Dec. 21, 1926. 1,611,559

C. J. RHODES ET AL

CLOSING THE ENDS OF SHEET METAL RECEPTACLES

Filed Sept. 15, 1923

Fig. 1.

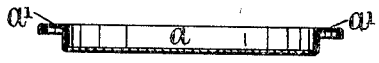


Fig. 2.

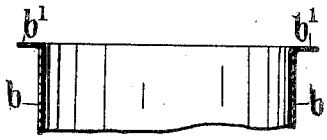


Fig. 3.

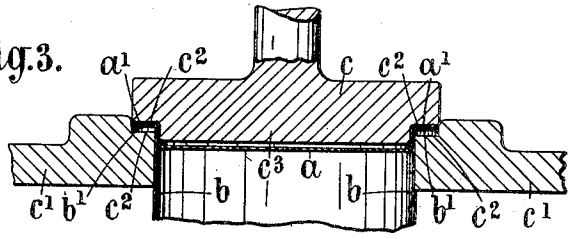


Fig. 4.

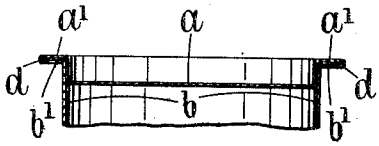


Fig. 5.

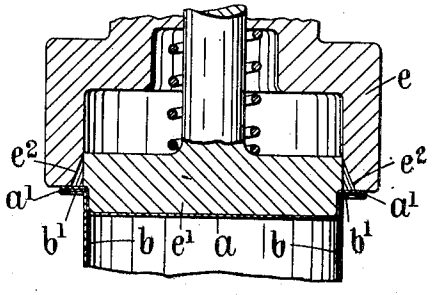
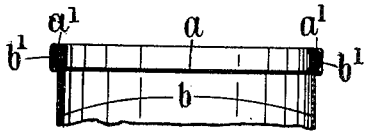


Fig. 6.



INVENTORS:

Charles Joseph Rhodes,

George William Berry.

ATTORNEY: A. J. Maddox

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UNITED STATES PATENT OFFICE.

CHARLES JOSEPH RHODES AND GEORGE WILLIAM BERRY, OF WAKEFIELD, ENGLAND.

CLOSING THE ENDS OF SHEET-METAL RECEPTACLES.

Application filed September 15, 1923, Serial No. 663,242, and in Great Britain September 26, 1922.

This invention relates to methods of and means for closing the ends, viz, the tops and/or bottoms of filled tins and other sheet-metal receptacles of round, square, or irregular section.

The invention comprises a method in which the top or bottom and body of the receptacle previously provided with flanges are brought together between dies, one flange being hooked over the other, said flanges being then soldered together if required and the extending flanged joint being finally caused to lie closely against the outside of the body of the receptacle.

According to the invention and taking as an example a vertical type of apparatus adapted to apply a top to a receptacle body, the said top is provided with an upturned vertical flange from which extends an outward flange which is hooked or turned down vertically at its outer edge. The body is also provided with an outward flange of the same angle as that on the top and these flanges are pressed together between dies so that the hooked part of the top flange is forced around the outer edge of the body flange to form a seamed flanged joint. The joint is now ready to be soldered, if this step is desired, and after such soldering the connected body and top are acted on by other dies to finally close the outwardly extending flanged joint and cause it to lie closely against the outside of the body, this being effected by causing a plunger of the upper die to descend and fit into the recessed upper part of the top produced by the first vertical flanging followed by the descent of a closing ring of said upper die which presses the flanged joint downwards against the side of the body, the pressure being taken by the plunger. A perfect double seamed joint is thus produced of a minimum depth and of extremely neat appearance. The aforesaid dies and associated parts may also be arranged to operate horizontally with certain types of receptacles.

An embodiment of the invention is represented in the accompanying drawings in which—

Figs. 1 and 2 show in section respectively an end of the receptacle and a fragmentary view of the upper part of the receptacle body;

Fig. 3 is a section showing the first stage of the method and the dies for effecting same;

Fig. 4 is a fragmentary section showing the receptacle body and end at the termination of the first stage of the method;

Fig. 5 is a section showing the commencement of the second stage of the method and the dies for effecting said stage; and

Fig. 6 is a fragmentary section showing the completely closed receptacle at the termination of said second stage.

In these views Figs. 1 and 2 show in section respectively the top a provided with hooked flange a^1 and the body b provided with rectangular flange b^1. Fig. 3 shows in section the upper plunger or die c and lower die c^1 with the receptacle parts between them prior to pressure being applied to clench them together. The dies are provided with complementary shoulders c^2 for this purpose, the upper die having a depending portion c^3 which engages the recess in the top of the receptacle. The clenched position of the body and top is shown in Fig. 4 at which stage solder may if desired be applied at the overlapping part of the flanges at d. The final closing movement has now to be performed, this being accomplished as shown in Fig. 5 by another upper die e the spring plunger e^1 of which is shaped to fit within the recessed upper part of the top a with the connected flanged joint extending outwards therefrom, this joint being now flattened or forced down closely against the side of the body by descent of the said upper die e which is in the form of a ring surrounding the plunger e^1 and has a tapered inner edge e^2 to engage the joint and force it down as required to produce the final double seamed joint shown in Fig. 6. During the closing action of the die e the pressure on the joint is taken by the plunger e^1.

What we claim as our invention and desire to secure by Letters Patent of the United States is:—

1. The method of applying closures to receptacle bodies, consisting in providing a receptacle body arranged with a flange extending laterally at a right angle to the body and a cupped closure disk engaged in the end of the body having a flange to extend contiguous to the body flange with the marginal portion turned inwardly in surrounding and contiguous relation to the edge of the body flange, engaging the body in an opening in one member of a pair of die members axially movable one relative to the other with the wall of said opening in embracing

relation to the body, said member having an annular enlargement at one end of said opening of a diameter the same as the closure flange and forming a seat for the engagement of said closure flange, the other die member embodying a plunger having an axially extended reduced portion to fit within the cupped portion of the closure disk inserted into the body engaged in the opening in the first die member, and the shoulder formed by said reduced portion at the juncture thereof with the plunger engaging over the closure flange and in the enlargement at the one end of the opening in the first die member and adapted as the two die members are brought together to fold the inturned marginal portion of the closure flange over the edge of the body flange, and then subjecting the so-united closure and body to compound die mechanism the members of which are axially movable one relative to the other, one of said die members consisting of a plunger slidable in the other die member having a portion to engage within the cupped portion of the closure in the body and a portion to engage partly over the closure flange, and the outer die member having the inner wall at the outer edge inclined outwardly and co-operating with the plunger to fold the joined closure and body flanges against the body and seal the raw edges of said flanges within the fold.

2. In means for applying cupped closure disks arranged with a laterally extending flange having an inturned marginal portion to flanged receptacle bodies, a pair of co-operating dies movable in a direction axially of the body and relative to each other, one of said dies comprising a plunger having an axially extended reduced portion to fit within the cupped portion of the closure disk and a shoulder at the juncture of said reduced portion to extend laterally over the closure flange, and the other die consisting of a plate having an opening for the engagement of and to embrace the receptacle body and having an annular enlargement to form a seat about the outer marginal portion of the opening of a width the same as the closure flange and of the laterally extended portion of the first die whereby as said dies are brought together the inturned marginal portion of the closure flange is folded over the edge and underside of the marginal portion of the body flange, and a compound die the members of which are also movable in a direction axially of the body and relative to each other, one member of said die being in the form of a plunger slidable in a recessed portion of the other die member and having portions to engage within the cupped portion of the closure in the body and partially engage over the laterally extended portion of the closure flange, and the outer marginal portion of the inner wall of said latter die member inclined outwardly and adapted to co-operate with the plunger member to fold and force the jointed flanges of the closure and body and seal the raw edges of said flanges within the fold closely against the outer side of the body.

In witness whereof we have signed this specification.

CHARLES JOSEPH RHODES.
GEORGE WILLIAM BERRY.