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ARTICLE SUPPORTING DEVICE

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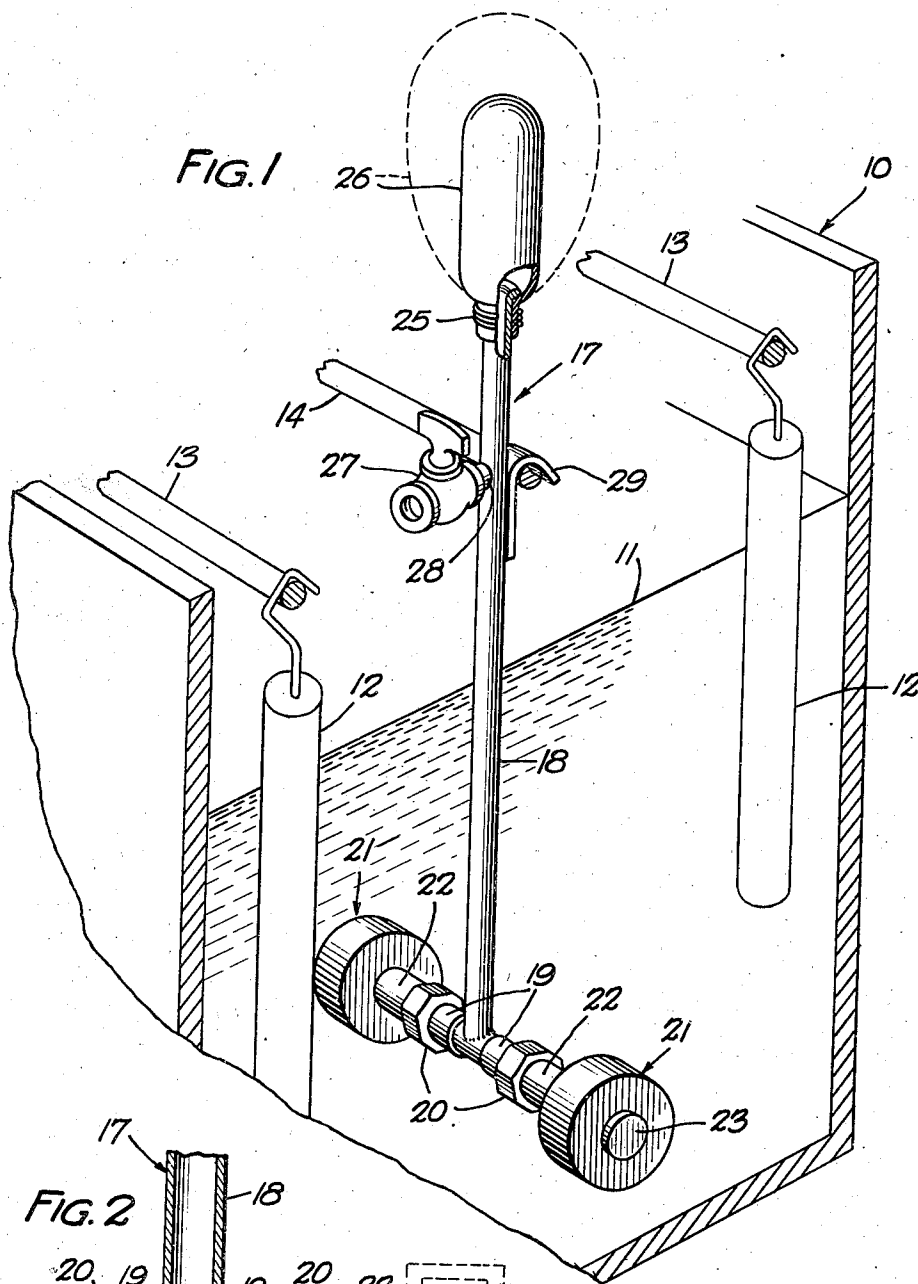
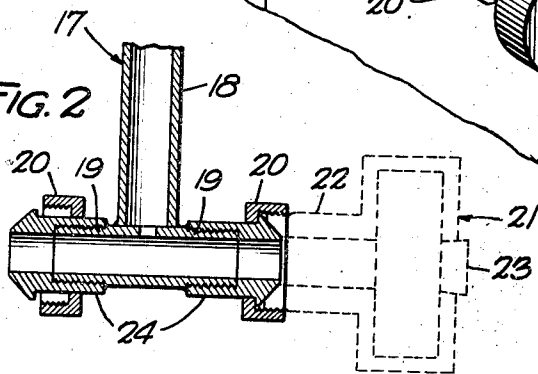


FIG. 2



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ARTICLE SUPPORTING DEVICE

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1 Claim. (Cl. 204—297)

This invention relates to article supporting devices and particularly to devices for supporting hollow articles with their interiors sealed off while submerged in a bath.

In the treating of certain types of hollow articles in an electroplating bath to plate their exterior surfaces, it is necessary, in order to prevent ruining means within the article, that the cleaning or plating solutions be prevented from entering the interior of the article.

An object of the present invention is to provide a simple and practical device for supporting hollow articles with their interiors sealed off while submerged in a treating bath.

In accordance with one embodiment of this invention, as used for supporting hollow articles while submerged in an electroplating tank for electroplating their exterior surfaces, there is provided a plating rack comprising means communicating with the interiors of the articles which includes an expansible member for applying a higher than atmospheric pressure within the articles, the expansible member also serving as a signal upon deflation in case a leak occurs.

A complete understanding of the invention may be had by reference to the accompanying drawing, in which:

Fig. 1 is a perspective view of a rack, partly in section, embodying the features of the invention shown supported in an electroplating tank, the tank being shown fragmentarily in broken outline, and

Fig. 2 is a fragmentary enlarged vertical sectional view of the lower end of the rack.

Referring now to the drawing in detail, a conventional electroplating tank is indicated at 10 containing an electrolyte 11 and anodes 12 suspended from bus bars 13. A cathode bus bar is shown at 14 for supporting the plating rack of this invention, which is indicated, in general, at 17. The rack 17 is in the form of an inverted T-shaped frame, which includes a vertical arm 18, preferably of copper pipe, and copper pipe cross arms 19 extending from its lower end and communicating at their interiors with the interior of the pipe arm 18 (Fig. 2). To the outer ends of the cross arms 19 are secured, in the present embodiment of the invention, screw threaded pipe couplings or union sections 20 which are used for coupling to and supporting hollow articles, indicated, in general, at 21, carrying means therein (not shown), upon the rack 17. The articles 21 are provided with screw threaded union sections 22 at one end which com-

municate with the interiors of the articles 21 and onto which the union sections 20 are threaded in securing the articles to the rack. The opposite ends of the particular type of illustrated articles 21 are equipped with plugs 23. The cross arms 19 are formed by soldering or brazing a length of copper pipe to the vertical arm 18 and nipple portions 24 of the union sections 20 are similarly secured to the cross arms by soldering or brazing.

At its upper end, the vertical pipe arm 18 has attached thereto, as shown at 25, an inflatable bulb or balloon 26 of rubber or other suitable material. Adjacent its upper end, an air inlet valve 27 is connected by a pipe nipple 28 to the interior of the pipe arm 18. A hook 29 on the vertical arm 18 is provided for supporting the rack 17 on the bus bar 14 while in the electroplating tank 10.

In using the rack 17, the articles 21 to be plated with the plugs 23 inserted therein are first attached to the rack by the union sections 20 and thereafter, in the present embodiment of the invention, a suitable source of air pressure (not shown) is connected to the inlet valve 27 and air under pressure is permitted to flow into the rack and when the bulb 26 is suitably inflated, as indicated in broken outline, for example, the valve is closed and disconnected from the air pressure source. Thereafter, the rack 17 is supported on the bus bar 14 of the electroplating tank 10 by means of the hook 29. The operator, after placing the rack in the tank 10 and before leaving the same, will observe whether the bulb 26 remains inflated and if it should begin to deflate, it will be a positive indication to him that a leak is occurring and that the rack 17 should be immediately removed from the tank 10 to prevent damage to the means within the articles 21 which would result from an infiltration of the electrolyte 11 or other treating solution into the interiors of the articles. Thus, with the bulb 26 remaining inflated, a greater than atmospheric pressure is being maintained in the interiors of the articles 21, which are hermetically sealed. This pressure should be high enough to counterbalance or exceed the hydrostatic pressure of the bath, and, consequently, the electrolyte 11 cannot enter the interior of the articles to damage or ruin the means therein. An indicating gauge may be substituted for the bulb 26 to indicate a drop in pressure within the articles 21.

It will be understood that although in the specific application of the invention air under

pressure greater than the hydrostatic pressure on the outside of the articles is applied to the interior thereof to prevent leakage into the articles of the treating solution, any fluid pressure, either gaseous or liquid, that would not be injurious to the contents of the article may be used.

From the above description, it will be evident that a simple and practical device is provided for supporting and hermetically sealing in a treating bath the hollow articles capable of being so sealed and carrying means within their interiors which would be damaged or ruined by immersion in the bath and further there is provided a visual indication to the operator in case a leak occurs in the device or articles.

Although a specific embodiment of this invention has been described and illustrated with reference to a particular type of article treating bath, it should be understood that modifications can be made and it is capable of other applications.

What is claimed is:

An electroplating apparatus for hollow rigid articles to be electroplated exteriorly in an electroplating bath comprising a pipe-like frame, a plurality of screw-threaded coupling members at its lower end for connection to screw-threaded portions of said articles, the interiors of said articles communicating with the interior of said frame, a cathode bus bar, means on said frame to freely suspend the same on said cathode bus bar and thereby suspend the articles in said bath, and an inflatable member connected to and communicating with the interior of said pipe-like frame for maintaining a higher than atmospheric pressure in the interiors of said articles to exclude the bath therefrom.

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