Jan. 18, 1938. V. J. GRAF 2,105,944

METHOD OF MAKING SINKS

Original Filed March 31, 1933 3 Sheets-Sheet 1

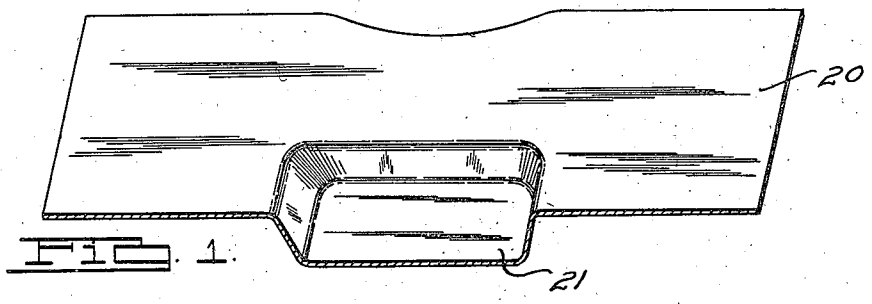


FIG. 1.

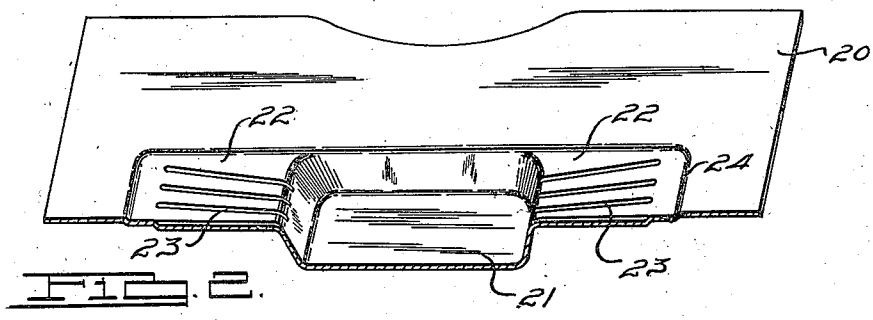


FIG. 2.

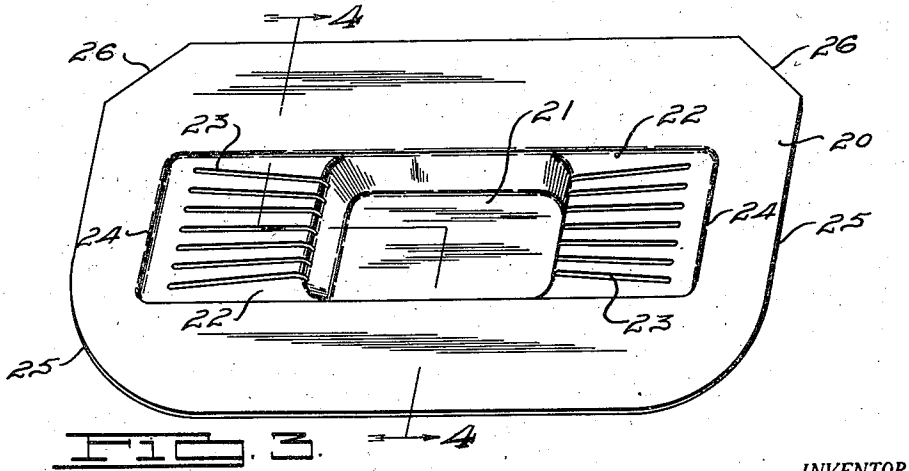


FIG. 3.

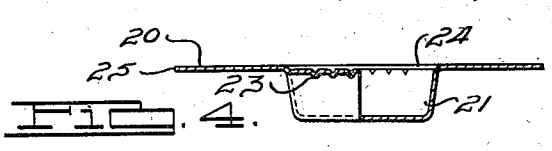


FIG. 4.

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Fig. 5.

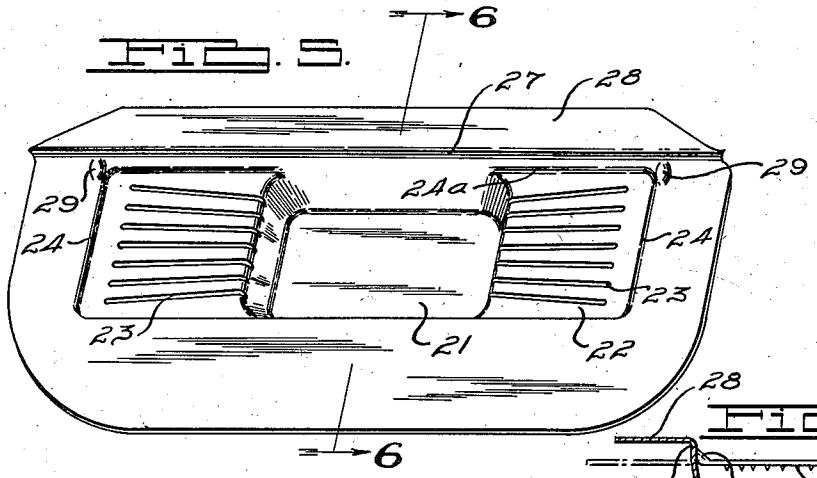


Fig. 6.

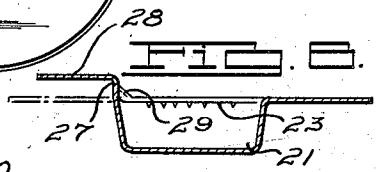


Fig. 7.

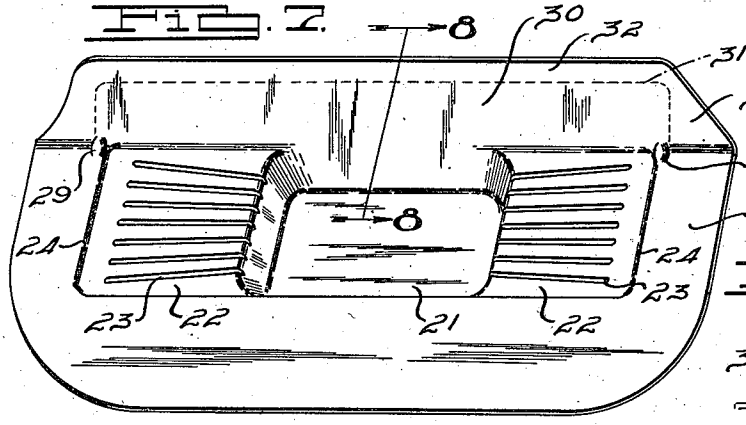


Fig. 8.

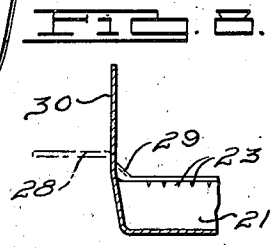


Fig. 9.

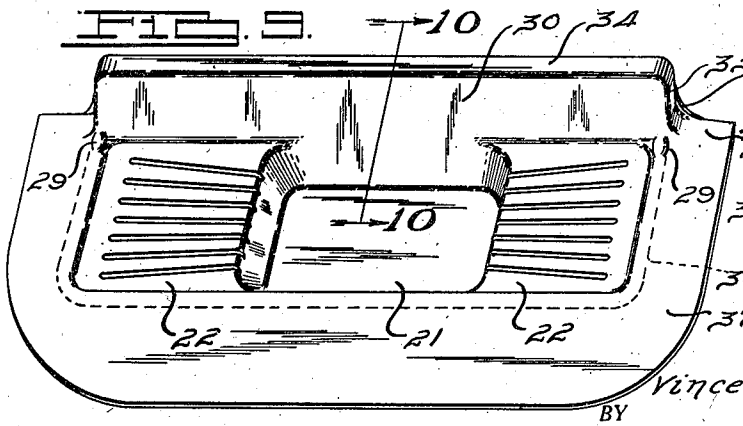
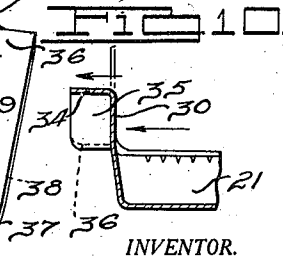


Fig. 10.



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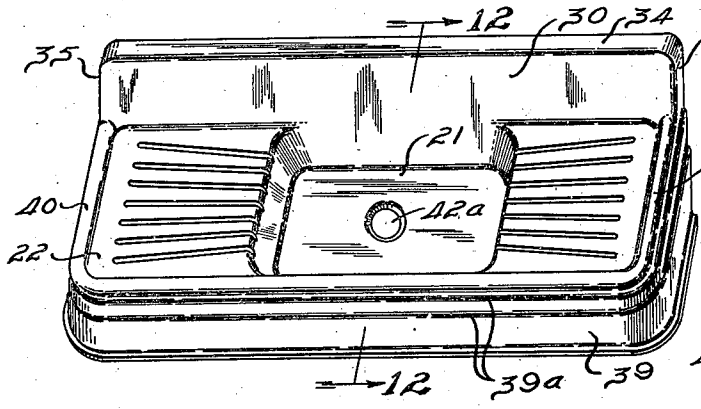


Fig. 11.

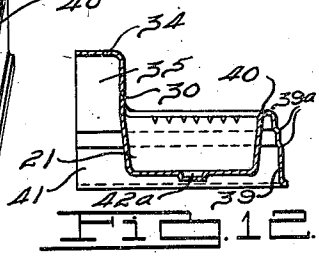


Fig. 12.

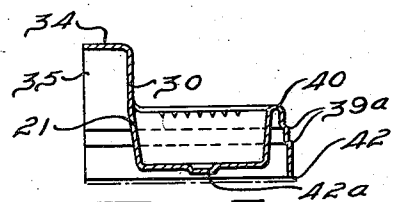


Fig. 13.

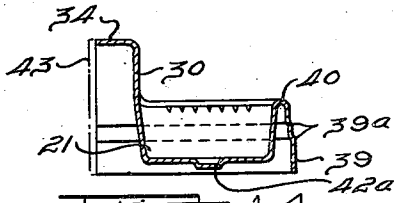


Fig. 14.

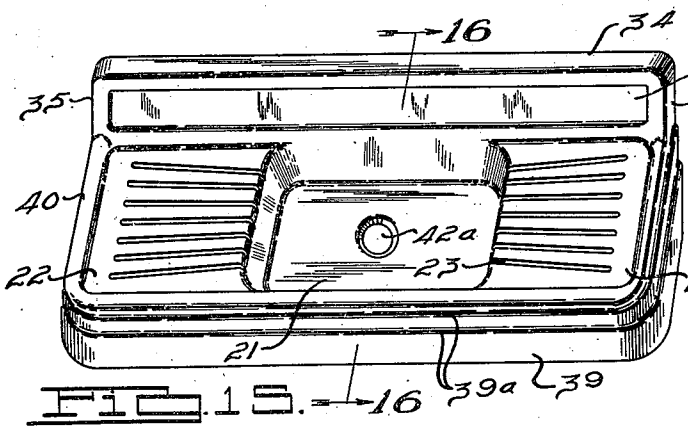


Fig. 15.

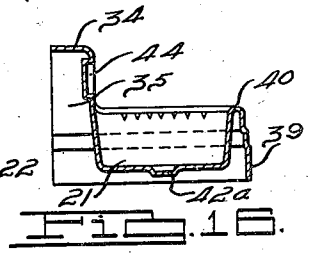


Fig. 16.

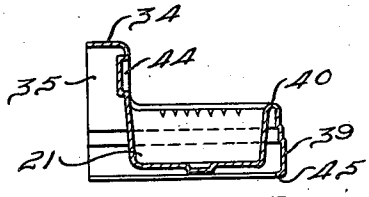


Fig. 17.

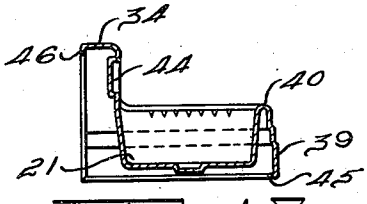


Fig. 18.

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UNITED STATES PATENT OFFICE

2,105,944

METHOD OF MAKING SINKS

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Application March 31, 1933, Serial No. 663,711
Renewed October 7, 1935

16 Claims. (Cl. 113—51)

This invention relates to the fabrication of sinks or wash basins by stamping or draw die operations from sheet metal, and more particularly to the formation from a single sheet metal blank of a sink of that character or design preferably having a basin, a single or double drain board terminating in a depending apron flange and an upright flanged back wall or splash board.

An object of the invention is to press or draw the entire sink from a single metal blank while at the same time producing around the edge of the back wall or splash board a continuous flange which merges integrally and co-extensively with the apron flange.

A further object is to form from a single metal sheet a basin, apron flange and flanged splash board with continuous, uninterrupted metal surfaces free from welded slits or patches, thereby securing substantial economies in manufacture and improved appearance while eliminating enameling flaws resulting from the difficulty in providing a clear, uniform baked enamel surface due to welds in the foundation metal.

A further object of the invention is to provide a rolled marginal rim between the basin and apron flange and to join the rim to the upright splash board or back panel by increasing the metal area at the juncture thereof.

Other objects of this invention will appear in the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

Fig. 1 is a fragmentary perspective view, partly in section, illustrating a metal blank from which the sink is fabricated, the basin being preliminarily formed in this view.

Fig. 2 is a similar view illustrating a succeeding step in the method.

Fig. 3 is a perspective view of the metal sheet after the formation of the sink and drain board and the preliminary trimming of the edges.

Fig. 4 is a section taken substantially through lines 4—4 of Fig. 3 in the direction of the arrows.

Fig. 5 is a perspective view of the metal blank after a succeeding operation.

Fig. 6 is a transverse section taken through lines 6—6 of Fig. 5 in the direction of the arrows.

Fig. 7 is a perspective view illustrating the formation of the sink prior to flanging.

Fig. 8 is a section taken substantially through line 8—8 of Fig. 7 in the direction of the arrows.

Fig. 9 is a perspective view illustrating the step of flanging the splash wall.

Fig. 10 is a section taken substantially through line 10—10 of Fig. 9 in the direction of the arrows.

Fig. 11 is a perspective view illustrating a further step in which the apron flange is formed.

Fig. 12 is a section taken substantially through lines 12—12 of Fig. 11 in the direction of the arrows.

Figs. 13 and 14 are views similar to Fig. 12 illustrating certain trimming operations.

Fig. 15 is a perspective view illustrating a further step.

Fig. 16 is a section taken substantially through lines 16—16 of Fig. 15 in the direction of the arrows.

Figs. 17 and 18 are views similar to Fig. 16 illustrating additional steps.

Before explaining in detail the present invention it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation, and it is not intended to limit the invention claimed herein beyond the requirements of the prior art.

In accordance with the invention there is formed from a single metal blank or sheet a sink, which may either be of the double or single drain board type or simply a basin type, having a continuous depending apron flange extending around the front and sides, and an upstanding back panel or splash board which is rearwardly flanged along the top and ends thereof, the lower part of the end flanges of the splash board continuing into the rear portions of the apron flange. Heretofore, where it has been attempted to fabricate sinks of this character from sheet metal it has been necessary to slit or cut away a part of the metal at the juncture of the splash board and the rolled edge or rim of the basin or of the drain board, as the case may be. Moreover, in accordance with previous practice it has been necessary to close these slitted edges by welding. Furthermore, the fabrication of such sinks according to previous practice has resulted in leaving gaps between the rear edges of the apron and the splash board flanges, and these gaps have been filled in by metal patches welded in position. Thus, it will be noted that previous practice has necessitated either slitting or patching, or both, and the consequent welding of the metal at such points. Such practice has not only intro-

duced expensive operations but has rendered it difficult if not impossible to produce a final product of satisfactory appearance. This is particularly true where the formed article is provided with a surface finish of enamel, it having been found in practice that blemishes or imperfections appear in the enameled surfaces at points where welding has taken place.

In the drawings there is illustrated a succession of steps by which a sink of the double drain board type may be formed from a single metal sheet or blank free from welded joints and patches. It will be understood, of course, that the method in its broader aspects is equally applicable to the formation of a single drain board sink and in fact of a sink without a drain board wherein the structure comprises a fluid basin, an upright back or splash board and a continuous apron flange extending around the front and sides of the basin and merging with the flanged ends of the splash board.

In accordance with the present embodiment, herein illustrated by way of example, a single metal blank or sheet 20 is placed in the press and the central portion is preliminarily drawn to provide a well or basin 21, as illustrated in Fig. 1, this being accomplished by a suitably shaped draw die. In the following operation the blank may be formed by suitable dies to provide drain boards 22 channeled or corrugated as shown at 23, the basin and drain board depressions terminating within the area of the blank along lines 24. In the same operation the drawing of the well or basin 21 may be completed as to shape and depth, see Fig. 2. In accordance with the next step in the method the blank is preferably rough trimmed around its edges 25 and a suitable portion of the metal trimmed off as at 26, see Figs. 3 and 4.

If desired, the back panel or splash board may be formed up in two operations as illustrated in Figs. 5 to 8 inclusive. As shown in Figs. 5 and 6 the metal in rear of the well or basin is formed up at line 24a to produce a step 27 and a rearwardly extending horizontal portion 28. During the same die operation a small area of the metal at opposite rear corners of the drain boards is drawn forwardly to provide embossed portions 29, sufficient metal being introduced at these points to provide, in a succeeding operation, the proper radius of curvature at the juncture of the rolled rim and upright back wall or splash board. As illustrated in Figs. 7 and 8 the splash board is formed up from the dotted line position to the full line position shown at 30 in Fig. 8.

It will be seen from Fig. 7 that the blank at this stage is formed with a front horizontal section incorporating a well or basin and drain boards, and is also formed with a vertically extending back panel 30. With the blank in this condition the back panel may be formed with a continuous flange and the marginal area 37 of the front section may be formed into a continuous apron flange merging into the back wall flanging. In accomplishing this the marginal metal of the back is pressed rearwardly substantially along the dotted line 31 (see Fig. 7), this being accomplished between suitable dies. The integrally joined metal areas 32 and 33 are simultaneously drawn or pressed rearwardly in the same direction while at the same time the metal areas indicated at 37 and 30 are held between blank holders. The result of this draw operation is illustrated in Figs. 9 and 10 wherein the back 30 is provided with a continuous uninterrupted flange along the top edge at 34 and downwardly along the end edges at 35, the flange portions 35 merging into a horizontal area 36 the metal of which is drawn largely from the area 33 shown in Fig. 7. The direction of the draw producing the areas 34, 35 and 36 is illustrated by the arrows in Fig. 10, and the shape of the blank at this stage is substantially illustrated in Fig. 9. Although a part of the metal during the draw may remain in the form of a web 35a, this portion may be readily removed in the final trim operations.

The blank having been drawn to the approximate form illustrated in Fig. 9, the next step in the method preferably consists in forming the apron flange. The metal area 37 extending around three sides of the basin, is drawn downwardly approximately along the dotted line 38, and the marginal area between the line 38 and the margin 24 of the sink and drain boards is drawn to provide a rolled rim. The blank of Fig. 9 is accordingly shaped between suitable forming dies to provide the apron flange 39 and in the same operation suitable ornamental beading 39a may be formed as desired. A roll shaped rim 40 is produced in this operation, and it will be noted that the embossed portions 29 are located at the juncture of the ends of the rolled rim 40 and the flanged back or splash board. The purpose of the embossed portions 29 is to introduce additional metal at the juncture of the back 30 and rolled rim 40 thereby preventing wrinkling or splitting of the metal at these points and eliminating the necessity of slitting or cutting out the metal and then welding, as in prior practice. It will be seen that in this step of the method the metal areas 36 and 37 of Fig. 9 are wiped downwardly in a vertical direction, thus producing at the rear vertical edges of the sink a portion 41 forming a uniform continuation of the flange portion 35, see Figs. 11 and 12. In this operation the basin may be embossed at 42a for the drain hole.

In addition to the foregoing steps in the formation of the sink, succeeding operations are desirable for finish trimming and flanging. As illustrated in Fig. 13 the lower edge of the apron flange is trimmed as indicated at 42, and as illustrated in Fig. 14 the splash board flanging around the three sides thereof is finish trimmed at 43. In another operation a decorative offset 44 may be formed in the face of the splash board, as shown in Figs. 15 and 16. In Fig. 17 the lower edge of the apron flange is provided with an inwardly extending finishing flange 45 and in Fig. 18 the splash board flange is provided around its marginal edge with a finishing flange 46. It will be understood that in other operations the drain hole may be pierced through the drain offset or embossing 42a and the splash board pierced to form the faucet holes.

In the present embodiment herein illustrated, I have set forth a sequence of steps by which the method may be satisfactorily performed. The invention, however, is not limited to the sequence herein given as obviously certain steps may be combined or re-arranged in different order. If desired the back or splash board panel and the basin or drain board panel may first be formed, after which the basin and the drain board proper may be pressed out. In some instances the drain board or apron flange will be omitted, and in such case it will be understood that the rolled rim 40 will form the upper margin of the basin proper. Considered from one aspect the inven-

tion contemplates (1) forming a substantially horizontal basin panel and a back or splash board panel substantially at right angles thereto, (2) rearwardly upsetting or drawing the metal at each end of the back panel to produce a vertical end flange on the back panel and a co-extensive horizontal extension of the marginal portion of the basin panel, and (3) downwardly drawing or pressing said marginal portion and extension to provide a continuous apron flange terminating at its rear edge substantially in line with the rear vertical edge of the back panel flange.

It will also be understood that the invention may be carried out by first stamping the blank or sheet to produce the horizontal basin panel and the upright or vertical splash board panel; second, drawing the marginal portions of the the basin panel downwardly to provide a continuous apron around three sides thereof; and third, rearwardly flanging the back panel or splash board around its three edges and drawing the metal at the juncture of the back panel and apron to increase the metal area so as to form the end flange of the back panel with an extension of the apron.

Thus, it will be seen that the invention, in one of its broader aspects, contemplates forming a single metal blank or sheet by pressing or drawing operations, through suitable dies and blank holders, to produce a horizontal panel or section having a basin incorporated therein either with or without a drain board or drain boards, a continuous integral apron flange extending around three sides of the horizontal panel, a substantially vertical back panel or splash board continuously flanged around its three edges; and drawing the metal at or near the juncture of the back panel and apron to introduce into the apron at the rear edges thereof integral extensions of the back panel flanging.

I claim:

1. The method of forming a sink from a single metal blank, which comprises stamping the blank to form a horizontal basin and apron forming panel and an upright back panel, drawing the terminal end portion of the back panel to form a rearwardly projecting flange and to form from the metal of said end portion a horizontal extension of the apron forming portion of the horizontal panel, and folding said apron forming portion and horizontal extension downwardly to provide an apron having the rear edge thereof terminating in substantial vertical alinement with the rear edge of said flange.

2. The method of forming a sink from a single metal blank, which comprises stamping the blank to provide a basin, a continuous depending apron extending around three sides thereof and an upright splash board or back panel, rearwardly flanging the end of the back panel and drawing the metal at the juncture of the panel and apron to introduce into said flange an integral portion forming a rearward extension of the apron.

3. The method of forming a sink from a single metal blank, which comprises forming the blank by stamping operations with a substantially vertical back panel and a horizontal panel provided with a basin, downwardly flanging the marginal portions of the horizontal panel to form a depending apron flange, rearwardly flanging the marginal edges of the back panel and drawing the metal between the apron flange and end flange of the back panel to extend the apron flange rearwardly substantially into line with said back panel end flange.

4. The method of forming a sink from a single metal blank, which comprises drawing the blank to provide a basin, an upright back and a horizontal apron forming portion joined at right angles to the end portions of the back, drawing the back at right angles to its plane to form a continuous top and end flange while at the same time forming from the said end portion of the back a substantially horizontal extension of the apron forming portion, and pressing said extension and portion downwardly to provide the apron.

5. In the method of forming a sink from a single metal blank, the steps of forming a basin containing panel and a back panel at right angles thereto, rearwardly upsetting the end of the back panel by drawing the metal to form a rearwardly extending end flange and a coextensive horizontal extension of the marginal portion of the basin panel, and downwardly flanging said marginal portion and extension to provide an apron flange terminating at its rear edge substantially coextensively with the back panel flange.

6. In the method of forming a sink from a single metal blank, the steps of drawing or stamping the blank to form a horizontal basin containing section and an upright back wall, rearwardly flanging the end of said wall and downwardly flanging the corresponding end of said section to provide an apron, and drawing the metal at the juncture of said flanging to extend the apron rearwardly substantially coextensively with the back wall flanging.

7. The method of forming a sink from a single metal blank, which comprises drawing the blank to provide a horizontal basin containing section terminating in a rolled rim and a downwardly extending apron, forming an upright splash board, and drawing the metal to increase its area at the juncture of said rim and splash board.

8. In the method of forming a sink from a single metal blank drawn to provide a horizontal basin containing section terminating in a rolled rim and a downwardly extending apron and also drawn to provide an upright back wall rearwardly flanged at its end, the step of drawing the metal substantially in line with said rim to increase its area at the juncture of the back wall and rim.

9. In the method of forming a sink from a single metal blank drawn to provide a horizontal basin containing section terminating in a rim and a downwardly extending apron and also drawn to provide an upright back wall rearwardly flanged at its end, the step of drawing the metal to increase its area at the juncture of the back wall end flange and said apron.

10. In the method of forming a sink from a single metal blank drawn to provide a horizontal basin containing section terminating in a rolled rim and a downwardly extending apron and also drawn to provide an upright back wall rearwardly flanged at its end, the steps of drawing the metal to increase its area at the juncture of the back wall end flange and said apron, and drawing the metal substantially in line with said rim to increase its area at the juncture of the back wall and rim.

11. The hereindescribed method of forming a sink from a single metal blank, which comprises drawing into the blank a basin and drainboard, forming an upright back wall, forwardly embossing the metal adjacent the rear corner of the

drainboard, and forming an apron flange and a rolled rim joined to the back wall by said embossed portion.

12. The hereindescribed method of forming a sink from a single metal blank, which comprises drawing into the blank a basin and drainboard, forming an upright back wall, forwardly embossing the metal adjacent the rear corner of the drainboard, rearwardly flanging said back wall beyond said embossed portion, and forming an apron flange and a rolled rim joined to the back wall by said embossed portion.

13. In the method of forming a sink from a single metal blank, the steps of drawing into the blank a basin and drainboard, forming an upright back wall having its end portion extending beyond the drainboard, drawing said end portion to form a rearwardly extending end flange on the back wall and also a horizontal end extension, and forming an apron flange having said end extension as an integral part thereof.

14. In the method of forming a sink or the like from a single metal blank or sheet in which the sink in its completed form has a generally rectangular basin, an upwardly projecting splash board or back panel terminating in a rearwardly directed end flange and in which the basin at its side adjacent said flange has a turned rim; the step of augmenting the area of metal adjacent the juncture of said rim and end flange and forming said end flange and rim by bending operations to provide an integral seamless joint in said area between said rim, back panel and end flange.

15. In the method of forming a sink or the like from a single metal blank or sheet in which the sink in it completed form has a generally rectangular basin, an upwardly projecting splash board or back panel terminating in a rearwardly directed end flange and in which the basin at its side adjacent said flange has a turned rim formed as a part of a depending flange or apron; the step of drawing the metal in the area adjacent the place of juncture of said rim flange and end flange and augmenting said area so that upon forming said rim and flanges by bending operations a seamless joint will be produced in said drawn area between said rim, back panel and flanges.

16. In the method of forming a sink or the like from a single metal blank or sheet in which the sink in its completed form has a generally rectangular basin, an upwardly projecting splash panel terminating in a rearwardly directed end flange and in which the basin at its side proximate to said end flange has a drainboard terminating in a turned rim formed as a part of a downwardly directed flange; the steps of drawing said basin and drainboard, providing additional area of metal adjacent the place of juncture of said rim flange and end flange, and forming said rim and flanges by bending operations to produce a seamless joint in said area between said rim, back panel and flanges.

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