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DOUBLE BOTTOM COMPRESSED GAS CYLINDER AND METHOD OF MAKING SAME

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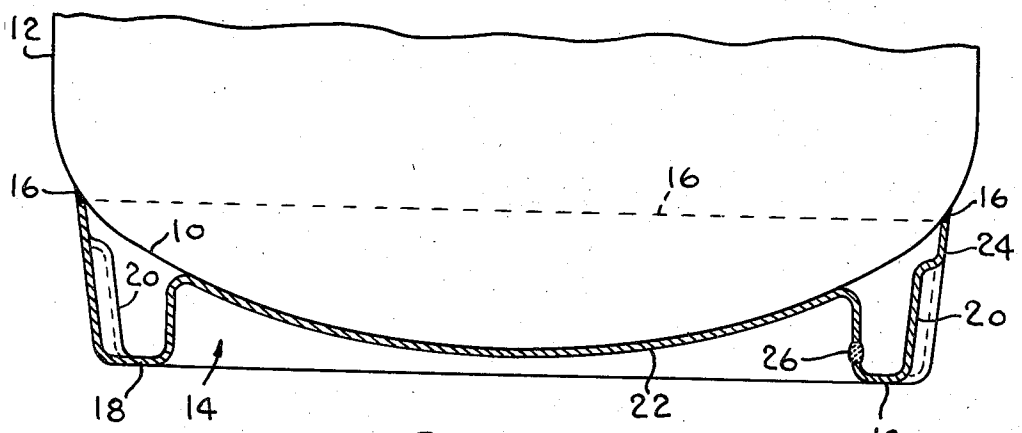


FIG. 1

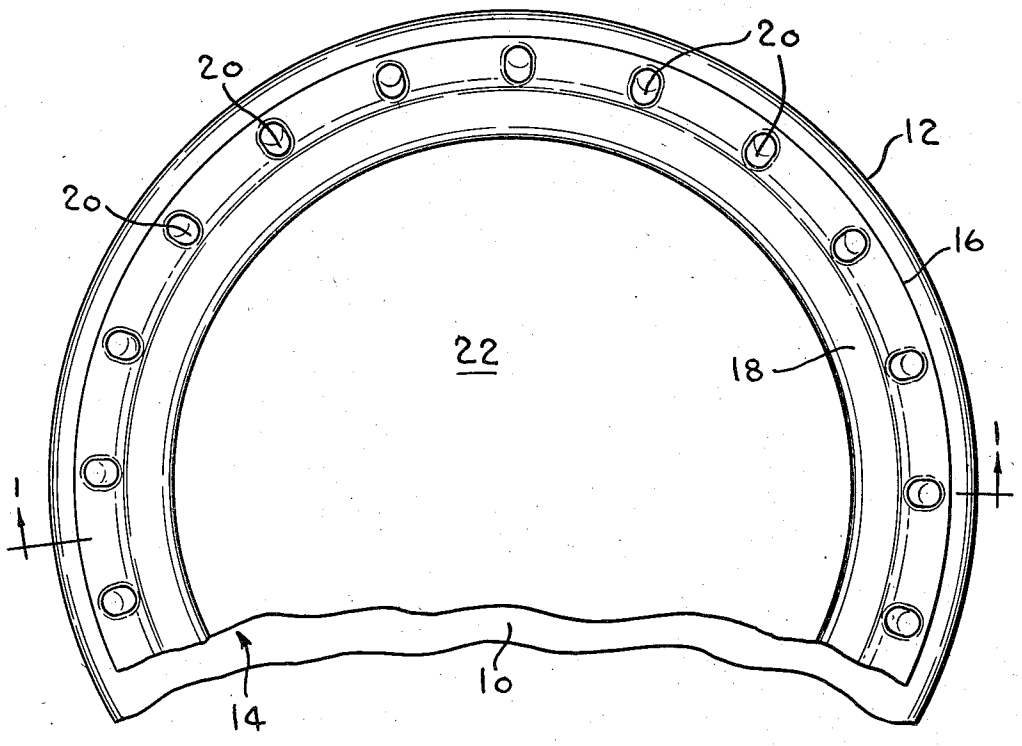


FIG. 2

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DOUBLE BOTTOM COMPRESSED GAS CYLINDER AND METHOD OF MAKING SAME

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1 Claim. (Cl. 220—69)

This invention relates to compressed gas cylinders and particularly to the provision of a novel foot ring structure and the method of making the cylinder and foot ring.

The foot ring structure commonly employed today comprises a skirt welded to the bottom of the gas cylinder and projecting downwardly to terminate in an inwardly rolled edge. This is subject to a number of objections. In winter, ice and snow will accumulate in the inward curl of the footing and when the cylinder is refilled this is often overlooked or not cleaned out due to the difficulty of doing so. The cylinder is filled on a gross weight less tare weight method and the presence of ice and snow results in a fill short by weight of the ice or snow. The footing is subjected to considerable moisture (ICC requirements call for leaving the cylinder outside) and is likely to rust. When rusted or when deformed by accident the ring must be replaced and this must be done by the manufacturer under ICC regulations. In order to replace the old worn ring the ring is removed and a new one welded in its place. Since the weld is at the cylinder the cylinder must now be stress relieved. Thus replacement is rather costly and time consuming. Finally the present foot ring structure results in a difficult to clean crevice where the cylinder bottom and ring meet.

The object of this invention is to overcome these difficulties.

Another object of this invention is to provide a cylinder and footing structure which is easily replaced and easily maintained and which does not tend to pick up foreign matter.

Another object is to provide a novel method of fabricating the present structure to virtually eliminate rusting of the bottom of the cylinder.

Other objects and advantages will be pointed out in, or be apparent from, the specification and claim, as will obvious modifications of the single embodiment shown in the drawing, in which:

Fig. 1 is a cross-section through the present foot ring structure; and

Fig. 2 is a bottom view of the cylinder and ring.

Referring to the drawing in detail, it will be noted that the curved bottom **10** of the gas cylinder **12** is provided with a combined foot ring and double bottom member **14**. This member **14** is welded at line **16** to the cylinder and has an annular drawn foot portion **18** upon which the cylinder normally stands. The exterior of the annular foot has vertical corrugations or ribs **20** for added strength. Inside the foot **18** the member is dished to provide a second bottom portion **22** which substantially conforms to the curvature of the bottom of the cylinder.

This construction affords no place for ice and snow to pack or water to pool as in the curled foot previously

employed in this field. The entire surface is readily accessible for cleaning, and even if it is not cleaned any rusting which occurs will be exteriorly of the gas cylinder proper so there is little danger of damage to the bottom of the cylinder. If the present double bottom member should become damaged or rusted it can be replaced by cutting the old double bottom off at just above ribs **20** and the replacement welded on the cylinder. Since this operation is remote from the cylinder there is no need to stress relieve the cylinder again. Thus the replacement becomes a matter of field replacement rather than factory. This saves considerable time and money.

In the course of manufacture the double bottom member **14** is welded to the cylinder **12** prior to stress relieving. When the assembly is heat treated to relieve stresses I prefer to have a hole in the member **14** to act as a vent to let air out and thereby insure a dry atmosphere between the cylinder and the bottom member. After the heat treatment is completed but before the cylinder cools, the vent hole is plugged as at **26** to seal the interior. This plug can be effected by welding. Having done this the entrapped atmosphere is dry and at a partial vacuum and there is no danger of condensation which could lead to rusting. This eliminates another source of trouble found in prior arrangements.

When gas is drawn off rapidly the liquid gas in the cylinder boils, particularly at the bottom of the cylinder. This produces a refrigerating effect which results in condensation on the bottom in humid weather. With the new construction this is no longer a problem since any rusting will be on the double bottom member **14** and not on the cylinder bottom **10**. This method of construction which results in a dried atmosphere within the space between the cylinder and the bottom is important by way of preventing corrosion. In addition, venting during heat treating (at 1500 to 1700° F.) prevents stressing the parts when the air expands.

Although but one embodiment of the present invention has been illustrated and described, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claim.

I claim:

An article of the class described comprising a gas cylinder having downwardly curved bottom wall, an auixilary bottom member secured to the cylinder, said auxiliary bottom member having an integral, annular foot portion including a lower annular ground-contacting portion and inner and outer annular wall members extending upwardly therefrom, said outer wall member terminating in an upper peripheral edge welded to the curved bottom member of the cylinder along a generally circular line of contact of a lesser diameter than that of the cylinder, said inner wall portion at its upper end being peripherally joined to a central portion of said auxiliary bottom member which is downwardly dished to conform generally to the curvautre of the bottom wall of the cylinder, said inner and outer peripheral wall members being spaced to define, with the curved surface of the cylinder bottom, a closed chamber containing dry air at subatmospheric pressure, said outer annular wall portion being provided with vertically-extending corrugations to stiffen the same, said corrugations terminating short of the upper welded edge of said wall portion to provide an intermediate substantially smooth annular wall portion to facilitate welding during replacement of the auxiliary bottom member.

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