Aug. 14, 1928. 1,680,535

H. H. GARY

WELDED SHEET METAL CONTAINER

Filed Nov. 19, 1925 2 Sheets-Sheet 1

Fig. 1

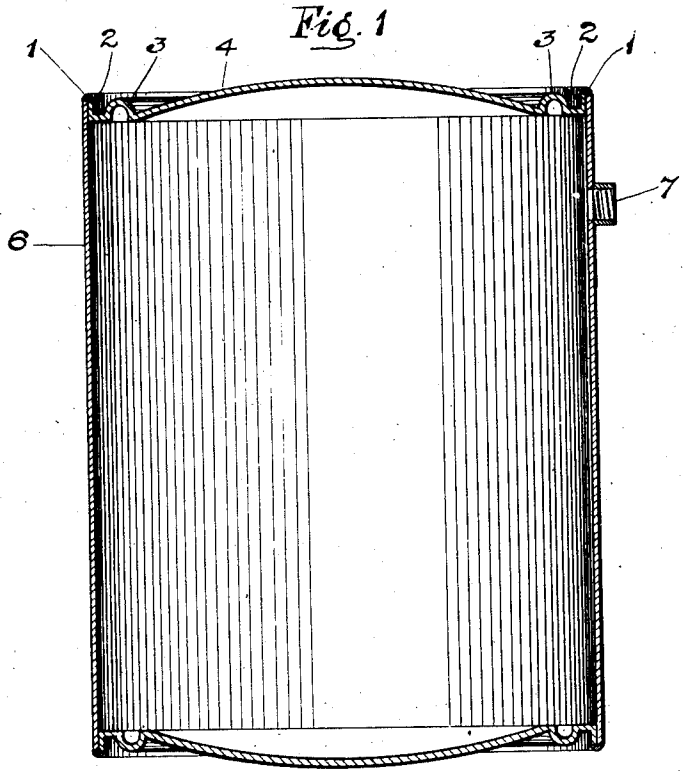
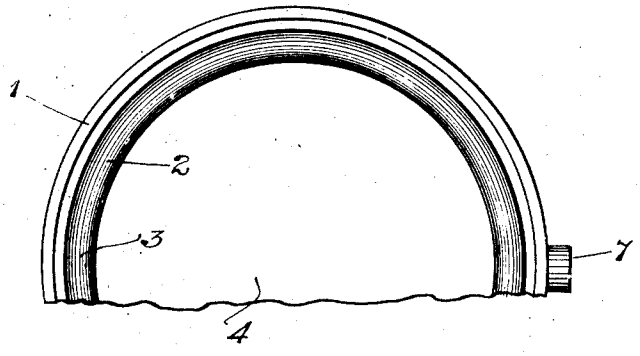


Fig. 2



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Fig. 3

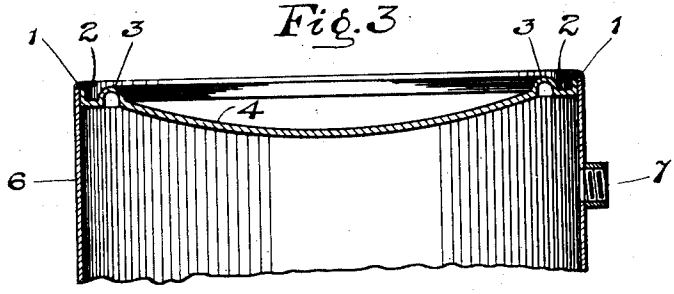


Fig. 4

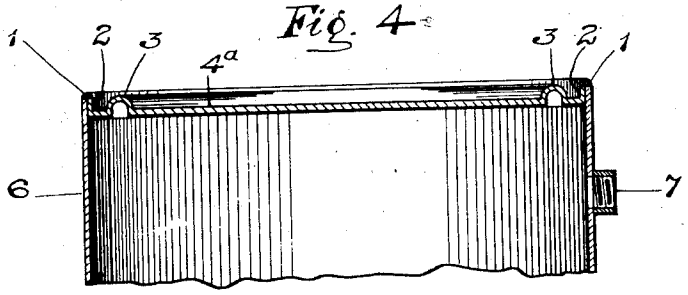
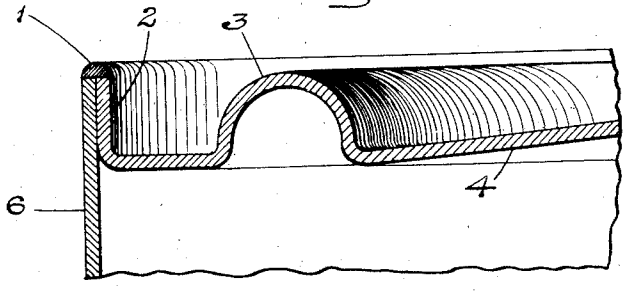


Fig. 5



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Patented Aug. 14, 1928. 1,680,535

UNITED STATES PATENT OFFICE.

HARTWELL H. GARY, OF BIRMINGHAM, ALABAMA.

WELDED SHEET-METAL CONTAINER.

Application filed November 19, 1925. Serial No. 70,193.

My invention relates to improvements in welded sheet metal tanks or containers, especially those used for the storage of gasoline, oils and other liquids.

At the present time the tanks commercially used for this purpose are composed of an oval or a cylindrically shaped shell or body of sheet metal, with flat heads of the same material, the heads being flanged around the edges and secured to the sheet by welding the seam on the edge formed by the junction of the flange and the end of the body or shell. Difficulty has been experienced in producing a weld on this edge which will withstand fracture due to the distortion or bending in the head when it bulges outwardly due to pressure within the tank, such for instance as would be caused by the pressure of the compressed air which is used for testing the tank so that it may be made free from leaks.

Difficulty has also been experienced in preventing the heat developed in welding, from warping or buckling the heads and thereby producing objectionable internal stresses and also detracting from the neat appearance of the finished tank.

The object of my invention is to provide an improved tank or container for the purpose set forth wherein these difficulties may be overcome.

With this end in view my invention consists in making a tank of sheet metal with welded seams or joints, each head of said tank being provided with a circumferential bead U-shaped in cross section and forming an expansion joint in the head between its center panel which bulges under pressure and its marginal out-turned flange which is welded to the tank body.

In order that the invention may be clearly understood, reference is had to the accompanying drawings forming a part of this specification, and in which:—

Fig. 1 is a central longitudinal cross section of a finished tank made in accordance with my invention in its preferred form.

Fig. 2 is a fragmental top plan view of same.

Fig. 3 is a cross section of the head before same is bulged or dished outwardly by pressure within the tank.

Fig. 4 is a cross section showing a modified form of head.

Fig. 5 is a cross section through the shell and head joint on a larger scale.

In these views corresponding figures represent corresponding parts.

In the preferred process of manufacture the sheet metal shell or body 6 is bent to the desired shape, which is usually oval or circular, and the longitudinal seam is welded. This seam is not shown on the drawings because it has no bearing on my invention. The sheet metal head is then rolled or pressed into the shape shown in Fig. 3 in which 2 represents a flange around the edge of the head, 3 a U-shaped bead or expansion joint extending around the head and adjacent to the flange, and 4 a central panel. The expansion joint 3 is shown to project outwardly but it is obvious that this is merely the preferred direction.

It will be observed that in Fig. 3 the central panel 4 is bulged or dished inwardly which makes it more convenient to hold in the welding machine, in addition to which another advantage will be referred to later in this specification.

It is obvious however that the heads could be dished or bulged outwardly, as shown in Fig. 1, or left substantially flat, as shown at 4^a in Fig. 4.

I now position the heads in the ends of the shell in the manner shown, with the edge of the flange 2 approximately flush with the end of the shell and I weld the seam 1 on the edge only, using a blow pipe or other suitable welding method. This method of securing the head to the shell is not new and I do not claim this as part of my invention.

In a tank made in accordance with my invention, the expansion caused by the heat of the welding process is now absorbed in the U-shaped expansion joint or bead 3 which closes slightly when the head is heated and opens again when cooled, thus preventing the head from becoming warped or buckled. I now introduce compressed air into the tank through the opening 7, the pressure being sufficient to cause the head to move suddenly and with some force from the position shown in Fig. 3 to that shown in Fig. 1. This movement produces a sharp vibration of the weld 1 which serves as a percussion test to aid in developing any weaknesses which may be present. The vibration only and not the permanent movement of the head is transmitted to the weld, for the permanent movement is absorbed by the U-shaped expansion joint or bead 3,

which functions as a hinge and thus prevents the bending and destruction of the weld which takes place when a plain flanged head without the bead is bulged or dished outwardly by pressure within the tank.

In order to secure the results just described, it is important that the bead 3 lie as close as possible to the flange 2, and I have found in practice that the distance between said parts should not be materially greater than the width of the bead.

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

1. A welded sheet metal container, composed of a tubular shell, and heads, each having an outwardly disposed marginal flange adapted to fit snugly within an end of the tubular shell, and a weld joint connecting the edge only of said flange to the container, each head having a deep bead which is interposed between, and is adapted to form an expansion joint connecting, the flanged margin of the bead with its central panel, and lies closely adjacent to said flange.

2. A welded sheet metal container comprising a tubular shell and metallic heads provided each with a deep marginal flange, a central concavo-convex panel, and a deep integral U-shaped bead lying closely adjacent to said flange and adapted to form an expansion joint connecting the flanged margin of the head with its central panel, said head flanges being adapted to fit snugly in the open ends of the shell, and welded joints connecting the end edges only of the shell and head flanges.

In testimony whereof I affix my signature.

HARTWELL H. GARY.