March 19, 1929. C. I. HUMMER 1,706,064

TANK DOME

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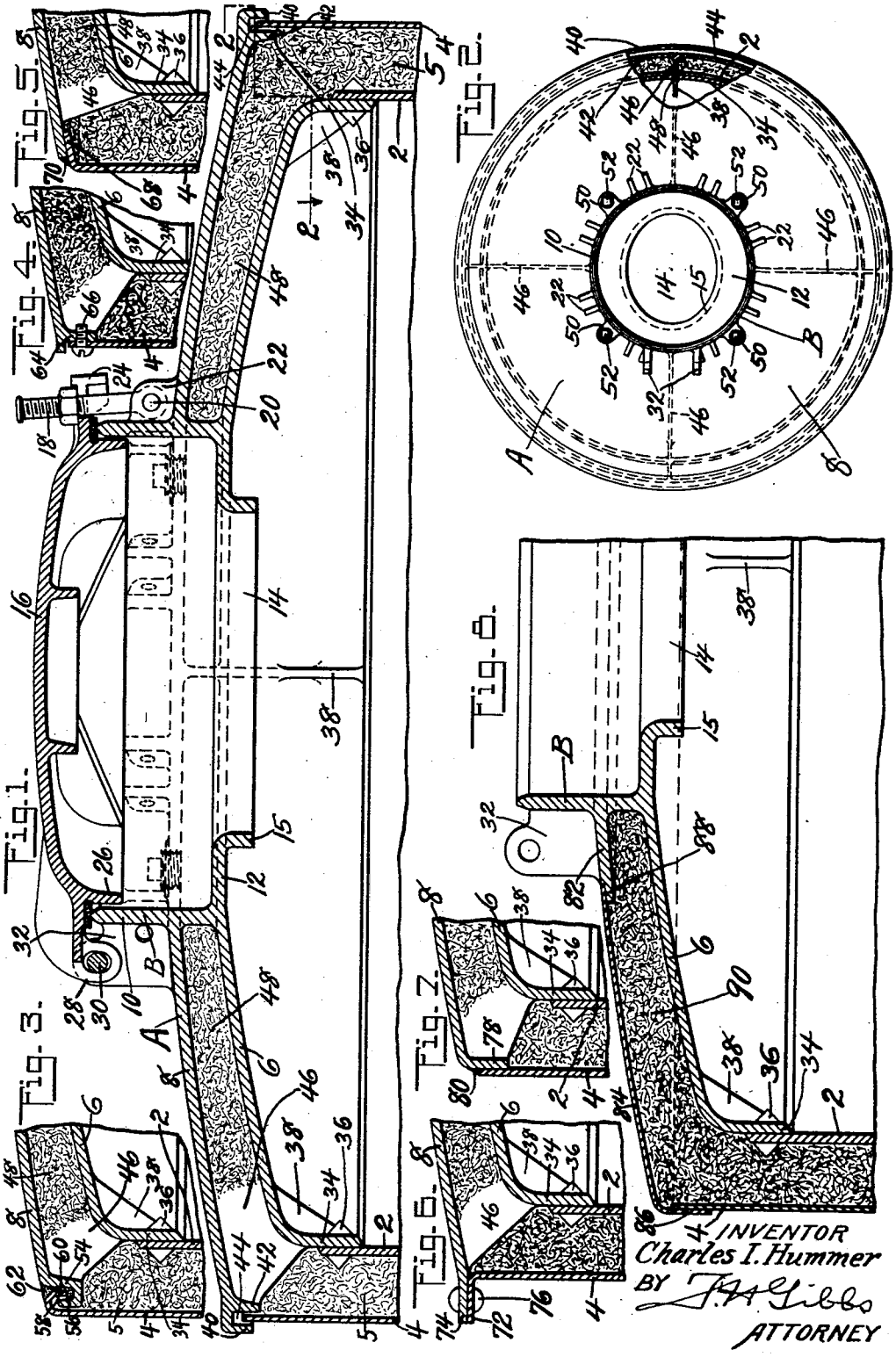

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UNITED STATES PATENT OFFICE.

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TANK DOME.

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Reference is had to the accompanying drawings, which illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof within the scope of the claims will occur to persons skilled in the art.

In said drawings:

Figure 1 is a sectional view of the upper portion of a tank dome constructed in accordance with the present invention;

Fig. 2 is a top plan view of the dome, certain parts being broken away to show a sectional view on the line 2—2 of Fig. 1;

Figs. 3 to 7, inclusive, are sectional views showing modified forms of connections, and

Fig. 8 is a fragmentary sectional view of a tank dome showing a modification of the invention.

The present invention relates to domes of the type employed with tank cars, tank wagons or the like.

One of the main objects of the invention is to provide a unitary tank dome head and dome ring.

Another object is to provide a tank dome head and dome ring in a single casting.

A further object of the invention is to provide a tank dome head formed of spaced portions cast integral with a dome ring, the spaced portions receiving suitable insulating material therebetween.

Other objects and advantages of this invention will be apparent from the following description taken in conjunction with the accompanying drawings in which 2 indicates the dome sheet of a tank dome and 4 indicates a sheathing arranged in spaced relation with respect to the sheet 2, the sheet and sheathing being connected to a tank not shown. In the present invention the sheathing 4 is of greater height than the sheet 2 and serves to secure insulating material 5 to said sheet, the insulating material being of cork or any suitable or desired thermo-insulation.

The dome head is designated generally at A, and as clearly shown in the drawing, comprises a single casting having spaced inner and outer walls 6 and 8, respectively, formed with a dome ring designated generally at B and comprising an upstanding flange 10 and an internal inwardly-directed circumferential flange 12 defining a manhole opening 14 between an integral annular flange 15 formed with and depending from the flange 12; the flange 12 also serving as a stiffening element for the ring to prevent fracturing thereof especially at the juncture of the wall 6 therewith. A manhole cover 16 is provided which may be of any desired or preferred construction. It is shown as seated on the edge of flange 10 and secured by bolts 18 carried by pintles 20 extending through pairs of lugs 22 cast integral with the flange 10 and upper wall 8; the bolts 18 being adapted to extend between pairs of ears 24 cast with the lid 16. The lid has a depending flange 26 which lies inside the flange 10 of the dome ring, and said dome ring is hingedly connected at 28 to a pin 30 mounted in lugs 32 formed with the dome ring and the upper wall 8.

Referring now to the embodiment of the invention shown in Fig. 1, the inner wall 6 is circumferentially bent at its lower edge forming a downwardly extending marginal flange 34 which, when the cover is positioned, engages the inner face of the dome sheet 2 and is connected thereto by rivets 36. Ribs 38 are secured at the bend in said wall 6, the ribs extending between the wall 6 and the flange 34 and obviously reinforcing the wall 6 at its bend.

The edge of the upper wall 8 terminates in downwardly extending spaced flanges 40 and 42 defining an annular recess 44 within which the upper end of the sheathing 4 is received.

It has been found desirable to provide the walls 6 and 8 with reinforcing members and to that end ribs 46 are provided which are formed integral with the dome ring B and the upper and lower walls 6 and 8, said ribs extending to the end of the upper wall 8 and to the bend of the inner wall 6.

Suitable insulation 48 is provided between the lower and upper walls 6 and 8 of the cover and it will be apparent that when the cover is positioned as shown in Fig. 1, the tank dome is entirely insulated except for that portion thereof defined by the dome ring. The insulation shown at 48 is of fiber, cork or other like material, but it is sometimes desired to provide the dome and head with insulation which may be poured between the walls and permitted to harden therein. To this end the upper wall 8 is provided with spaced bosses 50 (see Fig. 2) in which tapped apertures are formed which are normally closed by a plug 52. The insulation in a substantially liquid form may be poured between

the walls 2, 4, 6 and 8 through the apertures formed in the bosses 50 and permitted to solidify between said walls, if such an insulation is used; the plugs 52 then being applied to normally close the apertures as will be apparent from the drawings.

Several modifications are shown of the method of connecting the upper wall 8 to the sheathing 4, and referring now to Fig. 3 it can be seen that the upper wall 8 terminates in a marginal trough-like member formed of the depending portion 54 turned over as shown at 56. The trough-like member comprises the recess 58 which receives the downturned end 60 of the sheathing 4. To form a substantially tight joint a suitable sealing medium 62, which may be tar or a cement, is poured into the recess and permitted to harden.

In Fig. 4 the upper wall 8 is provided with a downwardly extending annular flange 64 which is positioned against the inner face of the upper end of the sheathing 4. Suitable screws 66 or the like serve to secure the upper wall to the sheathing 4.

In Fig. 5 the upper end of the sheathing 4 is turned over to form an inwardly extending flange 68 upon which the edge of the upper wall 8 rests and the edge of the wall 8 is connected to the sheathing at the flange by suitable weld metal 70.

In Fig. 6 the sheathing 4 is outwardly flanged at its upper end, as shown at 72, to lie adjacent a marginal flange 74 formed at the edge of the upper wall 8, and said meeting flanges are connected together by means of rivets 76 or the like.

Fig. 7 discloses another welded connection and it can be seen that the edge of the upper wall 8 is provided with a depending marginal flange 78 which engages the inner face of the upper end of the sheathing 4 and is welded thereto as shown at 80.

In the modification shown in Fig. 8 the dome ring B has the lower wall 6 cast therewith in the manner shown in Fig. 1, said wall being connected to the inner wall 2 of the dome by rivets 36, all as shown in Fig. 1. This modification differs from Fig. 1, however, in providing an annular flange 82 formed integral with the ring B and arranged substantially parallel to the wall 6. A sheathing ring 84 is provided which has a downturned marginal flange 86 frictionally engaging the upper end of the sheathing 4. The inner edge of this ring 84 is received within an annular cut-out portion 88 formed in the edge of the flange 82. No other securing means are believed to be necessary for the sheathing ring 84 as the connection is a frictional one, but if desired, screws or the like may be employed for connecting the sheathing ring to either the flange 82 or the sheathing 4 or both. In the modification shown in this Fig. 8 the dome ring with its wall 6 is first connected to the wall 2 of the tank dome and insulation 90 is then positioned on the wall 6 and the sheathing ring 84 then secured in position.

In effect, this invention contemplates the provision of an article of manufacture for the use hereinbefore specified, which article of manufacture comprises a single casting or a unit having upper and lower annular members or walls, the upper wall being connected at its inner edge with the lower wall at a point intermediate the inner and outer edges of said lower wall whereby to provide an intermediate annular flange in continuation of the lower wall; the internal flange defining a manhole opening. The inner edge of the upper wall is upwardly flanged to provide an annular ring or supporting element for a dome cover or the like. It will be apparent that the construction described herein is a definite improvement over dome heads of the prior art in which the head is connected by means of rivets or the like to a dome ring, for the reason that potential leaks at the connections of the dome ring with the dome head are eliminated.

What is claimed is:

1. A cast one piece dome head comprising a dome ring, spaced walls radiating therefrom, and reinforcing ribs connecting the walls adjacent the free edges thereof, said free edges being adapted for attachment to tank dome sides.

2. In a tank dome, spaced side sheets, and a head comprising spaced walls constituting continuations of said side sheets, said walls terminating in a dome ring for receiving a dome cover, the spaced walls and dome ring being a one piece casting.

3. In a tank dome, spaced side sheets, and a dome head comprising a one piece casting including a dome ring and spaced walls radiating therefrom and having their free edges connected to said side sheets.

4. A cast one piece dome head comprising a dome ring having an internal annular flange and spaced walls radiating from said ring, the free edges of said walls being adapted for attachment to tank dome sides.

5. A cast one piece dome head comprising a dome ring having an internal annular reinforcing flange defining a manhole opening, spaced walls radiating from said ring, one thereof being arranged in horizontal continuation of said flange, the free edges of said walls being adapted for attachment to tank dome sides.

In witness whereof I have hereunto set my hand.

CHARLES I. HUMMER.