June 3, 1952 M. ANSEELE 2,598,962

METAL CONTAINER HAVING REINFORCED END SEAM

Filed Feb. 21, 1948

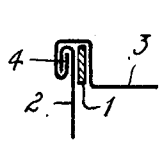


Fig.1

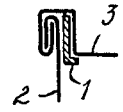


Fig.2



Fig.3

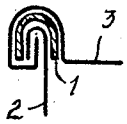


Fig.4



Fig.5

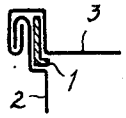


Fig.6

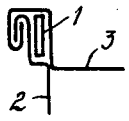


Fig.7

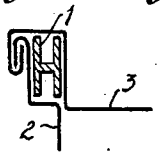


Fig.8

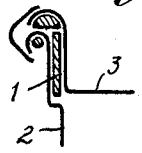


Fig.9

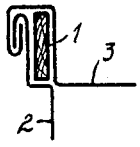


Fig.10

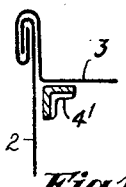


Fig.11

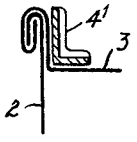


Fig.12

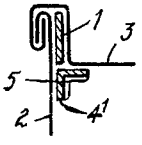


Fig.13

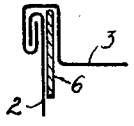


Fig.14

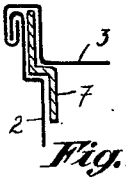


Fig.15

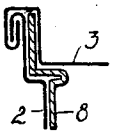


Fig.16



Fig.17

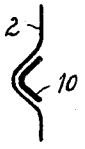


Fig.18

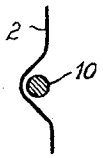


Fig.19

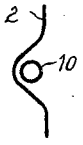


Fig.20

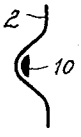


Fig.21

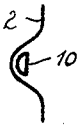


Fig.22

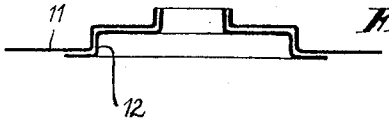


Fig.23

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METAL CONTAINER HAVING REINFORCED END SEAM

Marié Anseele, Ghent, Belgium, assignor to Marcel Defauw, Ghent, Belgium

Application February 21, 1948, Serial No. 10,147
In France May 27, 1946

Section 1, Public Law 690, August 8, 1946
Patent expires May 27, 1966

2 Claims. (Cl. 220—66)

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Different methods have already been proposed for reinforcing the swaging and the moulding in metal containers. It has been proposed to reinforce the body of metal drums by means of more or less deep and numerous mouldings.

My invention has for its object improvements that lead not only to a reinforcement of metal containers but also in spite of a small increase in labour expense to a considerable economy of raw material. These improvements consist chiefly in reinforcing all the points of the containers that are more energetically strained while reducing to the utmost the amount of material at all points where this can be done without any damage to the container and without impairing the rigidity and resistance of the container. In other words these improvements aim at a more logical distribution of the raw material generally used for the production of a metal container whereby it is possible through this improved distribution to obtain with a same amount of raw material a container that resists much better the usual strains or again for a resistance that is the same as that of a container obtained through the application of the usual methods I obtain a substantial economy in dead weight and consequently in raw material.

By way of example and with a view to make the invention appear more clearly, I will disclose various applications of improvements according to my invention to a drum of the usual so-called "One Trip Drum" type. These examples show simple means for reinforcing the edges of certain mouldings of the walls at the location of the bungholes. These reinforcements associated with the known reinforcements of the drum body through a number of sufficiently deep small mouldings, allow the manufacture of such drums from metal sheets that are much thinner than is usually the case, which leads to the result that the drum is as resistant or if desired even more resistant than those generally used for such purposes and this is obtained together with an important economy in raw material and a very small increase in labour expense.

It is furthermore obvious that the novel above described reinforcing methods are applicable not only to oil drums but also to any other types of containers with swaged covers or else to a container having a complete opening.

Obviously, also the various methods described hereinafter are applicable either together or only in part.

Accompanying drawings show by way of example various forms of execution of my invention.

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Figures 1 to 10 relate to a reinforcement of the flange of the drum.

Figures 11 to 17 relate to a further reinforcement of said flange.

Figures 18 to 22 relate to a reinforcement of certain mouldings.

Figure 23 relates to a reinforcement registering with the bunghole.

As concerns the reinforcement of the drum flanges as illustrated in Figs. 1 to 10, several forms of reinforcement of the crimping of such edges have already been proposed, among them a treble swaging or again the incorporation of an outer protecting strip that caps the swaged arrangement. Other means have also been proposed which have for their general result the addition to the five metal sheet thicknesses provided by the normal swaging generally termed a double swaging, two or three complementary sheets thicknesses. These complementary sheet thicknesses are generally set with the normal swaging which has the effect to make the latter extremely difficult.

The reinforcement of the drum flange according to the present invention consists simply in inserting between the walls of the drum body and the lateral wall of the stamped cover, parallel to said body wall, a ring of suitable thickness, i. e. of a thickness such that it compensates more or less the reduction in the thickness of the swaging due to the use of thinner sheets for the body and for the covers or else if desired of a still more considerable thickness.

In Fig. 1, 1 designates the reinforcing ring, 2 the wall of the drum body, 3 one of the covers and 4 the swaging. If for instance, the usual thickness used for the metal sheets is E, the thickness of the swaging is in this case equal to 5E. Now, if metal sheets of a reduced thickness equal to say *e* are used, the thickness of the complete swaging is only 5*e*. It is possible with the method according to the present invention to insert either a strip of a thickness 5E—5*e* or else a strip of a still greater thickness so as to increase still more the resistance of the drum edge. Obviously it is also possible to insert a thinner strip as there is no definite relationship between the thickness used for the body and covers of the drum and for the reinforcing ring.

In order to increase still further the resistance to deformation and in particular to shocks and also in order to provide an economy of material for the reinforcing ring itself, said circle may be shaped in a suitable manner and it may appear for instance under the form of a bent angle iron as shown in Fig. 2.

Said ring or strip used for reinforcing may also be corrugated or shaped throughout its length so as to provide a maximum resistance to deformation. Fig. 3 illustrates said corrugated strip.

The embodiments described hereinabove offer the advantage of simplicity and easy execution together with a great adaptability. They show also the advantage of not making the swaging operation more difficult as the same is generally made with thin metal sheets in the usual manner.

But in order to provide still more resisting reinforcements, the reinforcing ring may be located in a manner such that it may be associated in the flanging operation and be incorporated thus in the setting of the covers as shown in Fig. 4. However this manner of operating is not generally necessary as it is possible to select as desired the thickness of the reinforcing ring so as to obtain the desired degree of reinforcement without it being necessary to this purpose to make the swaging more intricate. Lastly, a more considerable reinforcement of the swaging and consequently of the edge of the drum is provided by folding the extra ring over the edge of the sheet forming the body of the drum so as to cooperate with a double thickness to the flanging and subsequent flanging (Fig. 5). This leads to the provision of 9 sheet thicknesses or plies instead of 5 for usual setting and as the operator may select as desired the thickness of his reinforcing ring or strip he may thus reinforce the edge of the drum as desired.

However, instead of applying thereto a separate reinforcing strip, it is possible, if it is desired, and if the result aimed at is believed to be reached, it is possible to obtain a thickness of 9*e* for the setting, *e* being the thickness of the body sheet, this being obtained through a two fold folding of the very edge of the sheet of the body over itself to form thereby the reinforcing ring.

With a view to furthering the positioning of the reinforcing ring and in order to prevent the latter from falling off through the action of repeated vibrations or of shocks, it is proposed to increase the diameter of the edge of the drum body inside which the ring and cover are to be inserted (Fig. 6).

Figs. 7 and 8 illustrate reinforcements by means of a ring assuming the shape respectively of a hollow rectangle in cross-section and of a small suitably shaped beam while Fig. 9 illustrates a reinforcement similar to that of Fig. 5 but applicable to a drum of the type that may be completely opened.

Lastly, the ring, instead of being made of metal, may be made of any other material such as wood (Fig. 10).

An extra reinforcement of the flange is shown in Figs. 11 to 17. As a matter of fact, it is of interest to proceed with a still further reinforcement of the edge or flange of the drum and consequently it is proposed to incorporate to the means described hereinabove or to substitute therefor further members constituted by brackets 4' bearing on one hand against the edge of the drum body and on the other hand against the periphery of the cover as shown in Fig. 11.

These brackets are also applicable to the outside of the drum inside the angle of the setting portion as illustrated in Fig. 12.

The brackets are preferably provided with a suitable outline or are provided with grooves so as to show a maximum resistance to flexion.

Thus in Fig. 13, 5 designates a groove provided in the bracket.

Instead of separate brackets, it is possible to use a complete ring shaped for instance after the manner of an angle bar and bearing against the wall of the drum body while holding the cover either from the outside as shown in Fig. 12 or from the inside.

As disclosed precedingly it is possible to make use of an association of the different means described. Thus, Fig. 13 shows an association of the simple reinforcing ring 1, with reinforcing brackets 4'.

Lastly, this reinforcing the drum by means of brackets may be associated with the above described reinforcing ring and the bracket may assume in cross-section various shapes such as those illustrated in Figure 14 in which the bracket and ring form a single straight cylinder 6, in Figure 15 wherein this compound bracket and ring 7 is stepped to receive the cover 3 or in Figure 16 wherein a particularly resisting outline 8 is obtained through a double fold, for securely holding the periphery of the cover. It may also be of advantage to reinforce to a more considerable extent the part of the drum located between the side walls of the cover and the body of the drum in which case it is of advantage for instance to fold over a sufficient breadth the reinforcing ring 9 so that it may show a double thickness over said breadth as shown in Fig. 17.

Turning now to Figs. 18 to 22 relating to the reinforcment of certain mouldings of the drum, it should be reminded that when the body of the drum is made of thin metal sheet, it may be of interest to reinforce certain mouldings and in particular the rolling mouldings carrying the weight of the drum when the latter is caused to roll over the ground or turned down over its side. In other cases it may be of interest to reinforce other mouldings in proximity with the edges of the drums provided with crimped covers or adapted to be entirely opened.

It is a known fact that it is possible to reinforce such mouldings through the application of outer strips that may for instance be moulded together with the drum body. But such strips if they are not secured through welding to the body may fall off under the action of shocks and do not play their part any more while they give the drum almost unpleasant appearance.

Furthermore, as the strip is located on the outside of the drum, it should be comparatively wide so as to sufficiently match the outline of the rolling moulding.

The improvement according to my invention consists in locating the reinforcing strip or shaped member 10 on the inside of the moulding which removes the above drawbacks while it allows moreover the use of narrower strips (Fig. 18) or of a more rational outline such as that of a thread (Fig. 19), of a tube (Fig. 20), of a solid semicircular member (Fig. 21) or of a hollow semicircular member (Fig. 22), all of which give when located in register with the moulding a resistance of the latter to shocks and to the strain due to the rolling over ground, that is considerably increased.

Obviously any other shaped member may be used to this purpose and such reinforcing members may be made of any metal or non-metallic material as desired.

Turning now to Fig. 23, relating to the reinforcement in front of the bung holes it should be remembered that the execution of drums of thin

metal sheet may require the reinforcement of the wall at the point corresponding to the filling and draining bung holes.

To this purpose supplementary thicknesses or plies of material are provided through the application at the desired locations of plates or washers of sheet metal that may be submitted together with the walls of the drum to the cutting and stamping operations required for the formation of the bung holes.

In Fig. 23, 11 designates the wall of the drum made of thin metal sheet while 12 designates the supplementary reinforcing washer.

What I claim is:

1. In a drum or similar container having a body portion, an end portion of greater diameter than said body portion and a cover fitting into said end portion of greater diameter; a reinforcing ring located within said container and having one portion extending axially along an inner surface of said body portion, a second portion extending along the said end portion of the drum and between the end portion and the cover, and a third portion interconnecting the first and the second portions and extending transversely thereto.

2. In a drum or similar container having a body portion, an end portion of greater diameter than said body portion and a cover fitting into said end portion of greater diameter; a reinforcing ring located within said container and having one portion extending axially along an inner surface of said body portion, a second portion extending axially along the said end portion of the drum and between the end portion and the cover, and a third portion interconnecting the first and the second portions and extending transversely thereto, said third portion having an inwardly extending portion which is folded upon itself.

MARIÉ ANSEELE.

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