

Nov. 21, 1933.

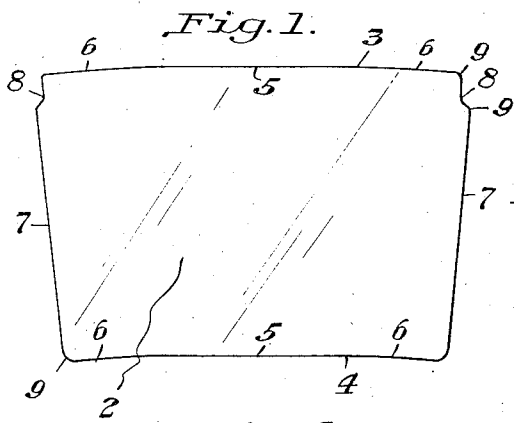
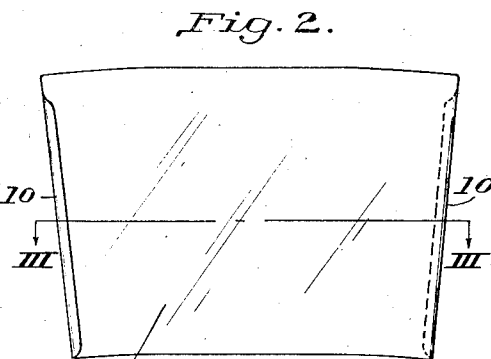
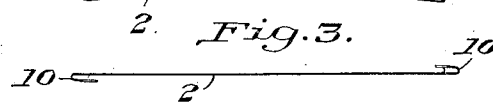
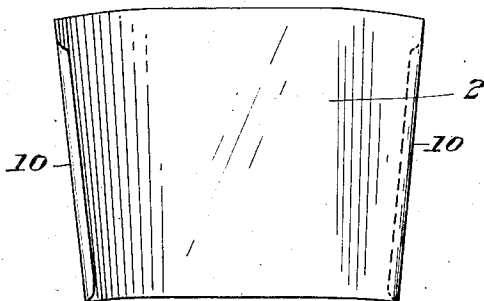
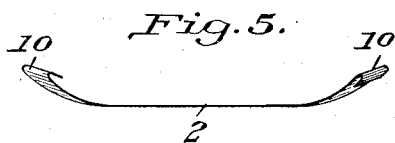
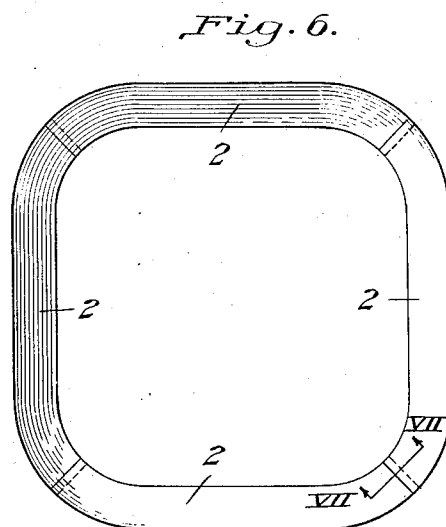
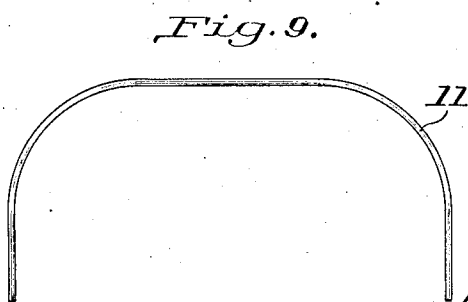
H. KIELBERG

1,935,848

CONTAINER AND MANUFACTURE THEREOF

Filed June 28, 1933

5 Sheets-Sheet 1



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5 Sheets-Sheet 2

Fig. 10.

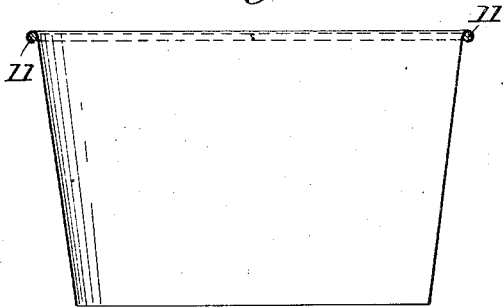


Fig. 11.

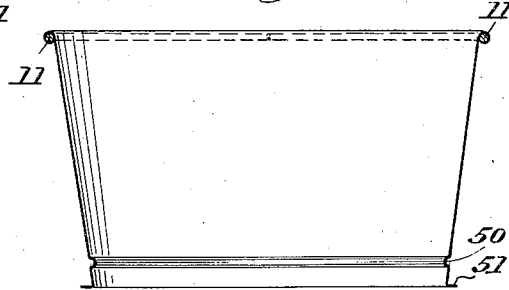


Fig. 12.

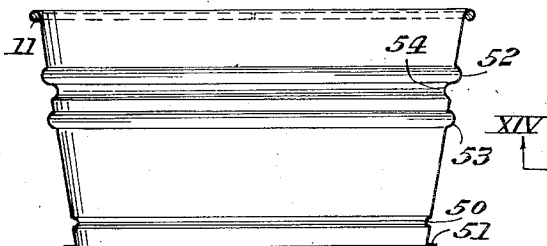


Fig. 13.

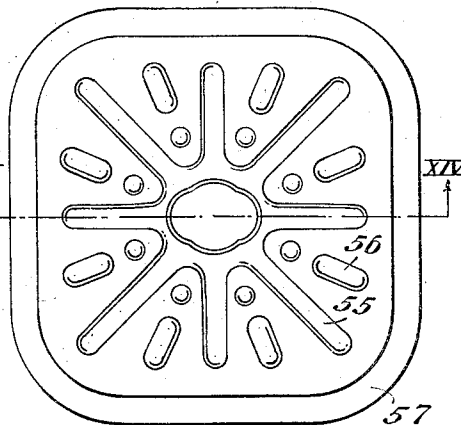


Fig. 15.

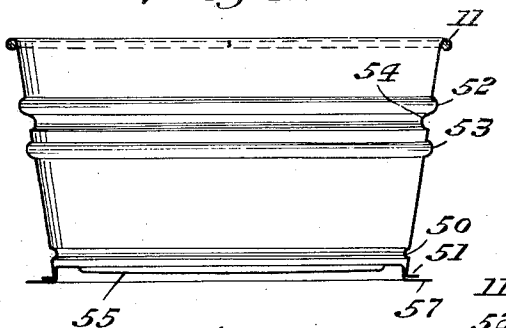


Fig. 14.

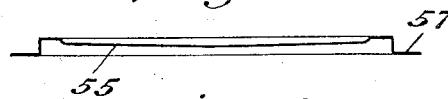


Fig. 16.

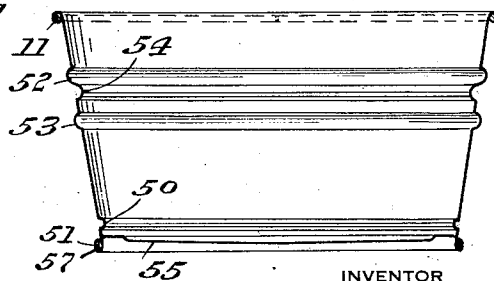
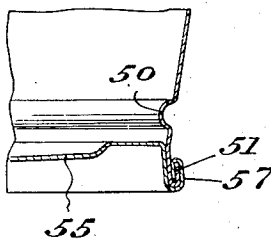


Fig. 17.



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CONTAINER AND MANUFACTURE THEREOF

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Fig. 18.

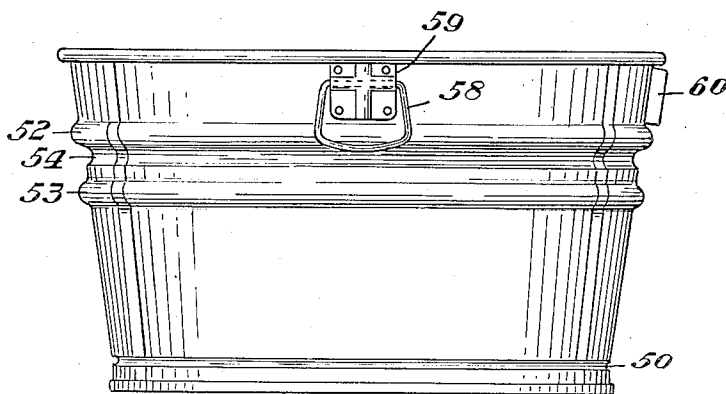
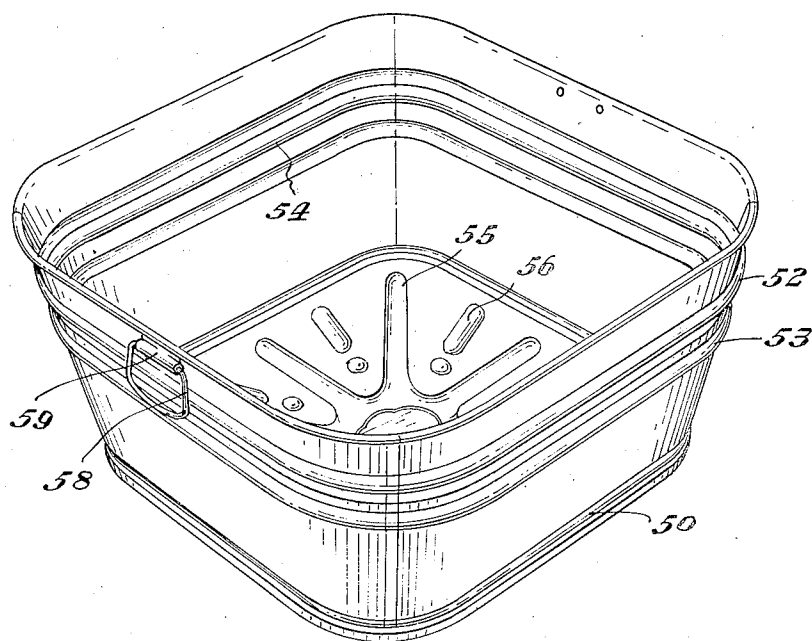


Fig. 19.



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5 Sheets-Sheet 4

Fig. 20.

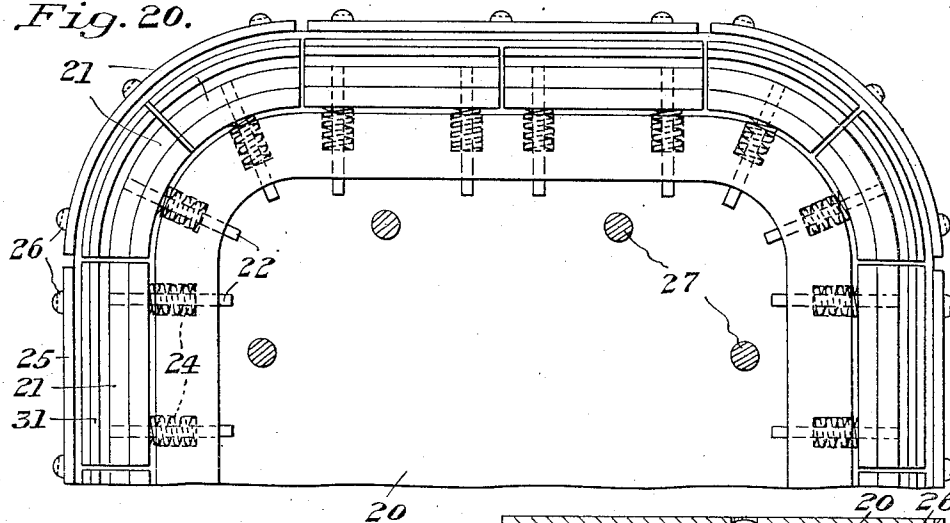
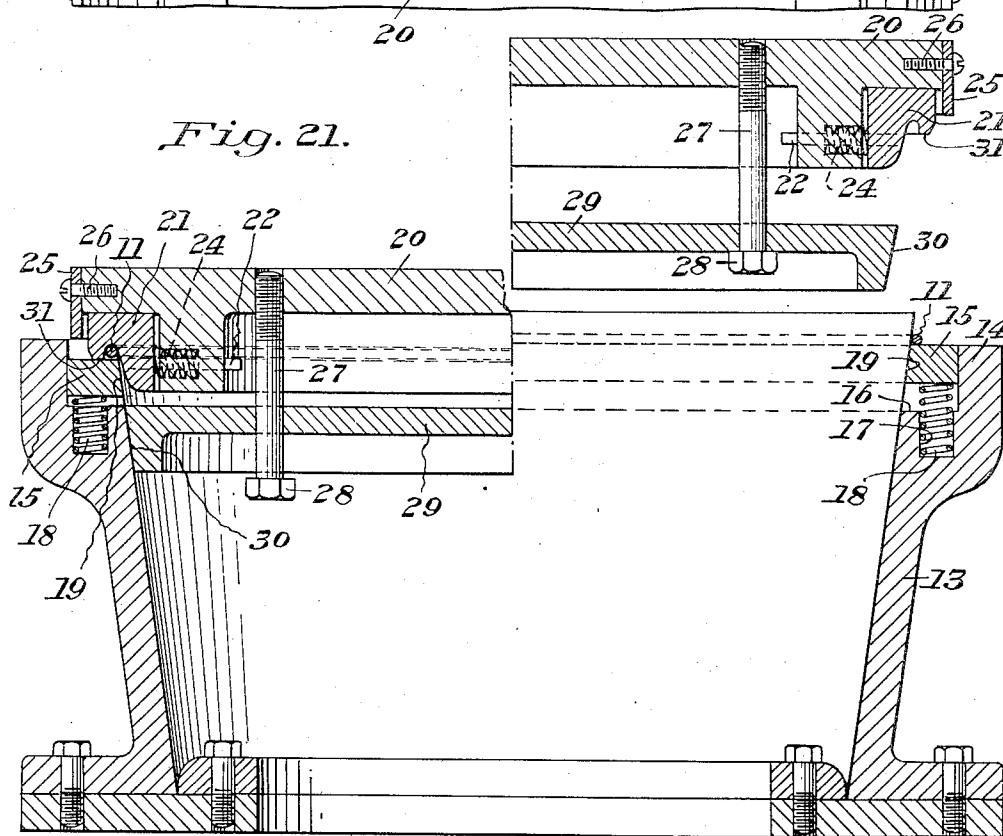


Fig. 21.



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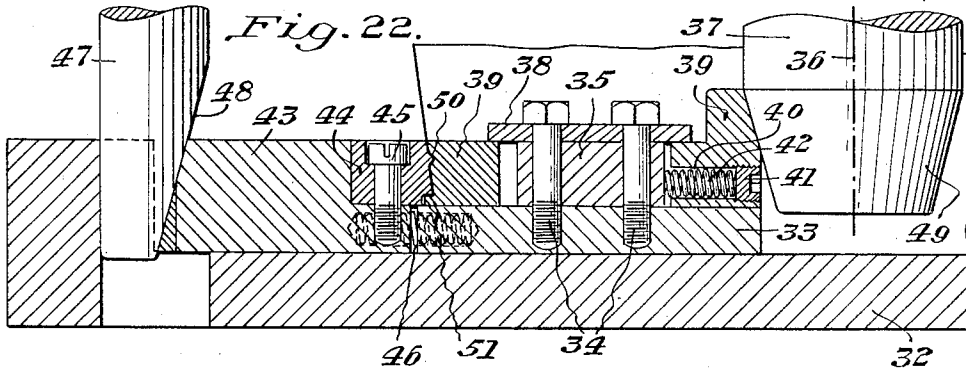
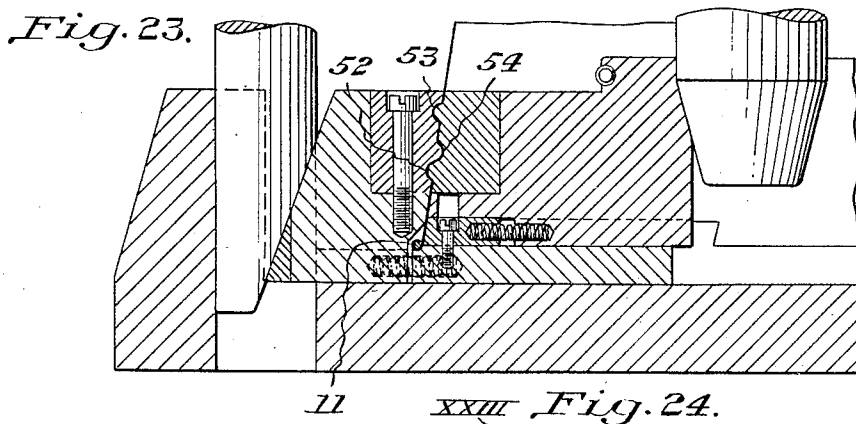
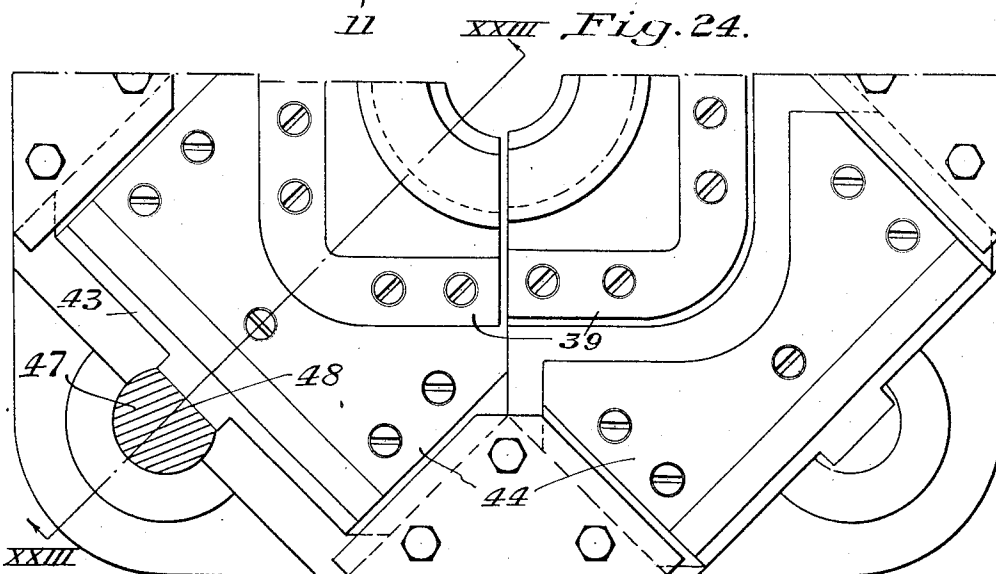
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CONTAINER AND MANUFACTURE THEREOF

Filed June 28, 1933

5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE

1,935,848

CONTAINER AND MANUFACTURE THEREOF

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a corporation of Delaware

Application June 28, 1933. Serial No. 678,083

22 Claims. (Cl. 113—120)

This invention relates broadly to containers and the manufacture thereof. It relates more particularly to the manufacture of containers such as wash tubs and the like made up of assembled body and closure members. It relates still more particularly to the manufacture of composite sheet metal containers and to certain novel steps in the manufacture thereof by which the speed and facility of manufacture are increased, the cost decreased and a superior product produced.

This application is in part a continuation of my copending application Serial No. 557,205, filed August 15, 1931.

My invention has particular, although not exclusive, application to the manufacture of non-circular containers and especially containers having one or more peripherally straight or generally flat wall portions. It may appropriately be described in connection with the manufacture of containers such as sheet metal wash tubs which are of generally rectangular cross section but with rounded corners and which are preferably outwardly and upwardly flared. Certain of my improved manufacturing steps enable the manufacture of containers of this type in quantity at high speed and low cost and solve particular problems peculiar to the manufacture of non-circular tubs.

The invention may best be described by explaining its application to the manufacture of a specific product, and for purposes of illustration only I will describe the invention in connection with the manufacture of an outwardly and upwardly flared substantially square sheet metal wash tub having rounded corners and an attached bottom. However, as will appear as the description proceeds, certain features of the invention are not limited to the manufacture of a container of this specific type but have considerably wider application.

Other details, objects and advantages of the invention will become apparent as the following description of certain present preferred modes of practicing the same proceeds.

In the accompanying drawings I have illustrated in a more or less diagrammatic manner the manufacture of a container, and for the purpose of clearly explaining certain of the steps I have shown certain mechanisms which may be used. Most of the mechanism is of such character as to be sufficiently understood from the description of the process, and, as no claim to the mechanism is made herein, all of it is not illustrated in the drawings.

In the drawings:

Figure 1 is a plan view of a sheet metal blank;

Figure 2 is a view similar to Figure 1 of the blank shown in Figure 1 but having its edges deformed;

Figure 3 is a cross section taken on the line III—III of Figure 2;

Figure 4 is a view of the blank shown in Figure 2 but having its body portion deformed;

Figure 5 is a view of the blank shown in Figure 4 as viewed from the bottom of such figure;

Figure 6 is a plan view of a container body member formed by assembling four of the blanks shown in Figures 4 and 5;

Figure 7 is a cross section taken on the line VII—VII of Figure 6;

Figure 8 is a view of a blank for a rim strengthening member with a portion removed;

Figure 9 is a view of a rim strengthening member formed from the blank shown in Figure 8;

Figure 10 is a vertical cross-sectional view through the body member shown in Figure 6 having rim strengthening means applied thereto and a rim formed thereabout;

Figure 11 is a view similar to Figure 10 showing the blank after having been subjected to a deforming operation to provide therein a strengthening rib and a flange for attachment of a bottom closure member;

Figure 12 is a view similar to Figure 11 showing the blank after having been subjected to another deforming operation to provide therein additional strengthening ribs;

Figure 13 is a plan view of a bottom closure member;

Figure 14 is a cross section taken on the line XIV—XIV of Figure 13;

Figure 15 is a view similar to Figure 12 showing the body member assembled with the bottom closure member;

Figure 16 is a view similar to Figure 15 showing the bottom closure member applied;

Figure 17 is an enlarged partial vertical cross-sectional view of a portion of the construction shown in Figure 16;

Figure 18 is an elevational view of the finished tub showing a handle and wringer clip attached thereto;

Figure 19 is a perspective view of a finished tub having handles but no wringer clips;

Figure 20 is a partial inverted plan view of the die mechanism;

Figure 21 is a compound vertical cross-sectional view of the die mechanism shown in Figure 20 and illustrating the parts thereof in two different positions;

Figure 22 is a vertical cross-sectional view of other die mechanism;

Figure 23 is a view similar to Figure 22 of other die mechanism generally similar to the die mechanism shown in Figure 22 and taken on the line XXIII—XXIII of Figure 24; and

Figure 24 is a compound plan view partially in horizontal cross section of the die mechanism shown in Figure 23 showing the parts in two different positions.

The invention will be described in connection with the manufacture of tubs such as shown in Figures 18 and 19. These tubs are of generally rectangular, and preferably square, cross section but have rounded corners and are flared upwardly and outwardly. They have separately attached bottom closure members, and the body members thereof are, preferably made up of a plurality of connected blanks. Such body members are provided with peripherally extending strengthening ribs and with rim strengthening means about which the rims are formed. Handles are applied and wringer clips may or may not be applied as desired.

Referring now more particularly to Figures 1 to 5, inclusive, there is provided a quantity of substantially flat sheet metal blanks having the shape shown in Figure 1. Each blank 2 is of generally tapered construction having top and bottom edges 3 and 4, respectively, viewing Figure 1, each of which is substantially straight throughout its middle portion 5, such straight portion merging into generally downwardly inclined or curved portions 6 adjacent the ends of the blank. The end edges 7 are inclined toward one another and are offset at 8 for a purpose to be presently described. The corners of the blank are slightly rounded, as shown at 9.

The blanks 2 are preferably formed by blanking them out of metal sheets by the use of an ordinary appropriately shaped blanking die. The blanks formed by such die are piled under or adjacent the die and are removed in packs to an edge bender. The end edges 7 are bent in such edge bender, as shown in Figures 2 and 3, one of such edges being bent toward one face of the blank and the other toward the opposite face of the blank. Such edges are bent so that after bending the end edges 10 of the blank will be substantially straight from top to bottom, as shown in Figure 2, the edge of the bent portion at either end merging with the edge of the corresponding inwardly offset portion at the top of the blank. The edge bending is preferably performed manually by the use of a bending die, the blanks being introduced thereto either singly or in pairs or threes, as may be desired, depending upon the gauge of the material.

The blanks having the reversely bent end edges are then introduced, either singly or in pairs or threes, into a curved die, and a plunger cooperates with such die to deform the body portions of the blanks, with the result shown in Figures 4 and 5. The ends of each blank are bent or curved both toward the same face of the blank and in such manner that in the curved blank shown in Figures 4 and 5 the entire top edge lies generally in one plane, and the entire bottom edge lies generally in a plane substantially parallel to the plane of the top edge. This does not appear in Figure 4 because such figure is not taken at right angles to the planes mentioned. Each curved end of the blanks terminates in a direction at an angle, roughly, of 45° to the middle portion which is maintained substantially flat,

This operation may be performed by a hand die.

Referring now more particularly to Figures 6 and 7, four of the blanks as shown in Figures 4 and 5 are assembled and connected to produce a hollow peripherally closed flared container body member, as shown in Figure 6. This operation is also preferably performed manually, the adjacent reversely turned edges of the respective blanks being interlocked and then pressed together or seamed to form joints or seams, as shown in Figure 7. The body member of Figure 6 is concavely bent interiorly thereof throughout a portion of its periphery and has straight unbent portions, being in the particular described embodiment of generally square cross section with rounded corners. The seams are formed at the corners, this being particularly advantageous in strengthening the body member and insuring that it will retain its shape both during and after manufacture of the tub. The blanks are shaped, deformed and assembled so that the top and bottom rims of the body member shown in Figure 6 lie respectively substantially entirely in parallel planes.

I find it particularly advantageous, and personally prefer, to bend the body portions of the blanks into the shape shown in Figures 4 and 5 before assembling them. An alternative procedure, however, would be to assemble generally flat blanks, as shown in Figures 2 and 3, before permanently deforming the body portions thereof, thus producing a hollow generally circular blank, and then reducing such blank, in a deforming die or otherwise, to the shape of the body member shown in Figure 6. This latter procedure has the advantage that the substantially flat blanks more readily adapt themselves to being seamed together than do the bent blanks, but I prefer to first bend or deform the blanks because it is particularly difficult to reduce the substantially circular peripherally closed blank to the shape of the body member shown in Figure 6. However, my broader claims are not limited to either specific manner of forming the body member.

Furthermore, the bending of the body portions of the blanks before formation of the peripherally closed body member, although preferably and desirably performed in a die, may be performed otherwise, as by passing the end portions of the blanks between deforming rolls. The use of a die is preferred, however, because it is difficult to always insure passing the blanks between rolls to the same extent and thus forming substantially identical blanks, which, of course, is highly desirable for the production of symmetrical and uniform products.

Rim strengthening means are provided at the upper rim of the body member. The rim strengthening means preferably comprise one or more pieces of wire of usual size about which the upper rim of the body member is turned. I prefer to use a plurality of pieces of wire or other strengthening members at the upper rim of the tub. For example, two generally U-shaped complementary strengthening members 11, as shown in Figure 9, may be used, such strengthening members being applied to the body member at opposite sides of the latter and being of such size and shape as to snugly embrace the upper portion of the body member with their ends in contact or nearly so.

Each strengthening member 11 is formed from a length or blank 12 of wire or the like, as shown in Figure 8. The blank 12 is of substantially the same length as that desired for the

strengthening member and is preferably placed in a die and bent to the shape of the member 11, as shown in Figure 9. I preferably use a multiple die and bend a number of blanks into strengthening members at the same time. A number of the blanks 12 are laid across the top of a U-shaped die and a plunger is then moved into such die, bending the respective blanks into substantially U shape.

For application of the rim strengthening means the body member shown in Figure 6 is introduced into a die 13 (Figures 20 and 21) which is shaped to snugly receive the same with a portion thereof extending above the top of the die. The die has an upwardly extending flange 14 of increased size within which is mounted for vertical movement a die ring 15. The die ring 15 is adapted for generally vertical movement with respect to a shoulder 16 formed in the die 13. The die 13 is provided with a series of wells 17 each of which receives the lower portion of a coil spring 18 the upper portion of which bears against the bottom surface of the die ring 15. The inner face 19 of the die ring 15 is slightly tapered to conform to the outer surface of the body member, as shown in Figure 21.

Cooperating with the mechanism just described is a plunger 20 having connected therewith about the periphery thereof a series of curling dies 21 each of which is mounted on one or more pins 22 slidably guided within holes in a downwardly extending flange 23 of the plunger. Each of the curling dies 21 has a flat upper surface which lies against a flat surface of the plunger whereby to cooperate with the pin or pins to insure proper guiding of the curling die. One or more coil springs 24 normally urges each curling die outwardly away from the center of the plunger. Retaining members 25 are fastened to the plunger by screws 26 to prevent the curling dies from becoming disassembled from the plunger.

Threaded into the plunger 20 from below are a plurality of bolts 27 having heads 28. All of the respective bolts 27 have the upper surfaces of their heads, viewing Figure 21, at substantially the same elevation. Mounted on the bolts 27 for vertically slidable movement thereon is a pilot or clamping member 29 which under the force of gravity normally rests on the upper surfaces of the bolt heads 28. The outer surface 30 of the pilot or clamping member is tapered in conformity with the inner surface of the die and the body member and is of such size that upon lowering thereof it will seat within the body member below the level of the die ring 15, as shown at the left-hand side of Figure 21.

After the body member has been placed in the die 13, the parts at such time being as shown at the right-hand side of Figure 21, the two complemental strengthening members 11 are placed thereabout upon the upper surface of the die ring 15 and so as to snugly embrace the upper portion of the body member but with their ends not quite in contact. The plunger is then moved downwardly with respect to the die, but before the curling dies come into action the pilot 29 seats within the die 13, thus firmly clamping the body member therein. This holds the body member against deformation except the deformation intended to be imparted to the upper portion thereof by the curling dies and enables effective functioning of the curling dies without subjecting the main part of the body member to undue stress.

Continued downward movement of the plunger 20 then brings the curling dies into contact with the upwardly extending rim of the body member and such dies are effective for curling such rim outwardly and downwardly and around the strengthening members 11. During the latter portion of the operation of the curling dies abutment portions 31 thereof strike the upper surface of the die ring 15 and move the same somewhat downwardly against the action of the coil springs 18, this assisting in insuring completion of the curling operation. By reason of the resilient mounting of the curling dies in the radial direction they are enabled to properly adjust themselves to the work. After the curling operation has been completed the plunger 20 is removed upwardly carrying the pilot 29 with it, as shown at the right hand side of Figure 21. The body member is then as shown in Figure 10 with the upper rim formed about the strengthening members 11.

The body member is next formed to receive and cooperate with a bottom closure member and at the same time preferably has formed therein a strengthening rib extending therearound. For this purpose there is provided die mechanism of which a portion, which will serve for purposes of explanation, is shown in Figure 22. The die mechanism comprises a base plate 32 to which is connected in any suitable manner a bearing 33 having connected thereto by bolts 34 guiding and spacing members 35 symmetrically positioned about the axis 36 of an inner plunger cam 37 and a bearing plate 38, as shown in Figure 22. Mounted for slidable movement outwardly with respect to the axis 36, one guided by each of the members 35, and all bearing between the bearing members 33 and 38, are four symmetrically positioned inner die members 39, one adapted to cooperate with each corner of the body member, as will presently be described.

Each die member 39 has a well 40 closed by a plug 41 threaded into the outer end thereof, each such well being adapted to contain a coil spring 42 bearing at its outer end against the corresponding member 35 and at its inner end against the plug 41, forming in effect an integral portion of the die member 39, so as to normally urge such die member inwardly or toward the axis 36. The inward movement of each die member 39 is limited by its engagement with its guiding and spacing member 35.

Also suitably mounted and guided toward and away from the axis 36, and respectively positioned outside and in cooperative relationship with the respective die members 39 are outer die carriers 43 carrying dies 44 bolted thereto at 45. The respective outer die carriers 43 are normally urged outwardly, or away from the axis 36, by coil springs 46 acting between such die carriers and the bearing 33. A vertically movable outer plunger cam 47 cooperates with each of the die carriers 43, the four outer plunger cams 47 being mounted for vertical movement in unison. Each of them has a tapered cam portion 48 cooperating with the corresponding outer die carrier 43 so that upon downward movement of the plunger cam the corresponding die carrier 43 and its die 44 move inwardly toward the axis 36. The four inner die members 39, on the one hand, and the four outer dies 44, on the other hand, cooperate to engage the body member substantially about its entire periphery internally and externally, respectively.

Normally the plunger cams 37 and 47 are raised

out of the way, the dies 39 and 44 being at such time spaced apart and permitting insertion of the lower portion of the body member. The body member is positioned therebetween and the outer
 5 plunger cams 47 are first lowered into cooperative relationship with their respective die carriers 43 and into the position shown in Figure 22, thereby moving the respective outer dies 44 inwardly into contact with the body blank. The
 10 inner plunger cam 37 is then lowered, such plunger cam having a generally conical cam portion 49 which simultaneously moves outwardly the four inner dies 39 to deform the lower portion of the body member against the outer dies,
 15 as shown in Figure 22. A strengthening rib 50 is formed in the body member and the lower rim of such member is turned outwardly, as shown at 51, for cooperation with a bottom closure member, as will presently be described. After completion of the operation the plunger cams are
 20 withdrawn upwardly, permitting the dies to spread apart, and the body member is then removed, being in the condition shown in Figure 11.

25 The body member is then inverted and placed in die mechanism shown in Figures 23 and 24 which is of the same type as the die mechanism of Figure 22 and functions in exactly the same manner. In view of the detailed description of the die mechanism of Figure 22
 30 which has been given above, it is believed that any detailed description of the mechanism shown in Figures 23 and 24 will not be necessary. The body blank is shown as having imparted to it in the latter mentioned die mechanism outward
 35 strengthening ribs 52 and 53 and an inward strengthening rib 54, as shown in Figure 12.

As a matter of fact, I find it preferable rather than to form all of the strengthening ribs 52,
 40 53 and 54 in a single operation, to form the same in two or more operations. Formation of the strengthening ribs results in drawing of the metal, and if too great a draft is taken in any single die operation there is danger of tearing.
 45 For example, the rib 53 may be formed in the same die and at the same time as the rib 50 and the foot 51 are formed, and the ribs 52 and 54 may be formed in a subsequent separate operation, or three or more operations may be utilized, the number of operations depending upon
 50 the amount of draft to be taken, the size of the body member and the gauge of the material being used.

The body member is now ready for application of the bottom closure member. Such bottom closure member is shown in Figures 13 and 14. It is preferably blanked out of sheet metal and stamped into the form shown in Figures 13 and 14 in a single operation. The closure member has strengthening ribs 55 and 56 and an outwardly extending flange 57 adapted to cooperate with the foot 51 of the body member. The body member is superimposed upon the bottom closure member, as shown in Figure 15, and such members are then double seamed together to form a tub, as shown in Figures 16 and 17. The double seaming is preferably done on a machine which rotates the assembled body member and bottom closure member while maintaining the same substantially in upright position, there being one or more die rollers cooperating therewith and guided toward and away from the axis of the body member during rotation thereof but gradually moving inwardly with respect thereto. Such
 75 a machine is not new, and therefore is not here-

in described and claimed. The outer portion of the flange 57 of the bottom closure member is turned upwardly and inwardly about the foot of the body member and then the cooperating flange and foot are turned upwardly and against the exterior of the body member, as shown in Figure 17.

Handles 58 are next attached to the tub. Each handle is held against the outer surface of the tub by a saddle 59, which is either riveted or spot welded to the outer surface of the tub immediately below the upper rim thereof, as shown in Figure 18. The rim strengthening members terminate approximately at the middle portions of opposite straight sides of the tub, and the handle members are preferably applied at such sides and in line with or generally straddling the extremities of the rim strengthening members. Furthermore, the top of each saddle 59 is preferably positioned directly below and in contact with the upper rim of the tub so that when a filled tub is lifted by its handles the load will not be carried entirely by the sides but partly by the strengthened or reinforced rim. The fact that the saddles substantially straddle the joints at the ends of the strengthening members lends requisite strength to the relatively weak points of the rim.

A wringer clip 60 is shown in Figure 18 as being attached to the outer surface of the body member just below the rim. If desired, two of such wringer clips appropriately spaced along one of the substantially straight or flat sides of the tub may be used as they facilitate the application of a wringer thereto. The wringer clips may be attached either by riveting or by spot welding. They are not essential, and a wringer may be attached to the tub without the necessity of providing any wringer clips.

The tub is then structurally completed and is next pickled to remove dirt, rust and other material adhering to its surface, washed in water and dipped in a galvanizing metal. The tubs are then cooled and washed and the labels applied and they are ready for shipment.

While I have described certain present preferred containers and methods or steps used in making containers, it is to be distinctly understood that the invention is not limited thereto, but may be otherwise variously embodied and practiced within the scope of the following claims.

I claim:

1. In the manufacture of containers, the steps comprising forming a sheet metal body blank with a relatively flat portion having substantially straight parallel upper and lower edges and with end portions having upwardly diverging end edges, at least one end portion having upper and lower edges extending at slight angles to the upper and lower edges of the relatively flat portion when positioned in the same plane as said relatively flat portion, said end portion being bent transversely of the upper and lower edges of the blank into flaring shape, connecting said blank with at least one other blank to form a flared peripherally closed container body member, and connecting a bottom closure member to the smaller rim portion of the body member to form an upwardly flared container.

2. In the manufacture of containers, the steps comprising forming a plurality of sheet metal body blanks each having a portion having substantially straight parallel upper and lower longitudinally extending edges and each such blank having

end portions having upwardly diverging end edges, at least one end portion of each such blank having upper and lower edges extending at slight angles to the upper and lower edges of the first mentioned portion of the blank, bending laterally said end portion of each blank, connecting together said bent blanks to form a flared peripherally closed container body member, and connecting a bottom closure member to the smaller rim portion of the body member to form an upwardly flared container.

3. In the manufacture of containers, the steps comprising forming a plurality of sheet metal body blanks each having a portion having substantially straight parallel upper and lower longitudinally extending edges and each such blank having end portions having upwardly diverging end edges, at least one end portion of each such blank having upper and lower edges extending at slight angles to the upper and lower edges of the first mentioned portion of the blank, bending at least part of the metal at the extremity of said end portion of each blank to provide a seaming portion, bending laterally said end portion of each blank to form substantially a trough shape, connecting together said bent blanks by said seaming portions to form a flared peripherally closed container body member, and connecting a bottom closure member to the smaller rim portion of the body member to form an upwardly flared container.

4. In the manufacture of containers, the steps comprising forming a sheet metal body blank with a portion having substantially straight parallel upper and lower longitudinally extending edges and with end portions having upwardly diverging end edges, each of such end portions having upper and lower edges extending at slight angles to the upper and lower edges of the first mentioned portion of the blank, bending laterally said end portions to form substantially a trough shape, connecting said blank with at least one other blank to form a flared peripherally closed container body member, and connecting a bottom closure member to the smaller rim portion of the body member to form an upwardly flared container.

5. In the manufacture of containers, the steps comprising forming a sheet metal body blank with a portion having substantially straight parallel upper and lower longitudinally extending edges and with end portions having upwardly diverging end edges, at least one end portion having upper and lower edges extending at slight angles to the upper and lower edges of the first mentioned portion of the blank, bending portions of the metal at the respective extremities of said end portions to provide oppositely disposed seaming portions, bending laterally at least one end portion of the blank and forming therewith a flared peripherally closed container body member, and connecting a bottom closure member to the smaller rim portion of the body member to form an upwardly flared container.

6. In the manufacture of containers, the steps comprising forming a sheet metal body blank with a portion having substantially straight parallel upper and lower longitudinally extending edges and with end portions having upwardly diverging end edges, at least one end portion having upper and lower edges extending at slight angles to the upper and lower edges of the first mentioned portion of the blank, bending laterally at least one end portion of the blank and forming therewith a flared peripherally closed container

body member whose upper and lower rims lie substantially in parallel planes, substantially simultaneously bending the entire larger rim of the body member to strengthen the same, and connecting a bottom closure member to the smaller rim to form an upwardly flared container.

7. In the manufacture of containers, the steps comprising forming a sheet metal body blank with a portion having substantially straight parallel upper and lower longitudinally extending edges and with end portions having upwardly diverging end edges, at least one end portion having upper and lower edges extending at slight angles to the upper and lower edges of the first mentioned portion of the blank, bending laterally at least one end portion of the blank and forming therewith a flared peripherally closed container body member whose upper and lower rims lie substantially in parallel planes, clamping the body member against distortion and then substantially simultaneously bending the entire larger rim of the body member to strengthen the same, and connecting a bottom closure to the smaller rim to form an upwardly flared container.

8. In the manufacture of containers, the steps comprising forming a sheet metal body blank with a portion having substantially straight parallel upper and lower longitudinally extending edges and with end portions having upwardly diverging end edges, at least one end portion having upper and lower edges extending at slight angles to the upper and lower edges of the first mentioned portion of the blank, smoothly curving said blank laterally adjacent at least one of said end portions and forming therewith a flared peripherally closed container body member having substantially flat sides and rounded corners and whose upper end lower rims lie substantially in parallel planes, substantially simultaneously deforming the body member throughout its entire periphery, and connecting a bottom closure member to the smaller rim to form an upwardly flared container.

9. In the manufacture of containers, the steps comprising forming a sheet metal body blank with a portion having substantially straight parallel upper and lower longitudinally extending edges and with end portions having upwardly diverging end edges, at least one end portion having upper and lower edges extending at slight angles to the upper and lower edges of the first mentioned portion of the blank, bending laterally at least one end portion of the blank to form substantially a trough shape, seaming said blank with at least one other blank to form a flared peripherally closed container body member, substantially simultaneously deforming the body member throughout its entire periphery and through the seams, and connecting a bottom closure member to the smaller rim to form an upwardly flared container.

10. In the manufacture of containers, the steps comprising forming a sheet metal body blank with a portion having substantially straight parallel upper and lower longitudinally extending edges and with end portions having upwardly diverging end edges, at least one end portion having upper and lower edges extending angularly with respect to the upper and lower edges of the first mentioned portion of the blank, bending laterally at least one end portion of the blank and forming therewith a flared peripherally closed container body member, forming a peripherally extending strengthening portion in said body member intermediate its top and bottom rims, and connecting a bottom closure member to the smaller rim of

the body member to form an upwardly flared container.

11. In the manufacture of containers, the steps comprising forming a substantially flat sheet metal blank providing upper and lower edges having substantially straight parallel portions and having other portions non-parallel with said first mentioned portions and providing non-parallel side edges, bending said blank transversely of the upper and lower edges and forming therewith a flared peripherally closed container body member whose upper and lower rims lie substantially in parallel planes, forming a peripherally extending strengthening portion in said body member intermediate its upper and lower rims, and connecting a bottom closure member to the smaller rim of the body member to form an upwardly flared container.

12. In the manufacture of containers, the steps comprising forming a substantially flat sheet metal blank providing upper and lower edges having substantially straight parallel portions and having other portions non-parallel with said first mentioned portions and providing non-parallel side edges, bending said blank transversely of the upper and lower edges and forming therewith a cornered flared peripherally closed container body member seamed adjacent at least one corner thereof and whose upper and lower rims lie substantially in parallel planes, and connecting a bottom closure member to the smaller rim to form an upwardly flared container.

13. A container comprising a peripherally closed upstanding body member comprising a sheet metal body blank having a relatively flat portion with substantially straight parallel upper and lower edges and having end portions with upwardly diverging end edges, said blank having at least one end portion having upper and lower edges extending at slight angles to the upper and lower edges of the relatively flat portion when positioned in the same plane as said relatively flat portion so that the body member will have its top and bottom rims in parallel planes, at least one of said end portions being bent transversely of the upper and lower edges of the blank and being upwardly flared, and a bottom closure member connected to the smaller rim of the body member, the container thereby being upwardly flared and having at least one substantially straight side.

14. A container comprising a peripherally closed upstanding body member comprising a sheet body blank having a relatively flat portion with substantially straight parallel upper and lower edges and having end portions with upwardly diverging end edges, said blank having at least one end portion having upper and lower edges extending at slight angles to the upper and lower edges of the relatively flat portion when positioned in the same plane as said relatively flat portion so that the body member will have its top and bottom rims in parallel planes, at least one of said end portions being bent transversely of the upper and lower edges of the blank and being upwardly flared, said body member having a peripherally extending strengthening portion intermediate its top and bottom rims, and a bottom closure member connected to the smaller rim of the body member, the container thereby being upwardly flared and having at least one substantially straight side.

15. A square tapered sheet metal wash tub comprising a body portion made up of blanks seamed together so that the body portion is pe-

ripherally closed, such body portion having four flat sides of equal width each sloping somewhat outwardly from bottom to top and four flared rounded trough shaped corners joining said flat sides, said body portion having a peripherally extending strengthening portion in said flat sides and said rounded corners and through the seam or seams, and a bottom connected with said body portion.

16. As an article of manufacture, a tapered wash tub comprising a bottom of generally polygonal contour providing four substantially straight primary side edges and four rounded corners, side walls secured to the periphery of said bottom and terminating in a plane substantially parallel to the plane of the bottom, said side walls being constituted by four substantially straight primary side walls and four rounded corners, a cross section of the tub in any plane above the bottom being of generally polygonal contour with the cross sectional area in said planes gradually increasing from the bottom to the top of the tub, said side walls being formed of a plurality of similar sections united along diagonally opposite rounded corners.

17. As an article of manufacture, a sheet metal wash tub of generally polygonal shape comprising a body made up of trough-shaped blanks of sheet metal having flaring or divergent portions and having their upright edges seamed together, and a sheet metal bottom seamed to the body, the sides of the tub being flared upwardly and outwardly and their upper edges having a continuous reinforcing rim, the corners of the tub being rounded.

18. As an article of manufacture, a sheet metal wash tub of generally polygonal shape comprising a body made up of trough-shaped sheet metal blanks having flaring or divergent portions and having their upright edges seamed together, whereby to strengthen the body in the upright direction, and a sheet metal bottom seamed to the respective trough-shaped blanks and assisting in holding them together in assembled relationship, the assembled trough-shaped blanks having therein a substantially continuous circumferential swaged portion to strengthen the tub in the circumferential direction.

19. An article of manufacture comprising a wash tub of generally rectangular shape having its sides composed of a plurality of sheet metal blanks formed with upwardly diverging edges and each bent to form a trough shape, the edges of the blanks being seamed together to form generally vertically extending seams, and a bottom seamed to the lower edge portions of the side blanks, the tub having rounded corners and being provided with a substantially continuous surrounding swaged bead portion intermediate of the height of the sides around the tub and including the vertical seams.

20. An article of manufacture comprising a wash tub of generally rectangular shape having its sides composed of a plurality of sheet metal blanks formed with upwardly diverging edges and each bent to form a trough shape, the edges of the blanks being seamed together to form generally vertically extending seams positioned substantially at corners of the tub, and a bottom seamed to the lower edge portions of the side blanks, the tub having rounded corners and being provided with a substantially continuous surrounding swaged bead portion intermediate of the height of the sides around the tub and including the vertical corner seams.

21. An article of manufacture, comprising a tub of generally rectangular form having its sides formed of a plurality of sheet metal blanks bent into trough shape, the tub having rounded corners extending at an angle to each other, the edge portions of the side blanks being seamed together to form vertically extending seams, and a bottom of generally rectangular shape seamed to the lower edges of the side portions, said parts forming a tub with upwardly and outwardly flaring sides and rounded corners.

22. A container comprising a peripherally closed upstanding upwardly flaring body member comprising sheet metal body blank means having a plurality of relatively flat portions each having substantially straight parallel upper and lower edges and upwardly diverging end edges and having an end portion bent transversely of the upper and lower edges of the blank means and forming a material portion of the upwardly flaring enclosure, said bent end portion having its edge portion bent to form a seaming portion, and a bottom closure member seamed to the smaller rim of the body member by a depending seam.

HENRY KIELBERG.

CERTIFICATE OF CORRECTION.

Patent No. 1,935,848.

November 21, 1933.

HENRY KIELBERG.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 5, line 113, claim 8, for "end" read and; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 12th day of December, A. D. 1933.

(Seal)

F. M. Hopkins
Acting Commissioner of Patents.

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