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PAINT MASK STRUCTURE

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FIG. 1.

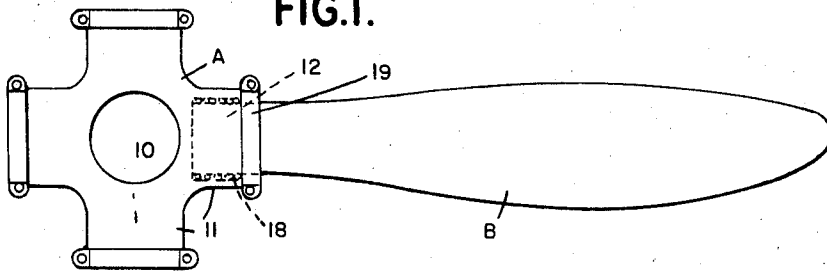


FIG. 2.

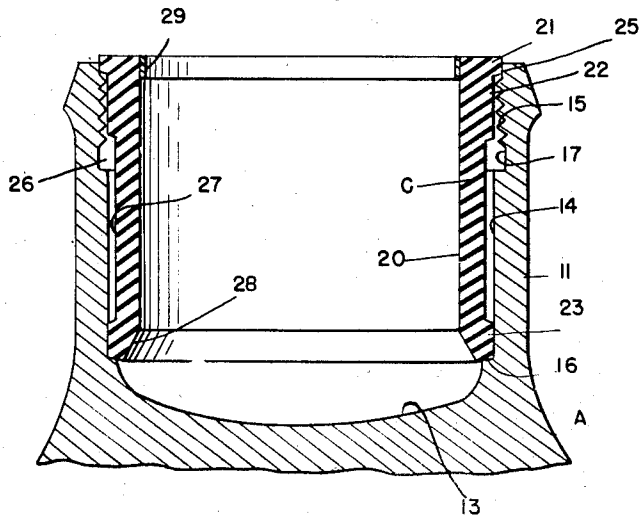
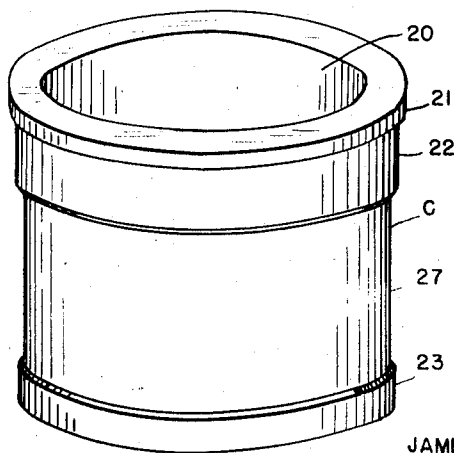


FIG. 3.



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PAINT MASK STRUCTURE

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5 Claims. (Cl. 91-65)

This invention relates generally to devices that are used during painting or plating operations to protect portions of articles from paint or plating material applied to adjacent portions thereof, and refers more particularly to a paint mask for portions of the throat of a propeller hub of an airplane.

Heretofore it has been customary in accordance with the government specifications to provide the throat of a propeller hub with a bearing surface for the shank of the propeller blade and with an internal thread for the lock ring employed to hold the shank of the blade on said bearing surface. It has also been customary to paint or plate the closed inner end of the bottom of the throat. Usually the painting or plating operation is performed after the bearing surface and threads mentioned have been formed in the throat, consequently it is difficult to keep such paint or plating material from passing onto and impairing the bearing surface and threads. However, notwithstanding attempts in the past to prevent such impairment some paint or plating material was deposited upon either the bearing surface or the threads and had to be removed. This required very careful work and considerable time, hence was costly and delayed production.

Thus, one of the essential objects of the present invention is to provide a mask capable of protecting thoroughly both the bearing surface and the threads from the paint or plating material.

Another object is to provide a mask that may be easily applied to and removed from the throat of the propeller hub without marring any part thereof.

Another object is to provide a mask that is simple in construction and economical to manufacture.

Another object is to provide a mask that is sturdy, durable, and capable of being subjected to repeated handling and use.

Other objects, advantages and novel details of construction of this invention will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawing, wherein

Figure 1 is an elevational view of a propeller hub and showing a blade mounted in the throat thereof;

Figure 2 is an enlarged longitudinal sectional view through the throat and showing in section the mask embodying my invention applied thereto;

Figure 3 is a perspective view of the mask per se.

Referring now to the drawing, A is a propeller hub having a central opening 10 for a supporting shaft (not shown) and having four radially extending outwardly opening substantially cup-shaped throats or sockets 11, and B is a propeller blade having its shank 12 rotatably mounted in one of the throats 11.

As usual each throat 11 has a rounded bottom or closed end 13 and is provided between said bottom and the outer open end thereof with a finished bearing surface 14 and internal threads 15. Preferably the bearing surface 14 is at the inner end of the throat and extends from a shoulder 16 at the rim of the rounded bottom 13 to an annular recess or groove 17 spaced from the outer end of the throat, while the threads 15 are adjacent the outer end of the throat and extend from the groove 17 to a point near the outer end of the throat. The shank 12 of the propeller blade is concentric with the bearing surface 14 and is adapted to turn therein (feathering). Any suitable bearings 18 for the shank 12 may be provided on the surface 14, and any suitable means such as the lock ring 19 may be engaged with the internal threads 15 to hold the shank 12 in assembled relation with the throat.

For protecting the bearing surface 14 and threads 15 from paint or plating material applied to the bottom 13 of the throat I have provided a mask C that is preferably tubular in configuration and is made of resilient material such as rubber or rubber composition. As shown, this mask C has a smooth interior surface 20 and is provided upon the outside thereof with three annular enlargements or ribs 21, 22 and 23 respectively. The enlargements 21 and 23 respectively are at the upper and lower ends of the mask, while the enlargement 22 is just underneath the enlargement 21. Intermediate the enlargements 22 and 23 the exterior surface of the mask is also smooth. Preferably the enlargements 22 and 23 are substantially equal in thickness although they differ in depth, the enlargement 22 having approximately twice the depth of the enlargement 23, while the uppermost enlargement 21 is thicker than the enlargements 22 and 23 and projects laterally outward beyond and overhangs the enlargement 22. Preferably the outside diameter of the enlargements 22 and 23 is substantially equal to the inside diameter of the bearing surface 14 and threads 15, while the outside diameter of the enlargement 21 is substantially equal to the inside diameter of the outer end portion 25 of the throat.

In use, the mask C is folded or doubled up,

i. e., one wall thereof is drawn or pressed in toward the opposite wall thereof to reduce the over-all outside diameter of the mask to permit it to be inserted into the throat 11 to the position illustrated in Figure 2. When in this position the lower enlargement 23 bears firmly against and has sealing engagement with bearing surface 14 and shoulder 16, while the upper enlargement 21 bears firmly against and has sealing engagement with the outer end portion 25 of the throat. The enlargement 22 covers the threads 15. Moreover, air is pocketed in the space 26 between the smooth exterior surface 27 of the mask and the bearing surface 14 and recess 17 when the doubled-up mask is released within the throat and snaps into the position illustrated in Figure 2. Instead of air being pocketed as described such air may be expelled by hand pressure against the resilient mask to create a vacuum in the space 26. In either instance paint or plating material will be excluded from the space 26. Thus, the bearing surface 14 and threads 15 are thoroughly and effectively protected by the mask from paint or plating material applied to the bottom 13 of the throat. In this connection it will be noted that the inner end portion 28 of the mask is bevelled to eliminate any obstruction to the passage of paint or plating material onto the bottom 13 of the throat. Moreover, the shape of the mask C is such that a spray gun or plating apparatus (not shown) may be inserted into or through the mask to paint or plate the bottom 13 of the throat. Normally the resiliency of the rubber or rubber composition from which the mask C is made is such that the mask will inherently remain tight against the portions 14, 16 and 25 mentioned of the throat, however to be doubly safe a metal expanding ring 29 of spring steel may be employed upon the inside of the mask at its upper or outer end to hold and maintain the mask tight against the throat.

What I claim as my invention is:

1. A mask for a bearing surface and threads upon the inside of a cup shaped throat of a propeller hub, comprising a resilient tubular member substantially equal in length to the depth of the throat and insertable within said throat to form a protecting sleeve over said surface and threads, said member having three external enlargements, one being provided for sealing engagement with said throat at the outer end thereof beyond said threads, another being adapted to span said threads, and the third being provided for sealing engagement with a portion of the throat near the inner end or bottom thereof.

2. Means for protecting a finished interior bearing surface and internal threads disposed adjacent one another at one side of a cup-shaped member from paint and plating material applied to the bottom of the cup-shaped member, comprising a tubular member insertable within the cup-shaped member as a protecting sleeve to cover simultaneously both the bearing surface and internal threads, said tubular member being provided upon its exterior at longitudinally spaced points thereof with laterally projecting annular enlargements or ribs adapted to have sealing engagement with interior portions of the cup-shaped member beyond the remote ends of the bearing surface and threads whereby a vacuum is provided between the tubular member and cup-shaped member intermediate said en-

largements to exclude paint and plating material applied to the bottom of said cup-shaped member.

3. Means for protecting a finished interior bearing surface and internal threads spaced longitudinally apart at one side of a cup-shaped member from paint and plating material applied to the bottom of said cup-shaped member, comprising a tubular member formed of resilient material and operable as a protecting sleeve within the cup-shaped member to cover simultaneously both the bearing surface and internal threads, said tubular member being provided upon its exterior at longitudinally spaced points thereof with laterally projecting annular enlargements or ribs adapted to have sealing engagement with interior portions of the cup-shaped member adjacent the remote ends of the bearing surface and threads whereby a vacuum is provided between the tubular member and cup-shaped member intermediate said enlargements to exclude paint and plating material applied to the bottom of said cup-shaped member, the inner end of said tubular member being beveled toward the bottom of the cup-shaped member to substantially eliminate any obstruction to the passage of paint or plating material onto the bottom of the cup-shaped member from a point within the tubular member.

4. Means for protecting two different longitudinally spaced interior portions of a cup-shaped member from paint and plating material applied to the bottom of said cup-shaped member, comprising a tubular member formed of rubber and operable as a protecting sleeve within the cup-shaped member to cover simultaneously the two longitudinally spaced interior portions aforesaid of the cup-shaped member, said tubular member being provided upon its exterior surface at longitudinally spaced points thereof with laterally projecting annular enlargements or ribs adapted to have sealing engagement with interior portions of the cup-shaped member upon the remote ends of the two longitudinally spaced interior portions aforesaid of the cup-shaped member whereby a vacuum is provided between the tubular member and cup-shaped member intermediate said enlargements to exclude paint and plating material applied to the bottom of the cup-shaped member.

5. Means for protecting an interior finished bearing surface and internal threads at one side adjacent the bottom and open end respectively of a cup-shaped throat of a propeller hub from paint and plating material applied to the bottom of said throat, comprising a tubular member formed of resilient material and operable as a protecting sleeve within the throat to cover simultaneously both the bearing surface and internal threads, said tubular member being provided upon its exterior at opposite ends thereof with laterally projecting annular enlargements or ribs adapted to have sealing engagement with interior portions of the throat at remote ends of the bearing surface and threads whereby vacuum is provided between the tubular member and throat intermediate said enlargements to exclude paint and plating material applied to the bottom of said throat.

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