No. 875,317. PATENTED DEC. 31, 1907.

J. BRENZINGER.

SHEET METAL CONTAINER.

APPLICATION FILED DEC. 24, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

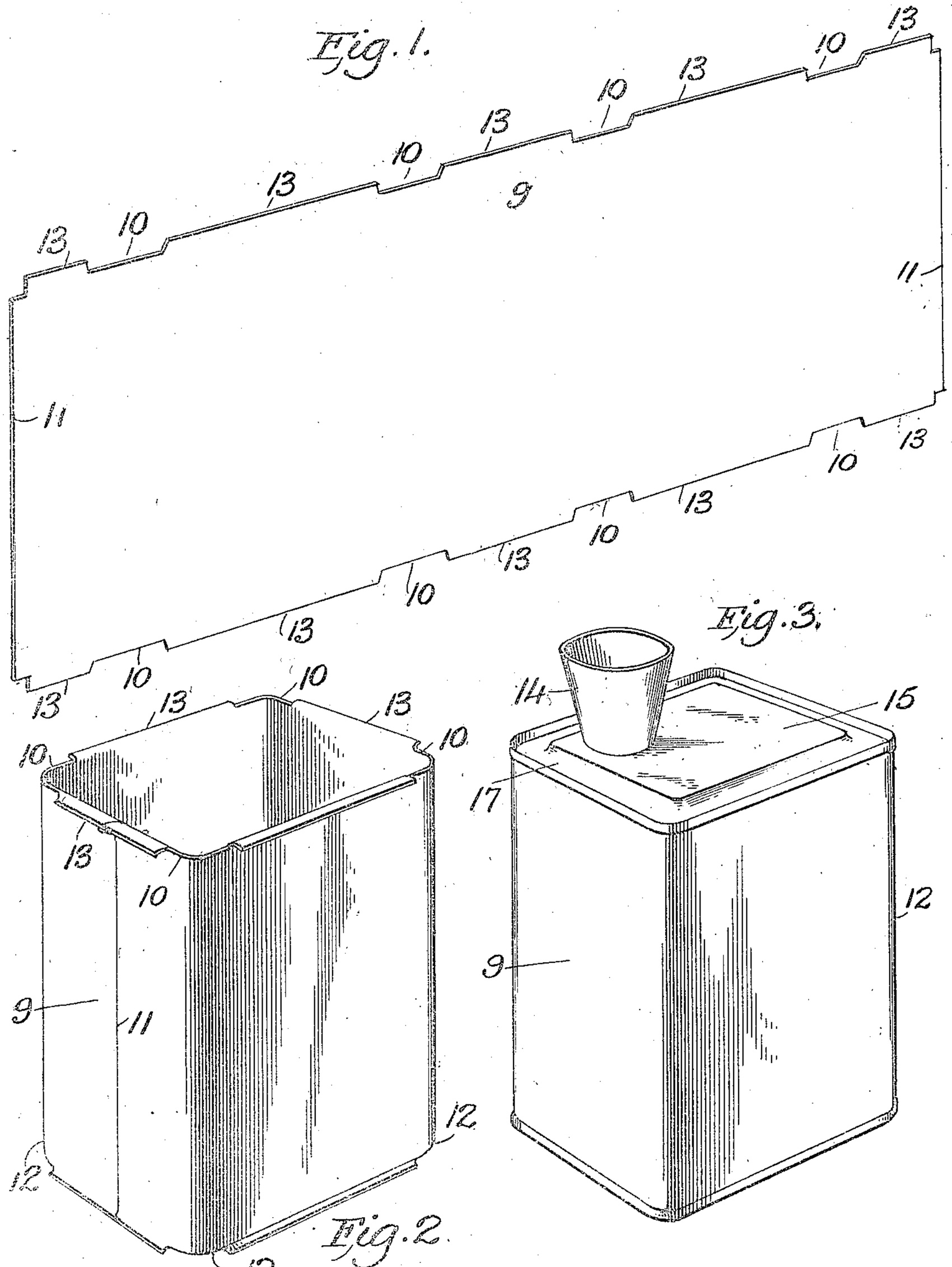

Fig. 2.

Fig. 3.

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2 SHEETS—SHEET 2.

Fig. 7.

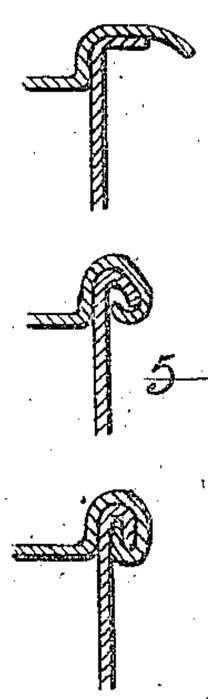


Fig. 4.

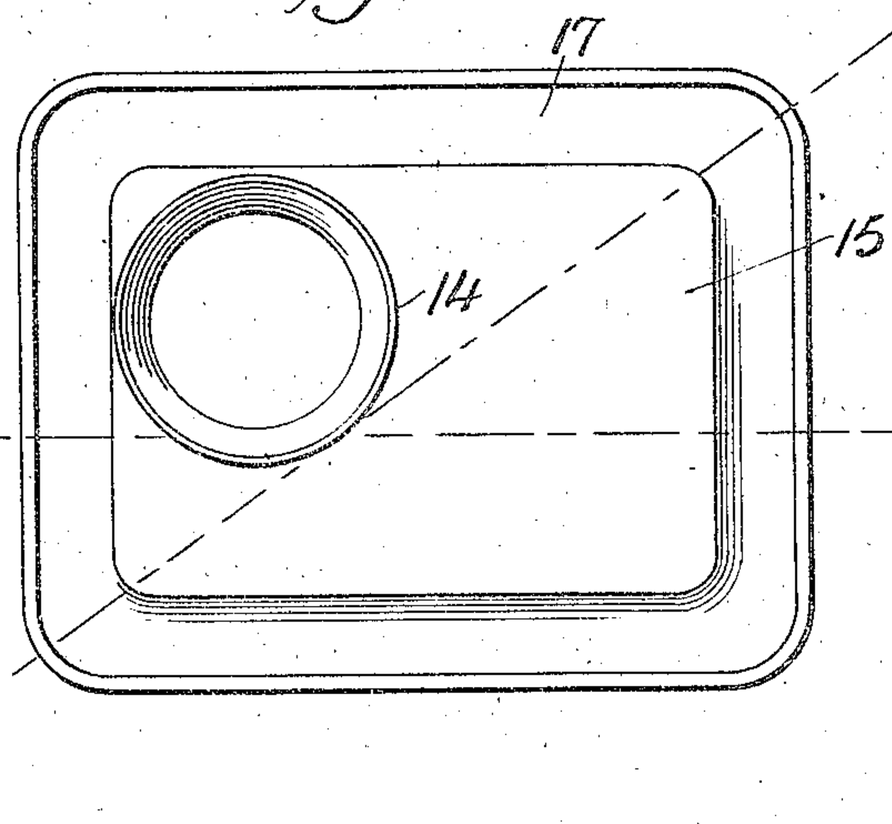


Fig. 8.

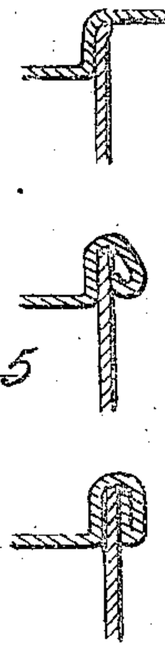


Fig. 5.

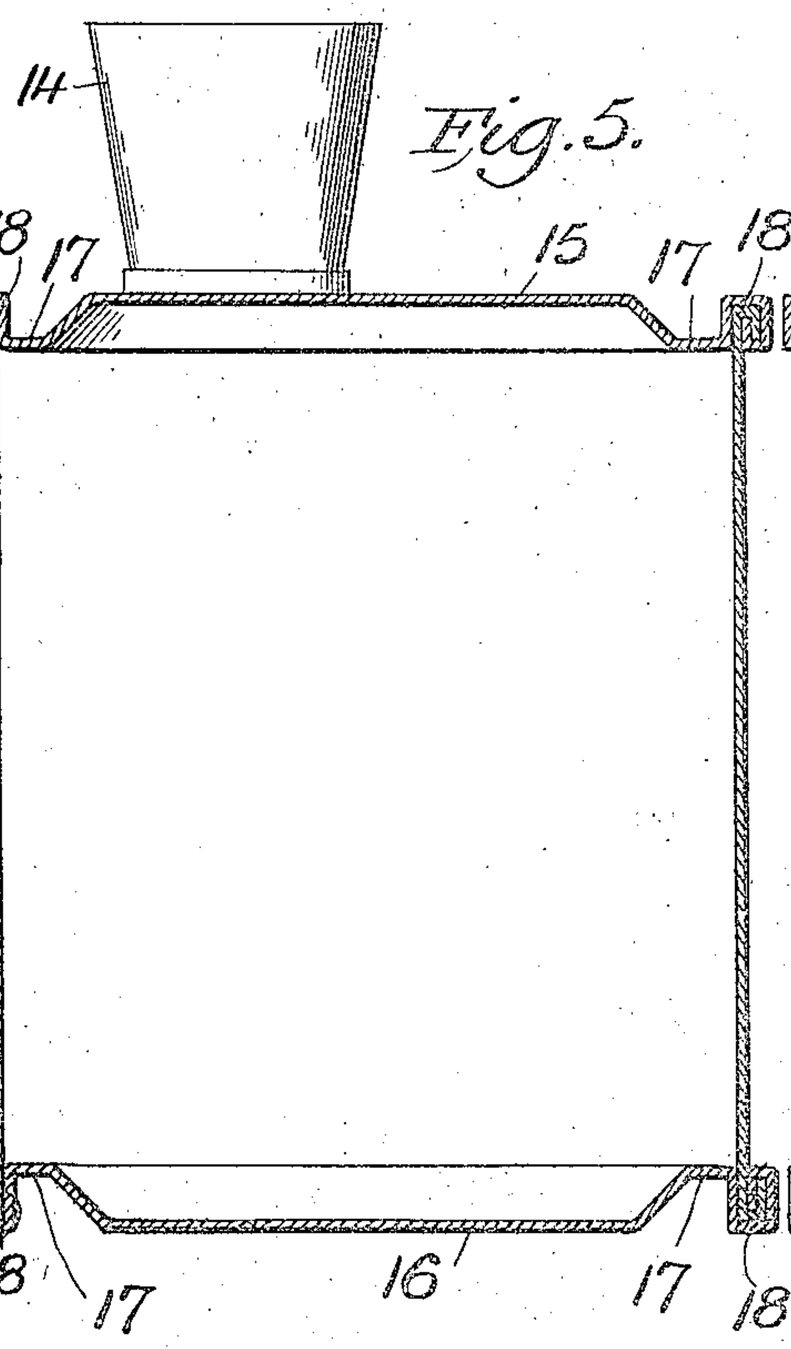
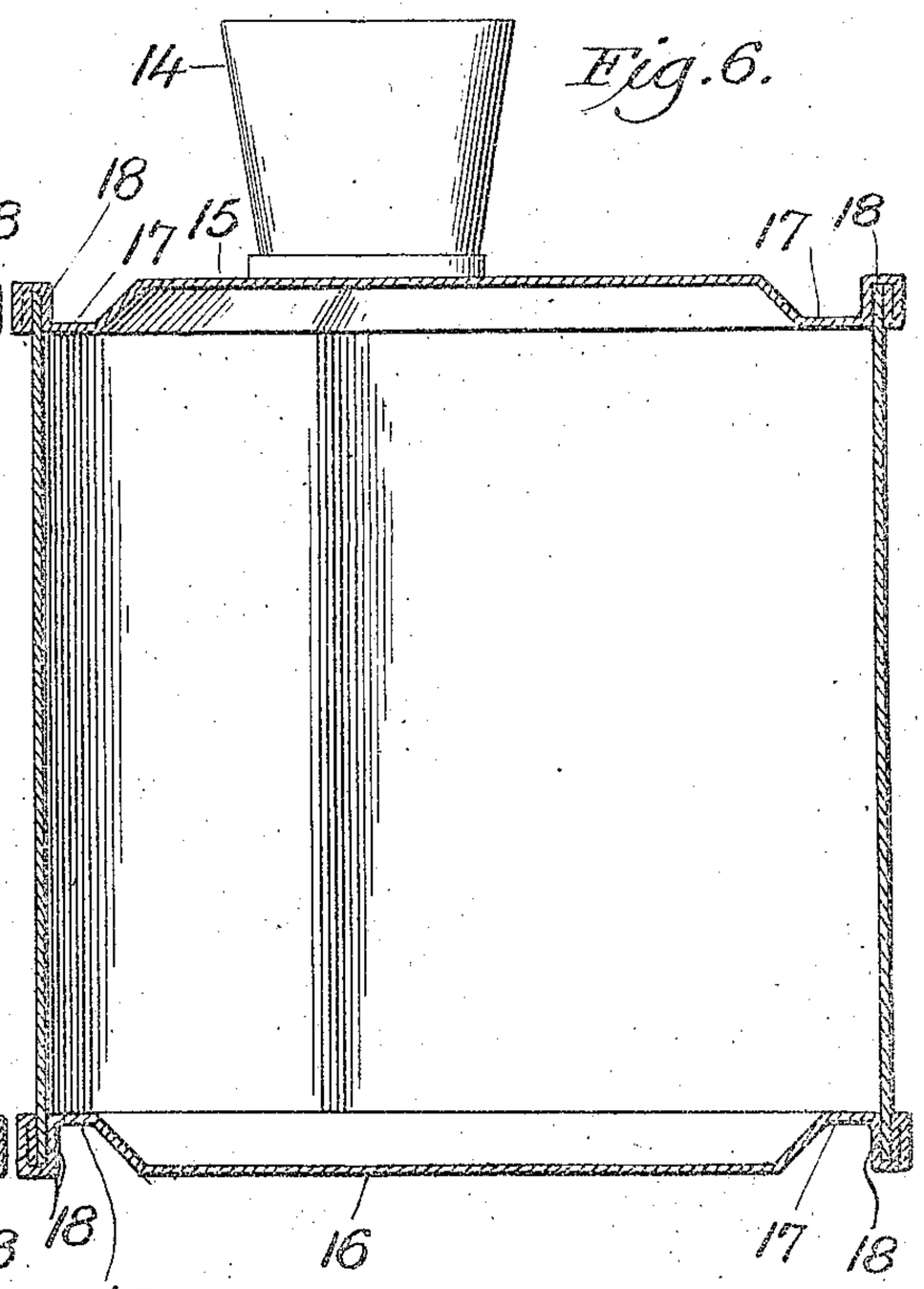


Fig. 6.



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UNITED STATES PATENT OFFICE.

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SHEET-METAL CONTAINER.

No. 875,317. Specification of Letters Patent. Patented Dec. 31, 1907.

Application filed December 24, 1906. Serial No. 349,231.

To all whom it may concern:

Be it known that I, JULIUS BRENZINGER, a citizen of the United States, residing at Mount Vernon, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Sheet-Metal Containers, of which the following is a specification.

This invention relates to sheet-metal containers, such as are known in general parlance as "tin cans", and more particularly to improvements in the construction of the body portion of such containers.

In the manufacture of the ordinary cylindrical or "round" cans, there is little difficulty in securing a strong and tight joint between the top or bottom and the side walls of the can, either by the old process of soldering or in the more modern manner of double-seaming. For many purposes, however, cans of substantially rectangular configuration, generally referred to as "square" cans and preferably having rounded corners, are considered more desirable. While the tops and bottoms of the so-called "square cans" may be readily secured and sealed to the previously-formed side walls in the old manner of soldering, true double-seaming is more difficult—if possible at all for commercial purposes in a machine-made can.

In the manufacture of "round" cans, the cylindrical can-body is first formed from a suitable blank, after which a flange is turned at the top and bottom edges thereof. In the double-seaming operation, this flange is rolled or folded to interlock with the edge of the top or bottom disk, which is compressed therewith into a substantially solid bead comprising portions of both sides and ends. This flange, prior to the double-seaming operation, projects rectangularly outward, from the can body, and while such a flange may readily be turned at the edges of a cylinder of sheet-metal, where the curvature is gentle, it cannot be so turned at sharply rounded corners where the abrupt edge-wise bend of the metal will fracture the same—objectionable for obvious reasons when the purposes of double-seaming are considered. It would be similarly impracticable to attempt to flange the blank before the latter has been formed into a substantially rectangular can-body, in-as-much as the operation of forming a flanged blank would result in the same—or even more pronounced—edge-wise bend of the metal strip constituting the flange and ultimate fracture thereof. The difficulties incident to double-seaming in the manufacture of "square" cans, in the generally-accepted means of true double-seaming, will be therefore apparent.

In true double-seaming, as is well known, there is positive interlocking between top (or bottom) and sides, and, when properly formed and compressed, soldering is unnecessary. A true double-seam, for many reasons, is preferred to any form of soldered joint, but in the production of rectangularly-shaped can-bodies true double-seaming is, as explained, impracticable. Heretofore, therefore, what is known as false double-seaming has been resorted to in cans of this configuration, in which, instead of providing a body-flange which enters the hook formed by the interiorly-turned edge of the top or bottom and by the double-seaming operation becoming interlocked therewith, the folded or hooked edge of the top or bottom is folded down against the sides of the can-body and compressed thereagainst, the joint being made tight and strengthened by soldering.

The present invention contemplates a structure wherein the integral side walls of a substantially rectangular can-body are joined to the top and bottom or end portions by double-seaming along contiguous edges which form substantially right lines, and at the rounded corners alone by false double-seaming, the latter with or without soldering. In this manner, I not only strengthen by true double-seaming the flat sides of the can, ordinarily the weakest parts of the walls and consequently, therefore, of the joint, resorting to false double-seaming at the corners only, which are naturally stronger and more rigid on account of the curvature, but I may utilize the same machine and the same operation to effect both forms of connections.

My invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, in which I have selected for the purposes of illustration and shown a well-known form of rectangular-shaped, round-cornered can, and in which

Figure 1 is a perspective view of a blank from which the body of the can may be formed; Fig. 2 is a perspective view of the formed can-body, before the top and bottom,

or end portions, have been applied thereto; Fig. 3 is a perspective view of the completed can; Fig. 4 is a top plan view of Fig. 3; Figs. 5 and 6 are vertical sections taken, respectively, on the lines 5—5 and 6—6 of Fig. 4, and Figs. 7 and 8 are detailed sectional views illustrating the successive steps of the true double-seaming and the false double-seaming processes, respectively.

Referring now to the drawings in detail, numeral 9 refers to a blank cut to proper size and configuration from suitable sheet-metal, such as tin plate. As shown in Fig. 1, this blank 9 is of rectangular configuration, and is provided with a series of recesses 10 10 in each of the opposite longer edges thereof. This blank 9 is adapted to be formed into the body portion of the can, the shorter edges 11 11 thereof being joined in any suitable manner, either by a soldered lap-seam, as shown, or by a side lock-seam, if desired, as would be possible in a can embodying my invention.

As shown in Fig. 2, the can-body is designed to be of substantially rectangular configuration, with rounded corners 12 12, and to this shape the blank 9 is formed, the recesses 10 10 being so spaced in the blank as to be symmetrically located at the corners of the can-body when formed, and the length of each recess being substantially equal to the arc of curvature at the rounded corner. The cutting of these recesses 10 10 leaves the series of projecting portions 13 13 of the edges, which are, in the forming operation, bent over substantially at right angles to the sides of the can-body to form flanges which extend throughout the straight portion only of each side edge. In other words, both top and bottom edge is provided with a flange which is cut away at the rounded corners. The can-body is now ready for the application of the top and bottom, or end portions. It being of the essence of my invention to avail myself, in the manufacture of "square" or rectangular cans, so far as possible, of the advantages of double-seaming, I employ for these end portions formed plates similar in all except configuration to the top and bottom disks which are double-seamed to the body portions of the ordinary "round" cans. With the exception of the aperture for the spout or neck 14, the top plate or end portion 15 is similar in all respects to the bottom plate or end portion 16, each being of rectangular configuration, with corners rounded to correspond to the rounded corners of the can-body, the dimensions of each being such that when applied to the can-body, in proper position, prior to the double-seaming operation, its edges project a suitable distance beyond the edges of the flanges 13 13, in order that the former may be folded under the latter, as illustrated in Fig. 7, and each being provided with the channel or depression 17 forming the shoulder 18 against which the rim of the can-body is compressed by the sealing or double-seaming operation.

Double-seaming machines are well known in the art, and need not be described in detail here. When the body and one of the end portions of my can are subjected to the action of such a machine, it will be apparent that where the edge of the plate 15 (or16) overlies one of the flanges or flange portions 13, the well-known true or "regular" double seam will result, the steps in the process of involution of the superposed edges being clearly shown in Fig. 7. At the rounded corners, where the flange 13 is absent and the plate 15 (or 16) merely projects transversely across the substantially vertical edge of the can-body, the same machine, in the same operation, will merely downwardly and inwardly roll or fold the edge of the plate 15 against itself, the steps in this process being shown in Fig. 8.

Solder may be applied to the false double-seams, if desired, but in-as-much as true double-seaming forms much the greater portion of the joint, and by its interlocking structure insures strength and rigidity throughout the whole connection including the false double-seamed portions thereof, it is not thought that under ordinary conditions soldering would be necessary.

It will thus be apparent that my invention enables me, in the production of the so-called "square cans," to avail myself of all of the advantages of double-seaming, with none of the disadvantages attendant upon an attempt to provide a continuous flange at the end of a can-body having sharply rounded corners. Particular attention is called to the fact that by limiting the true double-seaming to the straight side edges only, it is possible to form the flanges while the sheet is in the blank, or flat, before the blank is formed into the can-body.

Fig. 5 being a vertical section through the sides of the can-body, where the flanges 13 are present, and Fig. 6 being a section through the corners, where said flanges are absent, these figures serve to clearly bring out the differences in the character of different portions of the same joint, the result of the same operation. In these figures I have, for the purposes of illustration, greatly exaggerated the thickness of the metal and the comparative size of the seam or bead.

Many modifications of minor details of my improved can will doubtless readily suggest themselves to those skilled in the art to which it appertains, and I therefore do not desire to limit my invention to the specific construction herein shown and described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A sheet-metal container having an end portion secured to the body portion thereof

by a joint consisting of both true and false double-seams.

2. A sheet-metal container of substantially polygonal cross-sectional configuration, with rounded corners, having an end portion joined to the body portion or sides by true double-seaming along right lines and false double-seaming on curves.

3. A sheet-metal container comprising a body portion formed from a suitable blank which provides at one end of said body portion a flange which is cut away at intervals, and an end portion secured to said body portion by a double-seaming operation, whereby the double-seam is false where said flange has been cut away.

4. A sheet-metal container comprising a blank bent into a body portion of substantially polygonal cross-sectional configuration, with rounded corners and flanges projecting from the straight side edges only of an open end of said body portion, and an end portion secured thereto by a double-seaming operation, whereby the resulting double-seam is false at the rounded corners.

5. A sheet-metal container comprising a blank bent into a body portion of substantially rectangular cross-sectional configuration with flanges at each end which do not include bent portions of said body, and end portions each secured to said body portion by a double-seaming operation.

6. A sheet-metal container comprising a blank bent into a body portion of substantially rectangular cross-sectional configuration, with rounded corners and flanges at each end projecting from the straight side edges only, and end portions the edges of each of which are folded under said flanges and compressed therewith into a bead, whereby, at said corners, the edge of the end portion is folded upon itself and pressed against the side of said body portion.

In testimony of the foregoing, I have hereunto set my hand in the presence of two witnesses.

JULIUS BRENZINGER.

Witnesses:
T. E. WEEMS,
M. F. DICKEL.