

Filed Oct. 25, 1967

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Feb. 17, 1970

D. W. ROLLINS
RAILWAY HOPPER CAR WITH SEPARATE
COMPARTMENTS BETWEEN THE HOPPERS

3,495,548

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3 Sheets-Sheet 2

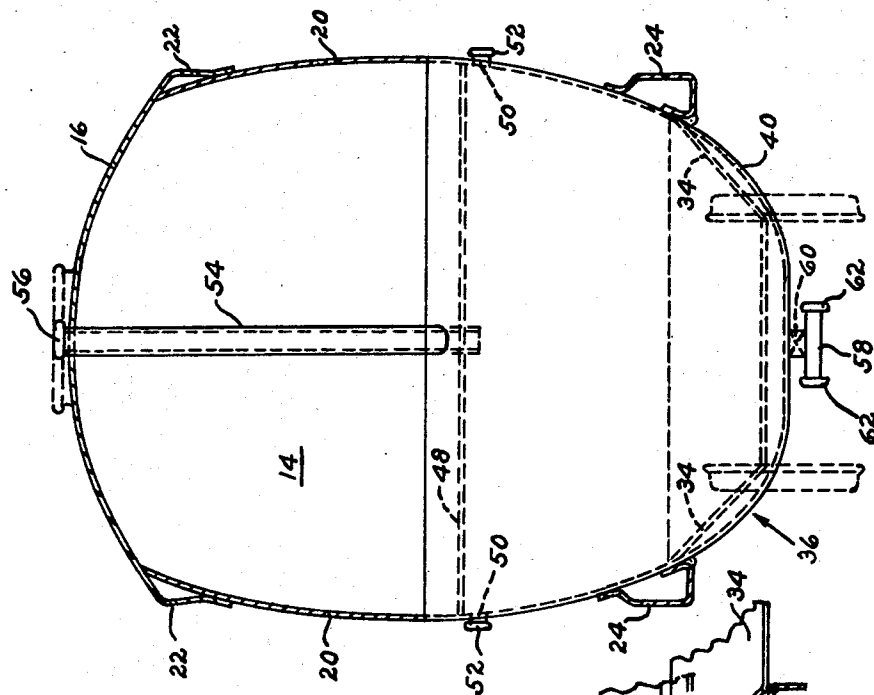


FIG. 2.

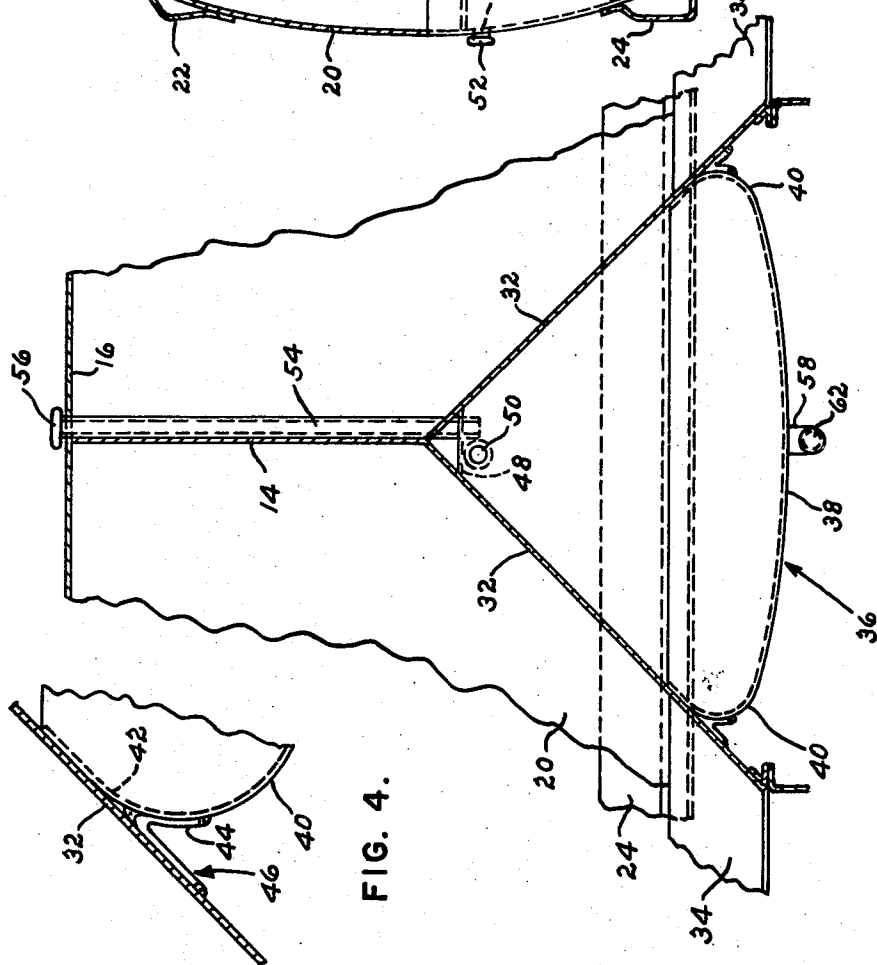


FIG. 3.

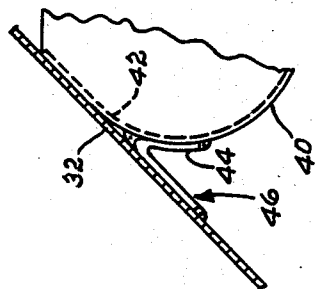


FIG. 4.

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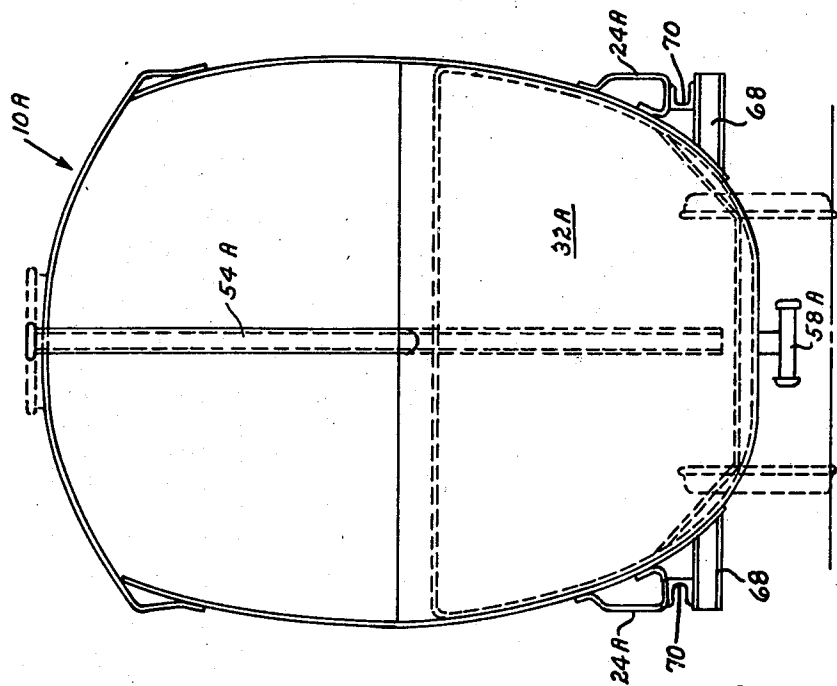


FIG. 5.

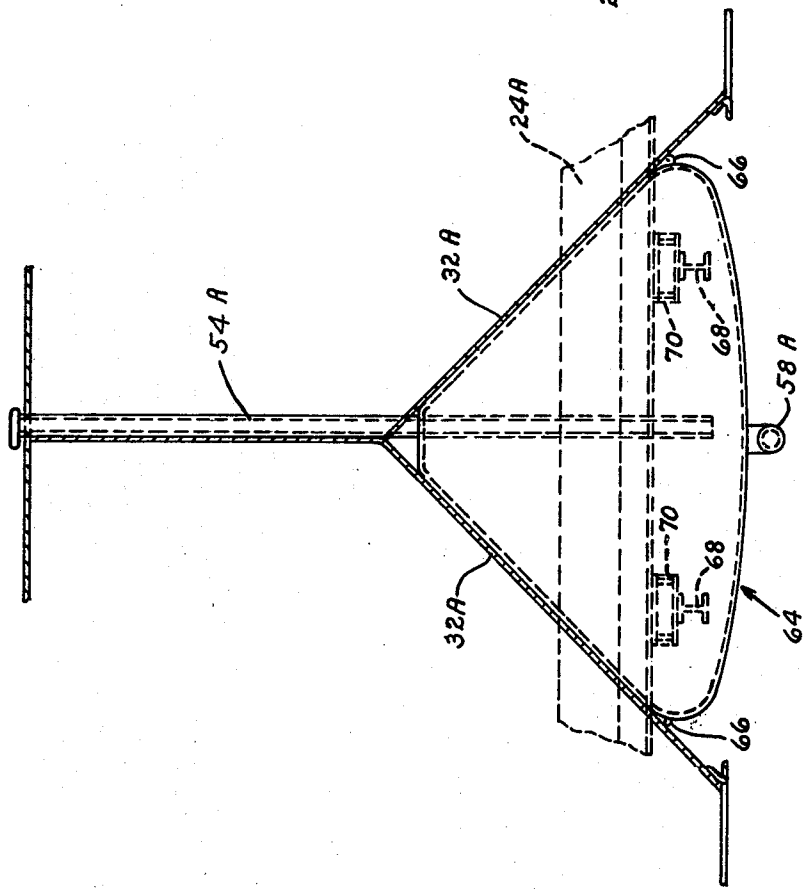


FIG. 6.

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RAILWAY HOPPER CAR WITH SEPARATE COMPARTMENTS BETWEEN THE HOPPERS**Dallas W. Rollins, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y., a corporation of New Jersey**

Filed Oct. 25, 1967, Ser. No. 677,923

Int. Cl. B61d 7/00, 5/02, 5/06

U.S. Cl. 105—248

5 Claims

ABSTRACT OF THE DISCLOSURE

A railway hopper car having a plurality of bottom discharge hoppers with a pair of adjoining hoppers having facing inclined side slope sheets extending between the side sills and diverging from each other to form an open space between facing hopper slope sheets. An enclosed compartment is formed in the space between the facing hopper slope sheets to provide a liquid carrying compartment or tank separate from the hoppers. A lower discharge outlet for the liquid tank permits unloading of the liquid lading.

Description of the invention

The present invention utilizes the space between the lower portions of adjacent hoppers to form a separate liquid carrying tank or compartment. Adjacent hoppers have facing slope sheets diverging from each other to form a space between the lower portions of a hopper. The invention is particularly adapted for use in a hopper car having a stub center sill at each end of the car since the stub center sills do not extend through the hoppers to obstruct the space between hopper slope sheets. The tank may be loaded from its side or, if desired, from the top of the hopper car. The tank does not interfere with the hoppers and the hoppers may be loaded and unloaded independently of the tank. Therefore, separate loadings may be carried by the tank.

The invention accordingly comprises the constructions hereinafter described, the scope of the invention being indicated in the following claims.

In the accompanying drawings, in which two possible embodiments of the invention are illustrated,

FIGURE 1 is a partial side elevation of a railway hopper car having separate lower tanks formed between the hoppers;

FIGURE 2 is a section taken generally along line 2—2 of FIGURE 1;

FIGURE 3 is a partial longitudinal section of a pair of adjoining hoppers;

FIGURE 4 is an enlarged fragment of FIGURE 3 illustrating the securing means for the liquid carrying tank comprising the present invention;

FIGURE 5 is a section of another embodiment of the invention in which an integral enclosed tank is secured to the hopper slope sheets in the area between contiguous hoppers; and

FIGURE 6 is a longitudinal section of the embodiment illustrated in FIGURE 5.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

Referring now to the drawings for a better understanding of this invention, a railway covered hopper car generally indicated 10 is illustrated having a plurality of hoppers 12 separated by vertical partitions 14. Hoppers 12 have bottom discharge openings and a gravity gate structure generally indicated 15 controls the flow of lading from hoppers 12. A roof 16 has hatch covers 18 thereon to permit loading of hoppers 12. A side sheet 20 on each side of railway car 10 has an upper side plate

structure or top chord member 22 extending along the upper marginal portion thereof for the length of car 10. Roof 16 is secured, such as by welding, to side plate structure 22. Extending along the lower marginal portion of each side sheet 20 is a side sill generally indicated 24 extending the length of the car. An end structure generally indicated 26 is mounted adjacent each end of car 10. End structure 26 includes a stub center sill 28 terminating inwardly of adjacent hopper 12 and a bolster structure 30.

Each intermediate partition 14 has a pair of hopper side slope or floor sheets 32 which extend downwardly from partition 14 in a diverging relation to form a generally inverted V-shape. Side slope sheets 32 extend transversely of car 10 and are secured, such as by welding, to side sheets 20 and side sills 24. Hopper end slope sheets 34 extend downwardly from side sills 24 and extend between spaced adjacent hopper side slope sheets 32 to form a generally rectangular lower discharge opening leading to gravity gate structure 15. In the conventional type of covered hopper car, an open space or void is formed between opposed facing side slope sheets 32 of adjoining hoppers 12.

The present invention utilizes this space by providing a separate compartment or tank generally indicated 36 in the volume between facing side slope sheets 32. Tank 36 includes a bottom wall 38 and upturned marginal end wall portions 40 secured by welding to adjacent side sills 24. Upturned marginal side wall portions 42 are secured by welding to leg 44 of a support angle 46 secured to side slope sheet 32. Side wall portions 42 are also secured to a portion of slope sheet 32 superjacent angle 46 as shown in FIGURE 4. An upper plate 48 extends between and is secured by welding to side sheets 20 and to side slope sheets 32. Thus, an enclosed compartment or tank 36 is formed by upper plate 48, hopper slope sheets 32, side sheets 20, lower wall 38, and wall portions 40, 42. Each side sheet 20 has a suitable inlet opening 50 adjacent plate 48 with a removable cap 52 thereon to permit loading of tank 36 from either side of railway car 10 as shown in FIGURE 2. To permit loading from roof 16, a suitable vertical pipe 54 is mounted on the adjacent vertical partition 14. Pipe 54 at its lower end extends through upper plate or wall 48 and at its upper end extends through roof 16. A suitable cap 56 on the upper end of pipe 54 allows the loading of tank 36 from pipe 54.

To unload tank 36, a lower T-shaped discharge pipe 58 is in fluid communication with the interior of tank 36. A valve 60 may be selectively opened and closed for the discharge of lading. A cap 62 on each end of pipe 58 may be removed when desired to connect a hose or the like for unloading.

As an example, when utilizing a railway car 10 having three hoppers and a total capacity of forty-six hundred (4600) cubic feet, two tanks 36 may be employed having a total capacity of eight hundred and fifty (850) cubic feet or around four hundred and twenty-five (425) cubic feet each. With molasses as a lading, a total of seventy-five thousand (75,000) pounds may be carried in tanks 36. Therefore, hoppers 12 may be employed for carrying other ladings, whereas, if molasses or some other viscous liquid is carried in hoppers 12, the car must be cleaned before being loaded with another lading. Thus, car 10 may be employed in one direction with one lading and in a return direction with a viscous lading and without any cleaning of hoppers 12 being required.

Referring to FIGURES 5 and 6, another embodiment of this invention is illustrated in which an integral enclosed tank 64 is fabricated before being secured in the area between slope sheets 32A of car 10A. Tank 64 after being fabricated is placed in the area between

slope sheets 32A and welded at 66 to slope sheets 32A. Then, a connection is made to side sills 24A including I-beams 68 and channel-shaped supports 70. I-beams 68 are welded to tank 64 and extend outwardly therefrom beneath adjacent side sill 24A, and channel-shaped supports 70 are welded to I-beams 68 and superjacent side sill 24A. A suitable pipe 54A may be inserted within a preformed opening in tank 64 to extend to a position adjacent the bottom of tank 64. Liquid lading may be loaded by pipe 54A. Upon unloading from discharge outlet 58A, steam or the like may be discharged from pipe 54A adjacent outlet 58A to heat the lading being unloaded, such as may be desirable with some highly viscous liquids, such as pitch or asphalt.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results obtained.

As various changes could be made in the above construction without departing from the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A covered hopper railway car having a pair of spaced side sheets extending the length of the car, a side sill along the lower portion of each side sheet extending for the length of the car, a plurality of hoppers spaced along the length of the car, each hopper having a bottom discharge opening positioned between the side sills, means to control the flow of lading from each bottom discharge opening, adjacent hoppers having facing inclined slope sheets extending between the side sills transversely of the car and diverging from each other thereby to form a space between said facing slope sheets, said side sheets, side sills, and slope sheets comprising framing members for said car, a wall structure in said space secured to at least some of said framing members to form an enclosed compartment beneath the hoppers between said slope sheets and said side sheets for carrying lading, and a discharge outlet for said enclosed compartment to permit unloading of the lading from the enclosed compartment.

2. A covered hopper railway car as set forth in claim 1 wherein a generally vertical inlet pipe extends within said compartment and has a lower discharge end closely adjacent the bottom of said compartment.

3. A covered hopper railway car as set forth in claim 1 wherein said side sheet adjacent the compartment has an inlet opening therein to provide an inlet for said compartment.

4. A covered hopper railway car having a pair of spaced side sheets extending the length of the car, a stub center sill structure adjacent each end of the car, a side sill along the lower portion of each side sheet extending for the length of the car, a plurality of hoppers spaced along the length of the car each hopper having a bottom discharge opening centrally of the width of the car, means to control the flow of lading from each bottom discharge opening, a vertical partition separating adjoining hoppers, said adjoining hoppers having facing inclined slope sheets extending in a direction transversely of the car downwardly from the vertical partition separating said adjoining hoppers, said facing slope sheets being secured between the side sills and side sheets and diverging from each other in an inverted generally V-shape thereby to form a space between said facing slope sheets, said side sheets, side sills, and slope sheets comprising framing members for said car, a lower wall in said space secured to at least some of said framing members to form an enclosed compartment below the hoppers and between said slope sheets and said side sheets for carrying lading, and a lower discharge outlet connected to said lower wall to permit unloading of the lading from the enclosed compartment.

5. A covered hopper car as set forth in claim 4 wherein said lower wall has upturned marginal portions secured to said side sills and additional upturned marginal portions secured to said side slope sheets.

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U.S. Cl. X.R.

105—358, 360; 220—63