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METHOD OF MAKING SHEET METAL CONTAINERS

Filed May 2, 1927

Fig. 1

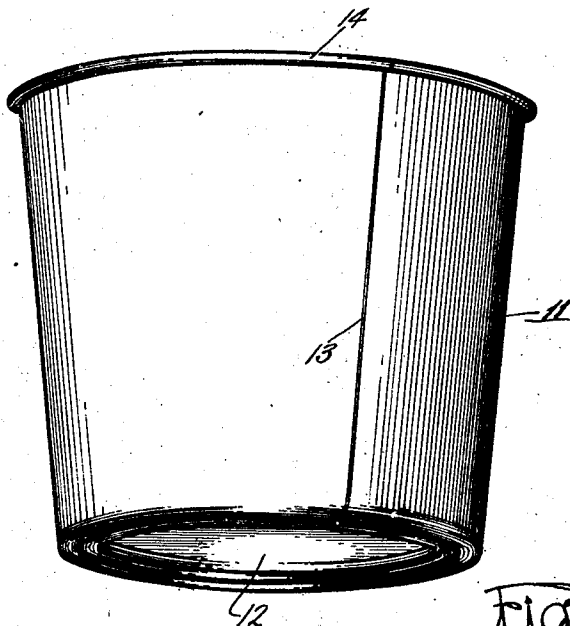


Fig. 2

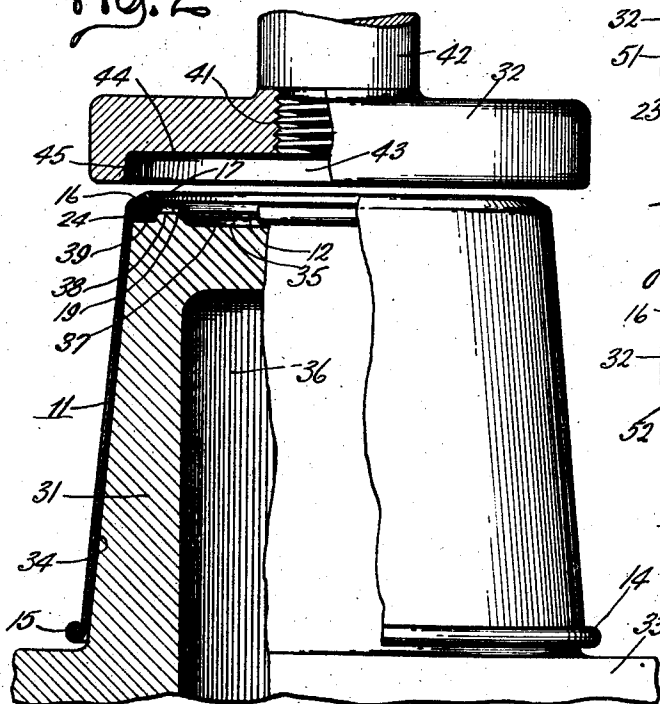


Fig. 3

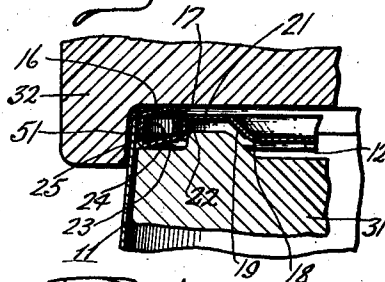
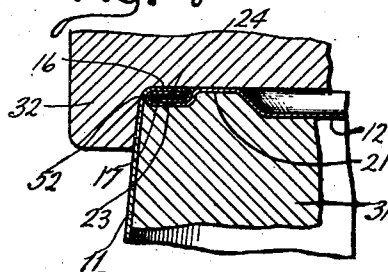


Fig. 4



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METHOD OF MAKING SHEET METAL CONTAINERS

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The invention relates generally to sheet metal containers, and while it has more particular reference to the provision of a new and improved method of forming a two piece sheet metal pail, it will be apparent that it is susceptible of other valuable application.

The principal object of the invention is the provision of a two piece pail or the like having an improved liquid tight bottom construction.

Another important object of the invention is the provision of an improved bottom construction for pails and the like which includes a liquid tight seam, so formed that the material of the seam lies entirely within the outer surface of the pail and presents a smooth, continuous, bottom.

Another important object of the invention is the provision of an improved liquid tight seam for sheet metal pails by interposing a layer of sealing compound within the folded seam.

Another important object of the invention is the provision of a sheet metal pail having an improved pail bottom construction, including a liquid tight seam formed by enclosing a sealing compound between interfolded side wall and bottom portions during the formation of the container.

Still another important object of the invention is the provision of an improved two-piece pail or other container having an especially strong bottom construction, including a folded seam joining the side walls and bottom of the pail, and a reinforcing ridge with which the folded portions of the seam engage to provide a sturdy bottom construction adapted to sustain heavy liquids within the container and to eliminate the necessity of using more expensive types of paint pails and drawn kegs as containers for heavy paint materials, white lead and similar liquids.

Numerous other objects 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 to the drawings:

Figure 1 is a perspective view of a sheet

metal container embodying my invention;

Fig. 2 is an elevation view of the dies for making the sheet metal container showing the separate parts of the container arranged thereon prior to folding adjacent edges together in forming the container.

Fig. 3 is an enlarged sectional view of portions of the forming dies and container parts shown in Fig. 2 and illustrating the beginning of the formative die stroke; and

Fig. 4 is an enlarged sectional view of the parts shown in Fig. 3, illustrating the completion of the formative process.

To illustrate my invention, I have shown on the drawings a sheet metal container comprising an encircling side wall 11 and a bottom wall 12. The side wall and bottom of the container are separately formed and are afterwards secured together to comprise the finished container by interfolding certain portions of the parts which are specially shaped to facilitate the folding operations. In the embodiment illustrated, the side wall 11 comprises a single sheet of material formed substantially into a cylinder or cone frustum and having opposite end edges secured together into a side seam 13, which may be of any convenient type. The side wall is flared from bottom to top and has its upper edges rolled over and around a reinforcing wire 15 to form a bead 14. The bottom edge of the side wall 11 is formed into an intumed integral flange 16 comprising a conical surface, which makes an obtuse angle with the side walls. The inner edge of the flange 16 is bent inwardly to form an annular flange 17 substantially parallel with the side wall portions 11.

The bottom 12 of the container comprises a circular sheet, the material of which is offset outwardly from the plane of the bottom at 18 to form an annular, sloping portion 19, thence inwardly to form a flat annular surface 21 which adjoins the sloping portion 19 and which lies in a plane parallel with the plane of the bottom 12. The material is then bent inwardly at right angles to the annular surface 21 to provide an annular shoulder 22 and thence outwardly to provide a conical surface 23 making an obtuse angle with the

shoulder portion 22. Finally the material at the edge of the bottom is bent up slightly past the perpendicular to provide an upstanding edge flange 24.

5 The side wall 11 and the bottom wall 12 are assembled by folding together the annular flange portions 16 and 17 of the side walls and portions 23 and 24 of the bottom. This is accomplished by means of dies 31 and 32 upon which the parts are assembled and
10 pressed together into interengaged position. The lower die 31 has an integral flanged base 33, flaring side walls 34, a circular top surface 35, and is made hollow as at 36 to increase
15 strength and resilience and to decrease weight. The die comprises substantially a truncated cone having sides, the slope of which corresponds with the flare of the side wall 11, the die being adapted to fit snugly
20 within and to form a solid support for the flaring pail body during the formation of the pail.

The upper surface 35 of the lower die is shaped to fit the container bottom; that is to say, the die surface comprises a circular central portion 37, an annular ridge 38, the surfaces of which conform to the shape of the annular ridge composed of the offset bottom portions 19, 21 and 22, and an outer peripheral ledge 39 extending between the ridge 38
30 and the top edge of the die.

The upper die 32 comprises a cylindrical disk having a diameter somewhat greater than the external diameter of the pail bottom. The disk is provided with a centrally disposed aperture 41 which is threaded for engagement with a die shaft 42. The die shaft is connected to press mechanism suitable for operating the dies. The disk is
35 provided with a circular recess 43, which is disposed centrally in the lower disk face and which has a flat circular bottom surface 44 of a size corresponding to the bottom of the finished container and flaring side walls 45 corresponding to the flare of the container walls.

The container is formed by positioning the formed bottom wall 12 centrally upon the upper surface 35 of the lower die, a sealing compound 51 is then or earlier deposited in the annular groove 25. The formed side wall portion is then inverted and placed over the lower die, the wall portion 11 snugly engaging the side of the die and the flange portions 16 and 17 are arranged in juxtaposition with respect to the corresponding flange portions 24 and 23 of the pail bottom, as shown clearly in Fig. 3 of the drawings. The upper die 32 is then forced down upon the lower
60 die 31 and the sloping flange 16 is bent still further from the pail body. This forces the flange 17 between the adjacent flanged portions 24 and 23 of the pail bottom. Further compression of the dies results in the flange
65 17 being gripped firmly between the portions

24 and 23 of the bottom and the flange 24 being similarly gripped between the portions 16 and 17 of the side walls. The final result is illustrated in Fig. 4 of the drawings, which shows the parts completely folded together. During this process the sealing compound is scraped up and is securely enclosed between the interfolded side wall and bottom portions providing an annular liquid tight sealing gasket 52 between the two pail portions. The folded portions are forced into engagement with the peripheral shoulder 22 which strengthens not only the joint itself but also the entire pail bottom. The folded portions are forced also into the groove 25 adjacent the shoulder and hence lie entirely within the confines of the outer pail surface, which provides a smooth pail bottom finish.

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 many 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. The method of forming a container which comprises forming a continuous side wall and an end portion separately, each of said formed portion having formed edges adapted for interfolding, the formed portion of the side wall extending towards the center of said end portion, said end portion having offset portions providing an upwardly presented groove and a shoulder adjacent the edge thereof, spaced from said edge, positioning a sealing compound in said groove, engaging said formed edges into engagement and folding them together with one edge interlocking under the other edge, whereby the formed edges of the side wall scrape into and partially remove the sealing compound in the groove, said folded portions being pressed into said groove and into engagement with said shoulder and confining the removed sealing compound therebetween.

2. The method of forming a container, which comprises forming a continuous side wall and an end wall separately, each of said formed elements having edges shaped for interfolding and interlocking, said end wall having a vertical shoulder and a groove formed at the outer side of said shoulder and an upstanding flange formed at the outer part of said groove, and said side wall having a flange extending inwardly over the said groove of the end wall and a depending flange arranged in the inner part of said groove, positioning a sealing compound in said groove between the said flanges, and then compressing said parts together and causing the depending flange of the side wall to scrape along

the bottom of said groove at the lower side of said compound, and causing the upstanding flange of the end wall to scrape along the inwardly extending flange of the side wall, and compacting the parts to form a sealed seam between said elements enclosing said compound.

3. The method of forming a container, which comprises forming a continuous side wall and an end wall separately, each of said formed elements having edges shaped for interfolding and interlocking, said end wall having a vertical shoulder and a groove with an inclined bottom formed at the outer side of said shoulder and an upstanding flange formed at the outer part of said groove, and said side wall having a flange extending upwardly and inwardly over the said groove of the end wall and a depending flange arranged in the inner part of said groove, positioning a sealing compound in said groove between the said flanges, and then compressing said parts together and causing the depending flange of the side wall to scrape along the bottom of said groove at the lower side of said compound, and causing the upstanding flange of the end wall to scrape along the inwardly extending flange of the side wall, and compacting the parts to form a sealed seam between said elements enclosing said compound.

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