Jan. 13, 1948. H. W. KUGLER 2,434,417

SMALL PARTS HOLDER FOR ELECTROLYTIC BATHS

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Fig. 3

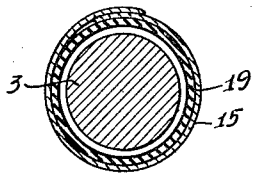


Fig. 2

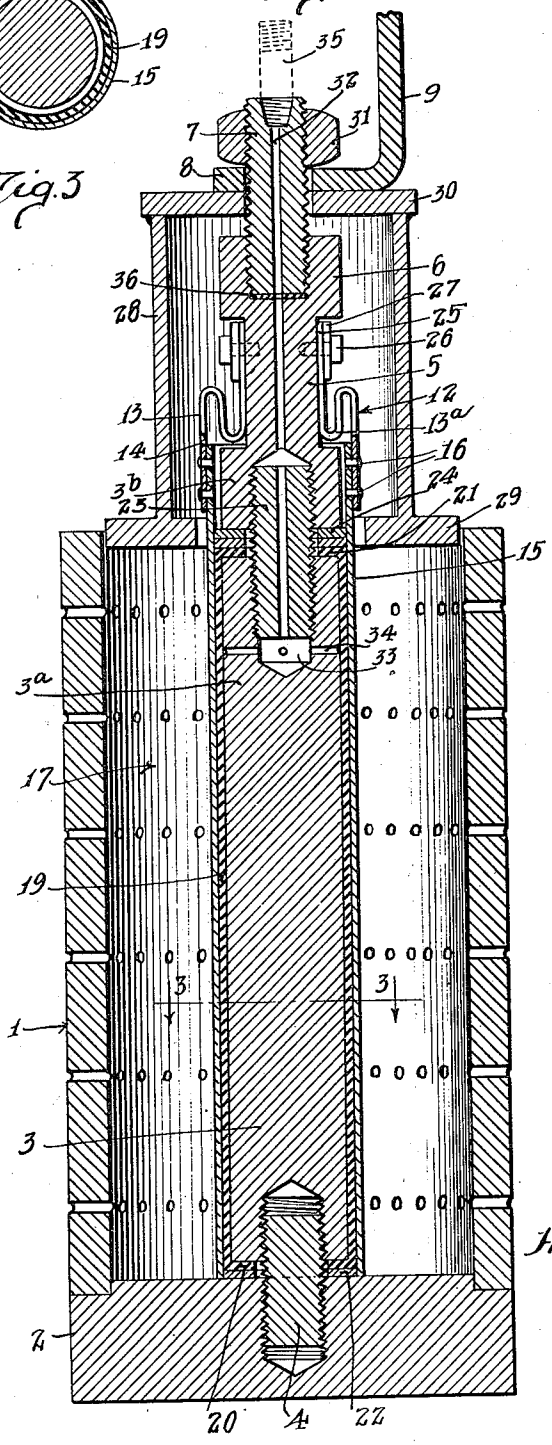
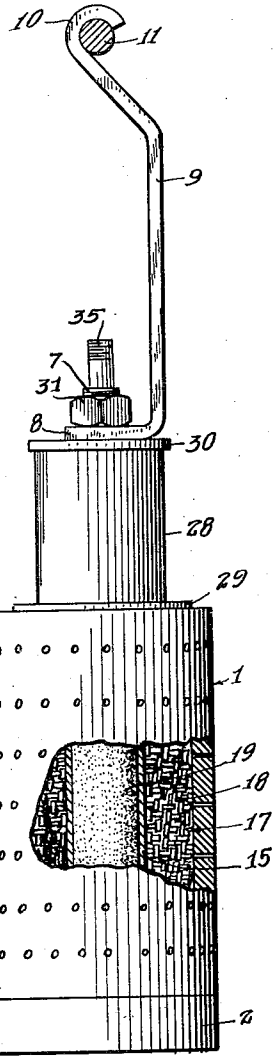


Fig. 1



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SMALL PARTS HOLDER FOR ELECTROLYTIC BATHS

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5 Claims. (Cl. 204—285)

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This invention relates to means for facilitating the treatment of small articles in electrolytic baths, or the like.

The invention is particularly applicable to the construction of a container for small objects that are to be subjected to anodic oxidation, anodic pickling, or cathodic plating, etc.

In subjecting small metal articles to any of the above electrolytic processes, it is the usual practice to place them in a container or "basket" in which they are held while immersed in the bath. This method is employed for treating rivets, and in order to insure contacts of sufficient effective area for the rivets, it has been the practice to pound the containers and vibrate them to pack the rivets closely together. Such pounding and vibration is not satisfactory, and does not accomplish the result desired, but does accomplish the rapid deterioration of the containers, and frequently results in damage to some of the contents.

An object of the present invention is to overcome these difficulties, and to provide a simple construction for a holder for rivets or other small articles to be treated in such a bath, which will operate so as to insure intimate contact between the superficial area of the rivets held in the basket.

Another object of the invention is to provide simple means for effecting this packing effect on the rivets, so that it is to a certain extent controllable; so that the amount of packing pressure can be varied as may be desired to suit different conditions such as the sizes or form of the articles that are to be treated in the bath.

In practice, the containers referred to are usually suspended into a vat containing the electrolytic bath, by a hook that hooks over a substantially horizontal electrical conductor in the form of a bar or heavy wire. One of the objects of the invention is to provide a holder for rivets or the like, of simple and compact construction, capable of exerting force upon the rivets in the basket, to pack them, and so constructed that fluid pressure can be admitted into the device to effect the packing of the rivets.

In the preferred embodiment of the invention, I employ a laterally movable wall which can be moved laterally by pressure so as to effect the packing of the rivets, and for this purpose I prefer to employ a roll of sheet metal which is incorporated in the construction of the container; and one of the objects of the invention is to provide an effective form and means for supporting this roll in such a way that it can freely change its

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dimension under the action of the fluid pressure, to pack the rivets in the compartment or chamber in which they are held.

Further objects of the invention will appear hereinafter.

The invention consists in the novel parts and combination of parts to be described hereinafter, all of which contribute to produce an efficient small parts holder for electrolytic bath.

A preferred embodiment of the invention is described in the following specification, while the broad scope of the invention is pointed out in the appended claims.

In the drawing:

Fig. 1 is a side elevation of the complete container including the hook that suspends it in the bath, and in this view the body of the basket is broken away so as to show a portion of the wall of the container or basket in section, and illustrating a charge of rivets in position to be packed by the packer, or packing roll referred to above.

Fig. 2 is a vertical section through the container and contiguous parts upon an enlarged scale, and further illustrating details of the construction.

Fig. 3 is a horizontal section taken about on the line 3—3 of Fig. 2, and illustrating an example of how fluid pressure may be employed to effect a lateral movement of the wall of the packer.

Before proceeding to a more detailed description of the invention, it should be stated that broadly it involves the use of a laterally movable wall which forms a portion of the wall of the compartment or chamber in which the rivets are placed. This laterally movable wall or packer, when used with a cylindrical form of basket, is preferably constructed in the form of a roll of sheet metal with overlapping edges extending substantially parallel with the axis of the roll. While this roll could be constructed as an outside roll surrounding the charge of rivets, in the present application the roll is illustrated as associated with the core or inner spindle of the container, and it operates with an expansive movement to pack the rivets in the annular chamber between the core and the circumferential wall of the basket.

In the illustrated embodiment of the invention, 1 indicates the basket which consists of a perforated circumferential shell mounted on a bottom 2, and on this bottom a central mandrel or core 3 is secured by any suitable means such as a threaded stud or center pin 4, the lower end of which is threaded into a socket in the bottom 2,

and the upper end of which is threaded into a similar socket in the lower end of the core or spindle 3.

At its upper end the core 3 has an integral neck 5 which, if desired, may be of slightly smaller diameter than the supporting head 6 which is formed at the upper end of the neck and integral with it. This neck is provided with suitable means for connecting it to a support which, in the present instance, includes a threaded pintle or stud 7, the lower end of which is threaded into a socket in the head 6, and the upper end of which is passed through a horizontally disposed ear 8 that is formed on the lower end of a hanger 9. The upper end of this hanger is offset inwardly to form a hook 10 that is employed to hang the holder on a substantially horizontal support and electric conductor 11. The offset in the hanger 9 is sufficient to bring the center of gravity and axis of the holder substantially in line with the supporting conductor 11.

On the neck 5 a conducting bracket 12 is provided for conducting the electric current, and this bracket is preferably formed of two metal straps 13, bent substantially to the shape illustrated; that is to say, the lower end of each strap 13 includes convolutions 13a which terminate at the bottom of the hanger in a straight extension, the lower end of which supports the laterally movable wall 15 which, in the present instance, consists of a roll of sheet metal, the upper edge of which is riveted as at 16 to the extensions 14, said roll 15 having overlapping edges extending longitudinally with the roll.

The rivets, of course, are received in the annular chamber or compartment 17, and on the side of the wall 15 remote from the rivets 18, I provide a flexible expansible wall 19 which is in the form of a tube; and in order to make a tight connection at the ends of this tube, the wall of the tube is turned inwardly to form a flange 20 at the lower end, and a similar flange 21 at the upper end. At the lower end this flange 20 is clamped between the lower face of the core 3 and a sealing washer 22 that seats on the upper face of the bottom 2.

In order to clamp the flange 21, the core 3 is preferably constructed in two sections, a body section 3a and a cap section 3b, and these two sections are capable of being clamped together through the agency of a long threaded nipple 23 similar to the nipple 7; and the space between the ends of the sections 3a and 3b, is provided with one or more sealing washers 24 which clamp the flange 21 against the upper end of the body section 3a of the core.

The hanger straps 13 can be supported on the upper section 3b of the mandrel in any desired manner, but in the present instance the upper end of each strap 13 is formed into a long shank 25 that is attached to the neck 5 by small screws 26 that if desired, may be applied through washers 27. The upper portion of the roll 15, and the bracket or hanger 12, is enveloped in a housing sleeve 28, the lower end of which carries an attached ring 29 that fits into the annular mouth of the basket 1, but does not completely fill this space. The upper end of this housing 28 has a transverse head 30 that fits over the nipple 7; and a nut 31 is provided on this nipple for clamping the ear 8 down onto this head 30.

The mandrel 3 is provided with means for conducting fluid under pressure down into the mandrel, to enable this pressure to be applied back of the tubular flexible wall 19 to force the same outwardly against the roll 15 and expand it. In Fig. 3 I illustrate the relation of these parts when the fluid pressure is applied. The natural resiliency of the material of the roll 15 normally holds it so that it presses the tubular sheet 19 against the side of the mandrel with a light pressure, but as soon as the fluid pressure comes on, the tube 19 will become distended and expand the packer 15.

In order to accomplish this, an inlet duct 32 is provided that extends continuously down through the nipple 7, the section 3b of the mandrel, and thence down through the nipple 23 where it passes into the lower end of the socket for the nipple 23 in the section 3a, at which point a small chamber 33 is formed, that is provided with a plurality of radially disposed ducts 34 that conduct the fluid out to contact with the flexible tube 19.

This tube is preferably constructed of some material that will be more or less resistant to the action of ingredients such as acids that may be in the electrolytic bath. For expanding the packer 15 I may employ pneumatic pressure or a liquid. This would be applied, of course, by the attachment of a connection such as indicated in dotted lines at 35, and if desired, a threaded socket can be provided at the upper end of the nipple 7 to receive this connection.

A sealing washer 36 should be provided between the lower end of the nipple 7 and the bottom of the socket into which it screws in the head 6.

In using this holder, of course, the rivets would be charged into the rivet chamber 17 before the sleeve 28 is put in place. After this, the sleeve 28 is placed down over the nipple 7 together with the offset hanger 9, and these parts are then clamped up with a nut 31. The hose connection leading to the connection 35 is then attached, and pressure is put on to any desired degree to pack the rivets together. If desired, this can be done repeatedly while shaking the container to enable gravitation to assist in bringing the rivets into more intimate contact with each other, and with the walls of the holder.

Many other embodiments of the invention will be resorted to without departing from the spirit of the invention.

What I claim is:

1. In a holder for articles to be immersed in an electrolytic bath or the like, the combination of a container for the articles, a packer substantially in the center of said container having a laterally movable wall in contact with the articles, means including a flexible wall adjacent said movable wall, and means for admitting fluid under pressure on the side of the flexible wall remote from said articles to force the movable wall laterally and thereby crowd the articles into intimate contact with each other.

2. In a holder for articles to be immersed in an electrolytic bath or the like, the combination of a container for the articles, having a peripheral wall for retaining the articles, a packer substantially in the center of said container including a roll having overlapped edges causing a change in dimension of the roll when the wall of the roll is moved laterally, an actuator for moving the wall laterally, including a distendable flexible wall with means for admitting fluid under pressure to the side of the distendable wall remote from the roll, said fluid operating to move the wall of the roll laterally to crowd the articles

in the container into intimate contact with each other.

3. In a holder for articles to be immersed in an electrolytic bath or the like, the combination of a container for the articles, having a peripheral wall and a bottom, a mandrel secured to the bottom and extending substantially centrally up through the container, a tubular flexable wall disposed around the mandrel, an expansible packer in the form of a roll of sheet metal with overlapping edges enveloping the tubular flexible wall, means attached to the mandrel for supporting the upper edge of the expansible packer, means for supporting the upper end of the mandrel, there being a duct extending down through the same and through the mandrel, with lateral ducts within the mandrel for conducting fluid pressure to the inner side of the flexible tube to force the same against the packer.

4. A holder according to claim 3, in which the means for supporting the packer roll on the mandrel, includes a convoluted member having an extension at its lower end attached to the upper end of the packer roll, and having a shank at its upper end attached to the mandrel.

5. In a holder for articles to be immersed in an electrolytic bath or the like, the combination of a container for the articles, a packer within the container having a laterally movable wall of conductive material in contact with articles

that are to be immersed in the bath, said wall including a sheet disposed substantially in the form of a roll with the edges of the sheet overlapping each other to cause the lateral movement of the wall, fluid-actuated means located on the side of said wall remote from the articles, for moving the said wall laterally to pack the articles into intimate contact with each other, and conductive means in metallic contact with said laterally movable wall for connecting the holder to an electric conductor.

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