Oct. 10, 1944. J. E. DUGGAN 2,359,975

PAINT MASK STRUCTURE

Filed May 18, 1942

FIG. 1.

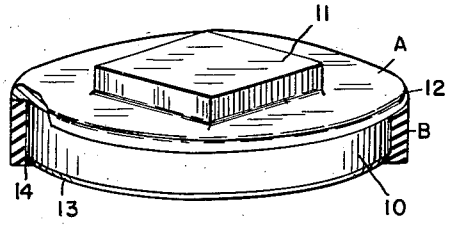


FIG. 2.

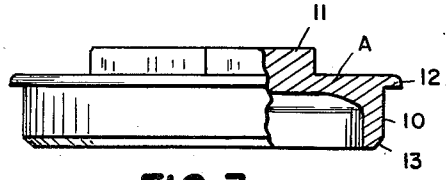


FIG. 3.

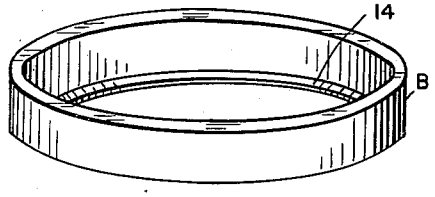
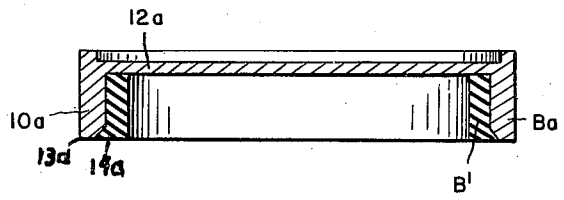


FIG. 5.



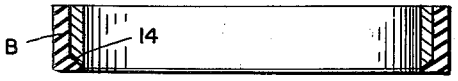


FIG. 4.

INVENTOR.

JAMES EDWARD DUGGAN

BY

Whittemore, Hulbert & Belknap

ATTORNEYS

Patented Oct. 10, 1944

2,359,975

UNITED STATES PATENT OFFICE

2,359,975

PAINT MASK STRUCTURE

James Edward Duggan, Detroit, Mich.

Application May 18, 1942, Serial No. 443,517

2 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 paint masks for portions of cap type plugs adapted for use in governor housings carried by propeller hubs of airplanes.

Heretofore it has been customary in accordance with government specifications to highly finish and polish the outer surface of the annular flange portion of each plug so that such flange would fit accurately and snugly within a suitable opening therefor in the governor housing. It has also been customary to paint or plate the cap or top portion of each plug, however the painting or plating is usually done after the flange mentioned has been polished for obviously it would be difficult to finish and polish the flange after the painting or plating operation without marring or damaging the paint or plating. Oftentimes though some paint or plating material passes from the cap portion onto the polished flange portion and has to be removed therefrom. This requires very careful work and considerable time, hence is expensive and objectionable. To overcome this difficulty several attempts have been made in the past to mask the flange portion but to my knowledge none of the devices used have proven satisfactory. For example, some marred the paint or plating, some could be used only once and then had to be scrapped, and others required additional fastening means such as adhesive tape that not only left objectionable marks when removed but was unsuitable for further use after being used one or two times.

Thus, one of the essential objects of my invention is to provide a mask capable of protecting thoroughly the finished surface of the flange from the paint or plating material, that may be used repeatedly without being scrapped, and that requires no additional fastening elements to hold it in place.

Another object is to provide a mask that may be quickly and easily applied to or removed from the flange without marring any part thereof.

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

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 a perspective view of a plug with a mask embodying my invention applied thereto and shown in section;

Figure 2 is a detail elevational view of the plug, with parts broken away and in section;

Figure 3 is a perspective view of the mask, per se;

Figure 4 is a vertical sectional view through one side of the mask;

Figure 5 is a vertical sectional view through the mask applied to the inside of an annular flange of another article.

Referring now to the drawing, A is a cap type plug adapted for use in a governor housing carried by a propeller hub of an airplane, and B is a mask embodying my invention for protecting the depending annular flange 10 of the plug from paint or plating material applied to the cap or top portion 11 of the plug.

As shown, the plug A is a metal casting of circular configuration and has an annular web 12 overhanging and disposed at substantially right angles to the depending annular flange 10 thereof. Preferably the outer lower portion 13 of the flange 10 is beveled while the outer surface of said flange including the beveled portion just mentioned is highly finished and polished so as to fit accurately within a suitable opening therefor in the housing (not shown) of the governor and is adapted to be protected by the mask B when the cap or top portion 11 including the web 12 is painted or plated.

The mask B comprises an annulus having a tapered flange 14 projecting inwardly therefrom at its lower edge. Preferably this mask is formed of resilient material such as rubber or rubber composition and is adapted to fit snugly upon the annular flange 10 of the plug. In fact, the inside diameter of the annulus B is substantially equal to the outside diameter of the flange 10 so that the frictional engagement alone between the mask B and flange 10 is sufficient to hold the parts in assembled relation. In this connection it will be noted that the depth of the annulus B is substantially equal to the outside depth of the flange 10 and that the tapered flange 14 of the annulus covers in surface to surface relation the beveled portion 13 of the flange. Thus, all of the polished exterior surface of the flange 10 is covered and protected by the annulus B. As a result, no paint or plating material applied to the rest of the plug A will pass onto or reach such polished surface. In this connection it should also be noted that the upper edge of the annulus B bears against and forms a seal with the underside of the annular web 12 of the plug.

In Figure 5 I have shown a slightly modified construction wherein the mask B′ is applied to the inner instead of the outer surface of the depending flange 10ª of the article to be painted or plated. In this construction the depth of the annulus B′ is substantially equal to the inside depth of the flange 10ª and the tapered flange 14ª of the annulus projects laterally outward therefrom at the lower edge thereof and engages in surface to surface relation the inner beveled portion 13ª of the flange 10ª. Thus, all of the inner surface of the flange 10ª is covered and protected by the mask B′. As a result no paint or plating material applied to the rest of the article will pass onto or reach the inner protected surface of the flange 10ª. Preferably the outside diameter of the annulus B′ is substantially equal to the inside diameter of the flange 10ª so that the frictional engagement alone between the annulus B′ and flange 10ª is sufficient to hold the parts in proper assembled relation. In this connection it should also be noted that the annular web 12ª of the article in this construction projects inwardly instead of outwardly and is engaged by the upper edge of the annulus B′.

Thus, in both instances (Figures 1 and 5) the resilient masks will effectively protect the engaged surfaces of the flanges without in any way interfering with the painting or plating operations for the rest of the plugs or articles having such flanges. The masks may be easily slipped upon or within the flanges as the case may be without injuring or marring the polished surfaces thereof and may be readily removed as desired without marring the paint or plating material that has been applied to the rest of the plug or article. Such masks may be used repeatedly and will stand handling and abuse without becoming unsuitable for further use. They are simple in construction and economical to manufacture and serve effectively and efficiently as protectors for the surfaces engaged thereby. In this connection it is apparent that they are not to be confined to annular flanges of plugs but may be used with the surfaces of any annular body or element, as desired.

What I claim as my invention is:

1. Means for protecting a surface and beveled portion of an annular flange depending from an overhanging annular web of an article from paint or plating material applied to other portions of the article, comprising a one piece mask formed of resilient material and shaped to cover the surface and beveled portion to be protected, said mask being an annulus having a beveled flange, the annulus and beveled flange thereof being applicable in surface to surface relation to the annular flange and beveled portion to be protected, the depth of the annulus being substantially equal to the depth of the annular flange to which it is applicable whereby the upper edge of the annulus may bear against and form a seal with the underside of the annular web of the article, the formation of the annulus being such that frictional engagement thereof with the annular flange is alone sufficient to maintain the parts in assembled relation.

2. Means for protecting a surface of an annular flange depending from an overhanging annular web of an article from paint or plating material applied to other portions of the article, comprising a one piece mask formed of resilient material and shaped to cover the surface of the annular flange to be protected, said mask being an annulus applicable in surface to surface relation to the surface of the annular flange to be protected, the depth of the annulus being substantially equal to the depth of the annular flange to which it is applicable whereby the upper edge of the annulus may bear against and form a seal with the underside of the annular web, the formation of the annulus being such that frictional engagement thereof with the surface aforesaid of the annular flange is alone sufficient to maintain the parts in assembled relation.

JAMES EDWARD DUGGAN.