No. 770,948. PATENTED SEPT. 27, 1904.

B. ADRIANCE & A. CALLESON.

METHOD OF MAKING SHEET METAL BOXES OR CANS.

APPLICATION FILED OCT. 24, 1903.

NO MODEL.

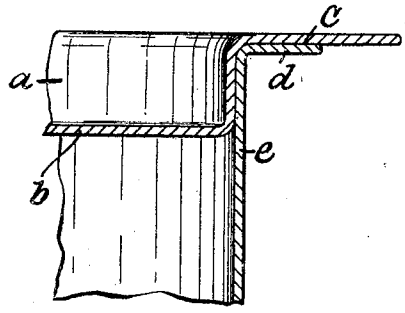

Fig. 1.

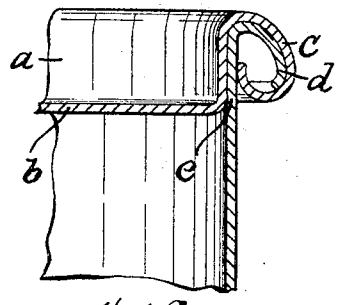

Fig. 2.

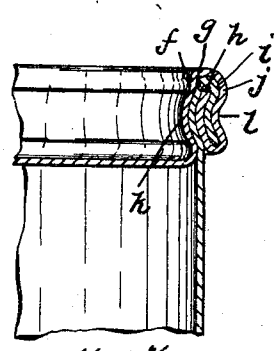

Fig. 3.

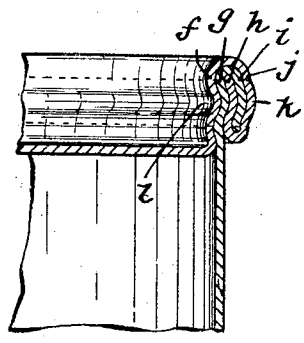

Fig. 4.

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No. 770,948. Patented September 27, 1904.

UNITED STATES PATENT OFFICE.

BENJAMIN ADRIANCE AND AMOS CALLESON, OF NEW YORK, N. Y.; SAID CALLESON ASSIGNOR TO SAID ADRIANCE.

METHOD OF MAKING SHEET-METAL BOXES OR CANS.

SPECIFICATION forming part of Letters Patent No. 770,948, dated September 27, 1904.

Application filed October 24, 1903. Serial No. 178,381. (No model.)

To all whom it may concern:

Be it known that we, BENJAMIN ADRIANCE and AMOS CALLESON, citizens of the United States, residing in the borough of Brooklyn, in the city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Methods of Making Sheet-Metal Boxes or Cans; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to the formation of seams or joints for cans or other sheet-metal vessels, and it has reference particularly to seams or joints of such vessels formed, say, between the body portion of the vessel and its head.

The object of the present invention is to provide a seam for sheet-metal vessels which is not only perfectly hermetic and able to withstand almost an unlimited amount of bending, such as attends transportation, &c., without the seal which it forms being broken, but able to be produced by the use of simple expedients without undue wear and tear on the forming mechanism and rapidly, so as not to interfere with the vessels being produced in large quantities in a given time.

In carrying out this invention it should be understood that we start with the parts to be joined so formed that the portions thereof to form the joint will when properly assembled lie in plain laminated disposition. For instance, assuming that it is a can-body and the head thereof between which the joint is to be formed, the edge portion of the body primarily stands as a flange lying in a plane substantially at right angles to the main portion of the metal forming the body, while the corresponding edge portion or flange of the head lies flat against the flange of the body. The uppermost one of the two edge portions preferably extends farther than the other, as in the adaptation hereinafter particularly set forth as an example. Said edge portions are then rolled, so that the outermost one incases the other edge portion having its extreme edge projecting up in between said other edge portion and the member of which the latter forms a flange, whereupon the whole is compressed, so that all the layers thus brought into intimate relation with each other are compactly associated and every possible interstice prevented from forming. Furthermore, and this is an essential part of the invention, the roll thus produced is turned out with a bend formed transversely thereof, the effect being that on one side of said roll there is produced a longitudinal bead, while on the other side there is produced a corresponding longitudinal channel extending clear around or continuously in the roll.

Preferably the process above outlined is carried out by first rolling the outer flange around the other sufficiently to interlock the head and body and then in a single operation and by a single means effecting the compression and the continuous channeling of the roll.

One adaptation of the invention will be found fully illustrated in the accompanying drawings, wherein—

Figure 1 shows in section a sheet-metal can body and head formed and assembled preparatory to the forming of a joint. Fig. 2 shows in section said can body and head after their edge portions have passed through the first stage of the operation and been left interlocked; and Figs. 3 and 4 show in section said can body and head after the joint has been completed, Fig. 3 showing the bend above mentioned as extending in the opposite direction from that in which it extends in Fig. 4.

The parts being formed and assembled substantially as in Fig. 1, they are by suitable mechanism shaped as in Fig. 2. It is preferable that the head *a* be of the type in which the disk portion *b* thereof is set back, so that the finished joint makes a longitudinally-projecting flange on the can, and a working grip for the joint-forming means is afforded. At the completion of the first stage in the operation—namely, where the parts are left formed

as in Fig. 2—the flange *c* of the head and that, *d*—of the body stand rolled, preferably, outwardly, forming substantially a tube. One of the flanges (*i. e.*, flange *c* if the flanges are rolled outwardly, as shown) being much the wider of the two flanges is rolled around flange *d*, and its edge projects up in between the body-wall *e* of the can and flange *d*. Having been formed as in Fig. 2, the parts are shaped as in Fig. 3 or Fig. 4, where the joint is shown as completed. The roll has been compressed, so that the several layers *f g h i j*, which go to make up the joint, are compactly associated, practically even the minutest interstice being eliminated. The thus compressed roll has been transversely bent approximately centrally, so that on one side of the joint a bead *k* is formed, while on the other side a channel *l* is formed, the bead and the channel extending continously longitudinally of the seam. In Figs. 3 and 4 the positions of the bead and channel are relatively reversed.

The operation whereby the joint takes on the form illustrated in Figs. 3 and 4 is preferably one in which the forming mechanism acts to both compress and shape the joint (that is, bend the joint transversely) simultaneously. It is better for several reasons to effect this shaping or transverse bending of the joint at the same time that it is compressed. It is obvious that the joint, as it stands in Fig. 2, will yield more readily to the transverse bending effect than it would if subjected to this transverse bending effect after its layers are compactly compressed. The result is that not only are the full effects of the transverse bending of the joint attained, but less wear and tear on the forming mechanism is involved.

A joint or seam for sheet-metal vessels formed after the manner herein indicated will be found not only to be proof against leakage as the can issues fresh from the forming mechanism, but able to resist leakage after being considerably bent or misshapen by rough handling.

The term "roll" herein used is intended to broadly define any structure wherein the edge portions of the two bodies between which the joint is formed are after assemblage ready for jointing, as described, bent over until the extreme edge of the relatively outermost one stands in between the edge portions and said bodies.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The method of forming a solderless joint between edge portions of sheet-metal bodies which consists in first disposing said edge portions in laminated arrangement and so as to project in the same direction, then bending said laminated edge portions longitudinally and over toward one of said bodies into the form of a roll, and then pressing said roll and the adjacent portion of said body as to the whole width of said roll into a longitudinally-grooved form, substantially as described.

2. The method of forming a solderless joint between edge portions of sheet-metal bodies which consists in first disposing said edge portions in laminated arrangement and so as to project in the same direction, then bending said laminated edge portions longitudinally and over toward one of said bodies into the form of a roll, and then compressing said roll and the adjacent portion of said body and simultaneously forming in the portion of the metal being compressed a longitudinal intermediate channel, substantially as described.

3. The method of forming a solderless joint between edge portions of sheet-metal bodies which consists in first disposing said edge portions in laminated arrangement and so as to project in the same direction, then bending said laminated edge portions longitudinally and over toward one of said bodies into the form of a roll, and then compressing said roll and the adjacent portion of said body and simultaneously forming in one side of the metal being compressed a longitudinal intermediate channel and on the other side thereof a corresponding longitudinal intermediate bead, substantially as described.

In testimony that we claim the foregoing we have hereunto set our hands this 19th day of October, 1903.

BENJAMIN ADRIANCE.
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Witnesses:
HENRY A. PHILLIPS,
W. J. HORN.