Dec. 26, 1939. H. A. FINK 2,185,057

SHEET METAL CAN BODY

Filed June 8, 1937

FIG. 1.

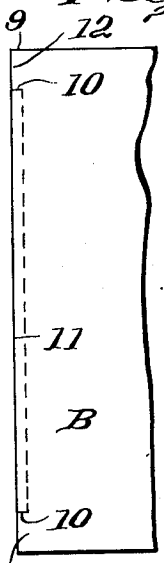


FIG. 2.

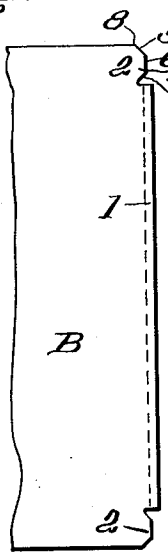
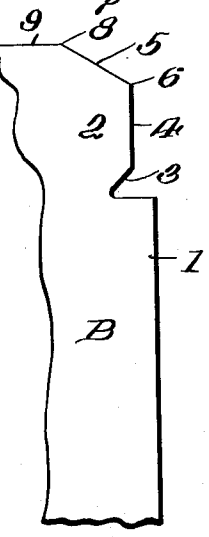


FIG. 2a.



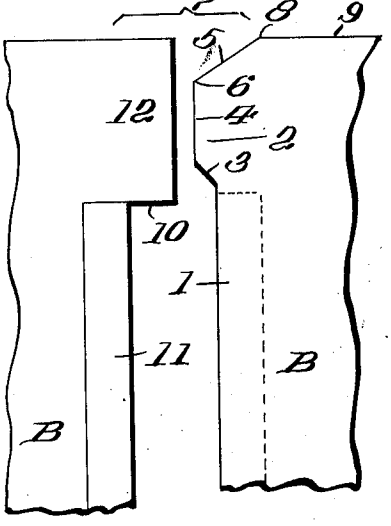


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FIG. 3.

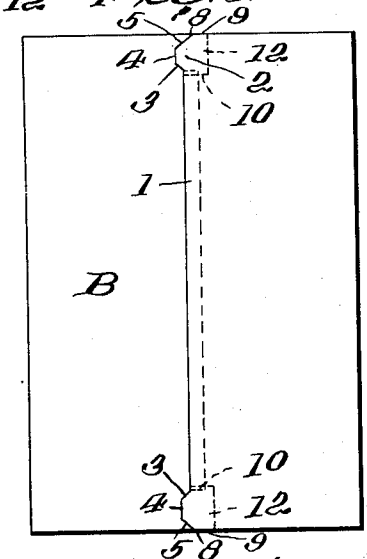


FIG. 4.

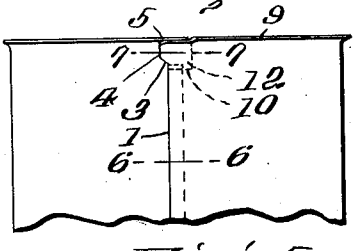


FIG. 5.

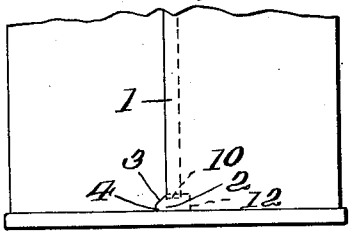


FIG. 8.

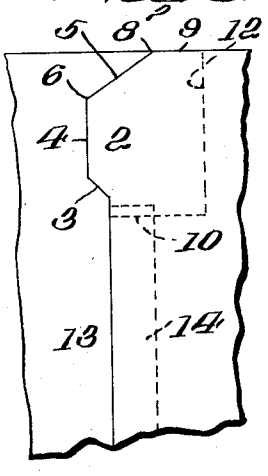


FIG. 6.

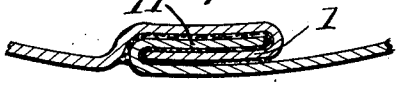
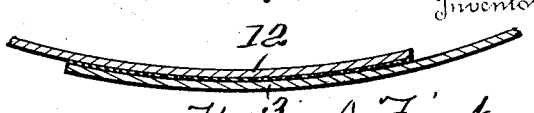


FIG. 7.



Inventor

Henry A. Fink

By Mason & Porter

Attorneys

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UNITED STATES PATENT OFFICE

2,185,057

SHEET METAL CAN BODY

Henry A. Fink, Pelham Manor, N. Y., assignor to Continental Can Company, Inc., New York, N. Y., a corporation of New York

Application June 8, 1937, Serial No. 147,113

1 Claim. (Cl. 220—62)

The invention relates to new and useful improvements in a sheet metal can body, and more particularly to the construction of the side seam joining the ends of the body blank to form the can body.

It is a common expedient to notch a can body blank so as to provide an outer hook which is adapted to be interlocked with the inner hook formed by slitting the other end of the can body blank. When the hooks are formed and the edge portions of the blank joined, there are lap portions at each end of the hooks so as to provide two thicknesses of metal at the ends of the can body to facilitate flanging. It is the usual practice to cut the body blank so that the lap portions extend laterally twice the width of the interlocked hook portions, with one of the lap portions terminating substantially at one side of the interlocked hooks, while the other lap portion extends laterally away from the interlocked hooks.

An object of the present invention is to provide a can body wherein the lap portions are of the usual lateral width of the standard side seam, and wherein the interlocked hooks are reduced in length so that the can body can be made from a blank of less length than the standard blank without reducing the volume of the can formed from the blank.

In the drawing—

Figure 1 is a plan view of a body blank which has been notched and slit ready for the forming of the hooks and the shaping of the blank into a can body;

Fig. 2 is an enlarged view of the notch at the ends of the outer hook of the side seam;

Fig. 2*a* is a view showing the edges of the blank with the hooks shaped preparatory to the interlocking of the hooks;

Fig. 3 is a view of a completed can body, solder bonded, preparatory to the flanging of the same;

Fig. 4 is a view showing one end of the can body flanged;

Fig. 5 is a view showing the lower portion of the can body with the bottom end seamed thereto;

Fig. 6 is a sectional view on the line 6—6 of Fig. 3;

Fig. 7 is a sectional view on the line 7—7 of Fig. 3, and

Fig. 8 is an enlarged detail view of one end of the side seam in the finished can body before it is flanged.

The invention is shown as applied to a cylindrical can body wherein the ends of the body blank are joined by a solder-bonded lock and lap seam. After the edges are joined, the ends of the can body are flanged. The bottom end is double-seamed to one end of the can body and this completes the can body ready for filling. After it is filled, then the other end is double-seamed to the top end of the can body.

The body blank indicated at B in the drawing is cut at one end thereof so as to form an outer hook 1 and outer lap portions 2, 2 disposed at the ends of the hook 1. The notching punch is so shaped that the body blank B is cut along a line 3, which is substantially at forty-five degrees to the edge of the hook 1. This line 3 extends substantially to the base of the hook, so that at each end of the hook 1, there is a V-shaped cut-away portion. As shown in the drawing, the body blank is also cut along the line 4 to form the lap section 2. This line 4 is so disposed that the lap section extends laterally to one side of the interlocked hooks a distance which is approximately half the length of a hook. This is clearly shown in Figures 2 to 5 of the drawing. The body blank is also cut along the line 5. This line extends from a point 6 which is located at the end of the line 4 and substantially at the base of the flange. After the can body is formed, it is flanged as indicated at 7 in the drawing, and the base of the flange is where the body wall begins to curve outwardly into the flange. This flanging is of the usual form and is well understood. This line 5 extends from the point 6 to the point 8. The point 8 lies in a line at the side of the side seam and also in a line containing the end edge 9 of the body blank, which is the end edge of the can body when it is completed.

Both lap portions 2, 2 are similar in construction, and a description of one will answer for the other. The other end of the blank is provided with slits 10, 10. These slits form the inner hook 11 and lap portions 12, 12. The lap sections 12, 12 extend the full depth of the hook 11. The outer ends of the lap sections 12, 12 lie in a line containing the edge 9 of the blank, and this forms the end edge of the can body. After the blank is formed in the manner above described, then the hook 1 is turned so as to form the outer hook of the side seam which is the hook carried by the outer lapping section of the can body wall. The blank is also turned so as to form the inner hook 11. In Figure 6 of the drawing, the hooks are shown interlocked. In Figure 7 of the drawing, the relation of the lap sections 2 and 12 are shown, after the hooks are interlocked, bumped and solder bonded.

Figure 8 is an enlarged detail of the side seam from the outside of the can body. One side of the side seam is defined by the line 13 and the other by the broken line 14. These lines 13 and 14 designate the extent of the interlocked hook portions of the side seam. The lap portion 2 at the outside of the can body extends laterally to the left of the hook portions as viewed in Figure 8, and the lap portion 12 at the inner side of the can body extends to the right of the interlocked hooks as viewed in this figure. The lap portion 2 extends laterally a less distance than the lap portion 12, but the lap portions are so disposed relative to the interlocked hooks that they extend to both sides of the limits of the side seam as defined by the interlocked hooks.

The lateral extent of the lap portions is substantially the same as in the standard can body. The length of the hooks, however, are very much less than in the standard can body. In other words, by the construction above described, the length of the interlocked hooks can be made much less than the length of the standard hooks in a side seam without decreasing the extent of the lap portions. This results in a great saving of metal without reducing the volume of the completed can. It is also found that the strength of the side seam is even greater. The lap portions are of substantially the same extent as in the standard can. When the hooks are made shorter, there is less leverage tending to cause the hooks to hinge and rupture the solder bond.

When the outer lap portion 2 is cut along the line 5 as described above, the strain on the solder bond incident to flanging is distributed so that there is less likelihood of rupturing the solder bond in the lapping portions. The lap portion 12 is contacted directly by the flanging die and it is forced against the lap portion 2, and during flanging there is less likelihood of rupturing the solder bond at the right of the lap portions as viewed in Figure 8. By cutting the metal along the line 5, the strain on the solder bond incident to flanging progressively changes, and therefore, the solder bond will not be ruptured along this line. By this shaping of the lap portions, a maximum extent of solder bond is obtained in the lap portions without causing said solder bond to be subjected to strains which are likely to rupture the same.

The purpose of the V-notch between the lap section 2 and the inner hook 1 is to give clearance between the end of the hook and the lap to facilitate the forming of the metal to form the hook and to permit the solder to flow readily under the lap and into the end of the side seam hooks to fill up the void at this point. In other words, these V-notches help in the forming of the hooks and the soldering of the side seam and the lap.

From the above it will be apparent that a can body having the same volume as the standard can body with the improved side seam described above, can be made from a blank which is of considerable less length, and thereby a great saving is made in the sheet metal necessary to produce the can body. This has been accomplished by reducing the length of the interlocked hooks only, and the arrangement of the hooks in the side seam so that the lap portions extend laterally at both sides thereof.

It is obvious that minor changes in the shaping of the parts and the arrangement of the hooks and the lap portions can be made without departing from the spirit of the invention as set forth in the appended claim.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is—

A sheet metal can body comprising a metal blank formed into cylindrical shape and having the side edge portions of the blank joined by a solder bonded side seam, said side seam including inner and outer hooks interlocked with each other, said hooks being relatively short as compared with the standard hooks of a lock and lap seam can body, and lap portions at the ends of the hooks, the inner lap portion being extended laterally beyond the limits of the interlocked hooks a distance equal to substantially the length of the inner hook and having its side edge substantially parallel with the edges of the hooks, the outer lap portion being extended laterally beyond the limits of the side seam at the other side thereof from the first lap portion and to a distance equal substantially to one-half of the length of the outer hook and having its side edge substantially parallel with the edges of the hooks, and its outer edge inclined and intersecting the edge of the can body in a line within the limits of the hook portions of the side seam, and having its inner edge inclined in the opposite direction and extending from the side edge of the lap portion to the base of the outer hook.

HENRY A. FINK.