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Metallischer Behälter und Verfahren zu dessen Herstellung

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Description

The invention refers to a water-tight metallic container according to the first part of claim 1 wherein the bending of metallic containers is to be compensated aiming to prevent the usual bending that normally appears in the metallic containers during the expansion operations carried out to obtaining or manufacturing such containers.

The seam-folding system of the inventive container which compensates the bending can be applied to all kind of metallic containers of a shape that can be either trunco-pyramidal, parallelepipedic, elliptical, etc.

As everybody knows, when the body of a metallic container is expanded, a deformation occurs due to stress of the material. Such deformation is called "bending" and happens in the bottom causing an uneven distribution of material in the periphery of the body of the container.

When the containers are manufactured it is necessary to correct such bending since such anomaly may lead to defective seam-folding when the joint between the bottom and the side area of the container is made through seam-folding which entails the subsequent risks of leakage due to a lack of water-tightness in certain containers.

The object of the invention is to absorb or compensate the differences in the length between the hooks at the corners and those intermediate ones produced during the seam-folding of the container and its bottom.

Currently the compensation can be achieved in accordance with the following three stages:

1. To cut the material with the periphery compensated before welding the body and its subsequent expansion.
2. To expand the body of the container with concave expanding tools so that they can proportionately compensate the subsequent deformation.
3. To cut the excess of the body of the container after its expansion.

The object is solved with a water-tight metallic container according to claim 1 and a process according to claim 4.

The water-tight container according to claim 1 has a seam-folding system to compensate the bending, which achieves that during the seam-folding operation the defect mentioned-above is corrected which, in turn, will save the operations 1 and 3 referred to above and which are prior to the seam-folding operation.

As far as operation 2 is concerned, enable the container according to claim 1 and the process according to claim 4 a more uniform and straight configuration of the container wall which, in turn, enables to better store such containers.

To complement this description and in an effort to better understand the main characteristics of the inven-

tion, a set of drawings is attached to this descriptive report forming an integral part of it and where, as an illustration and without limitation, the following has been represented:

Figure 1 shows a schematic view of the side of a container with one part seam-folded and the opposite one non-seam-folded. In this latter case the relevant bending can be noticed.

Figure 2 shows a plan view of a rectangular container with the seam-folding flange presenting different widths in the intermediate areas and in the corners.

Figure 3 shows in detail a section of a conventional seam-folding with no possibility of compensating the seam-folding since the hook and the loop where it is housed have the same length.

Figures 4 and 5 show section views of a compensating seam-folding made in accordance with the object of this invention.

In such figures, the numbering system correspond to the following parts and elements:

1. Container
- 1'. Conventional container
2. Bottom of the container 1
- 2'. Bottom of the container 1'
3. Flanges
4. Seam-folding
5. Bending
6. Narrower areas of the flanges 3
- 6'. Hooks of the areas 6
7. Wider areas of the flanges 3
- 7'. Hooks of the areas 7
8. Maximum compression area
9. Stepped and corrugated area
10. Height or constant area for the housing of the hooks.

As it can be seen in figure 1, a metallic container 1 presents a bottom 2 and a perimetric flange 3 for seam-folding 4 purposes represented in another area of the same figure which also shows the bending 5 before the seam-folding.

In figure 2 it can be noticed, after carrying out the folding operation, the difference of material between the areas 6 and 7 corresponding to the flanges. After the seam-folding, such flanges become the respective hooks 6' and 7' which maintain the same length differences as those produced when the body 1 of the container was expanded.

Figures 4 and 5 show the sections of the compensating seam-folding according to the invention, while figure 3 shows the conventional seam-folding with no differences of length between its hooks, i.e. those which intervene in the seam-folding between such conventional container 1' and the relevant bottom 2'.

Furthermore and in the case of figures 4 and 5, when the seam-folding operation is performed, the intention of the object of the invention is to compensate such difference exactly during such operation, the difference being absorbed inside the seam-folding itself. Thus, in the areas 7 presenting an excess of material such excess remains as shown in figure 5 while in the area 6 where there is less material such material stands as shown in figure 4 where the hook 6' does not totally overlap the hook of the bottom 2 and stands approximately at half the length of such bottom. In figure 5, the hook 7' completely overlaps the bottom hook 2.

The configuration of the new seam-folding, according to figures 4 and 5, enables to reduce the height of the hook 6' by means of corrugations that shorten its length and, on the other hand, the hook 7' should be kept completely straight, compressed and compact to avoid that the bottom 2 is detached from the body 1 while keeping the referred water-tightness level.

To execute such compensating seam-folding it is necessary to use a mandrel and a series of rollers of a special configuration so that the mandrel should have an area for the maximum compression in the area 8 for the hook 6' and to make a compensating stepped and corrugated area 9 where the hook 7' will be shortened and housed in the area 10 with a constant height along its periphery.

Claims

1. A water-tight metallic container comprising an expanded body (1) having a peripheral side flange (3), a bottom (2), and a seam-folded joint (4) between said bottom (2) and said peripheral side flange (3), so that at said joint (4), a hooked portion of said flange (3) is housed into and overlaps a peripheral loop of said bottom (2), characterized in that said peripheral side flange (3) has an uneven width so-called bending (5) which comprises at corners wider hooks (7') and at intermediate portions narrower hooks (6'), in that said loop has a constant height (10) which is substantially the same as the height of said wider hooks (7') so that the latter completely overlap said loop, while the narrower hooks (6') do not totally overlap said loop, and in that said seam-folded joint (4) is compressed in an area (8) corresponding to the height of the narrower hooks (6').
2. A water-tight container according to claim 1, characterized in that said seam-folded joint (4) comprises a stepped and corrugated area (9) for reducing the height of said hooks (6', 7').
3. A water-tight container according to claim 1 or 2, characterized in that the height of said narrower hooks (6') is half of the height of said loop.

4. Process for manufacturing a water-tight metallic container according to any of the foregoing claims, comprising the steps of :

expanding the body (1) of said container causing an uneven width in the peripheral side flange (3) thereof, due to so-called bending (5) with wider areas at the corners (7) and narrower areas (6) at the intermediate portions,

seam-folding the peripheral loop of the bottom (2) onto said peripheral side flange (3) so that said loop has a constant height (10) which is substantially the same as the length of the hooks (7') resulting from said wider areas (7), said loop housing said wider hooks and the narrower hooks (6') resulting from said narrower areas (6) so that said wider hooks (7') completely overlap said loop while said narrower hooks (6') do not totally overlap same, and

compressing an area (8) of said seam-folded joint (4) corresponding to the height of the shorter hooks (6').

5. Process according to claim 4, comprising the step of corrugating an area (9) of said seam-folded joint (4) for reducing the height of said hooks (6', 7').

Patentansprüche

1. Wasserdichter Metallcontainer, welcher einen gedehnten Körper (1) umfasst, der einen seitlichen umlaufenden Bund (3), einen Boden (2) und eine zwischen dem genannten Boden (2) und dem genannten seitlichen umlaufenden Bund (3) eingestete Dichtung (4) aufweist, derart, dass in der genannten Dichtung (4) ein eingerasteter Teil des genannten Bundes (3) angeordnet ist und an einer umlaufenden Schleife des genannten Bodens (2) übersteht, dadurch gekennzeichnet, dass der genannte seitliche umlaufende Bund (3) eine ungleiche Breite aufweist, die als Knick (5) bezeichnet wird, welche in den Ecken breitere Haken (7') und in den dazwischen liegenden Teilen schmälere Haken (6') aufweist; dass die genannte Schleife eine konstante Höhe (10) aufweist, die im wesentlichen der Höhe der genannten breiteren Haken (7') entspricht, so dass die letzteren vollständig über die genannte Schleife vorstehen, während die schmälere Haken (6') nicht vollständig über die genannte Schleife vorstehen; und dass die genannte eingerastete Dichtung (4) in einem Bereich (8) zusammengepresst ist, der der Höhe der schmälere Haken (6') entspricht.

2. Wasserdichter Container nach Anspruch 1,

dadurch gekennzeichnet, dass die genannte eingestete Dichtung (4) einen gestuften und gerippten Bereich (9) aufweist, um die Höhe der genannten Haken (6', 7') zu verringern.

3. Wasserdichter Container nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass die Höhe der genannten schmälere Haken (6') der halben Höhe der genannten Schleife entspricht.

4. Verfahren zur Herstellung eines wasserdichten Metallcontainers nach einem der vorgenannten Ansprüche, wobei dieses folgende Stufen umfasst:

den Körper (1) des genannten Containers zu dehnen, um so durch den sogenannten Knick (5) eine ungleiche Breite des seitlichen umlaufenden Bundes (3) desselben zu erreichen, mit breiteren Bereichen in den Ecken (7) und schmälere Bereichen (6) in den dazwischen liegenden Teilen, wobei die umlaufende Schleife des Bodens (2) über dem genannten seitlichen umlaufenden Bund eingerastet wird, derart, dass die genannte Schleife eine konstante Höhe (10) aufweist, die im wesentlichen der Länge der Haken (7') entspricht, die sich aus den genannten breiteren Bereichen (7) ergibt, wobei die genannte Schleife die genannten breiteren Haken und die schmälere Haken (6') aufnimmt, welche sich aus den genannten schmälere Bereichen (6) ergeben, so dass die genannten breiteren Haken (7') die genannte Schleife vollständig überlappen, während die genannten schmälere Haken (6') diese nicht vollständig überlappen, und einen Bereich (8) der genannten eingerasteten Dichtung (4) zusammenzupressen, wobei dieser der Höhe der kürzeren Haken (6') entspricht.

5. Verfahren nach Anspruch 4, welches die Stufe der Rippung eines Bereichs (9) der genannten eingerasteten Dichtung (4) umfasst, um so die Höhe der genannten Haken (6', 7') zu verringern.

Revendications

1. Un conteneur métallique étanche à l'eau comprenant un corps expansé (1) pourvu d'une saillie latérale périphérique (3), d'un fond (2), et d'un joint verrouillé (4) entre ce fond et cette saillie latérale périphérique (3), de sorte qu'une portion enclenchée (3) de cette saillie se loge dans ce joint (4) et dépasse une boucle périphérique de ce fond (2), caractérisé en ce que cette saillie latérale périphérique (3) a une largeur inégale appelée coude (5)

qui comprend des angles crochets plus larges (7') et, dans les parties intermédiaires, des crochets plus étroits (6'); en ce que cette boucle a une hauteur constante (10) sensiblement égale à la hauteur des dits crochets plus larges (7'), de sorte que ces derniers dépassent complètement cette boucle, tandis que les crochets plus étroits (6') ne dépassent complètement cette boucle; et en ce que ce joint verrouillé (4) est comprimé dans une zone (8) qui correspond à la hauteur des crochets plus étroits (6').

2. Un conteneur étanche à l'eau selon la revendication 1, caractérisé en ce que ledit joint verrouillé (4) comprend une zone échelonnée et cannelée (9) pour réduire la hauteur des dits crochets (6', 7').

3. Un conteneur étanche à l'eau selon les revendications 1 ou 2, caractérisé en ce que la hauteur des dits crochets plus étroits (6') est la moitié de la hauteur de la dite boucle.

4. Un procédé de fabrication d'un conteneur métallique étanche à l'eau selon l'une quelconque des revendications précédentes, comprenant les étapes de:

dilater le corps (1) du dit conteneur, provoquant une largeur inégale dans la saillie latérale périphérique (3) de celui-ci, en raison du dit coude (5), avec des zones plus larges aux angles (7) et des zones plus étroites (6) dans les portions intermédiaires, en verrouillant la boucle périphérique du fond (2) sur ladite saillie latérale périphérique (3) de sorte que la dite boucle a une hauteur constante (10), qui est sensiblement égale à la longueur des crochets (7') résultant des dites zones plus larges (7), cette boucle logeant les crochets plus larges et les crochets plus étroits (6') résultant des dites zones plus étroites (6) de sorte que les dits crochets plus larges (7') se superposent complètement à la dite boucle tandis que lesdits crochets plus étroits (6') ne se superposent pas complètement à elle, et comprimer une zone (8) du dit joint verrouillé (4), qui correspond à la hauteur des crochets plus courts (6').

5. Procédé selon la revendication 4, comprenant l'étape de canalisation d'une zone (9) du dit joint verrouillé (4) pour réduire la hauteur des dits crochets (6', 7').

