E. T. COVELL.

Manufacture of Sheet-Metal Cans.

No. 204,656. Patented June 11, 1878.

Fig. 1.

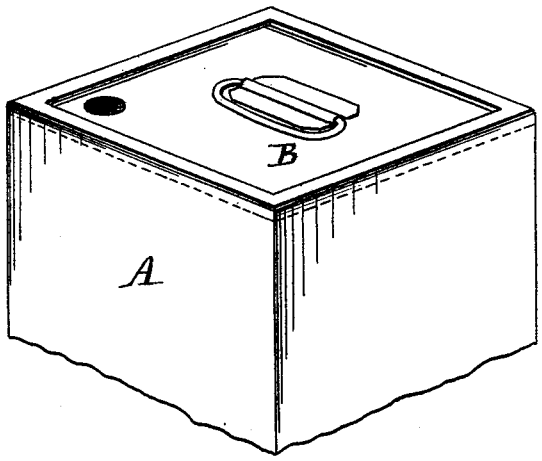
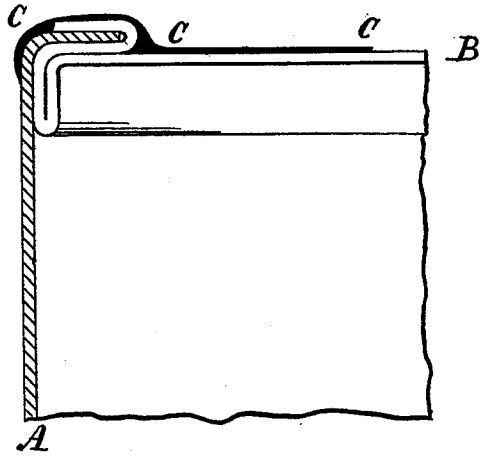


Fig. 2.



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UNITED STATES PATENT OFFICE.

EDWARD T. COVELL, OF NEW BEDFORD, MASSACHUSETTS.

IMPROVEMENT IN MANUFACTURE OF SHEET-METAL CANS.

Specification forming part of Letters Patent No. **204,656**, dated June 11, 1878; application filed May 17, 1878.

To all whom it may concern:

Be it known that I, EDWARD T. COVELL, of New Bedford, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in the Manufacture of Sheet-Metal Cans, which improvement is fully set forth in the following specification.

This invention relates to a method of closing certain seams of metal cans, whereby a neat hermetically-tight and expeditiously and easily made joint is obtained; and also, incidentally, to a novel construction of cans, whereby a notable economy in their production, and other advantages in point of strength and durability, are secured.

For the elucidation of my said invention it is unnecessary to enumerate the different methods heretofore employed to unite the heads with the body of cans. It will suffice to say that whatever method may have been employed, the finishing operation has always been the making of the seam or joint, however formed, liquid and air tight by solder, which has been applied either by means of soldering irons or coppers, or by immersing the seamed ends of the can in a bath of molten solder. Of course, according to the seam, either or both modes of applying the solder may be employed; but, as a general thing, the immersion process involved a peculiar construction of can body and head and a peculiar mode of union of these parts, a construction known as the "sunken-head plan"—that is to say, a plan which admits of the immersion of the seam to the exclusion of the head proper.

The immersion process has also heretofore been employed for the tinning (or galvanizing, as it is sometimes improperly called) of open metallic vessels, the several parts of which are united by a seam, to be afterward hermetically closed. The immersing of such vessels in a bath of molten metal has for effect the filling of the seam-joints with, and the retaining therein of, the molten metal, which, on cooling, forms a solid film of metal, impenetrable by air or liquid. The vessels thus tinned or galvanized had but one head or bottom, and were calculated to receive by such immersion a coating both inside and outside. Such vessels were the well-known slop-pails, coal-scuttles, hand-basins, &c.

My invention has for its object, and consists in, the adaptation of the immersion process to the manufacture of sheet-metal cans having two heads, united with a metallic body by means of a suitable seam.

The manner in which the same is or may be carried into effect and its purposes will more fully appear from the following description.

The body of the can is made of a sheet of tin, or tinned iron, in the manner that has heretofore been practiced in the manufacture of sheet-metal cans. For this purpose I use the tin-plate of commerce, which can be had of suitable or convenient size, and cut and trim and bend the same so as to make a quadrangular prismatic body. The ends of the sheet of tin are united by lap or hook joint, or seam, or otherwise, and soldered. The heads, instead of being made of tin or tinned iron, I make of sheet-iron—that is to say, of iron plates, or bundle-iron of commerce, which are neither tinned nor coated with any other metal, but are properly cleaned with acids preparatory to being coated or tinned.

When the heads are properly cut or stamped and securely united with or fastened to the body, they are covered with flux to receive the coating metal, and immersed in a bath of molten tin, lead, solder, or other fusible metal, care being taken to immerse as little as possible the tinned part or body of the can.

The kind of seam best adapted for the union of the body with the heads of the can to be finished in accordance with my said invention will readily suggest itself to any competent person. I prefer, however, such as those for which Letters Patent of the United States were issued to me on the 7th day of September, 1875, or to Charles P. Maxfield, on the 6th day of November, 1877, in which the seam to be closed by solder is securely and rigidly and compactly fastened onto the head.

Cans with seams formed of head-flanges turned over the ends of the body, forming, as it were, a contracted cap over it, as well as cans with heads which are sprung onto the body, could not be practically finished by the method described, because of the expansion and contraction to which the heads would be subjected during and after the immersion process, and whereby they are liable to become

loose and sometimes fly or are thrown off their bodies.

In proceeding in the manner indicated, it will be understood that the heads will be tinned or coated with metal on one—*i. e.*, the outer—side only, and the following advantages will be secured:

First, soldering is entirely dispensed with, since the tinning or coating of the iron heads after the same are united with their respective bodies incidentally closes and seals the joints by allowing the molten metal to penetrate the minute interstices of the seam-joint, and there remain, filling the joint and hermetically and permanently closing it, as before stated.

Second, a large percentage of tin which would be necessary to cover the interior surfaces of the heads is saved.

Third, the use for the heads of untinned iron enables me to employ sheet-iron, that is supplied to the market in bundles at very low prices as compared with "dimension tin," which comes in boxes, and which cannot always be readily found in the market.

Fourth, the saving in cutting out the head-blanks is by no means inconsiderable. The large amount of waste which is necessarily formed if it were covered with tin could only be utilized by an expensive process to recover or reclaim the tin from the scrap. By my invention this is saved, as no waste of tin-scrap is produced.

Fifth, inasmuch as most, if not all, the box-tin of commerce is an article of importation, large amount of duty is saved, and to that extent home industry fostered.

Sixth, in using iron, a much stronger article can be used for heads, which imparts to the can greater strength and rigidity.

In the drawing, I have shown in Fig. 1 a perspective view of the upper portion of a can made in accordance with the Maxfield patent, before referred to, and finished in conformity with this my said invention.

Fig. 2 is a sectional view of part of the body and part of the head united and finished.

In said drawing the tin body A is marked in cross-section lines; the sheet-iron head B is left, to distinguish the same, without section-lines, and the tin coating C upon the head and seams is represented in solid black, exaggerated in thickness.

In conclusion, I would observe that no particular instruction appears to be needed for the practical carrying out of the immersion process. Any intelligent and competent person will soon acquire the necessary experience to conduct this operation properly. It may, however, not be amiss to mention that, inasmuch as the cans are light and float upon the surface of the molten metal, but little or no force is needed to dip them. Still, in order to have the coating accomplished perfectly along the entire surface, without air-bubbles appearing on the surface, I generally dip the heads slantingly—that is to say, they are entered in the molten mass on one side first, and are then gradually righted until the whole head-surface is progressively brought below the level of the bath. In this proceeding the air is gradually expelled from below the head, and the molten metal will adhere to or form the body with the iron heads.

To facilitate the immersion process, suitable apparatus may be employed—for instance, the bath may be provided with or contain a support for the cans to be dipped, and this support may be made adjustable, to regulate the depth of immersion.

Having thus described my said invention, what I claim, and desire to secure by Letters Patent, is—

1. As a new article of manufacture, a can composed of a body made of a sheet or sheets of iron tinned on both sides, and of two heads made of sheets of iron tinned on one side only.

2. As a new article of manufacture, a can composed of a body made of a sheet or sheets of iron tinned on both sides, and of two heads made of sheets of iron connected or united with the body by a seam or joint, as described, and subsequently tinned or coated with metal, so as to both coat the head and seal the joint or seam, substantially as herein set forth.

3. The method of constructing cans and closing the seams thereof by forming the can of a tinned sheet-iron body and untinned or ungalvanized sheet-iron heads, the two being united by compressed seams, as described, and by tinning or coating with metal or soldering alloy both the heads and the seams uniting the heads with the body.

4. A tin can composed of a body and two heads, the former consisting of sheet-iron tinned before, and the latter of sheet-iron tinned after, they are put together, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EDWARD T. COVELL.

Witnesses:
CHAS. H. SANFORD,
ALANSON BORDEN.