J. G. HODGSON.

MANUFACTURE OF CANS.

APPLICATION FILED APR. 19, 1920.

1,431,228. Patented Oct. 10, 1922.

2 SHEETS—SHEET 1.

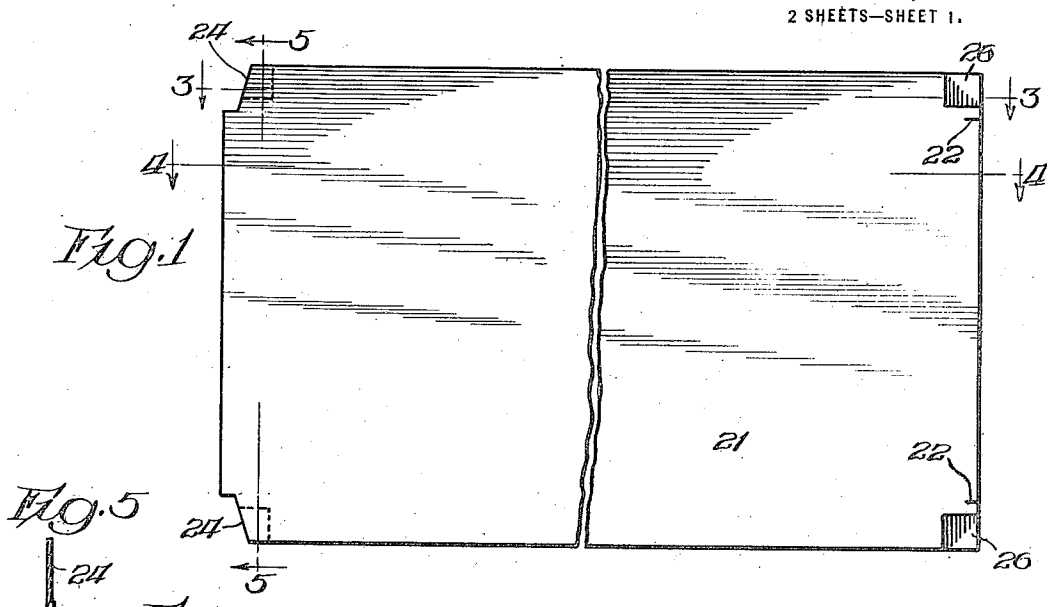


Fig. 1

Fig. 5



Fig. 2

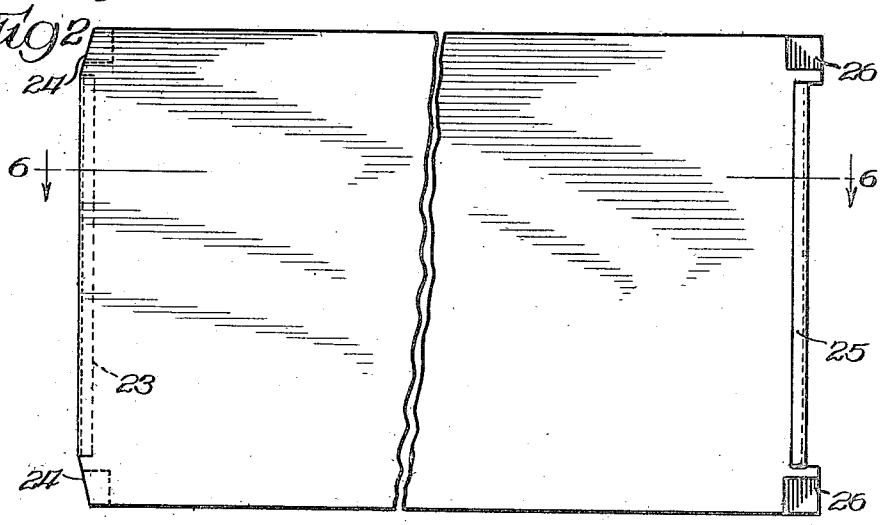


Fig. 3

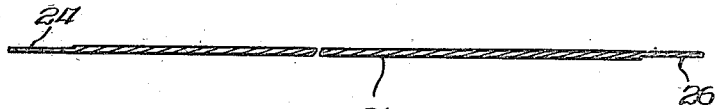


Fig. 4

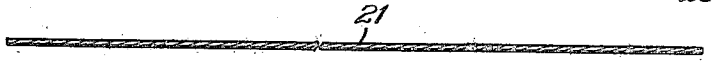
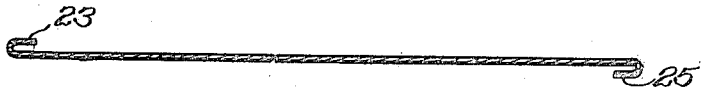


Fig. 6



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2 SHEETS—SHEET 2.

Fig. 7

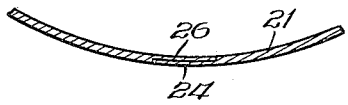


Fig. 8

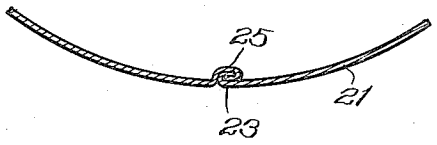


Fig. 12

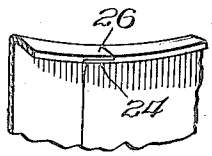


Fig. 9

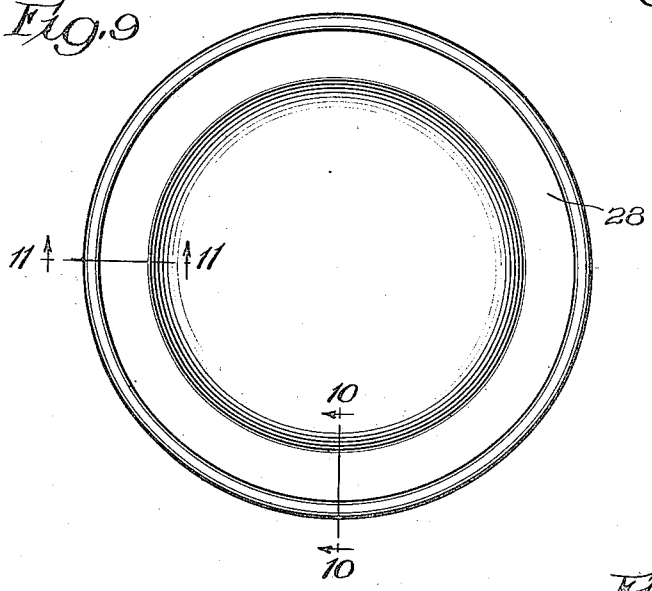


Fig. 10

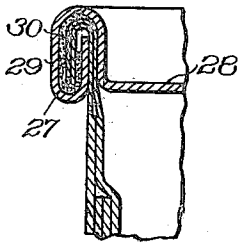
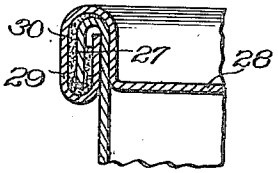


Fig. 11



Inventor:
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By Mudge, Clark & Carpenter Attys.

Patented Oct. 10, 1922. 1,431,228

UNITED STATES PATENT OFFICE.

JOHN G. HODGSON, OF MAYWOOD, ILLINOIS, ASSIGNOR TO AMERICAN CAN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

MANUFACTURE OF CANS.

Application filed April 19, 1920. Serial No. 374,783.

To all whom it may concern:

Be it known that I, JOHN G. HODGSON, a citizen of the United States, residing in Maywood, in the county of Cook and State of Illinois, have invented a new and useful Improvement in the Manufacture of Cans, of which the following is a specification.

This invention relates to receptacles or containers, more particularly to cans of the type wherein the heads or covers have a turned over seam connection with the can body; and the invention has for an object the provision of a construction at the juncture of the body or side seam and the head seam connection with the body, in which the seaming at this point is substantially uniform and of the same degree of tightness as the remainder of the seam, resulting in the elimination of lips or cut overs at the aforesaid juncture points and in practically obviating leakage through the head seam of the can.

In addition to the general object recited above, the invention includes among its objects such other advantages and results as may be found to obtain in the improvements hereinafter described or claimed.

In the accompanying drawings, forming a part of this specification, and showing for purposes of exemplification, a preferred form and manner in which the invention may be embodied and practiced, but without limiting the claimed invention to such illustrative instance or instances;

Figure 1 illustrates the two end portions of a blank from which is formed a can body constructed in accordance with the present invention;

Fig. 2 is a plan view showing the blank with the side seam forming flanges bent into position for subsequent interlock engagement with each other;

Fig. 3 is a section on the line 3—3 of Fig. 1;

Fig. 4 is a section on the line 4—4 of Fig. 1;

Fig. 5 is a section on the line 5—5 of Fig. 1;

Fig. 6 is a section on the line 6—6 of Fig. 2;

Fig. 7 is a horizontal section through the lapping portions at one end of the side seam of a can body;

Fig. 8 is a horizontal section through the side seam of a can body;

Fig. 9 is a plan view of the top of the can;

Fig. 10 is an enlarged horizontal section on the line 10—10 of Fig. 9 illustrating the juncture between the lapping portions of the side seam and a rolled seam connection of the head or top with the body of the can;

Fig. 11 is an enlarged vertical section on the line 11—11 of Fig. 9 showing the rolled seam connection with the main portion of the can body; and

Fig. 12 is an elevation of the lapping portions of the flanged can body.

The same characters of reference indicate the same parts throughout the several views.

In its present embodiment, the invention is applied to cans of the type in which the heads or covers have a rolled seam connection with the can body. For convenience, the present description will be confined to this use of the invention; the invention is however readily susceptible of other valuable applications, for example, it may be applied to receptacles generally; consequently it is manifest that the scope of the invention is by no means confined to the specific use and specific embodiment herein described as an illustrative example.

In the art of sheet metal cans, receptacles, or containers, it has heretofore been the common practice to form the lapping portions of the can body, situated at the opposite ends of the side seam by which the two edges of the blank are joined together, each of the same thickness of metal or other material as the balance of the can body. The result is that a double thickness of metal is present at the opposite ends of the side seam, and when the ends of the can body are flanged, the cover or top applied to the flanged end of the body, and the edge of the cover rolled over with and tucked under such flanged end, the much greater thickness of metal at the juncture between the side and top seams relatively to the juncture between the top seam and the main portion of the main body makes it an exceedingly difficult matter to insure a substantially leak-tight joint at the top of the side seam. There are at the point where the side seam joins the top or rolled over seam two more thicknesses of metal than at other points along the top seam, and the result is that, in rolling over the edge of the can top to form the top seam, lips, cut overs or other imperfections in the joint are formed at the top of the side seam which are attended frequently by leaks.

In accordance with the present invention, a substantially perfect seam is insured at all

points along the top edge of the can by making the lapping portions of the can body at the ends of the side seam in such manner that the combined thickness of that part of those lapping portions which is within the curl of the rolled over or otherwise overturned top seam of the can is substantially the same as or at least not materially greater than the main body portion of the can. The result is that, in turning over the edge of the top to form the seam connection with the end of the can body, the rolls or other seaming devices employed for this purpose encounter a surface which is substantially free from humps clear around the end of the can body and a uniform and even seam free from leaks is formed.

According to the mode of carrying out the invention illustrated in the drawings, there is provided an elongated sheet metal blank 21 which is subsequently rolled into a cylindrical body. One end edge of the blank is provided with two slits 22 which are arranged near the ends of the edge, the other end edge is formed with a flange 23 of a length substantially equal to the distance between the slits 22 and with chamfers or bevels 24 respectively located at the opposite ends of the edge beyond the flange 23. The flange 23 is doubled on the top of the blank to provide an outwardly turned flange which is interlocked with an inwardly turned flange 25 formed by doubling inwardly the edge of the body of the blank between the slits 22, thereby providing lips 26. When the blank is bent into shape to form the cylindrical can body, the flanges 23 and 25 are interlocked and the lips 26 are lapped, in the present instance overlapped, by the chamfered portions 24.

As stated, the present invention is for the particular purpose of obviating an excess of metal at the lapping portions which are located at the opposite ends of the side seam of the can body, the seam formed in the present instance by the interlocked flanges 23 and 25. In order to accomplish this result in a highly satisfactory manner, the chamfered portion 24 and the lips 26 are respectively made of reduced thickness, for example as shown in Figs. 3 and 5, so that when assembled into lapped relation with respect to each other the combined thickness of the two lapping portions is substantially equal to or not greater than the thickness of the main portion of the blank from which the can body is formed. Any suitable form and manner of reducing the thickness of these lapping portions of the can body is within the scope of the invention. In the form shown the chamfered portions 24 and the lips 26 are made of reduced thickness by swedging while the metal forming the can body is in the blank stage, although obviously a thinning operation may take place subsequently in the manufacture of the can body.

The advantageous results accruing from making these overlapping portions of reduced thickness are well illustrated in Figs. 7, 10, 11 and 12. It will be seen that as the combined thickness of the overlapping portions at the end of the side seam of the can body is not greater than the thickness of the blank forming the can body, humps are obviated at the ends of the side seam, there being substantially the same amount of metal between the overturned and inturned portions of the curl of the top seam at this point as at other points along the top seam. Furthermore, simple obtuse angle chamfered portions are satisfactory, it being unnecessary to cut away the extreme corners of the blank at the chamfered portions, as has heretofore been a common practice to lessen the bunching of metal in the lapping portions at the ends of the can body. In the illustrative instance the reduced metal has been swedged to about half thickness, so that in the completed double seam the four half thicknesses and three full thicknesses of interlapped metal have an aggregate thickness (Fig. 10) equal to the five thicknesses of metal in the double seam at other points in the can end circumference (Fig. 11).

After the blank has been rolled into the form above described, its opposite ends are flanged outwardly to form flanges 27. The top 28 may be applied to the end of the can body in any preferred manner. One usual method is to first roll the edge of the can top 28 over and under the flange 27 of the can top and subsequently by another rolling operation to overturn the rolled edge of the can top with the flange 27, to form the rolled and inwardly curled flanging 29 that constitutes the top seam of the connection. If desired a gasket 30 may be interposed between the flanging of the can top and the flanging of the can body.

What is claimed is:

1. A can embodying a body constituted of a sheet, the opposite side edges of which are brought into mutual juxtaposition to form a side seam and having lapping portions, at the opposite ends of said side seam, respectively of reduced thickness relatively to the main body portion, the end of the body including the lapping portions being flanged, and a cover applied to the flanged end of said body and having its edge rolled over with and tucked under said flanged end, substantially as specified.

2. A can embodying a body constituted of a sheet, the opposite side edges of which are brought into mutual juxtaposition to form a side seam and having lapping portions, at the opposite ends of said side seam, respectively of a combined thickness not greater than the thickness of the main body por-

tion, the end of the body including the lapping portions being flanged, and a cover applied to the flanged end of said body and having its edge turned over with and tucked under said flanged end, substantially as specified.

3. A receptacle body constituted of a sheet of receptacle-forming material the opposite side edges of which are brought into mutual juxtaposition to form a side seam and having lapping portions, at the opposite ends of said side seam, respectively of reduced thickness relatively to the main body portion, whereby a cover may be applied to the end of said body and a uniform top seam formed therewith by turning the cover edge over the receptacle body of substantially uniform thickness at its end, substantially as specified.

4. A can body constituted of a sheet of metal, the opposite side edges of which are brought into mutual juxtaposition to form a side seam and having lapping portions, at the opposite ends of said side seam, of a combined thickness not greater than the main body portion, and a flange formed around the end of the can body, whereby a cover may be applied to the flanged end of said body and a top seam formed of uniform thickness by rolling the cover edge over with and tucking it under said flanged end of uniform thickness, substantially as specified.

5. The method of making a can body which consists in forming a blank from a sheet of metal, bringing the opposite side edges of said blank into mutual juxtaposition to form a side seam having lapping portions respectively located at the opposite ends of said side seam, and, during the can body making process, reducing the thickness of said over-lapping portions, so that their combined thickness is not greater than the thickness of the main body portion, to produce a can body having an end of substantially uniform thickness, as described.

6. A side-seamed can-body adapted to be flanged for double-seaming at its end and having the metal at the lapped tip of its side-seam reduced in thickness to render the flanged end of such can-body uniform circumferentially and avoid bulging of the double-seaming, substantially as specified.

7. A sheet metal can body for double seaming, formed of a blank which is bent and the ends of which are lapped, portions of said lapped ends which are to enter the double seam being formed with reduced thickness of metal and the body wall at said portions being of less thickness than twice the unreduced thickness of said sheet metal.

8. A sheet metal can body blank formed at two of its corners, at opposite ends of the same side of the blank, with portions of reduced thickness for overlapping at the part of the blank which is to enter into the double seam, whereby the lapped part of the blank will be of less thickness than twice the unreduced thickness of the metal.

9. The tin can with its wall swedged to a thinner portion at the part where the side seam is to be included in the end seam.

JOHN G. HODGSON.