D. M. SOMERS.
Sheet-Metal Box.

No. 214,851. Patented April 29, 1879.

Fig. 1.

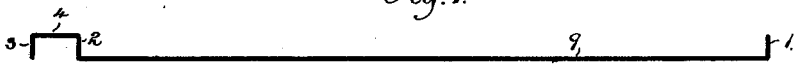


Fig. 2.

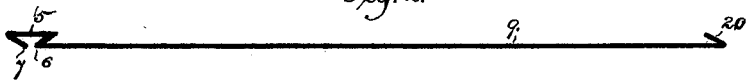


Fig. 3.

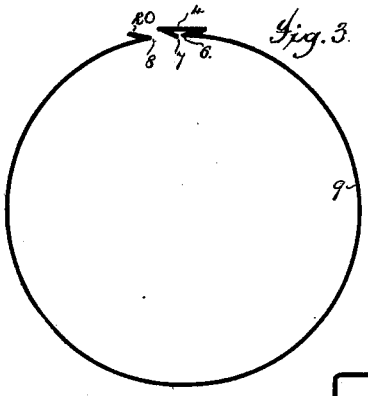


Fig. 4.

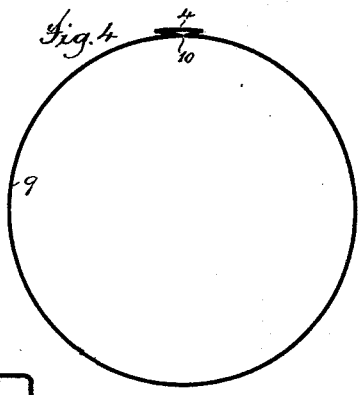


Fig. 5.

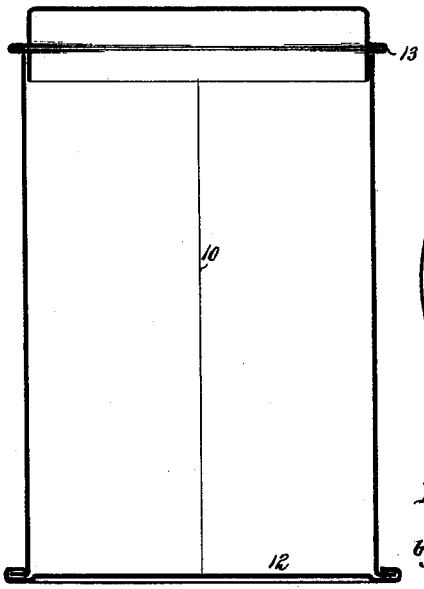


Fig. 6.

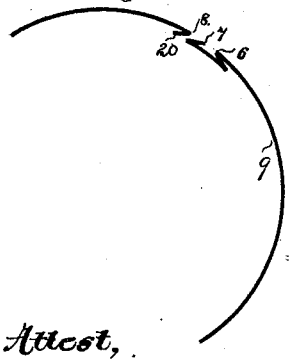
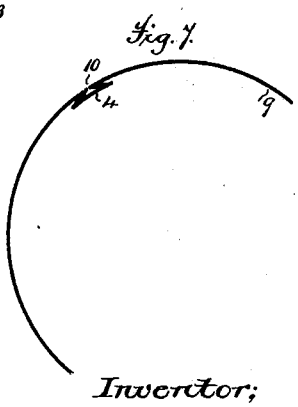


Fig. 7.



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IMPROVEMENT IN SHEET-METAL BOXES.

Specification forming part of Letters Patent No. **214,851**, dated April 29, 1879; application filed October 14, 1878.

To all whom it may concern:

Be it known that I, DANIEL M. SOMERS, of the city of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Sheet-Metal Boxes; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which drawings—

Figure 1 is a sectional view of a rectangular blank, the two edges of which, that are ultimately to be joined together, have been subjected to the first bending operation. Fig. 2 is a similar view thereof, the said edges having been subjected to the second bending operation. Fig. 3 shows a similar view, the blank so curved that its edges are brought nearly together. Fig. 4 shows said edges interlocked, so as to constitute an improved flat seam. Fig. 5 is a vertical section of an improved sheet-metal box embodying my improvement. Figs. 6 and 7 are similar views to Figs. 3 and 4, and illustrate in like manner a box having a similar flat seam, which is faced inwardly.

This invention relates to an improved structure of lapped seam for sheet-metal vessels.

It is requisite that such means shall be composed of the smallest possible number of laps or thicknesses, in order that a nearly flat or uninterrupted surface may be provided on either side of the walls of the vessel. It is moreover desirable that such seam shall be very narrow, and it necessary that their structure shall be such as to securely lock their members together and form a water-tight joint.

A seam, in part embodying the said advantages, has heretofore been made, which seam is so constructed as to provide one edge of the blank with one acute and two right-angular turns, which forms a ⊔-shaped double flange, while the opposite edge of the blank has one acute and one right-angular turn, which forms a single flange shaped to snugly fit one side and the bottom of the ⊔-shaped double flange, the sides of said double and single flanges being bent toward each other, and the whole consolidated by being pressed flat. Such a seam presents in a portion of its extent four thicknesses of material, and in its remaining portion five laps or thicknesses, which constitute a bulky and unsightly seam. The mode practiced in making such seam necessitates both an outward and an inward bending of the body portion of the vessel, which manipulation, especially where delicate or enameled metal is used in the structures, tend to its disfigurement and rupture.

My improved lapped seam is formed by providing the edges of the sheet that is to form the vessel with simple folds, all made in the direction of the position they ultimately occupy when the seam is completed. Thus one edge is turned in three acute angles, forming a hollow flange having two jaws that nearly meet, while the other edge has a single acute bend, forming a single lip adapted to enter said hollow flange and rest against one of its walls.

When the parts are consolidated or pressed flat a seam is constituted which consists of three laps or layers throughout one-half its extent and of four laps or layers in its remaining portion, while the opposed bends of the said lip and flange abut together and form a water-tight and secure joint, all of which will more particularly hereinafter appear.

In forming my improved seams for sheet-metal vessels I so bend the opposite edges of the blank which are to be united that they shall form the male and female members of such seam. These members are made by first providing said edges with right-angular flanges, one of which is a simple right-angular flange, 1, and the other a hollow flange constituted by two right-angular sides, 2 3, and a connecting-plate, 4. This shaping of the sheet-metal blank 9 is accomplished in suitable drop or swaging dies, as is well understood. These flanges are then, by a second swaging operation, so bent as to form the acute-angled lip 20 and the hollow socket 5, the jaws 6 7 whereof are formed by bending the plates 2 3 at acute angles to the plate 4 and the body 9 of the blank.

The blank thus formed has its edges united as follows: It is bent around a suitably-shaped former, either as shown in Figs. 3 or 6, according as it is desired that the protruding portion of the seam shall be upon the outside or inside of the article to be made, and the lip 20 of its one edge is passed into the hollow flange upon the other edge, being introduced

so as to lie behind the jaw 7, as in Figs. 4 or 7. The flanges are then consolidated by being pressed or rolled down solidly together, whereupon the bend 8 of the lip 20 will abut against the inner bend of the jaw 6, and the various parts will lie snugly together and form a perfectly-locked flat seam, which will present upon one surface the plate 4 and upon the other the single opening 10.

In thus consolidating the parts of the seam the jaw 7, which is entered into the lip 20, will force its bend snugly against the inner bend of the jaw 6, thereby causing the two to perfectly abut, so as to leave no space between them.

The contour of the article made will of course depend upon the form of the blank and the shape of the former used, the seam being adapted to all hollow vessels made from sheet metal by bending a sheet into proper shape and uniting its two meeting edges.

It is to be observed that the jaw 7 and lip 20 united form a single interlocking seam, and that the jaw 6 furnishes an abutment against the bend of which the inner end or bend, 8, of the jaw 20 so rests that after the parts are pressed together and interlocked a complete destruction of the seam is necessary to rend the united edges of the blank asunder. Such a seam is admirably adapted for use in the formation of various hollow vessels, and such a use of it is shown in Fig. 5.

The box there shown consists of a circular tube, 11, the edges of which are secured together by the seam described, and whose bottom edge is provided with an outwardly-turned flange.

The bottom 12 is formed from a circular blank, the edges of which are upturned and folded inwardly to embrace the bottom-edge flange of the body 11.

The cover is formed from a circular plate or blank, the sides of which are bent outwardly and inwardly to form the flange 13, which rests when the cover is inserted into the mouth end of the box upon the upper edge thereof. This seam is well adapted to unite the corners of a single blank, which is cut so as to provide upturned sides, which are united at the corners only. It may also be used in forming funnel-shaped vessels, hollow cylinders, as piping, or other vessels, whether provided with a bottom or not.

What is claimed is—

An improved seam for sheet-metal goods, the same being constructed as follows: one edge of the metal sheet being turned back over its body to provide the lip 20, and the other edge being bent at three points to provide a hollow flange having two jaws, 7 6, the said lip 20 being interlocked with the jaw 7, and the whole consolidated so that the jaw 6 of the hollow flange abuts against the bend 8 of the lip 20 and securely locks the parts in place, said seam thus being composed of four thicknesses of metal throughout one-half its extent and of three thicknesses throughout its other portion, all substantially as described.

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

DANIEL M. SOMERS.

Witnesses:
H. T. MUNSON,
GEO. H. GRAHAM.