

May 24, 1932.

W. D. PHETEPLACE

1,859,632

THIN METAL TANK AND METHOD OF MAKING THE SAME

Filed Oct. 21, 1930

*Fig. 1*

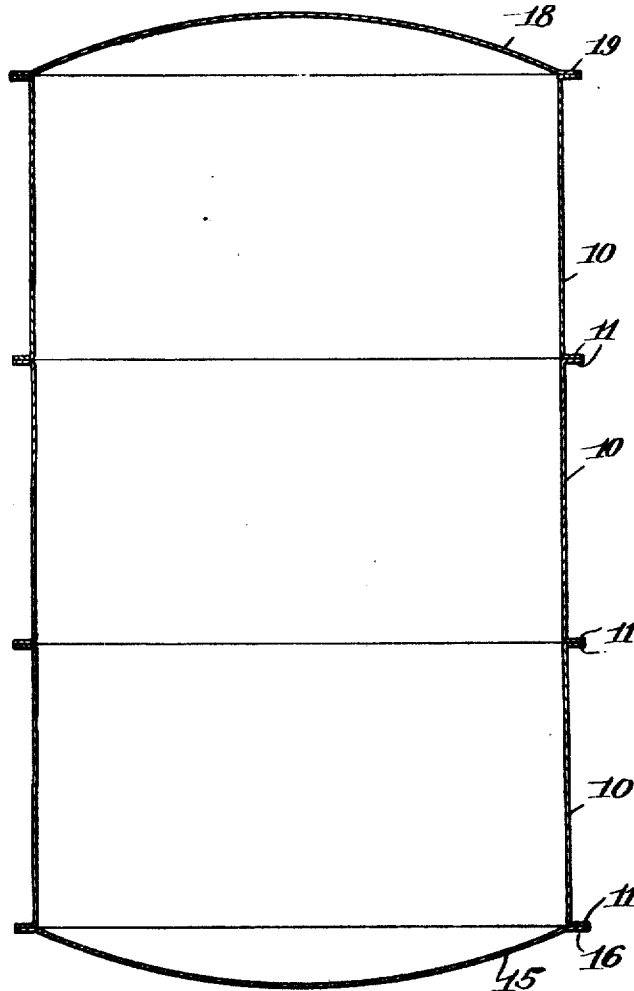


*Fig. 2*

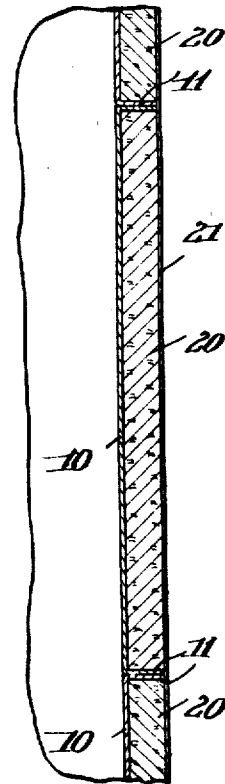


*Fig. 4*

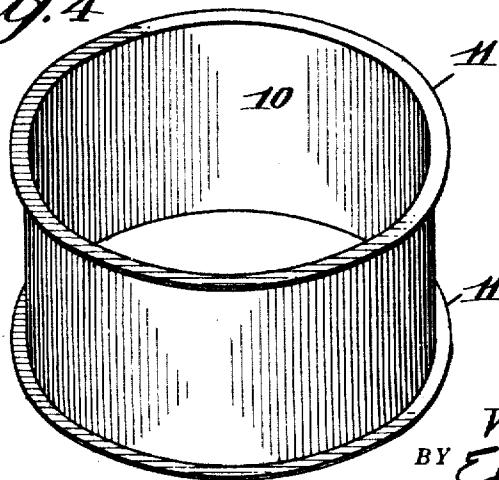
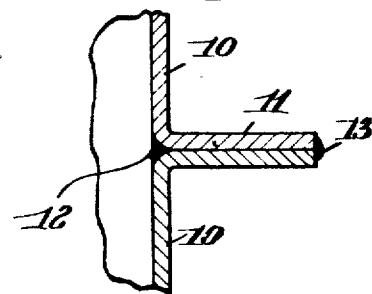


*Fig. 3*



INVENTOR  
*Walter D. Phetepplace*  
BY *Edward H. Oumpston*  
his ATTORNEY

## UNITED STATES PATENT OFFICE

WALTER D. PHETEPLACE, OF ROCHESTER, NEW YORK, ASSIGNOR TO THE PFANDLER CO.,  
OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK

## THIN METAL TANK AND METHOD OF MAKING THE SAME

Application filed October 21, 1930. Serial No. 490,219.

This invention relates to tanks of thin metal, such for example as stainless steel, and has for its object the provision of generally improved and more satisfactory tanks of this character and of a simple and economical method of constructing such tanks.

Another object of the invention is the provision of such tanks so designed and reinforced as to be of adequate strength notwithstanding the relatively thin metal of which they are made.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Fig. 1 is a vertical section taken centrally through a tank constructed in accordance with a preferred embodiment of the invention;

Fig. 2 is a fragmentary vertical section through a portion of the tank on a larger scale, illustrating the thermal insulation and the outer covering, which are omitted from Fig. 1;

Fig. 3 is a fragmentary vertical section on a still larger scale showing details of a joint, and

Fig. 4 is a perspective view of one section of the tank.

Similar reference numerals throughout the several views indicate the same parts.

The present invention deals with tanks of thin metal, such for example, as stainless steel, by which is meant a steel alloy which has unusually high corrosive resisting properties. As one example of such alloy, there may be mentioned the material commonly known in the trade as "18-8" steel, which contains roughly 18 per cent. of chromium and 8 per cent. of nickel. Certain other steels also have high corrosive resisting properties.

Stainless steel, due to its high cost, is commonly used only in relatively thin sheets; the cost of a large tank made of thick sheets of stainless steel would be practically prohibitive. The sheets usually used within the

practical limits of cost are about three-sixteenths of an inch or less in thickness. Difficulty has heretofore been experienced in constructing tanks of such thin material, and it has been found that tanks made in the ordinary way are apt to be distorted or ruptured under the influence of the pressures to which they are subjected. In order to overcome such distortion or rupture, it has heretofore been necessary to resort to various forms of bracing and reinforcement, which are both cumbersome and expensive.

According to the present invention, a tank of circular or other desired shape may be made up of standardized sections of a form such as that shown in Fig. 4. Each section is composed of a sheet 10 of thin metal, preferably stainless steel, made into a cylinder or other desired shape, the edges of the sheet being bent over to form marginal flanges 11 integral with the body 10. These marginal flanges extend outwardly from the body 10, as plainly shown in the drawings, and constitute reinforcing flanges extending around the tank which materially strengthen it and prevent distortion or rupture thereof notwithstanding the relatively thin metal of which the tank is constructed. As the flanges are of the same material as the body portion, they do not cause any electrolytic action in connection with the body portion.

The tank may be made of any desired number of sections built up to the proper height, or of course the tank may be placed on its side with its axis horizontal. In Fig. 1, three sections superimposed on each other are illustrated, each of which may be identical with that shown in Fig. 4. The sections are securely welded to each other as shown in Fig. 3, both interiorly of the tank as at 12 and at the peripheries of the flanges 11 is shown at 13. Preferably the junctions between the body portion 10 and the flanges 11 are slightly rounded, as indicated in Fig. 3, and the welding material 12 completely fills up the space between the rounded corners and projects to some extent into the tank when the welding operation is completed. Then the welding material is ground down to form a smooth surface flush with the interior of the

walls of the tank, as shown in Fig. 3. Thus the interior of the tank presents a smooth, unbroken, and sanitary surface without cracks in which dirt or bacteria might lodge.

5 A bottom or end 15 likewise of thin metal, preferably stainless steel pressed to the desired shape, is provided with marginal flanges 16 which are superposed on and welded to the lower flange 11 of the lowest tank  
10 section, and a top or opposite end 18 has a similar marginal flange 19 similarly welded to the upper flange of the top tank section. One end or one of the sections 10 may be provided with a suitable hand hole or man hole,  
15 and suitable inlet and outlet connections are provided.

By this construction, tanks may be made economically, since a factory may keep on hand a supply of the ring-like cylindrical  
20 sections of various diameters and heights, and tanks may be quickly constructed by using the desired number of sections of the desired diameter and welding them together either in the factory before shipment or at the scene  
25 at which the tanks are finally to be used. When the tank has been assembled and welded together, it is exceedingly rigid and strong relative to the thickness of material employed therein, as the flanges 11 themselves form re-  
30 inforcing bands extending around the tank, and it is not necessary to use separate or additional reinforcement.

The flanges 11 also serve as supports for holding thermal insulation in place if desired.  
35 Such thermal insulation, for example, may be of cork composition, as shown at 20 in Fig. 2, and it preferably substantially fills the space between the flanges. The insulation is covered by an outer covering 21, preferably  
40 of thin metal, which may contact with the peripheries of the flanges 11 when the insulation is of substantially the same thickness as the width of the flanges, and may be secured to the flanges 11 by spot welding or  
45 "tacking". When it is desired to use thicker insulation which will project out beyond the peripheries of the flanges, the outer covering 21 may be welded to strips of metal laid between the insulation and the outer covering.

50 Tanks constructed in the manner above described of relatively thin metal such as stainless steel, will withstand all the pressures to which they would ordinarily be subjected, notwithstanding the thinness of the material,  
55 which may be only three-sixteenths inch or less in thickness as mentioned above, and are extremely satisfactory in use.

While one embodiment of the invention has  
60 been disclosed, it is to be understood that the inventive idea may be carried out in a number of ways. This application is therefore not to be limited to the precise details described, but is intended to cover all variations and modifications thereof falling within

the spirit of the invention or the scope of the appended claims.

I claim:

1. A tank of thin corrosion-resisting material having its inner surface substantially  
70 free from bacteria harboring crevices, comprising a plurality of hollow sections of corrosion-resisting material each having a body portion of large area relative to the thick-  
75 ness of the material and an outwardly extending flange extending substantially around its periphery, said sections being assembled with the flanges of adjacent sections superimposed on each other and firmly secured to each other to form an integral construction in which said  
80 flanges extend around the tank and serve as reinforcements thereof.

2. A tank of thin corrosion-resisting metal having its inner surface substantially free  
85 from bacteria harboring crevices, comprising a plurality of substantially cylindrical sections of corrosion-resisting metal each having an outwardly extending marginal flange extending substantially around its pe-  
90 riphery, said sections being assembled with the flanges of adjacent sections superimposed on each other and welded to each other to form an integral construction in which said flanges extend around the tank and serve  
95 as reinforcements thereof.

3. A tank of thin corrosion-resisting metal having its inner surface substantially free  
100 from bacteria harboring crevices, comprising a plurality of substantially cylindrical sections of corrosion-resisting metal each having an outwardly extending marginal flange extending substantially around its periph-  
105 ery, said sections being assembled with the flanges of adjacent sections superimposed on each other and welded to each other to form an integral construction in which said flanges extend around the tank and serve as rein-  
110 forcements thereof, and thermal insulation applied to the exterior of said sections and supported by said flanges.

4. The method of making a tank of thin corrosion-resisting material having its inner  
115 surface substantially free from bacteria harboring crevices, which comprises forming a plurality of hollow sections of corrosion-resisting material each having an outwardly  
120 extending marginal flange extending substantially around its periphery, assembling said sections with the marginal flanges of adjacent sections superimposed on each other, and firmly securing the superimposed  
125 flanges to each other.

5. The method of making a tank of thin corrosion-resisting metal having its inner  
130 surface substantially free from bacteria harboring crevices, which comprises forming a plurality of substantially cylindrical sections of corrosion-resisting metal each having an outwardly extending marginal flange extending substantially around its periphery,

assembling said sections with the marginal flanges of adjacent sections superimposed on each other, said flanges being so shaped as to provide a space between them on the interior of the tank, and welding said superimposed flanges together and filling said space with welding material so that the inner surface of the tank is substantially smooth and unbroken at the joint between two sections.

6. The method of making a tank of thin corrosion-resisting metal having its inner surface substantially free from bacteria harboring crevices, which comprises forming a plurality of substantially cylindrical sections of corrosion-resisting metal each having an outwardly extending marginal flange extending substantially around its periphery, assembling said sections with the marginal flanges of adjacent sections superimposed on each other, welding said superimposed flanges to each other, applying thermal insulation to the exterior of said sections between said flanges, applying a metallic covering over said thermal insulation, and welding said metallic covering to said flanges.

WALTER D. PHETEPLACE.

#### CERTIFICATE OF CORRECTION.

Patent No. 1,859,632.

May 24, 1932.

WALTER D. PHETEPLACE.

It is hereby certified that the name of the assignee in the heading to the printed specification of the above numbered patent was erroneously described and specified as "The Pfandler Co.", whereas said name should have been described and specified as The Pfaudler Co., as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 12th day of July, A. D. 1932.

M. J. Moore,  
Acting Commissioner of Patents.

(Seal)

assembling said sections with the marginal flanges of adjacent sections superimposed on each other, said flanges being so shaped as to provide a space between them on the interior of the tank, and welding said superimposed flanges together and filling said space with welding material so that the inner surface of the tank is substantially smooth and unbroken at the joint between two sections.

6. The method of making a tank of thin corrosion-resisting metal having its inner surface substantially free from bacteria harboring crevices, which comprises forming a plurality of substantially cylindrical sections of corrosion-resisting metal each having an outwardly extending marginal flange extending substantially around its periphery, assembling said sections with the marginal flanges of adjacent sections superimposed on each other, welding said superimposed flanges to each other, applying thermal insulation to the exterior of said sections between said flanges, applying a metallic covering over said thermal insulation, and welding said metallic covering to said flanges.

WALTER D. PHETEPLACE.

#### CERTIFICATE OF CORRECTION.

Patent No. 1,859,632.

May 24, 1932.

WALTER D. PHETEPLACE.

It is hereby certified that the name of the assignee in the heading to the printed specification of the above numbered patent was erroneously described and specified as "The Pfandler Co.", whereas said name should have been described and specified as The Pfaudler Co., as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 12th day of July, A. D. 1932.

M. J. Moore,  
Acting Commissioner of Patents.

(Seal)