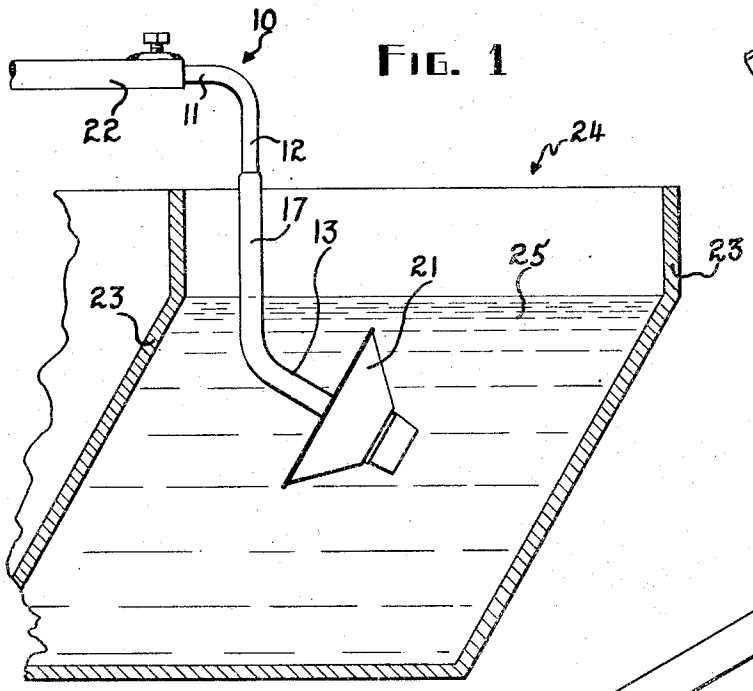
May 23, 1944. R. R. LA MOTTE 2,349,356

HOLDER FOR ELECTROLYTIC DEPLATING

Filed April 25, 1941

FIG. 1



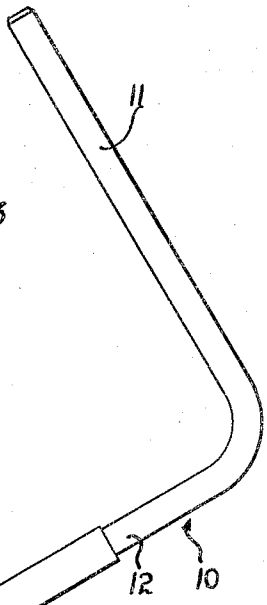
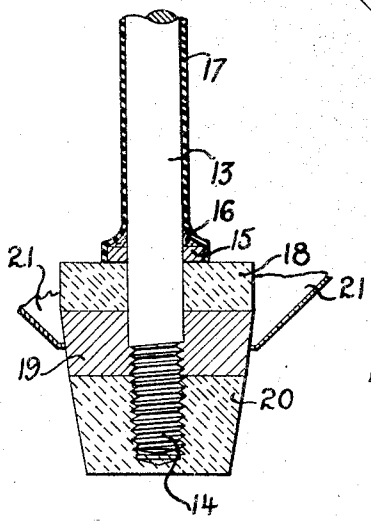
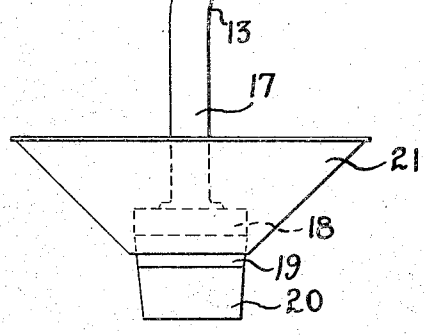


FIG. 3

FIG. 2





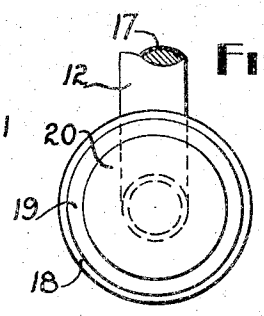


FIG. 4

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HOLDER FOR ELECTROLYTIC DEPLATING

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Application April 25, 1941, Serial No. 390,230

5 Claims. (Cl. 204—297)

This invention relates to a holder. More specifically it relates to a holder for supporting articles, such as cream separator disks, in an electrolytic deplating bath.

In the supporting of articles to be deplated in an electrolytic bath there is always a problem of good mechanical support as well as satisfactory electrical contact along with the problem of keeping bubbling to a minimum.

An object of the present invention is an improved holder.

A further object is the provision of an improved holder for supporting a cream separator disk to be deplated in an electrolytic bath.

Another object is to provide an improved holder for supporting articles to be treated in an electrolytic bath.

According to the present invention, a lead washer of tapering exterior surface is positioned upon a metallic rod between two Bakelite members which cover the end surfaces of the lead washer. The tapering peripheral surface of the washer provides support and electrical contact for an article, such as a cream separator disk, for deplating in an electrolytic bath. The lead washer is easily removable for replacement by virtue of the threaded engagement between the end of the rod and one of the Bakelite members.

In the drawing:

Figure 1 shows a novel holder of the present invention supporting a cream separator disk in an electrolytic bath;

Figure 2 is a sectional view of the end of the holder;

Figure 3 is a side view of the holder with a disk positioned thereon; and

Figure 4 is an end view of the holder.

The reference character 10 designates a rod having a first straight portion 11, a second straight portion 12 extending at right angles to the portion 11, and a third portion 13 extending at an angle, not a right angle, from the portion 12. As seen in Figure 2, the portion 13 has a threaded end 14 and a shoulder 15 secured, as by solder or welding 16, near but slightly spaced from the threaded end 14. A non-conducting, insulating coating 17 covers the shoulder 15, the part of the portion 13 on the side of the shoulder away from the threaded end 14, and the greater part of the portion 12. A washer or annulus 18, formed of Bakelite or other suitable non-conducting insulating material, is positioned on the portion 13 of the rod in abutment with the shoulder 15. A washer or annulus 19, formed of lead, is positioned on the end of the rod in abutment with the annulus 18. A member 20, formed of Bakelite or other suitable insulating material, abuts the lead annulus 19 and has a threaded opening which engages the threaded end 14 of the rod. The exterior surface of the lead annulus 19 is frusto-conical and the minimum diameter at one end abutted by the end of the member 20 is equal to the diameter of that end of the member 20. The maximum diameter at the other end abutted by the end of the non-conducting washer 18 is equal to the diameter at that end of the washer 18. Thus, only a peripheral frusto-conical surface of the lead annulus 19 is exposed. The peripheral surface of the member 20 is also frusto-conical, and the threaded opening in the member 20 engaging the threaded end 14 of the rod does not extend all the way through the member 20, and thus the threaded end of the rod is completely enclosed.

As seen in Figures 1 and 3, a cream separator disk 21, which is frusto-conical in shape, has an opening which is engaged by the frusto-conical peripheral surface of the lead annulus 19. As seen in Figure 1, the rod 10 is attached by its portion 11 to a supporting member 22 which may be carried on a rotating device, as disclosed in applicant's copending application Serial No. 381,481, filed March 3, 1941. The supporting member 22 is connected with a source of current, so that the rod 10 and the disk 21 form an anode, and circular walls 23 of a container 24 form a cathode. A phosphoric acid solution 25 forms a bath contained in the container 24, in which the disk 21 is submersed. The disk is formed of stainless steel which is polished by a deplating action upon the disk in the phosphoric acid solution, current passing from the disk through the solution to the container walls, and metal being removed from the surfaces of the disk.

The annulus 19 is formed of lead, so that substantially no deplating of the annulus takes place. It is important that the bubbling due to electrolysis at the exposed surface of the lead annulus be kept to a minimum, so that gas does not collect within the disk and thereby prevent a good polishing. Since the ends of the lead annulus 19 abut the non-conducting members 18 and 20 and are covered by them, only the peripheral surface of the lead annulus is exposed, and thereby bubbling is kept to a minimum. Since the peripheral surface of the lead annulus is frusto-conical, it is easy to effect a good engagement between the opening in the disk 21 and the surface. Lead is relatively soft, and consequently a contact over substantially the entire extent of

the opening in the disk is assured, and thus burning is avoided. However, since the lead is soft, it can easily become nicked and scratched by the repeated application and removal of separator disks; consequently, the lead annulus must be replaced at intervals, and removal is facilitated by virtue of the threaded engagement between the non-conducting member 20 and the threaded end of the rod 10. For replacement, the member 20 is removed by unscrewing, a new lead annulus 19 is applied, and the member 20 is again screwed onto the threaded end 14.

It will be seen from Figure 1 that the depth of the separator disk is approximately one-third the distance from each end of the separator disk to the nearest container wall 23. This ratio may vary from one-third to one-fifth. If the ratio is appreciably more than one-third, the deplating is too great near the ends of the separator disk. If the ratio is appreciably less than one-fifth, too great a time is required for sufficient deplating for satisfactory polishing. The angle of the disk in the separator bath must be as shown in Figure 1, so that the gases liberated, due to electrolysis at the disk and the peripheral surface of the lead annulus 19, will not accumulate inside the disk and thereby cause clouding or shading. For the same reason, the length of the part 13 of the rod 10 must be sufficient so that the part 12 of the rod extending at an angle to the axis of the disk 21 is not so close to the disk as to obstruct free passage of the gases from the inside of the disk.

It will be apparent from the foregoing description that a new and novel holder for articles to be treated in an electrolytic bath has been provided. The holder provides sufficient electric contact with the article to be treated, so that burning does not take place. There is provided a minimum of metallic or conducting surface engageable by the article to be treated, so that bubbling, due to electrolysis, is kept to a minimum. The part of the holder including the exposed surface engaging the article to be treated is easily replaceable.

The intention is to limit the invention only within the scope of the appended claims.

What is claimed is:

1. A device for holding in an electrolytic deplating bath an article having an opening therein, by contact with and support of the article at the opening, comprising a metallic rod member having a threaded end, a shoulder near the threaded end, and a non-conducting coating covering the shoulder and a considerable portion of the rod on the side of the shoulder away from the threaded end, a first non-conducting member of annular form positioned on the rod in abutment with the shoulder, a lead member of annular form positioned on the rod in abutment with the first non-conducting member and having a peripheral surface adapted to engage the opening in the article to be deplated, and a second non-conducting member having threaded engagement with the threaded end of the rod and completely enclosing the same and abutting the lead member, the lead member being easily removable for replacement by virtue of the threaded engagement of the second non-conducting member and the exposed surface of the lead member so that bubbling due to electrolysis is kept to a minimum by abutment of the lead member with the non-conducting members, the lead member constituting the support for the article by engagement of the opening therein.

2. A device for holding a cream-separator disk having an opening therein in an electrolytic deplating bath, comprising a metallic rod member having a threaded end, a shoulder near the end, and a non-conducting coating covering the shoulder and a considerable portion of the rod on the side of the shoulder away from the threaded end, a first non-conducting member of annular form positioned on the rod in abutment with the shoulder, a lead member of annular form positioned on the rod in abutment with the non-conducting member and having an external diameter increasing from a minimum at one end to a maximum at the other end equal to the external diameter of the first non-conducting member at the end abutted by the lead member, and a third non-metallic member having one end of a diameter equal to the minimum diameter of the one end of the lead member and in abutment therewith and having a threaded hole extending from the said one end only partially through the member and engaging the threaded end of the rod, whereby the lead member constitutes the support for the disk by engagement of the opening therein.

3. A device for holding in an electrolytic deplating bath an article having an opening therein, by contact with and support of the article at the opening, comprising a conducting rod, a non-conducting covering upon the rod extending from a point near the article holding end but spaced therefrom from one end for a considerable distance away from the said end, non-conducting abutment means positioned on the rod adjacent the said point, a conducting annulus positioned on the rod in conducting engagement therewith between the said point and the said one end in abutment with the abutment means, and a member having non-conducting surfaces detachably engaging the end of the rod and completely enclosing the said end and abutting the conducting annulus, whereby the conducting annulus is easily removable for replacement by virtue of the detachable engagement of the member with the end of the rod and the exposed surface of the conducting annulus so that bubbling due to electrolysis is kept to a minimum by covering of the end surfaces of the conducting annulus through abutment with the abutment means and the other member, said conducting annulus constituting the support for the article by engagement of the opening therein.

4. A device as specified in claim 3, the external diameter of the annulus conducting element increasing from a minimum at the end abutted by the member to a maximum at the end abutted by the abutment means, the diameters at the ends of the conducting annulus being equal, respectively, to the diameter at the ends of the member and the abutment means, respectively, abutting the ends of the conducting annulus.

5. A device as specified in claim 3, the conducting annulus being formed of lead and the external diameter thereof increasing from a minimum at the end abutted by the member to a maximum at the end abutted by the abutment means, the diameters at the ends of the conducting annulus being equal, respectively, to the diameter at the ends of the other member and the abutment means, respectively, abutting the ends of the conducting annulus.

RALPH R. LA MOTTE.