned at the side of the propeller toward the engine, and a cowl comprising a cone-shaped cup member of resilient thermoplastic material having diametrically opposite notches formed in its side wall and extending from the open end thereof and adapted to embrace the propeller at opposite sides of the hub and shaft and leaving arcuate segments between the notches, said segments having grooves on the

inner surface of the cup member extending between the notches and adapted to embrace the flange on said rigid disk, the resiliency of the thermoplastic material permitting the deformation of the cup member to effect the engagement or disengagement of the flange and grooves while securely holding the cowl when rotated.

2. The device defined in claim 1 in which the propeller shaft is provided with a radial shoulder and an axial clamping screw engaging the propeller shaft and propeller, and said rigid disk is positioned between the propeller hub and said shoulder and is clamepd by said screw.

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