

Jan. 15, 1935.

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1,988,308

SUPPORTING MEANS FOR CAR TANKS

Original Filed June 1, 1933 3 Sheets-Sheet 1

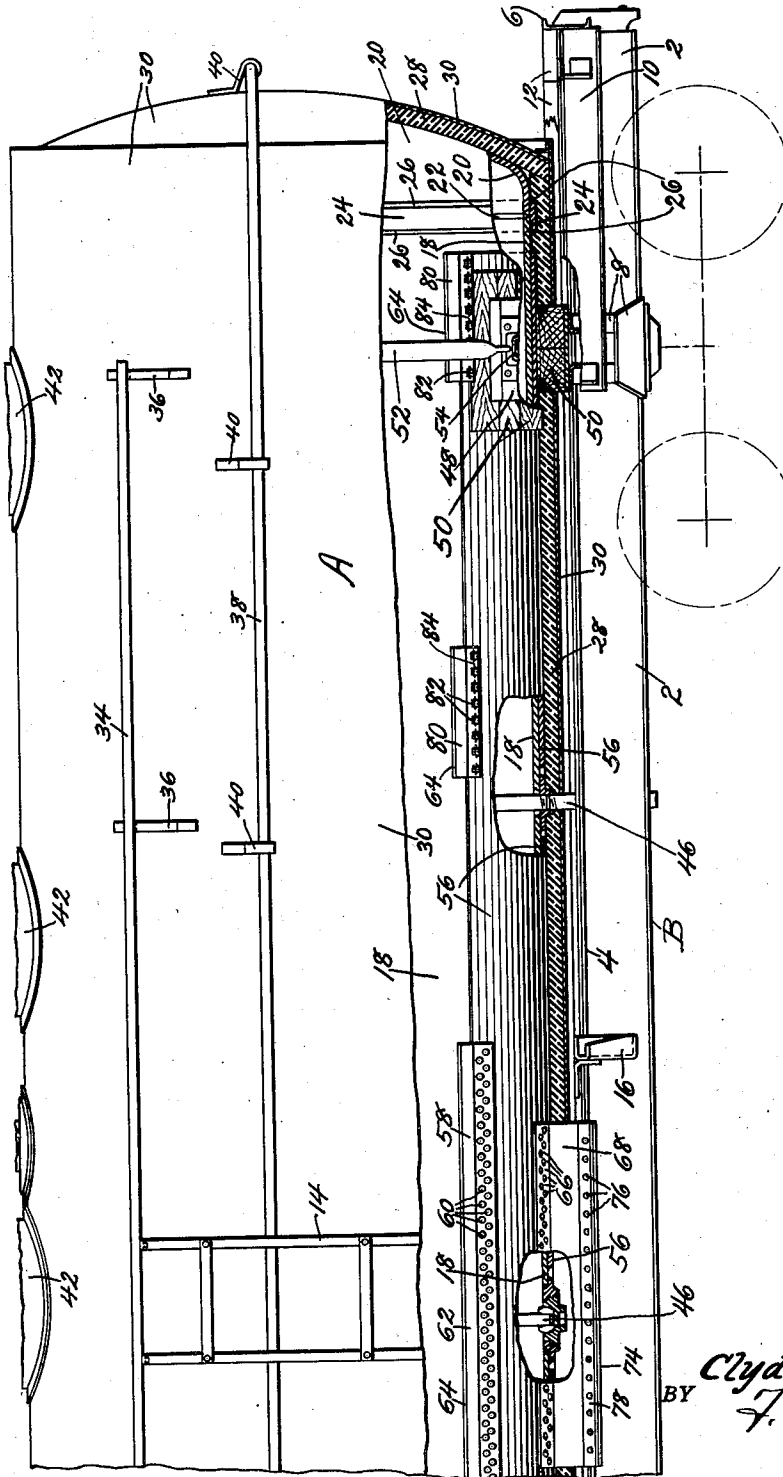


Fig. 1.

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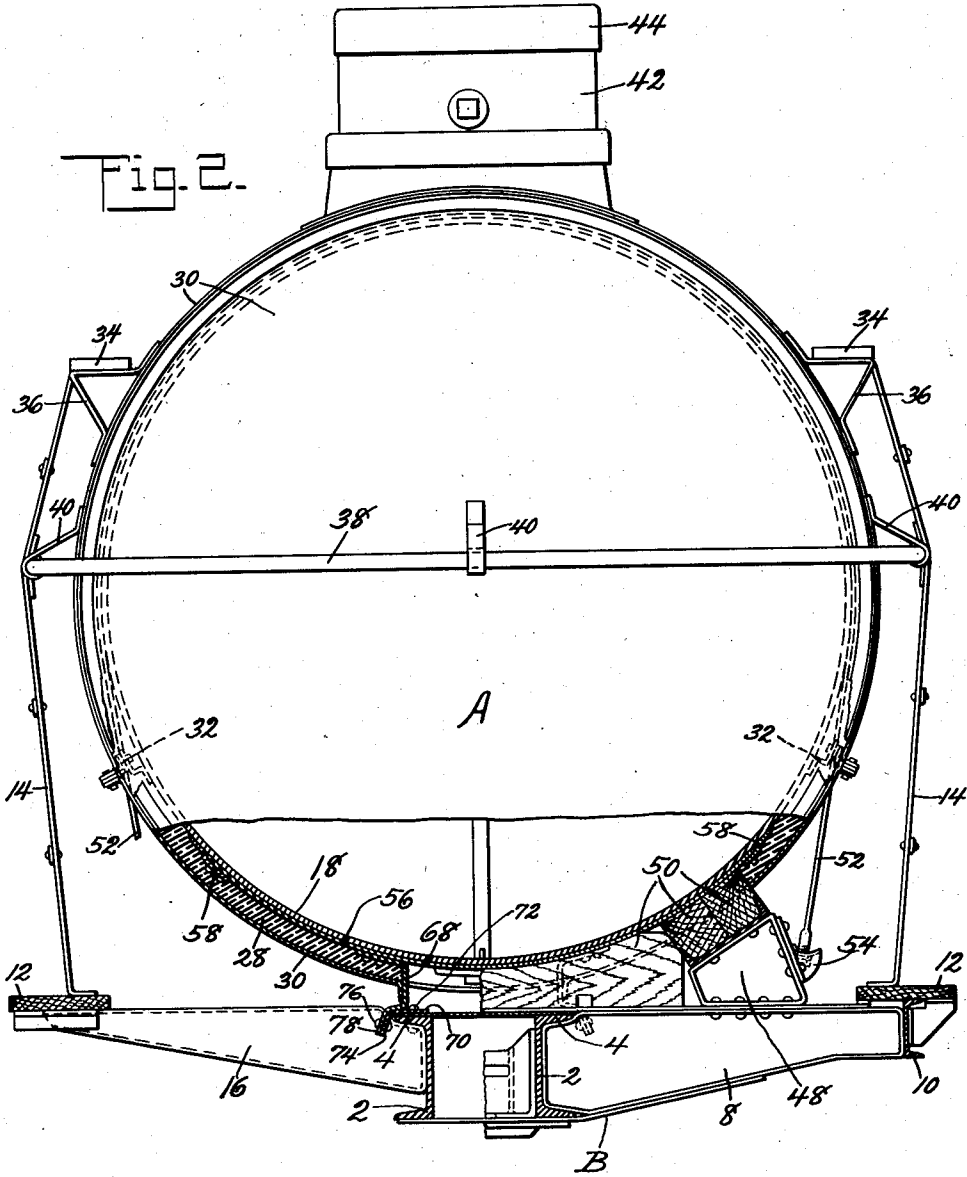
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SUPPORTING MEANS FOR CAR TANKS

Original Filed June 1, 1933 3 Sheets-Sheet 2



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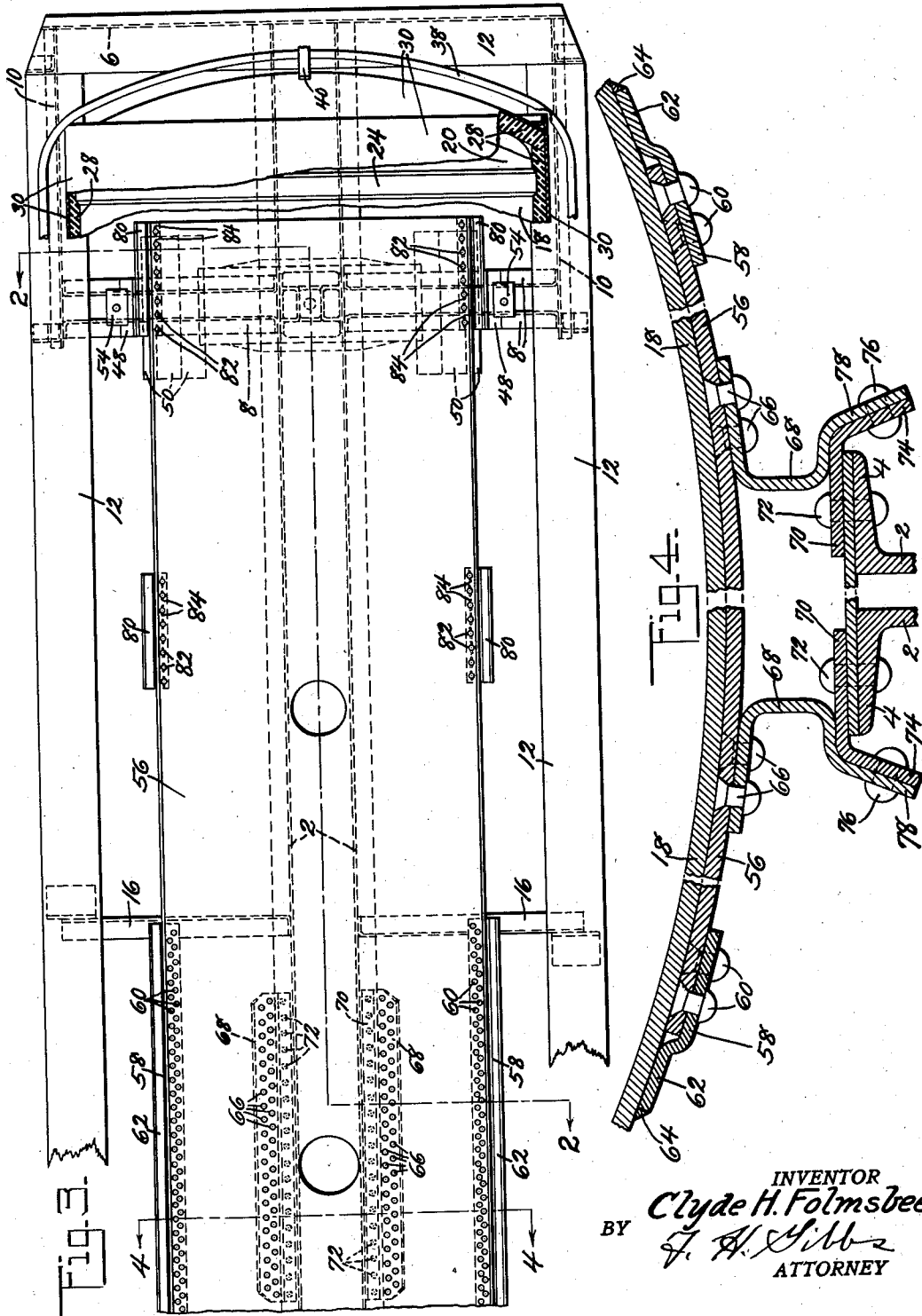
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SUPPORTING MEANS FOR CAR TANKS

Original Filed June 1, 1933 3 Sheets-Sheet 3



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1,988,308

SUPPORTING MEANS FOR CAR TANKS

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Original application June 1, 1933, Serial No. 673,843. Divided and this application April 18, 1934, Serial No. 721,124

9 Claims. (Cl. 105-362)

This invention relates generally to car tank anchors and supporting means and more particularly to the provision of means for anchoring and reinforcingly supporting tanks formed of material possessing high corrosion resisting properties, such, for example, as aluminum, the present application being a division of my pending application for United States Letters Patent, Serial No. 673,843, filed June 1, 1933.

The use of tanks formed of material possessing high corrosion resisting properties is highly desirable, and in some instances necessary, in the transportation of certain kinds of liquid lading, but tanks formed of such material lack to a great degree the desired strength and durability of more easily corrodible materials or metals, such, for example, as steel or iron, and one object of this invention is the provision of means for supporting such a tank on its underframe and reinforcing the same against deformation.

A great disadvantage in the use of tanks formed of such material has been the difficulty experienced in providing means for adequately securing the tank to its anchor and supporting means on the underframe without the use of objectionable rivets passing through the tank shell because of the necessity of forming the anchor and supporting means of a metal, such, for example, as steel, which possesses the required strength, and it is well known that such metals as aluminum and steel cannot be effectively secured together by means of welding.

Another object of this invention is the provision of means for effectively securing, by means of welding, a tank formed of material possessing high corrosion resisting properties to its anchor and supporting means.

Still another object of this invention is the provision of a new and improved means for supporting a railway car tank on an underframe.

A further object of this invention is the provision of anchor means for tanks of such construction as to avoid the use of rivets for securing the anchor means to the tank, thus eliminating the possibility of leakage of the contents of the tank at that portion thereof which is connected with the anchor.

Other objects and advantages of this invention will be apparent from the following description taken in conjunction with the accompanying drawings, in which

Figure 1 is a side elevation view of a railway tank car embodying the anchor and supporting means of the present invention, certain parts

thereof being broken away to disclose other parts more clearly;

Fig. 2 is a sectional view taken on the line 2-2, Fig. 3;

Fig. 3 is a fragmentary top plan view of the underframe, one end portion of the tank being shown partly in section;

Fig. 4 is an enlarged and broken sectional view taken on the line 4-4, Fig. 3.

Referring now more particularly to the drawings, there is shown a tank indicated generally at A which is mounted on an underframe indicated generally at B, which underframe may be of any preferred or desired construction, and in the instance shown comprises channel center sills 2 having top flanges 4, as clearly shown in Fig. 4, end sills 6 and bolsters 8. End bracing members 10 are secured to the bolsters and end sills and serve to reinforce the underframe at each end thereof, said bracing members also supporting lower running boards 12 from which ladders 14 rise. The underframe B also includes cross bearers 16 secured to the center sills 2 and extending transversely therefrom which also support the lower running boards 12 at each side of the car. The tank A, in the instance shown, is formed of aluminum, and comprises a cylindrical shell 18, closed at its ends by tank heads 20 which are welded at 22 to the end portions thereof. The welded joint 22 between the shell 18 and head 20 is reinforced by an annular member 24 which laps the joint and is welded to the shell 18 and head 20 at 26, all as shown in Fig. 1, which construction provides a strong and durable connection between the shell and head.

The tank A is provided with external insulation 28 covered by an outer sheathing 30 connected to the shell 18 by any suitable connecting or fastening means, such as those shown at 32 in Fig. 2. Upper running boards 34 are also provided which are supported on brackets 36 secured to the outer sheathing 30 and to which are connected the upper ends of the ladders 14. The tank A is also provided with a hand-rail 38 supported by brackets 40 secured to the outer sheathing 30, domes 42 having dome covers 44, and also with discharge pipes 46, which lead to discharge valves (not shown).

The tank A adjacent its end portions is supported on cradles 48 secured to the bolsters 8, said cradles including wood blocks 50, as shown in Fig. 2; tank bands 52 secured to the cradles 48 in any desired manner, such as shown at 54, being provided for holding the tank on the cradles 48.

Although in the instance shown the tank A is

formed of aluminum, it is to be understood it may be formed of any suitable or desired material. In addition to the cradles 48 it has been found desirable to provide a reinforcing supporting or tank rest element for the tank A in the form of a curved plate indicated at 56 in Figs. 1, 2, and 4, which extends longitudinally of the underframe B and is substantially co-extensive with the tank A; said plate being preferably of a material possessing strength sufficient to prevent easy deformation, such, for example, as steel. Steel cannot be readily welded to aluminum or other like metals and to attach the tank to said plate 56, fastening plates 58 are connected to the side edge portions thereof, intermediate the ends of the plate, as by rivets 60, these fastening plates being of a material which can be readily welded to the tank shell, and being provided with offset portions 62 welded as at 64 to said tank shell. Intermediate the ends of the tank rest element 56 the tank A is anchored to the underframe B, as shown clearly in Fig. 4, said element 56 being riveted as at 66 to the oppositely arranged plates 68 of a tank anchor, which may be of the form shown in patent to Auchincloss, 1,336,410, of April 13, 1920; said tank anchor comprising an upper element 70 riveted as at 72 to the top flange 4 of each center sill 2; the side edge portions of said upper elements 70 being downwardly flanged or bent at 74 and riveted as at 76 to the depending portions 78 of the anchor plates 68, as clearly shown in Fig. 4. The tank rest element 56 rests on the wood blocks 50 of cradles 48, as clearly shown in Fig. 2, and as illustrated in Figs. 1 and 3, the tank A adjacent its end portions is connected to the tank rest element by fastening plates 80 welded to the tank and bolted, as at 82, to the tank rest element, the bolts 82 passing through slots 84 in the fastening plates, thus permitting longitudinal expansion of the tank A in service. Intermediate the plates 80 and 58 the tank A is connected to the tank rest element 56 in a manner similar to that adjacent the end portions of the tank and hence the same reference characters are used.

In the construction described it will be apparent that very effective means are provided for securing a tank formed of material possessing high corrosion resisting properties to its anchor formed of steel without the necessity of employing rivets which pass through the tank shell and without resorting to directly welding the tank and anchor means to each other. In the construction described it will also be apparent that the tank A is effectively reinforced against deformation or collapse by the provision of the tank rest element 56 at the lower portion thereof.

The drawings herein disclose one embodiment of the invention, but it is to be understood they are for illustrative purposes only and various changes in the form and proportions of the construction may be made within the scope of the appended claims without departing from the spirit of the invention.

What is claimed is:

1. In a railway tank car, an underframe comprising a center sill and cradle members, a tank, a tank rest element substantially co-extensive with the tank on which the latter is mounted and to which it is secured, said element conforming to the shape of the tank and resting on said cradle members, and anchor means secured to the center sill and connected to the tank rest element.

2. In a railway tank car, a cylindrical tank, an underframe, means for reinforcingly supporting said tank comprising a tank rest element substantially co-extensive with the tank and conforming to the shape of the lower portion thereof, said element being supported by the underframe and receiving said tank and being provided with attaching elements secured thereto and welded to the tank, and anchor means connected to the underframe and to said tank rest element.

3. In a tank car, the combination with its underframe of a tank provided with attaching plates on opposite sides of the lower portion thereof, anchor means and cradle members supported by said underframe, and means for reinforcingly supporting said tank comprising a tank rest element substantially co-extensive with the tank and conforming to the contour of the lower portion thereof, said element being connected with said attaching plates and with said anchor means.

4. In a railway tank car, a cylindrical tank, an underframe comprising a center sill and bolsters, anchor means on said center sill and cradle members supported on said bolsters, a tank rest element substantially co-extensive with the tank resting on said cradle members and secured to said anchor means on which said tank is seated, said tank being provided with attaching elements welded thereto and secured to said tank rest element.

5. Anchor and seating means for cylindrical railway car tanks comprising, in combination with an underframe including center sills and bolsters having cradles secured thereon, a tank rest element for receiving and reinforcingly supporting said tank, said element being secured to the lower portion of said tank and substantially co-extensive therewith and resting on said cradles, and anchor means depending from said tank rest element and secured to the center sills.

6. In a railway tank car, an underframe comprising bolsters and center sills provided with cradles and anchor means, respectively, a tank, a tank rest element extending longitudinally of and conforming to the shape of the lower portion of said tank, resting on the cradles and secured to said anchor means, and attaching elements secured to the side edge portions of the tank rest element and welded to said tank.

7. In a railway tank car, an underframe comprising a center sill and cradle members, a tank formed of relatively light material possessing high corrosion resistant properties, a steel tank rest element substantially co-extensive with the tank and supported on the cradles, and means connecting the tank and tank rest element comprising attaching elements formed of material possessing substantially the same characteristics as the tank and welded thereto and mechanically connected to said tank rest element.

8. In a railway tank car, an underframe including a center sill and cradle members, a cylindrical tank formed of relatively light material possessing high corrosion resisting properties, and means for anchoring and reinforcingly supporting said tank on the underframe comprising a longitudinally-extending, steel tank rest element supported on the cradles and secured to the center sill, and connecting elements mechanically connected to the tank rest element and welded to said tank.

9. In a railway tank car, an underframe in-

cluding a center sill and cradle members, a cylindrical tank formed of relatively light material possessing high corrosion resisting properties, and means for anchoring and reinforcingly supporting said tank on the underframe comprising a longitudinally-extending tank rest element resting on said cradles and formed of material

possessing relatively greater strength than that of the tank and on which said tank is supported, means connecting said tank rest element to the center sill and means connecting the tank to the tank rest element.

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