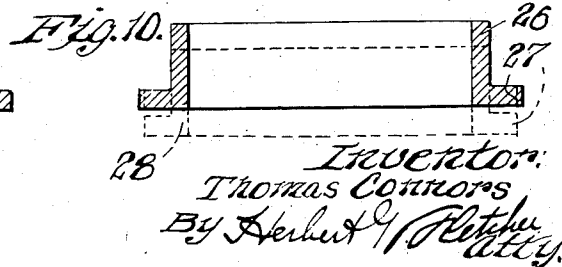
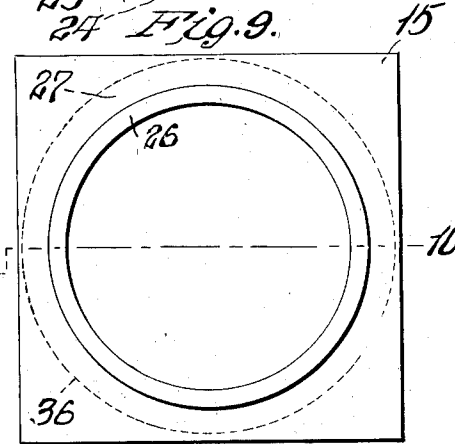
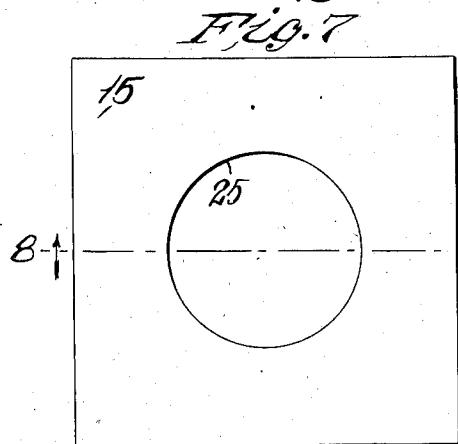
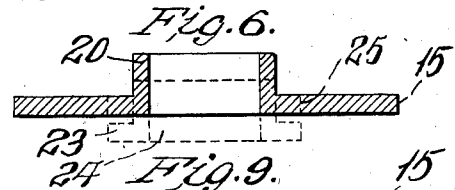
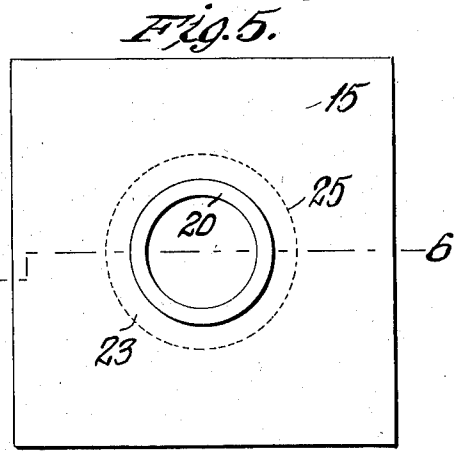
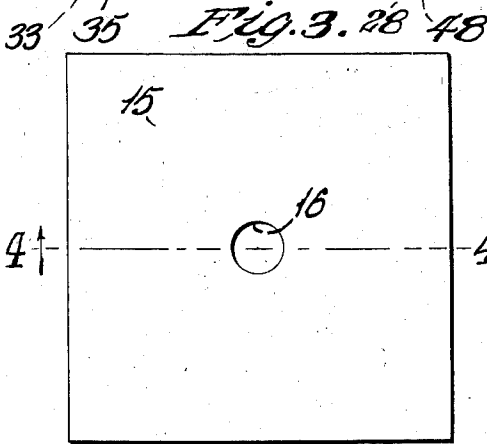
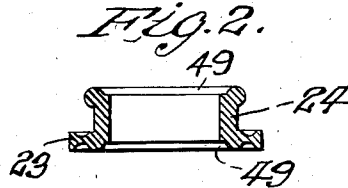
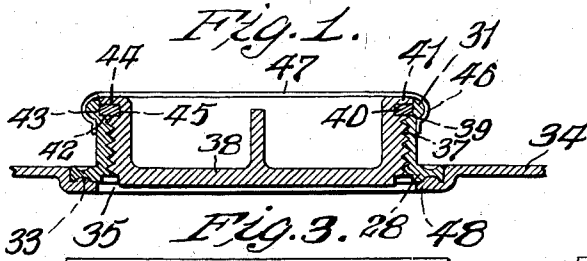


July 14, 1942.

T. CONNORS
METHOD OF MAKING FLANGED BUSHINGS FOR SHEET
METAL CONTAINERS OR BARRELS
Filed July 20, 1939

2,289,409

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 11.

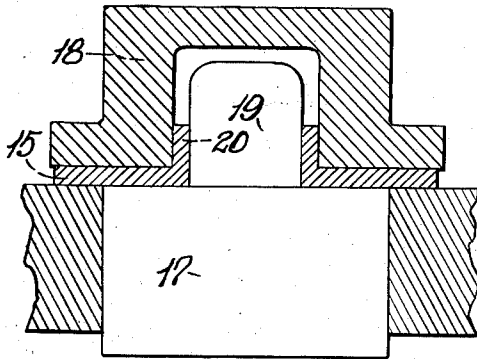


Fig. 12.

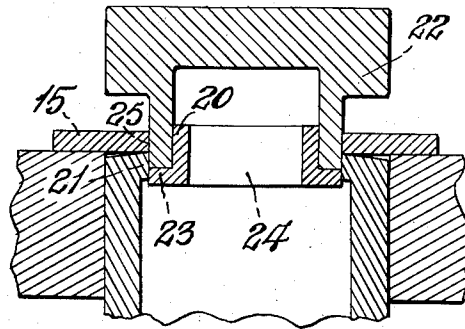
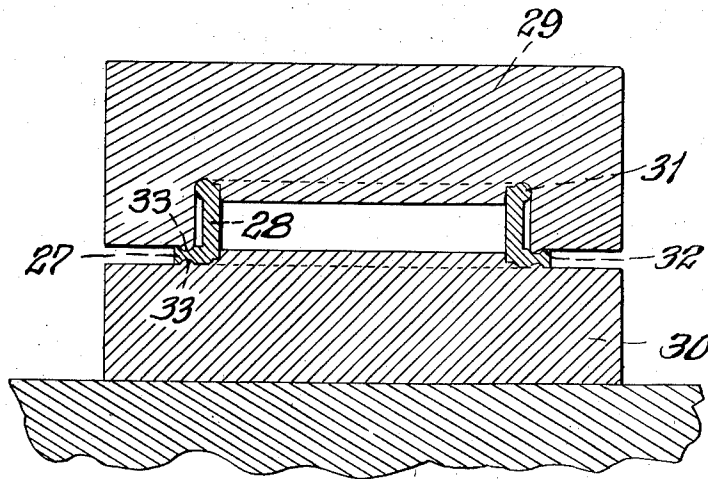


Fig. 13.



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UNITED STATES PATENT OFFICE

2,289,409

METHOD OF MAKING FLANGED BUSHINGS
FOR SHEET METAL CONTAINERS OR
BARRELSThomas Connors, St. Louis County, Mo., as-
signor to American Metal Barrel Company, St.
Louis, Mo.

Application July 20, 1939, Serial No. 285,479

4 Claims. (Cl. 29—148.2)

This invention relates to an improved method of making flanged bushings which are sometimes called flanges or bung fixtures, for the filling and discharge openings of metal containers such as barrels or drums, which are generally used as shipping containers for liquids and fluids such as petroleum products, edible oils, paints, chemicals, solvents and similar products.

In the general use of containers of this character, each metal container is ordinarily provided with two openings, one for filling and the other for discharging, the filling opening now being standardized as a two inch size and the discharge opening being standardized as a three-quarter inch discharge opening, and these openings and/or the bushings thereof, may be provided with standard pipe threads.

In recent years it has become customary to separately manufacture the flange bushings and to subsequently secure them in pairs in a wall of the container, such as the head or side wall thereof.

This invention therefore goes to the method of making flanged bushings for sheet metal containers which are secured to the container walls during the assembly of the container, and the invention has for one of its objects to provide an improved method of manufacture of flanged bushings from a minimum of sheet material, thereby eliminating waste material and at the same time obtaining an improved product by the use of the method.

It is a further object of the invention to provide a new art of forming and extruding flanged metal bushings from small portions of sheet metal which may be scrap metal from material used for similar or other purposes, by manufacturers of flanged bushings different than the flanged bushings of this improved method.

A further object of the invention is to provide a method of obtaining material from a minimum sized piece of material, sufficient to form and extrude metal for the manufacture of both the two inch and three-quarter inch standard size bushings.

It is still another object to provide a method to not only utilize material for manufacturing a pair of flanged bushings, but to utilize the first machine operation on the material for making a small bushing, as a step in operation in making a larger bushing of the pair of bushings.

Another still further object is to provide an improved method for the manufacture of flanged bushings at a minimum of expense.

A still further object of the invention is to

provide an improvement in sheet metal containers or drums.

With the foregoing and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes may be made within the scope of what is claimed without departing from the spirit of the invention.

An embodiment of the invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a transverse vertical sectional elevation taken through a fragmentary portion of a metal container wall and the flanged bushing constructed by this improved method, and the figure including a cooperable closure plug and a sealing cap mounted in seal-tight positions to the fixture.

Figure 2 is a transverse vertical sectional elevation taken through a standard three-quarter inch bushing made by this improved method.

Figure 3 is a plan elevation of a minimum diametered portion of sheet metal showing the first operating step in the manufacture of a pair of bushings for a container.

Figure 4 is a transverse vertical sectional elevation taken approximately on the line 4—4 of Fig. 3.

Figure 5 is a plan elevation of the portion of sheet metal shown in Fig. 3, showing the second operation thereon.

Figure 6 is a transverse vertical sectional elevation taken on the line 6—6 of Fig. 5.

Figure 7 is a plan elevation of the portion of material shown in Figs. 3 and 5, showing a further operation thereon.

Figure 8 is a transverse vertical sectional elevation taken approximately on the line 8—8 of Fig. 7.

Figure 9 is a plan elevation of the portion of material shown in Figs. 3, 5 and 7, showing a further operation thereon.

Figure 10 is a transverse vertical sectional elevation taken approximately on the line 10—10 of Fig. 9.

Figure 11 is a transverse vertical sectional elevation taken through a pair of forming dies and showing the extruding operation for the structure, as shown in Figs. 5 and 6.

Figure 12 is a transverse vertical sectional elevation through the forming dies necessary for stamping out the extruded portion illustrated in Figs. 5 and 6.

Figure 13 is a transverse vertical sectional ele-

vation through the forming dies used for completing the flanged bushing.

Referring by numerals to the accompanying drawings, 15 designates a minimum sized or diametered portion or blank of sheet metal of the required thickness for carrying on this improved method in making flanged bushings, and for the purposes of illustration, the diameter of the blank is such as may be found in scrap material and as may be suitable for making a two inch flanged bushing therefrom.

The first step necessary in carrying out this improved method is to provide a centrally disposed opening 16 of the required size in the sheet portion 15, by punching or otherwise, and the blank or portion 15 is then operated on by suitable dies 17 and 18, as shown in Fig. 11, wherein an extruding portion 19 on the die 17 will force the material around the margin of the hole of the blank upwardly into an annular neck 20, as shown in said figure and in Figs. 5 and 6.

The next operation on the blank of sheet material 15 is by the cutting dies 21 and 22, shown in Fig. 12, wherein the male die 22 is engaged over the pre-formed neck 20 in a manner to provide a flange 23 at the bottom of the neck, as shown in said figure and by dotted lines in Fig. 6, thus forming the three-quarter inch flanged bushing 24.

After the stamping out of the bushing 24 from the sheet material blank 15, the opening 25 therein provided, is entered by an extruding operation of another set of dies similar to those shown in Fig. 11, but of larger diameters so that the extruding portion of the larger dies will extrude the material surrounding the margin of the opening 25 into an upstanding neck 26, as shown in Figs. 9 and 10.

The next operation on the blank 15 of sheet material is by cutting dies similar to those shown in Fig. 12, but of larger diameters wherein the male die is engaged over the pre-formed neck 26 in a manner to provide a flange 27 at the bottom of the neck, as shown by dotted lines in Fig. 10, thus forming the two inch flanged bushing 28.

Figure 13 illustrates a set of dies 29 and 30 for providing the last operation on the flanged bushings, said figure however, illustrating the finishing operation on the large bushing 28 for providing the annular bead or lip 31 at the upper end of the neck 26 and for coining the flange 27, as shown at 32, by providing oppositely disposed grooves 33. Obviously, the small bushing 24 is similarly operated on by dies of required diameters.

From the illustrations and description of this improved method for making flanged bushings, it is obvious that the method steps named, when carried out will result in an improved product in that the material of the product is made more dense due to the extruding and stamping steps as related, and it is to be noted that but a minimum of waste material remains of the blank 15, as indicated by the dotted line 36 in Fig. 9.

Flanged bushings when made by this improved method, are then ready for securing to container walls and inasmuch as the flanges of the bushings are coined as shown at 32, a preferred manner of securing the bushings to a container wall is by electric resistance pressure welding, and for carrying out the welding operation one manner may be by providing an annular depressed portion 48 in the container wall 34 surrounding an opening 35 formed in the wall and the flange of

respective bushings being seated in a respective depression of the wall, as shown in Fig. 1.

A filler or bonding agent which may be of liquid form is pasted in the coin groove 33 which faces the wall material of the depression therein, for carrying out the welding operation.

Obviously, if desired, the flanges of the bushings may be made of different designs or shapes as may be required for securing the bushings to the container walls in a particular manner.

After bushings of this character have been constructed, they may be threaded as shown at 37 in Fig. 1, for the reception of a threaded closure plug 38, and a gasket seat 39 may be formed at the upper end of the threads for the seating of a gasket 40 carried by the plug, and the plug having a flange 41.

The flange 41 of the plug 38 is of a diameter so that it can engage somewhat in the opening of the gasket seat 39, and as the flange 41 of the plug engages the gasket, the gasket is compressed and engaged by and within four walls designated as 42 and 43 on the bushing and the walls 44 and 45 on the plug.

The bead or lip 31 of the bushing provides for clinching engagement of the side wall 46 of a sealing cap 47 which may be mounted over the bushing and the plug.

In some instances, it may be desired to leave the bushings in an unthreaded state so that an insertable bung or cork may be used.

Also if desired, bushings may be secured in the wall of a container in positions reversed to that shown in Fig. 1.

While one illustrative embodiment of the invention has been described in detail, it is not my intention to limit its scope to that particular embodiment or otherwise than by the terms of the appended claims.

With further regard to the gasket 40 being compressed within the four walls, the gasket is thereby held against buckling and from being worked up and down when the plug 38 is screwed into the bushing, and the bushing may be extruded at each end to form respective gasket seats therein as shown at 49 in Fig. 2.

While it has been stated that a bonding agent may be used in welding the bushings to the container wall, it is also practical to weld the bushings without the use of a bonding agent.

What I claim is:

1. The method of making a pair of flanged bushings from sheet material consisting of punching a centrally disposed hole in the material, extruding the marginal material of the hole, of stamping out the extruded portion with an annular flange thereon from the sheet, of extruding the marginal material of the hole remaining in the sheet after the first extruded portion and its flange has been stamped therefrom, of stamping the second extruded portion with an annular flange thereon from the sheet material, and of simultaneously beading the extending end of each extruded portion and annularly coining the flange of each extruded portion.

2. The method of making a flanged bushing from flat material consisting of punching a hole in the material, extruding the marginal material of the hole, of stamping out the extruded portion with an annular flange thereon from the material, and of annularly coining the flange.

3. The method of making a flanged bushing from flat material consisting of punching a hole in the material, extruding the marginal material

of the hole, of stamping out the extruded portion with an annular flange thereon from the material, of annularly coining the flange, and of beading the extending end of the extruded portion.

4. The method of making a flanged bushing from flat material consisting of punching a hole in the material, extruding the marginal material

of the hole, of stamping out the extruded portion with an annular flange thereon from the material, of annularly coining the flange, and of simultaneously beading the extending end of the 5 extruded portion and annularly coining the flange.

THOMAS CONNORS.