

[54] **METHOD FOR RECONDITIONING A CONTAINER**
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[58] **Field of Search**..... 29/427, 403, 401 R, 401.7; 113/120 BB, 120 DD, 1 K; 220/67, 68

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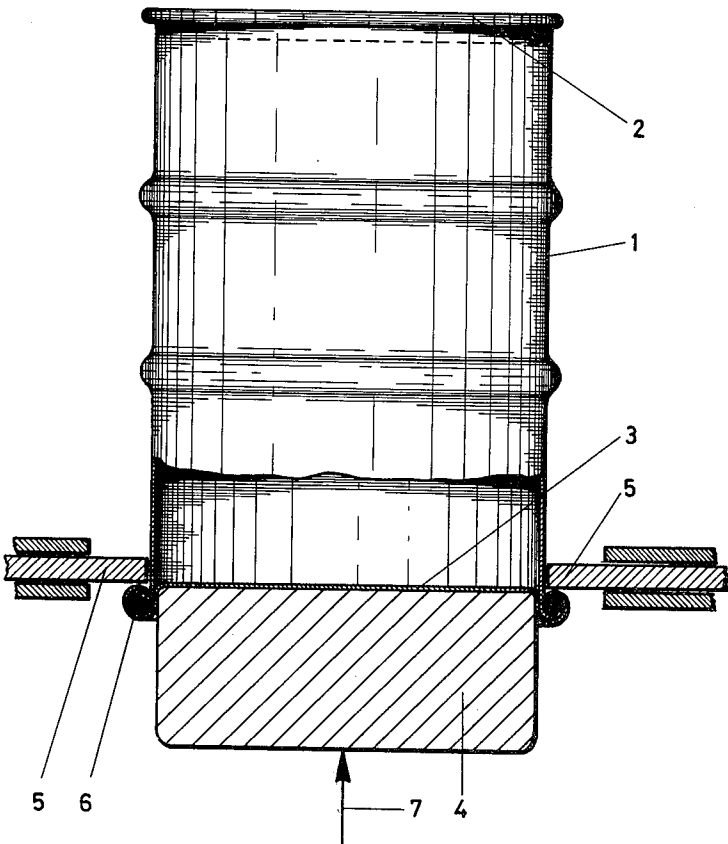
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Attorney, Agent, or Firm—Stevens, Davis, Miller & Mosher

[57] **ABSTRACT**
A technique for reconditioning a container including a spiral seam formed by an end wall and body wall of the container. The container is placed on a support to hold the end wall in an axial and radial direction with respect to the axis of the container. A tool is then moved towards an outer surface of the body wall to completely surround the body wall. The tool and surface are then relatively moved in opposite directions to unroll the seam, the body wall and end wall then being reshaped, cleaned and reconnected to form again a seam.

2 Claims, 4 Drawing Figures



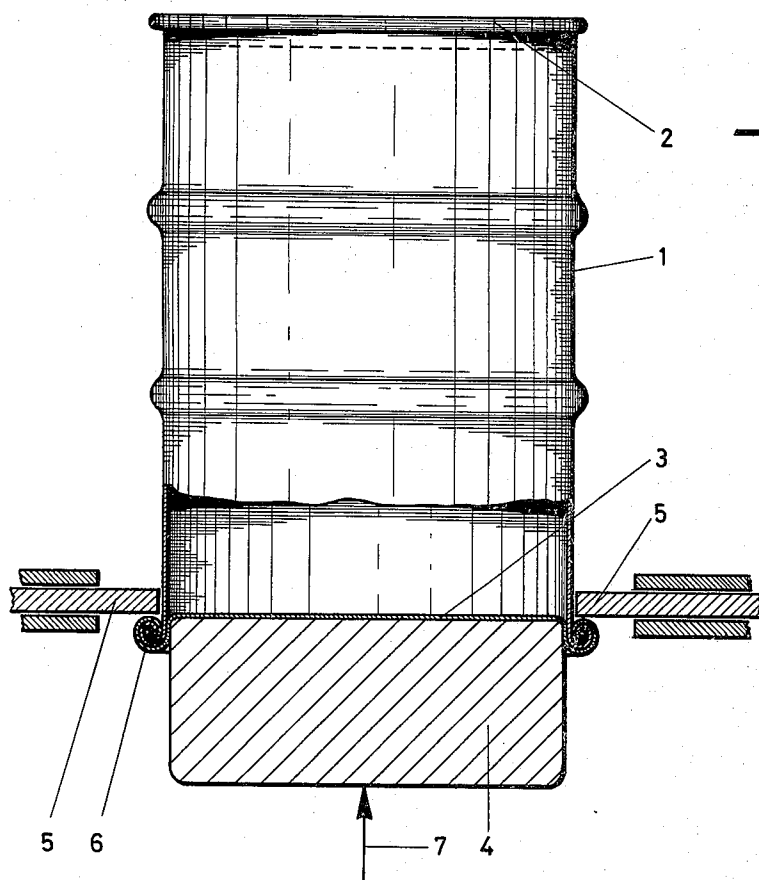


FIG. 2

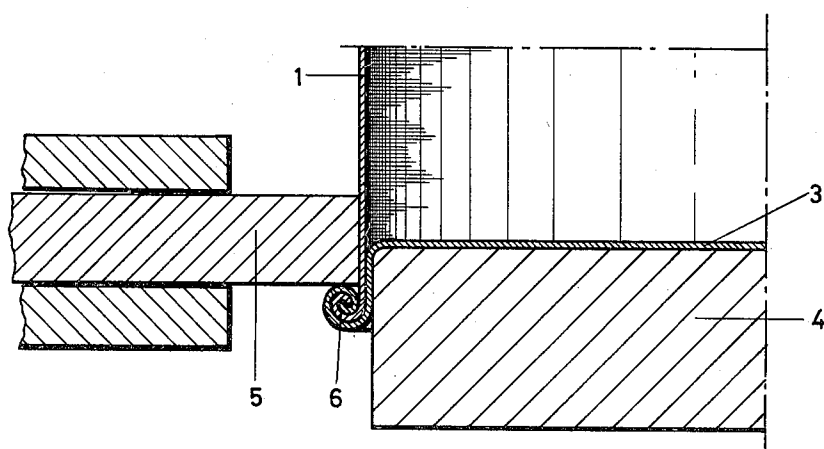
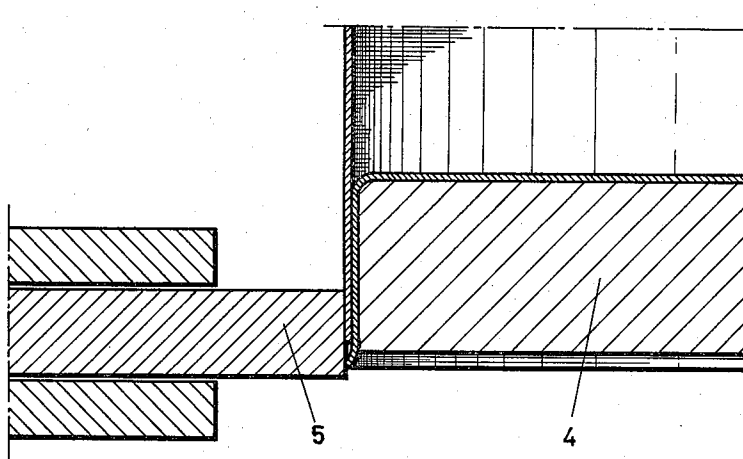
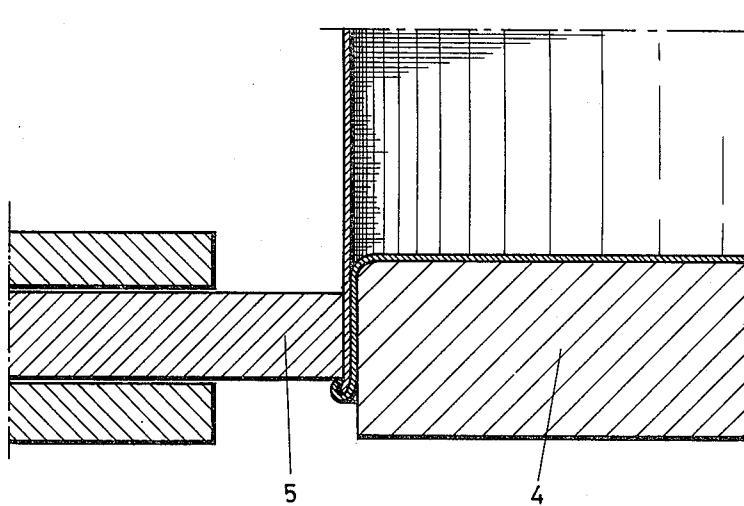


FIG. 3FIG. 4

METHOD FOR RECONDITIONING A CONTAINER

The invention relates to a method for reconditioning a container by separating the components at the site of the seam between body and lid, and bottom respectively, cleaning and reshaping them, and subsequently rejoining them, if desired. Such a method is generally known in the art and is applied in various ways.

An example of such a method is known, for instance, in which the cleaning of and/or the repairs to the container are carried out after the bottom portion or lid portion has been cut off, after which the upper edge of the lid is beaded over and the container is thereafter used as an open container. Such a container has lost its original capacity, while it cannot be used for the transport of liquids any longer.

With containers having the usual flattened folded seam between body and bottom, and lid respectively, it is furthermore known in the art to open the folded seam over a short distance and subsequently to cut off the body of the container as close to the upper edge as is possible. When the cleaning of and the necessary repairs to the container have been effected, the portion cut off from the body of the container is attached to said body again by welding and then the opened out folded seam is flattened against the body of the container again. This method has the disadvantage that on opening the folded seam this may easily get damaged, that in joining the often irregular components together by welding faulty welding occurs and that the container cannot be lined with an interior lining, as this is burnt off during the welding process.

Alternatively, it is also possible to apply a new lid and a new bottom respectively to the container instead of the portion cut off therefrom, the new portion being fixed to the body of the container in the usual way by means of a folded seam when the end of the body has been prepared for the purpose. Apart from the great expenditure involved, this method has the additional disadvantage that the reconditioned container thus obtained has a smaller height and thus a smaller capacity.

For some time now there has been felt the need in the art for a better method, but because the folded seam is damaged on being opened already, no attention has been paid to opening and reclosing the entire locked joint.

It is the object of the invention to provide a method which makes it possible to open the entire folded seam and close it again, if desired, without the contents of the container being affected.

This object is achieved according to the present invention by the fact that with a folded seam having sheet edges which are coiled around one another in the form of a spiral in section, the folded seam is entirely or for the greater part unfolded, i.e. uncoiled, by axially supporting the container at the site of its bottom and lid respectively, by giving full radial support to the inner edge of the lid and bottom respectively, and by moving an apparatus over the folded seam and right along the entire circumference of the body of the container in an axial direction towards the supporting means. It is understood that this relative displacement can be effected by displacing the supporting means while keeping the apparatus stationary, or by keeping the supporting means with the container stationary while displacing the apparatus.

In accordance with the present invention the apparatus preferably consists of a ring and said ring is preferably made in a number of radially movable segments.

Surprisingly, it has appeared that the spiral folded seam can be entirely uncoiled without any fractures occurring, and that after the cleaning of and the repairs to body and lid, and respectively bottom of the container has been effected, both components can be joined together again by means of a spiral folded seam and, which is even more surprising, that this operation can be repeated several times without any detrimental effects. In some cases it is desirable, however, to subject the material to a heat treatment, which is preferably given before uncoiling the folded seam.

The invention also relates to an apparatus for carrying out the method of the invention. This apparatus consists of a supporting means for the bottom or lid of the container, which supporting means has radially expandable segments, which serve to restore the original circular shape to the edge of the container, while the apparatus moreover comprises the ring, previously indicated, and the radially inwardly movable segments forming said ring, respectively, said supporting means, which supporting means and ring are axially movable with respect to one another, the structure being preferably embodied such that the supporting means is movable and the ring is stationary.

It would also be conceivable, to have the device co-operating with the supporting means consist of one or more rollers taking the place of the ring, the center line of said rollers being in radial extension to the center line of the container. Herewith, however, no satisfactory results can be obtained.

It is remarked that the spiral-shaped folded seam as well as a method for the manufacturing thereof have been described in the Dutch applications 69.11769 and 70.09657 respectively.

The invention will now be explained in more detail with reference to the drawings.

FIG. 1 shows a side view and sectional view respectively of the preferred embodiment of method and apparatus according to the invention.

FIGS. 2,3,4 show a part of FIG. 1 showing the method according to the invention in various stages.

FIG. 1 shows a container 1 with lid 2 and bottom 3. The container 1 is positioned with its bottom 3 on a supporting means 4, which fits therein with a close fit, and is provided with radially expandable segments, not shown, respectively.

Around the container have been arranged radially inwardly movable segments 5, which are enclosing the body of the container together. The radial movement is required to make it possible to arrange said segments across the spiral-shaped folded seam 6.

For the purpose of uncoiling the folded seam 6 in accordance with the invention, the segments 5 and the supporting means 4 are displaced in a relative axial direction with respect to one another, preferably by displacing the supporting means 4 in the direction of the arrow 7.

FIG. 2 shows the initial stage and FIG. 3 shows the final stage, while FIG. 4 shows an intermediary stage which, in many instances however, may be regarded as the final stage, since in this position of the uncoiled sheet edges the components can be taken apart as well.

After cleaning and repairing the container, the components can be put together again, which may be ef-

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fectured in a way known as such. If subsequently the method described in the Dutch patent application 70.09657 is again applied, the uncoiling can be repeated in accordance with the method of the invention.

We claim:

1. A method of reconditioning a container having end walls connected to a body wall, one of said end walls and said body wall having cylindrical end wall portions with flanged edges which are coiled about each other to form an outwardly directed seam, said seam, in cross-section, being in the form of a spiral, comprising:

a. placing the container with said one end wall on a support means for supporting said one end wall in an axial direction and for supporting the interior of the cylindrical end portion of said one end wall in

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a radial direction with respect to the axis of the container;

b. moving a tool towards an outer surface of said body wall to completely surround said body wall;

c. relatively moving said tool and support means in opposite directions with respect to each other to completely unroll said seam; and

d. connecting again said body wall and said one end wall with each other to form a seam after reshaping and cleaning of said body wall and said one end wall.

2. The method of claim 1 wherein said tool has a working surface contacting said seam and said working surface is substantially perpendicular to said body wall.

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