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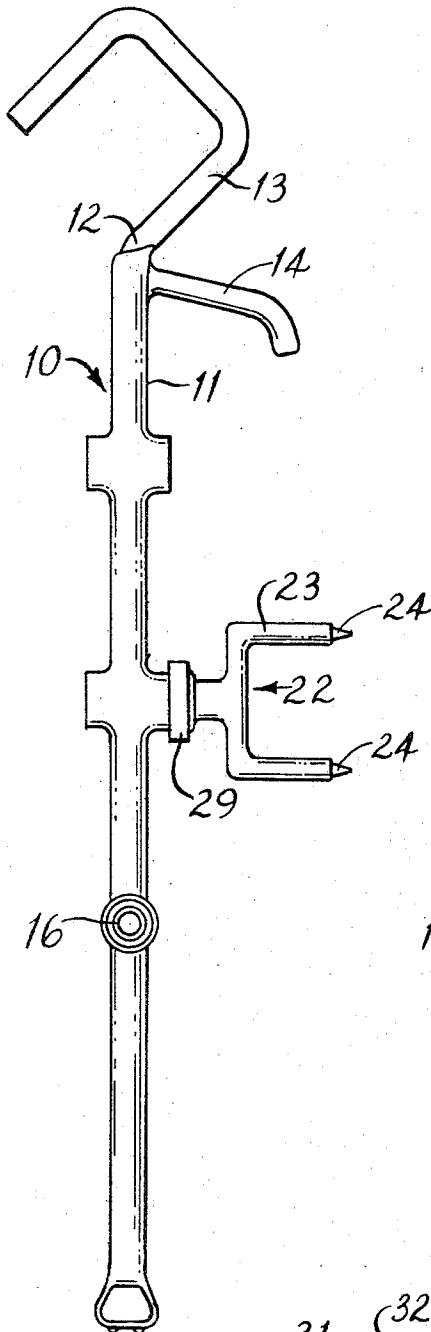


FIG. 1

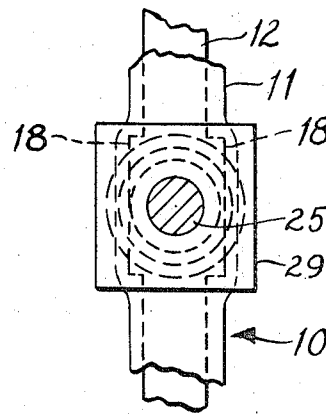


FIG. 3

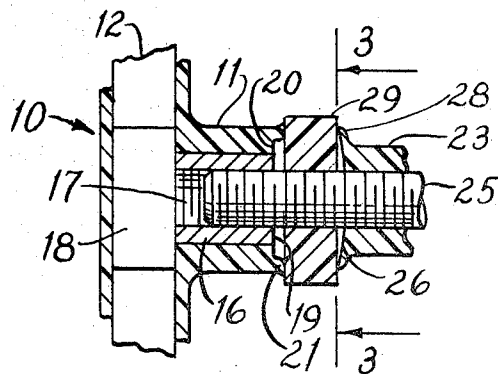


FIG. 2

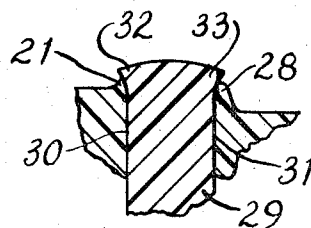


FIG. 4

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1

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3 Claims

ABSTRACT OF THE DISCLOSURE

A plastic-impregnated, linen based lock nut is disposed in face-to-face contact with the insulated coating of a terminal and contact member of an electroplating rack. The nut absorbs a quantity of an electroplating bath so as to swell, thereby effecting a tight seal against penetration of the bath to the terminal and contact member.

BACKGROUND OF THE INVENTION

(1) Field of the invention

This invention relates generally to electroplating racks intended for the support of articles to be plated in an electroplating bath and is especially concerned with an improved seal whereby such racks may be protected against the effects of penetration by the electroplating bath.

(2) Description of the prior art

Heretofore, electroplating racks have comprised a spine adapted to depend from a bus bar, the spine being coated with a suitable insulator and provided with detachable contact members adapted for mounting the articles to be plated. The contact members usually contemplate the use of a threaded member engageable with a suitable terminal provided upon the spine.

However, it has been found that the closure between the contact members and the terminals with which they are engaged is often imperfect, thereby permitting acid solutions, such as are employed in plating baths, to penetrate to the terminals, spine and threaded portions of the contact members so as to cause corrosion and other undesirable effects with respect to said parts and shorten their effective lives.

To meet this difficulty, it has been customary to utilize massive parts in an effort to lengthen the life of the rack despite its deterioration by the plating bath and to resort to repair and recoating thereof when needed. Such an approach to solving the disadvantage of conventional racks, however, adds substantially to the expense, bulk and weight thereof. Moreover, sealing means customarily employed to meet this problem frequently involve specially designed and correspondingly expensive parts which require special tools for their installation and adjustment.

It may be added that when contact members are employed in conjunction with the spines of conventional racks, it is often difficult to effect the desired position of the contact members and, at the same time, accomplish an effective seal thereof.

The present invention solves these problems.

SUMMARY OF THE INVENTION

In the present invention, a lock nut composed of a material which swells when exposed to the plating bath is disposed between each contact member and terminal of the spine, the nut being adjustably contactable with the resilient insulating coating of the terminals and contact members, and accomplishing a tight seal therewith when swelling of the nut is effected. The general conformation of the lock nut may assume conventional form and

2

be adjusted by means of conventional tools which require no special skill.

More specifically, it is an object of the present invention to provide an improved means for sealing the connection between components of an electroplating rack.

Another object of the invention is to provide means for sealing the connection between a contact member and a terminal provided upon the spine of an electroplating rack.

Another object of the invention is to provide sealing means of the character described which is adapted to protecting an electroplating rack from the deleterious effects of an electroplating bath.

Another object of the invention is to provide a sealing means of the character described which permits rapid and easy positioning of the contact member with which it is employed without breaking the sealing action accomplished by said sealing means.

Another object of the invention is to provide such a sealing means which may be easily installed and manipulated by conventional tools.

A further object of the invention is to provide such a sealing means which permits the use of a lighter, less bulky and less expensive electroplating rack than that which is conventionally employed.

Yet a further object of the invention is to provide such a sealing means which is of simple, economical and sturdy design.

Other objects and advantages of the present invention will become apparent from the following discussion when read in conjunction with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

FIG. 1 is an elevational view of one embodiment of the present invention;

FIG. 2 is an enlarged, fragmentary, sectional view of a portion of the form of the invention depicted in FIG. 1;

FIG. 3 is a cross-sectional view taken about the line 3—3 of FIG. 2;

FIG. 4 is an enlarged, fragmentary, cross-sectional view of a portion of the said embodiment of the invention after it has undergone a swelling action.

Throughout the various views, similar numerals are employed to refer to similar parts of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in the accompanying drawing, one embodiment of the present invention comprises an electroplating rack, generally designated by the numeral 10 and including a suitable insulation such as a vinyl plastic 11 which covers a metallic spine 12. The spine 12 is preferably composed of a material such as copper or brass and provided with suitable means for engaging a bus bar (not shown) such as a hook 13 forming part of the spine 12 and projecting from the vinyl plastic 11. The spine 12 is also provided with a suitable handle 14, preferably composed of steel and manually engageable to permit easy portability of the spine 12 and any members depending thereon, as desired.

The spine 12 is also provided with one or more terminals 16 (see FIG. 2) which are preferably brazed to the spine 12 so as to insure contact therewith and support therefor according to conventional practice.

As may be seen in FIGS. 2 and 3, each of such terminals 16 is coated with the aforesaid insulation of vinyl plastic 11, which insulation is an extension of that provided upon the spine 12. Each terminal 16 preferably includes a tube provided with a threaded portion 17 located on the internal surface of the tube. The spine 12

3

may also be provided with bosses 18 so as to afford additional seating for the terminal 16 where desired.

It will be observed that the insulation adjacent to the face 19 of the terminal 16 includes a depressed circular portion 20 and a circular flange 21.

As may be seen in FIGS. 1, 2 and 3, a suitable contact member, generally designated by the numeral 22, may be supported by a terminal 16, said contact member 22 including an insulation such as a vinyl plastic 23 covering metallic members which protrude as at 24 for engagement with an article to be plated, according to conventional practice. Said contact member 22 is also provided with a conventional means for connecting the metallic members to the electricity supplied by the spine 12, such as the threaded member 25 which is coated with said vinyl plastic insulation 23. The portion of said insulation 23 adjacent to said threaded member 25 is concave, as at 26 and includes a circular flange 28, the threaded member 25 projecting from said insulation 23 so as to be threadably engageable with the terminal 16, as may be seen in FIG. 2.

An important feature of the present invention resides in the use of a lock nut 29 which is interposed between the terminal 16 and contact member 22. This nut 29 and the associated terminal 16 and contact member 22 are adjusted so that the flanges 21, 28 are brought into abutment with the nut 29.

The nut is composed of a linen-based phenolic resin or other material of similar characteristics. The nut 29 may be tightened so as to compress the surfaces 20, 26 into planar alignment with the flanges 21, 28 (the vinyl plastic being resilient and yieldably conformable with the nut 29), thereby assuming the flat conformation designated by the numerals 30, 31 in FIG. 4. When the nut 29 and associated members are immersed in the electroplating bath, its exposed surfaces tend to absorb a portion of said bath so as to expand or swell as at 32, 33 (see FIG. 4), it being understood that the swelling of said nut 29 against the terminal 16 and contact member 22 obstructs further penetration of the electrolyte beyond the vicinity of the outer surface of the nut 29, thereby preventing communication of said electrolyte to the metallic members covered by the insulation 11, 23.

With the foregoing arrangement, it will be seen that the contact member 22, terminal 16 and nut 29 may be initially adjusted by conventional means such as a wrench (not shown) or other suitable gripping means so as to cause the nut 29 to be in tight contact with the flanges 21, 28 and adjacent insulation 20, 26 of the terminal 16 and contact member 22, as well as with the face 19 of said terminal; and the contact member 22 may be adjusted to assume any desired angular position about its axis of rotation, such as it might be required to assume when electricity is communicated to the spine 12 and contact member 22 during operative use. When these members are disposed in the electroplating bath, the swelling of the nut 29 will take up any play which may exist between it and said adjacent insulation, thereby insuring a complete and perfect seal of the connection between the contact member 22 and terminal 16.

For illustrative purposes, the invention has been de-

4

scribed with respect to one terminal of said electroplating rack. However, it will be seen that as many lock nuts and contact members may be used as desired and that unused terminals may be appropriately sealed by means well known to those skilled in the art.

The invention disclosed herein is not limited in its application to the method and details of construction and arrangement of parts shown and described, since the invention is capable of other embodiments and of being practiced or carried out in various other ways. It is also to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

I claim:

1. In an electroplating rack having a spine disposable in an electroplating bath, at least one terminal provided upon said spine and adapted for engagement with a contact member for supporting an article to be plated, the combination comprising:

- (a) a threaded portion provided upon said terminal;
- (b) a threaded member provided upon said contact member and engageable with said threaded portion;
- (c) said terminal and threaded member being coated with a resilient insulating material;
- (d) a lock nut surmounting said threaded member and disposed in abutment with said resilient insulating material of said terminal and threaded member;
- (e) said lock nut being composed of a fabric impregnated by a plastic material;
- (f) said fabric being absorptive of a quantity of said electroplating bath when said nut is disposed therein, whereby said nut expands to effect a seal of said terminal and threaded member against penetration by said electroplating bath.

2. In a device according to claim 1:

- (a) said resilient insulating material being composed of a vinyl plastic;
- (b) said fabric of said lock nut being linen;
- (c) said plastic material of said lock nut being a phenolic resin.

3. In a device according to claim 1:

- (a) said threaded member projecting from said resilient insulating material;
- (b) said resilient material on said terminal and threaded member including:
 - (i) opposing circular flanges abutable against said lock nut;
 - (ii) depressed surfaces adjacent to said flanges;
 - (iii) said flanges and depressed surfaces being yieldably conformable with said lock nut upon tightening thereof.

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