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R. M. CHESNEY
METHOD OF DRAWING METAL

1,960,000

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Fig. 1.

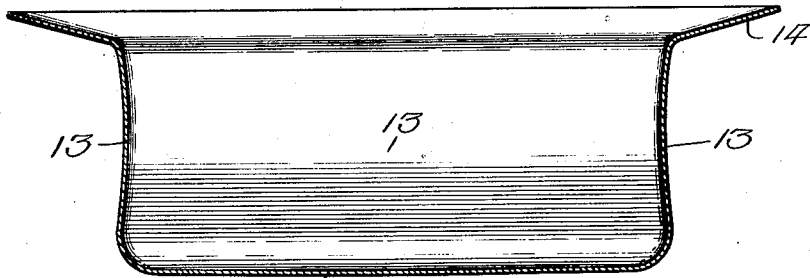


Fig. 2.

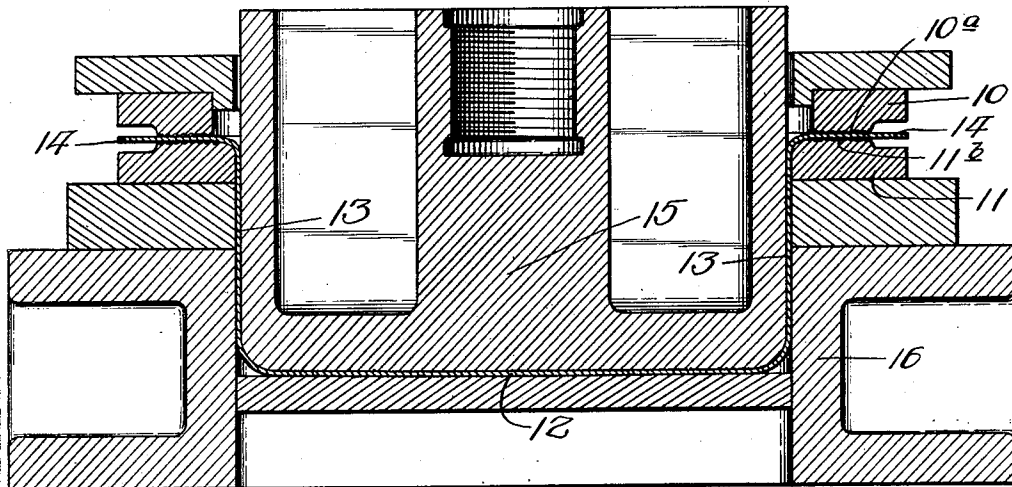
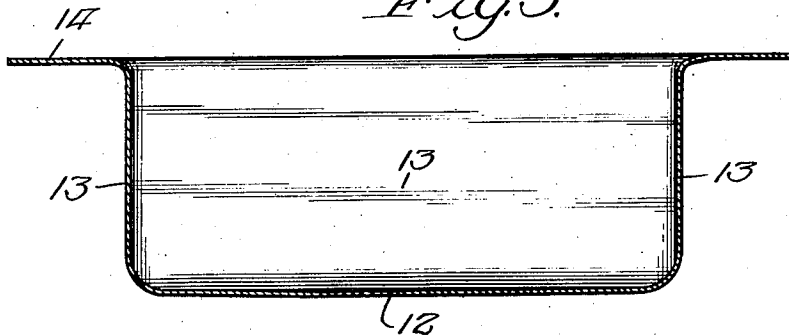


Fig. 3.



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Attys.

UNITED STATES PATENT OFFICE

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METHOD OF DRAWING METAL

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3 Claims. (Cl. 113—51)

This invention relates to improvements in methods of drawing metal and, more especially, the drawing of relatively deep rectangular or square depressions in sheet metal to form receptacles, such as, sinks, wash basins, tubs, and the like.

When a rectangular or square shape is drawn in sheet metal to form a rectangular receptacle by the ordinary methods, the receptacle sides or side walls are ordinarily bulged due to excess metal.

Heretofore, it has been customary to draw a rectangular receptacle a little undersize and then expand its side walls sideways in order to remove the bulge. This, however, has not always proven successful.

One of the features of my invention is to provide a method for straightening the bulged sides ordinarily formed when making rectangular or square deep-drawn sheet metal receptacles.

In general, in the practice of my invention, a receptacle shell having a flange or marginal edge is first drawn from a sheet metal blank a little shallow by the ordinary method. In other words, the shell is not quite as deep as the finished shape or receptacle should be. The shell is then placed in a die which is provided with a hold-down ring that is serrated. A ram plate that carries another serrated hold-down ring is then moved vertically downward and the serrated portions of the hold-down rings grip the flange or marginal edge of the receptacle and hold it rigidly in place. In the ordinary drawing process, these hold-down ring surfaces are smooth and the marginal edge or flange of the receptacle is allowed to slide between the hold-down rings; but in the practice of my invention, the serrations hold the marginal edge of the partially formed receptacle perfectly tight, and, therefore, enable the die punch on the ram to stretch the main body or side walls of the receptacle and draw out the excess metal at the bulge, making the receptacle side walls straight and parallel.

The practice of my invention is illustrated in the accompanying drawing, in which:—

Figure 1 is a vertical sectional view of a deep-drawn tub or receptacle with the bulged sides ordinarily left therein after the ordinary drawing operation;

Fig. 2 is a vertical sectional view showing one form of apparatus which may be used for stretching the sides of the receptacle shown in Fig. 1 to remove the bulge; and

Fig. 3 is a view similar to Fig. 1, showing a completed tub or receptacle with the bulges in the sides removed.

Similar numerals refer to corresponding parts throughout the drawing.

In carrying out the improved method, an unfinished deep-drawn sheet metal receptacle having inwardly bulged side walls extending between its marginal edge and bottom wall, such as shown in Fig. 1, is drawn in the usual manner from a sheet metal blank.

It is to be understood that the inwardly bulged receptacle shown in Fig. 1 represents an article somewhat undersize in an unfinished state. That is, the depression is drawn a little shallow.

The unfinished receptacle shown in Fig. 1 is then placed in apparatus, such as shown in Fig. 2, which may include a hold-down ring 10, provided with serrations 10a on its undersurface adapted to cooperate with serrations 11b in the cooperating hold-down ring 11 carried by a ram plate.

The receptacle to be made, for example a tub, comprises a bottom wall 12, rectangular sides or side walls 13 and the flange or marginal edge 14 extending outwardly from the upper ends of the side walls 13. The stretching apparatus shown in Fig. 2, also includes a ram or male die operating in a female die 16.

After the unfinished receptacle of Fig. 1 is placed in the apparatus shown in Fig. 2, the hold-down ring 10 is moved down toward the hold-down ring 11, so that the flange or marginal edge 14 of the receptacle is located between and gripped by the serrations 10a and 11b of the hold-down rings 10 and 11. The ram 15 is then lowered into contact with the bottom wall 12 and thereafter moved or forced downwardly to the position shown in Fig. 2, to pull or stretch the sides or side walls 13 of the receptacle. This stretching operation removes the bulges shown in Fig. 1 and makes the sides or side walls of the finished article straight and parallel, as shown in Fig. 3.

While I have shown and described certain embodiments of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims, in which it is my intention to claim all novelty inherent in my invention as broadly as permissible, in view of the prior art.

What I regard as new, and desire to secure by Letters Patent, is:

1. The method of straightening bulged side walls extending between the marginal edge and

bottom wall of a deep drawn rectangular sheet metal receptacle, which includes the steps of gripping the marginal edge of the receptacle having bulged side walls to hold said marginal edge rigidly in place, and then forcing the bottom wall downwardly to stretch and straighten the bulged side walls between the marginal edge and bottom wall while gripping said marginal edge.

2. The method of making a straight sided deep drawn rectangular sheet metal receptacle, which includes the steps of deep drawing a rectangular depression in a sheet metal blank to produce an unfinished receptacle having bulged side walls extending between a bottom wall and a marginal edge, then gripping the marginal edge of the receptacle to hold said marginal edge rigidly in place, and then forcing the bottom wall downwardly to stretch and straighten the bulged side

walls between the marginal edge and bottom wall while gripping said marginal edge.

3. The method of making a deep drawn rectangular sheet metal receptacle having a bottom wall, straight and parallel rectangular side walls, and a marginal edge extending outwardly from the upper ends of said side walls; which includes the steps of deep drawing a rectangular depression in a sheet metal blank to form an unfinished receptacle having inwardly bulged rectangular side walls extending between a bottom wall and a marginal edge, then gripping the marginal edge of the receptacle to hold said marginal edge rigidly in place, and then stretching said bulged side walls between the bottom wall and rigidly held marginal edge to straighten and true the same.

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20	95
25	100
30	105
35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150