Sept. 15, 1931. J. M. HOTHERSALL 1,823,046

CONTAINER

Filed Nov. 1, 1926 2 Sheets-Sheet 1

Fig-1

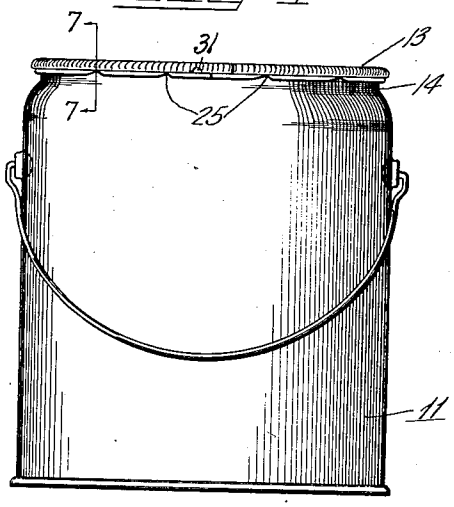


Fig 3

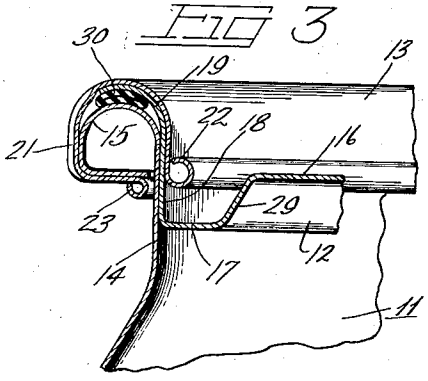


Fig-2

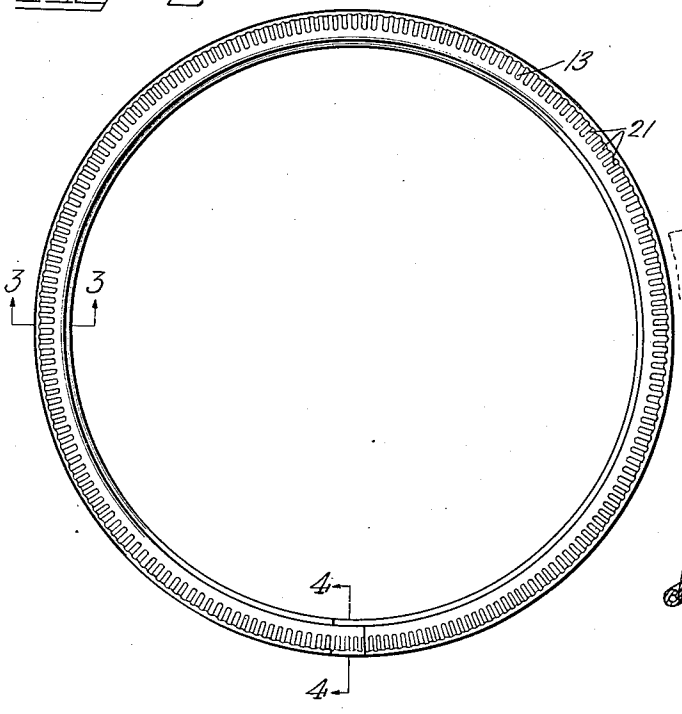


Fig-4

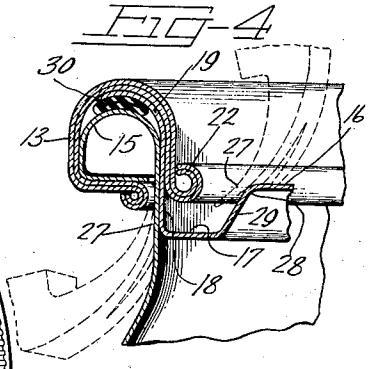
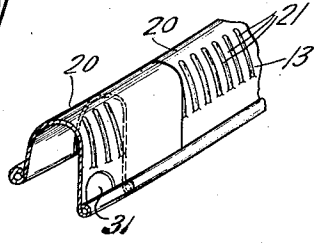


Fig-5



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CONTAINER

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FIG-6

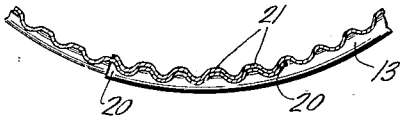


FIG-7

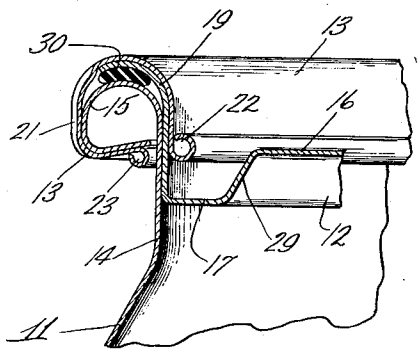


FIG-8

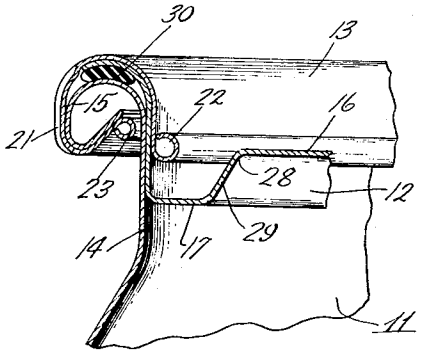
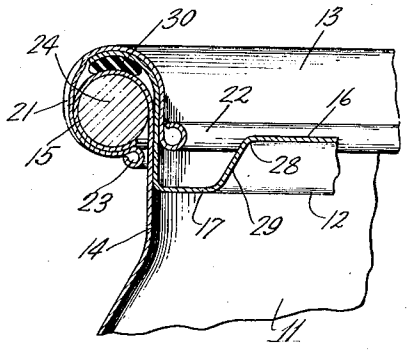


FIG-9



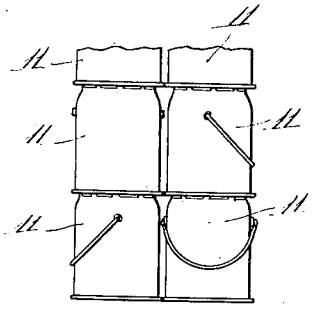


FIG-10

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Patented Sept. 15, 1931 1,823,046

UNITED STATES PATENT OFFICE

JOHN M. HOTHERSALL, OF BROOKLYN, NEW YORK, ASSIGNOR TO AMERICAN CAN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY

CONTAINER

Application filed November 1, 1926. Serial No. 145,420.

The invention relates to containers and to closures therefor and has specific reference to sealing strips or bands for securing covers to containers of the heavy type, such as lead kegs, heavy paint containers, and the like.

An important object of the invention is to provide such a closure that may be made or formed of strip stock, and which will not only serve as an efficient, strong and durable seal, but will also be easy to remove, and which is also adapted to serve as a temporary reclosure after removal.

Another important object of the invention is to provide such a closure that may be assembled into uniform clamping engagement with a container and cover parts without regard to the location of the overlapped ends, and that has uniform exterior dimensions so that an assembly die may uniformly engage the strip to insure uniform clamping engagement irrespective of the position of the overlaps. Indeed, the invention is broad enough to include the idea of making the sealing band endless and seamless, and thereby eliminate the lapping of the ends.

Another important object of the invention is to provide a closure that is formed so as to permit the overlapping ends to interlock and to make such interlocked portions smooth and inconspicuous after the applying tool has performed its work.

Another important object of the invention is to form the peripheral edges of the sealing strip in such fashion, and to space them relative to container and cover parts in such a manner, that either one of such edges may be easily accessible and may be engaged with a pointed prying off instrument, such as a claw hammer, to start the removal of the strip.

Another important object of the invention is the provision of a closure which is simple and economical to manufacture, neat in appearance, and which also performs the additional functions of a reinforcing member for containers which are subject to rough handling, both in the filling plant and in transit.

Another important object of the invention is to provide a heavy container for material such as lead, paints, and the like, that is formed with ends of unlike diameters so that one end of one container will nest within an end of another container to facilitate stacking. In devices of this character provided heretofore the opposite ends of the container were of like diameters and when stacked one on the other the seamed edge of one end required exact positioning upon the seamed end of another container to permit stacking and if a column of such containers were slightly jarred the seamed ends would move out of alignment causing the stack to tip over. In forming the containers in accordance with my invention the seamed end such as the top of one container nests within the seamed end or bottom of another container and the containers are thereby locked in axial alignment so that the stack may be carried to a considerable height and will not tip over on account of vibrations or jarring. No extra care is required in placing the containers one on the other since one seam guides the other to locate the containers.

Another important object of the invention is to provide a method of closing a container that will permit of the ready removal or the removal of the cover thereof by a peeling action and permit of reclosing or re-attaching the cover to the container.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring now to the drawings:

Fig. 1 is an elevational view of a container showing the cover sealing strip in completely applied position;

Fig. 2 is a top plan view of the container with the sealing strip completely applied thereto;

Fig. 3 is an enlarged section taken substantially on the lines 3—3 of Fig. 2;

Fig. 4 is an enlarged section taken substantially on the line 4—4 of Fig. 2, and showing a part of a claw-hammer in position to pry off the closure at either of two points. This view also shows a double layer of metal at the overlapping points of the sealing strip;

Fig. 5 is an enlarged detail view showing

the two ends of the sealing strip in overlapped relation before the strip is completely applied;

Fig. 6 is an enlarged detail sectional view showing the lapped ends of the sealing strip interlocked by means of the corrugation;

Fig. 7 is a view similar to Fig. 3 but taken along the lines 7—7 of Fig. 1, in other words through one of the indentations 25;

Figs. 8 and 9 are enlarged sectional views similar to Fig. 3, showing modified ways of applying the sealing ring; and

Fig. 10 is a diagrammatic view showing the nesting of the containers when stacked.

To illustrate my invention I have shown a container body 11, a cover 12 and a cover sealing strip or band 13. The container body 11, cover 12 and strip 13 are of the type and character shown in my copending application Serial No. 24,046, filed April 13th, 1925 (Patent Number 1,713,830 of May 21, 1929). The body 11 may be of any suitable form but preferably with a necked-in part 14 near the top and terminating into a rolled flange or bead 15. The cover 12 may also be of any suitable form but preferably with a central raised part 16, lower channel part 17, vertical wall part 18, terminating into a rounded flange part 19 and conforming in shape to the rolled part 15 of the container top, and adapted to be supported by said container part 15.

The cover sealing device or strip 13 may be formed of any suitable material of sufficient strength, thickness and pliability and may be formed by punching and forming an annulus out of plate stock or by cutting stock into strips and then bringing the strips to annular form, according as to whether an endless and seamless sealing ring or a sealing strip with overlapped ends is more desirable for particular needs.

In the present instance I have shown the band 13 formed of strip stock. The ends 20 of each strip may be secured together in any suitable manner to provide a continuous band and this band is preferably of inverted **U** shape, as clearly shown in Fig. 5. While said **U** shaped strip may have its surface perfectly smooth and even, it is shown with ribs or corrugations 21, as clearly illustrated in Figs. 1, 2 and 6. Only a portion of the band is provided with corrugations 21, these may extend transversely of the band from within a curled edge or outer bead 23 to within an inner bead 22 and may be provided throughout the entire circumference of the band, or throughout small portions of the circumference. In the present instance I have shown these corrugations extending from a short distance within the outer bead 23 to adjacent the domed center of the band, it not being thought necessary to extend these a greater distance toward the inner bead. The corrugations 21 may be of any suitable depth and are preferably of a depth slightly in excess of the thickness of the metal. These corrugations may be formed in the strip before the strip is brought to annular form or afterwards, and are preferably formed before so that uniform curls may be obtained in the forming dies, and so that the forming dies will compress the corrugations 21 in the overlapped portions of the strip so as to form a strip of substantially uniform exterior dimensions. These corrugations 21 have several substantial advantages over a smooth surfaced sealing band. When they are carried to the very ends 20 of the strip any special securing means for the ends 20 can be dispensed with since the corrugations of the overlapped ends substantially interlock with each other and provide a secure end seal. When a closing tool of the type illustrated in my copending application Serial No. 157,205 filed Dec. 27, 1926, is applied to this sealing band and the band is squeezed to finished sealing form there is a double thickness of sealing band metal where the sealing band ends 20 overlap each other and since this double thickness of metal naturally offers earlier and greater resistance to the closing die jaws the corrugations 21 of the overlapped parts of the sealing band are pressed or ironed out and smooth engagement of the ends is the result, while the corrugations on the non-lapped, single thickness part of the sealing band are substantially unaffected, and simply help to fill out the concave groove of the closing tool and compensate for the double thickness of the overlapped ends. It will be apparent too, that the corrugations 21 in the sealing band 13 help to make such band even stronger and more shock resisting than a smooth surface strip would, and at the same time reinforce the edge of the container top to a corresponding extent. The inner edge of the strip is or may be rolled back upon itself to provide a bead 22. The forming of the strip, as above mentioned, is preferably accomplished by the apparatus shown in my copending application Serial No. 23,476, filed April 16th, 1925, and the band may be assembled in any suitable manner to secure the cover to the container and preferably by the method shown in my copending application first above mentioned.

When the sealing band 13 has been completely clamped home by the said applying tool it assumes the position shown in cross-section in Figs. 3 and 4, the latter showing the double thickness of metal produced by the overlapping of the ends.

Fig. 8 shows a modified method of applying the sealing band. In that figure the outer end part of the sealing band together with the outer edge of the rolled body top flange 15 is shown as having received a little greater pressure than the corresponding parts in Fig. 3 were given, resulting in a little tighter

seal, but being also a little harder to remove.

Fig. 9 shows the body top flange bent around a reinforcing wire 24 and the outer end part of the sealing strip being curved in a corresponding manner to closely hug said body flange. This modification shows a container top construction of superstrength which may be desirable for special purposes.

Reference numeral 25 indicates a number of indentations on the underside of the completely pressed home sealing strip. These indentations are produced as an incident to the squeezing operation of the closing tool. In applying the band 13 its diameter is naturally decreased, the metal is contracted and the displaced metal must have some outlet. The applying tool is preferably so constructed that the slack of the metal is taken up by these indentations 25, which also help to reinforce the sealing strip.

A preferred manner of removing the sealing band 13 will now be described:

The band may be removed by inserting a pointed instrument into the opening 31 in one of the ends 20 of the band and using the rim for a fulcrum prying the band off and owing to the cover being formed with the channel part 17, sufficient prying space is left between said channel part 17 and the inner bead 22 of the sealing strip so that the point 27 of a claw hammer or any other suitable prying off tool may be inserted therebetween, as illustrated in dotted lines in Fig. 4, the corner 28 formed by the central raised part 16 and the declining wall part 29 serving as a fulcrum for the claw hammer. The sharp end 27 of the claw hammer may also be inserted between the vertical wall or necked-in part 14 and the outer bead 23 of the sealing strip (See Fig. 4), the outer and longer leg of the inverted U-shape sealing strip being of such predetermined length that when the sealing strip is completely applied said outer bead 23 will stop short of said vertical wall of said necked in part 14 a sufficient distance to permit the insertion of said claw hammer point or other suitable prying off instrument. The prying off or loosening of the sealing strip should be started at the overlapped edges, and if this procedure is followed it will be easy to peel off the remainder of the strip by hand. It will also be found that when the band is thus removed it will substantially regain its original U shape and will permit the ultimate consumer to clamp it back by hand upon the container and cover and it will then serve as a reclosure.

It will also be noted that the circular hole 31 appears in Fig. 5 adjacent the outer bead 23 near the overlapped end portions. This aperture is or may be provided to permit the insertion of a pointed instrument for assisting in the removal of the seal.

A rubber ring gasket 30 or any suitable lining compound is or may be interposed between the rolled part 16 and the container top and cover flange. This will produce a liquid tight seal.

The novel constuction of the container top also permits concentric stacking of the containers, one upon another, as illustrated (Fig. 10) with convenient nesting of the bottom of the upper container upon the top of the lower container so as to form a column of stacked containers which is very compact for shipping purposes and substantially secure against accidental displacement.

It has been found in practice that by drawing the central raised part 16 with a bend 28 to form the channel 17 the weakest parts of the container top have been located around said channel part 17 and around said bend 28 and experimental drop tests have revealed the fact that when a filled container is dropped edgewise against the chime or any other part of the sealing band the shock is taken up by the weakest points of the container, namely the parts 17 and 28, and the sealing ring usually escapes without any appreciable injury or distortion and without being forced open by the shock.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. A device for securing covers to containers, comprising a strip formed to provide an annular band of inverted U-shape and of uniform exterior dimensions, the flange of said cover being adapted to be contained within the U-shaped portion of said strip, and a portion of the strip being reinforced by transverse corrugations.

2. In a device for securing covers to containers, comprising a strip having a portion thereof corrugated at intervals around the strip and having the ends thereof brought into overlapping relation to provide a continuous band, the flange of said cover being adapted to be embraced by the U-shaped portion of said strip, and the corrugations of the overlapped portions of said strip being adapted to provide secure locking engagement between the end portions of said strip.

3. A device for securing covers to containers, comprising a strip having a portion thereof corrugated throughout the length of the strip and having the ends thereof brought into overlapped relation to provide a continuous band, the flange of said cover being adapted to be embraced by and contained within the U-shaped portion of said strip,

and the corrugations of the overlapped portions of said strip being of diminished size.

4. A cover sealing band for containers having a cover forming a seam with the container, comprising an annular body having a portion formed to embrace a container cover, a corrugated portion for embracing the seam, and a portion adapted to be moved after assembly into engagement with the cover seam for securing the cover and container in fixed relation.

5. A cover sealing band for containers having a cover forming a seam with the container, comprising an annular body having a portion formed to embrace a container cover, a corrugated portion for embracing the seam, and a curled portion adapted to be moved laterally into engagement with the can body.

6. A cover sealing band for containers having a cover forming a seam with the container, comprising an annular body having a portion formed to embrace a container cover, a corrugated portion for embracing the seam, and a curled portion adapted to be moved laterally into engagement with the can body, said strip being apertured to facilitate the removal thereof.

7. A container for heavy materials, comprising, a body having its opposite ends formed to unlike diameters, a closure permanently seamed to one of said ends, a closure for the opposite end, and means for removably securing said closure to said end, said means comprising a sheet metal band formed to extend about said closure and adapted to be bent into interlocking engagement with the end of the container, said band being reinforced by corrugation in the periphery thereof.

8. A container for heavy materials, comprising, a container having a curled end, a cover for said container formed to rest upon the curled end of the container when assembled and a sealing band having a curled inner bottom edge and adapted to embrace a portion of the cover and the curled end of the container for locking the cover to the container, said cover being formed to provide an annular channel into which said band may extend and said channel being of sufficient size to permit engagement of said edge of the band by a tool to facilitate the removal of the band, said band having corrugated and lapped ends.

9. A container for heavy materials, comprising, a container having a curled end, a cover for said container formed to rest upon the curled end of the container when assembled, and a sealing band adapted to embrace a portion of the cover and the curled end of the container for locking the cover to the container, said band being substantially of U-shape in cross-section and having curled edges, each of said curled edges being spaced from the container and cover after assembly to permit engagement thereof by the claws of a hammer or like tool for prying the band from the container to remove the closure, said band having corrugated and lapped ends.

10. A container comprising a body having a bead at the top said bead having a substantially flat bottom, a head having a portion extending over the bead, and a sealing ring for securely fastening and sealing the cover having a flange extending inwardly over said portion of the head and terminating in a bead spaced from the panel of said head, said ring further having a continuous downward flange crimped inward beneath said bead.

11. A container having a bead at the top said bead having a substantially flat bottom, a cover fitted to the container and having an outwardly extending marginal flange projecting over said bead, and a sealing ring for securely fastening and sealing the cover and having a flange projecting inwardly over the flange of the cover, the flange of said ring terminating in a bead spaced from the panel of said cover, said ring also having a continuous downwardly projecting flange bent inwardly at substantially a right angle to said downwardly projecting portion of said flange beneath the bead, said ring being divided and having corrugated and lapped ends.

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