No. 738,261. PATENTED SEPT. 8, 1903.

J. W. VAN DYKE.

RAILROAD TANK CAR.

APPLICATION FILED OCT. 28, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

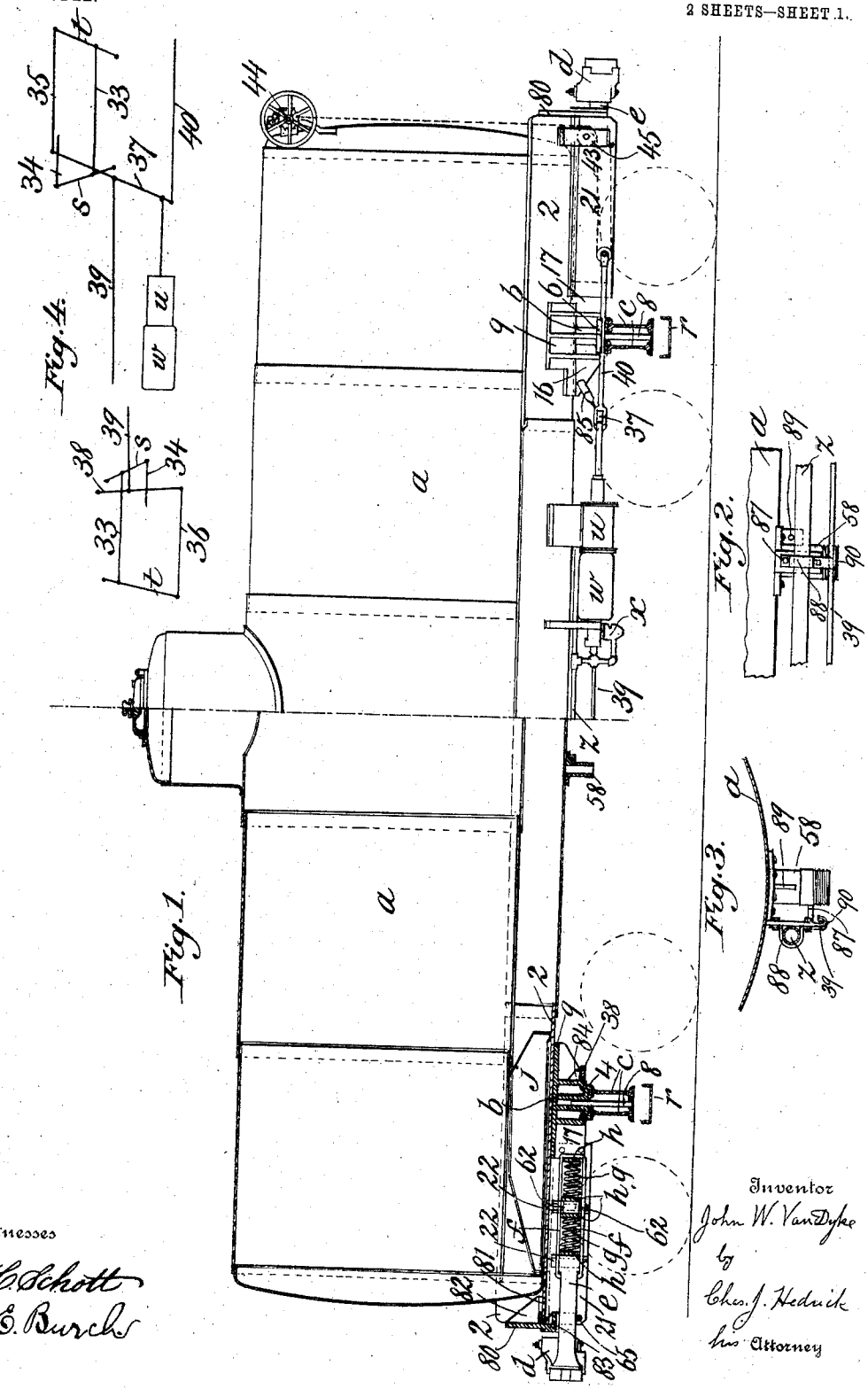


Fig. 1.

Fig. 4.

Fig. 2.

Fig. 3.

Witnesses

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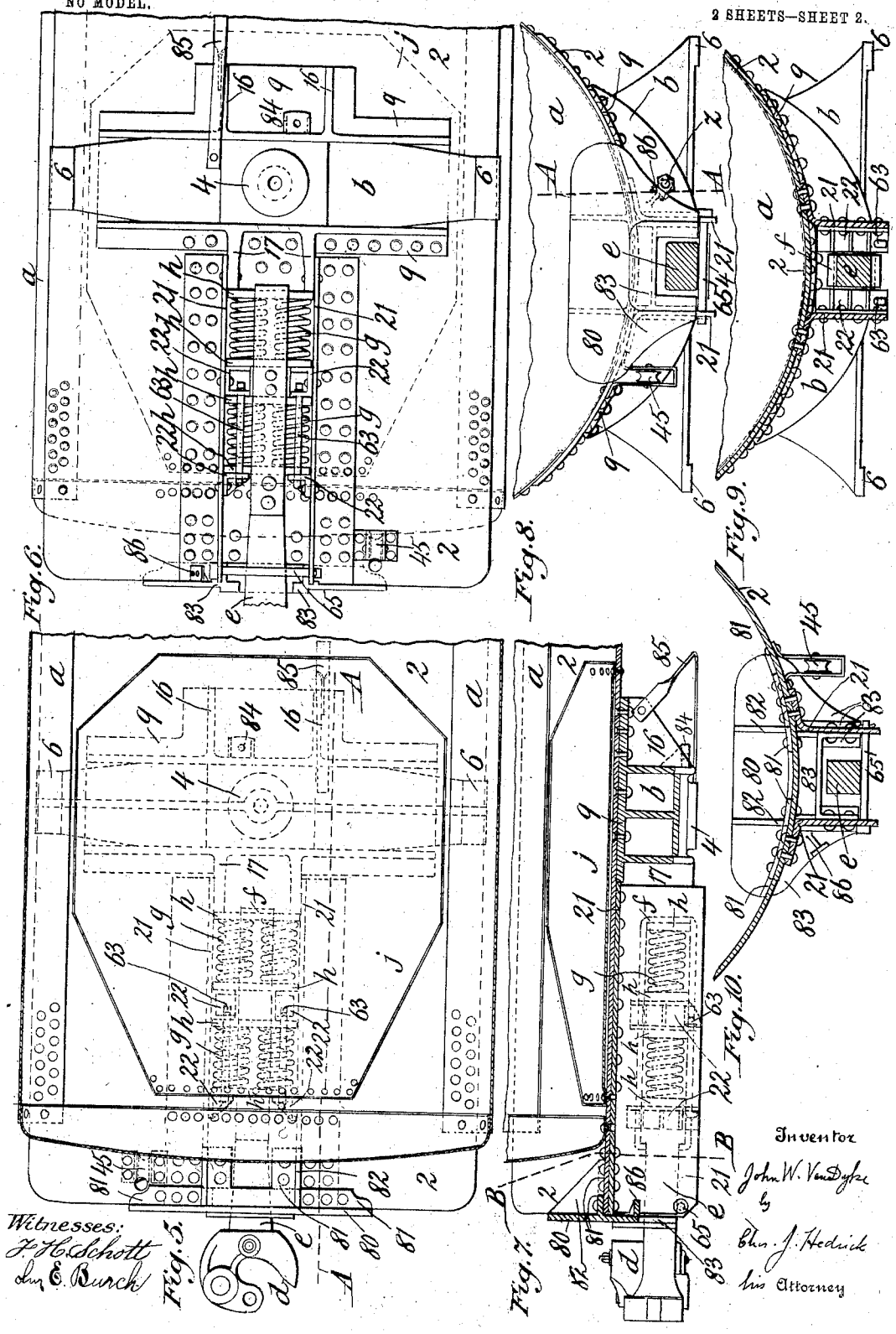
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NO MODEL. 2 SHEETS—SHEET 2.



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No. 738,261. Patented September 8, 1903.

UNITED STATES PATENT OFFICE.

JOHN W. VAN DYKE, OF LIMA, OHIO.

RAILROAD TANK-CAR.

SPECIFICATION forming part of Letters Patent No. 738,261, dated September 8, 1903.

Application filed October 28, 1902. Serial No. 129,174. (No model.)

To all whom it may concern.

Be it known that I, JOHN W. VAN DYKE, a citizen of the United States, residing at Lima, in the county of Allen and State of Ohio, have invented certain new and useful Improvements in Railroad Tank-Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has reference to cars with tight tanks in the form of horizontal cylinders of large capacity for the conveyance of oil on railroads. Heretofore (see my prior patent applied for June 25, 1902, by application officially serially numbered 113,083 to issue of even date with the patent hereon) I have devised a new or improved car of this description in which I dispense with the underframe previously employed to uphold the tank and to support the severe stresses of compression and tension incident to the coupling, shifting, and hauling of such cars in trains and rely upon the tank to sustain the weight of itself and contents and also to support the said stresses of compression and tension. The present invention has more particular reference to such new or improved cars; but the parts, improvements, and combinations composing the present invention are intended, all and several, to be secured for all the uses to which they may, respectively, with or without modification, be applicable.

In accordance with the present invention the bottom plate at each end of car is made to project beyond the head of the tank, and this projection is utilized for the following purposes or one or more of them, namely: (*a*) for forming a platform beyond the tank, and thereby diminishing the liability of tanks of two cars coming together; (*b*) for holding up the draw-bar; (*c*) for supporting stresses conveyed thereto from a coupler-buffer—that is, a coupler and a buffer, either or both, and (*d*) for supporting parts of the brake mechanism. It is considered more advantageous as conducing to strength and economy of construction to have the bottom end plate thus to project than to attach an exterior projecting plate to a tank of the old construction in which the bottom end plate terminates at the tank-head with or without being bent upward over the front of it for a short distance. So far as I am aware it is new, broadly, to construct the tank of any railroad tank-car with a bottom end plate projecting beyond the tank-head, as above set forth. Further, in accordance with the present invention, in order that the plate projection may better serve the purpose of protecting the tank from injury by contact with an adjacent car said projection is provided with a deep upturned flange, so that there is less danger of the said projection riding over or under the corresponding part on an adjacent car. Such an upturned flange could be usefully applied to a plate projection which might be formed otherwise than by an extension of the bottom end plate of the tank. It is considered most advantageous to make the flange a separate piece—a casting, for example—and to fasten it—by rivets, for example—to the projection. Further, in accordance with the present invention, in order to obtain a greater ratio of strength to weight a separate top plate for securing the coupler-buffer to the tank is dispensed with and side plates for this purpose are fastened to the bottom end plate of the tank, each by its individual flange. A special improvement is to provide the side plates with an end piece which may be integral with the upturned flange of the projecting bottom end plate of the car. It is also considered most advantageous to fasten the side plates to the body-bolster of the car and to effect such fastening by lapping said plates on vertical flanges projecting forward from the body-bolster. The bottom end plates should be made of thicker metal than other plates composing the tank.

The invention also consists in other new parts, improvements, and combinations, as herein specified.

The following description, with the accompanying drawings, illustrates what is considered the best mode of carrying the invention into effect, it being understood that modifications can be made so long as the substance of one or more of my hereinafter-written claims is taken.

Figure 1 is a partial side view, partly in section and partly in elevation, of a railroad

tank-car constructed in accordance with the invention. Figs. 2 and 3 are detail views of the tank discharge-pipe adapted to support the middle portion of the train-pipe. Fig. 4 is a diagram of the brake mechanism, a portion of the connecting-rod between the body brake-levers being broken away. Figs. 5 and 6 are respectively a plan, partly in section, and a bottom view of a portion of said car, the draw-head shown in Fig. 5 being omitted in Fig. 6. Figs. 7, 8, 9, and 10 are views of the same, or nearly the same, portion of the car, Fig. 7 being a sectional view on line A A of Figs. 5 and 8, Fig. 8 an end view, Fig. 9 a section on line B B of Fig. 7 looking to the right, and Fig. 10 the same section looking to the left.

The tank *a* is a horizontal metal cylinder of curved plates lapped, riveted, and calked. The bottom end plates 2 are heavier than customary, being, say, of about three-quarters of an inch, more or less, in thickness. The middle bottom plates may be about half as thick and the crown-sheets somewhat less. The tank is shown with a dome and convex ends as customary. The bottom end plates 2 instead of terminating at the corresponding tank-heads are made to project beyond said heads.

Under and secured to each bottom end plate 2 are the side plates 21, through which the coupler-buffer is connected with the tank *a*. Each side plate 21 has a curved top flange, Figs. 9 and 10, by which it is secured by rivets to the corresponding plate 2. It is secured, Fig. 6, to this plate partly beyond (outside) the tank-head and partly behind the same—that is, between the tank-head and the middle of the car. The coupler-buffer could be of the friction type or the spring type or of any ordinary and suitable description. As shown, the draw-bar *e*, provided with a coupling-head *d* at its outer end and the looped strap *f* at its inner end, acts upon the springs *g*, which are placed between followers *h*, these latter being inclosed by the strap *f* and one pair of them being between the inner end of the draw-bar and the stops 62 on strap *f* while the other pair are between said stops 62 and the closed end of said strap *f*. The motion inward of the inner and the motion outward of the outer follower of each pair is prevented by the stops 22 on the side plates 21 or by the ends of the flanges 17 of the body-bolster *b*. The stops 22 are made of castings riveted to the side plates. The ends of the followers *h* rest upon the rods 63, removably supported by the castings, which form the stops 22. The draw-bar is upheld in part by the strap *f*, resting on the followers *h*, and in part by the removable cross-pin 65, which passes through holes in the front end of the side plates. As the flanges of the side plates 21 are riveted to the portion of each bottom end plate which projects beyond the tank-head, such projection aids in supporting the stresses conveyed from the coupler-buffer. As the cross-pin 65 is upheld by devices—namely, the plates 21—secured to the said projection, the latter aids in holding up the draw-bar *e*. As the projection lies beyond the tank-head, it makes a platform which diminishes the liability of two tanks meeting when the cars come together, which they may sometimes do with violence. That the projection may better serve the purpose of protecting the tank from injury it is provided with a deep upturned flange 80, consisting, as shown, of a separate piece with flanges 81, by which it is secured to the bottom end plate, and with buttressing-ribs 82, by which it is braced.

At the outer end of each pair of side plates 21 is an end piece 83, integral with the upturned flange 80. It forms a guide for the end of the draw-bar to prevent too extensive side motion thereof, and it also imparts to the ends of said side plates a greater resistance to lateral pressures.

The tank *a* is mounted on wheeled trucks (of any ordinary or suitable construction) by means of body-bolsters *b*, which are riveted to the bottom end plates 2 of the tank by means of the respective curved top plates 9 of the body-bolsters. The body-bolsters rest on the truck-bolsters *c* by their center-bearings 4 and have side bearings 6 to aid in upholding the tank when its equilibrium is disturbed. A king-pin 8 passes through the center-bearings of each body-bolster and the underlying truck-bolster. At *r* is shown the channel-iron connecting the side frames (not shown) of each truck. The position of the wheels is indicated by the dotted circles.

Each body-bolster *b* has forwardly-projecting vertical flanges 17, and the inner ends of the side plates 21 are lapped upon and riveted to said flanges 17, so that the body-bolsters aid in communicating stresses from the coupler-buffers to the bottom end plates. The body-bolsters may be of any suitable description, and they, as well as the side plates 21, may be of any suitable material. It is considered expedient to make the body-bolsters in the form of castings and the side plates 21 of pressed steel or wrought metal. The upturned flange 80 and the end piece 83 may be cast.

As a safeguard against leakage, by the starting of a rivet or otherwise, patches or cover-plates *j* of sheet metal are secured inside the tank over the areas of fastening the side plates 21 and body-bolsters *b* to the bottom end plates 2. The patches are secured by rivets and calked. The rivets (see Fig. 7) are inserted through holes in the curved flanges of the side plates 21, so that should the side plates be torn off in a wreck the rivets holding the inside patches *j* are not disturbed and the tank remains tight. The rivets which secure the tank-heads to those portions of the bottom end plates 2 which overlie the curved flanges of side plates 21 are also inserted through holes in the said

curved flanges, so as not to be disturbed by accident to the side plates.

The body brake-levers 37 and 38 are mounted on the body-bolsters. The lever 38 is pivoted at its inner end to a lug 84, and its outer end is supported by the lower member of the bracket 85, which is formed of bent strap metal and fastened at one end to the bottom of the body-bolster and at the other to a flange 16 thereon. The lever 37 is upheld by two such brackets 85. The levers 37 and 38 (see Fig. 4) are connected with each other by the rod 39, having a pivot at each end, and each of them is connected by a link (35 and 36, respectively) with the live brake-lever *t* on the corresponding truck. The diagram Fig. 4 is that of inside hung brakes, the live and dead brake-levers *t* and *s*, respectively, on each truck being connected by a strut 33. At 34 is indicated the link for holding the upper end of the dead brake-lever *s*. For a hand-brake the lever 37 is connected by the rod 40 with the brake-chain 43, running over the brake-chain pulley 45 to the axle 44, mounted on the tank-head and provided with the usual hand-wheel and retaining-ratchet. The brake-chain pulley is carried by a bracket arranged under the projection of the bottom end plate 2 of the tank and secured thereto by rivets. For an air-brake the cylinder *u* and the auxiliary reservoir *w* with triple valve *x* are suspended by hangers from the tank *a*. The areas of fastening may be protected by one or more tight inside patches, such as the patches *j*, above described.

The train-pipe *z* is upheld at each end of the car by a clip engaging a lug 86 on the corresponding end piece 83. It passes through a hole in the web of each body-bolster *b* and is upheld at the middle by the bracket 87, Figs. 2 and 3, on the tank discharge-pipe 58, being secured thereto by the clip 88.

At 89 is a lug for attaching the chain of the cover (not shown) for pipe 58.

At 90 is a hook for supporting the brake-rod 39 between the body brake-levers. In this way said rod is (in part) upheld by the tank discharge-pipe 58.

In consequence of official requirement the subject-matter of the present application as originally filed has been divided and in part embodied in my application, Serial No. 158,018, filed May 20, 1903, which is a division and continuation hereof. The patent to issue on it of even date with the patent on my application Serial No. 113,083 and with the patent hereon is in legal effect intermediate the said patents, being subsequent to the patent on application Serial No. 113,083 and prior to the patent hereon—that is to say, whatever of inventive novelty is contained in application Serial No. 113,083 is intended to be secured by the patent to issue on it. Whatever is contained in application Serial No. 158,018 and not in application Serial No. 113,083 is intended to be secured by the patent to issue on application Serial No. 158,018, and whatever is contained herein and not in one or other of said applications Serial Nos. 113,083 and 158,018 is intended to be secured by the patent to issue hereon.

I claim as my invention or discovery—

1. A railroad tank-car having a tank with a bottom end plate which projects after the manner of a platform beyond the tank-head, substantially as described.

2. A railroad tank-car having a tank with a bottom end plate which projects beyond the tank-head, such projection carrying devices for holding up the draw-bar, substantially as described.

3. A railroad tank-car having a tank with a bottom end plate which projects beyond the tank-head, such projection having secured thereto devices through which stresses are transmitted from the coupler-buffer, substantially as described.

4. A railroad tank-car having a tank with a bottom end plate which projects beyond the tank-car, such projection carrying devices whereby the draw-bar is upheld and through which stresses are transmitted to said projection from the coupler-buffer, substantially as described.

5. A railroad tank-car having a tank with a bottom end plate which projects beyond the tank-head, such projection supporting a part of the brake mechanism, substantially as described.

6. A railroad tank-car having a tank with a bottom end plate which projects beyond the tank-head, such projection supporting a part of the brake mechanism and carrying devices whereby the draw-bar is upheld and through which stresses are transmitted to said projection from the coupler-buffer, substantially as described.

7. A railroad tank-car having a tank with a bottom end plate which projects after the manner of a platform beyond the tank-head and which is provided with a deep upturned flange as a protection against over or under riding, substantially as described.

8. A railroad tank-car having a tank with a plate projection beyond the tank-head, and a deep upturned flange on said projection as a protection against over or under riding, substantially as described.

9. A railroad tank-car having a coupler-buffer held by side plates fastened, each by its individual flange, to the bottom end plate of said tank, substantially as described.

10. A railroad tank-car having a coupler-buffer held by side plates fastened, each by its individual flange, to the bottom end plate of said tank and provided with an end piece between the side plates, substantially as described.

11. A railroad tank-car having a tank with a projecting bottom end plate, to which plate the coupler-buffer is attached partly beyond and partly behind the tank-head, substantially as described.

12. A railroad tank-car having a tank with

a projecting bottom end plate and a coupler-buffer held by side plates which are fastened, each by its individual flange, to said bottom end plate partly beyond and partly behind the tank-head, substantially as described.

13. A railroad tank-car having a tank with a projecting bottom end plate and a coupler-buffer held by side plates which are fastened, each by its individual flange, to said bottom end plate partly beyond and partly behind the tank-head and which have an end piece between said side plates, substantially as described.

14. A railroad tank-car having a tank with a projecting bottom end plate and a coupler-buffer held by side plates which are fastened, each by its individual flange, to said bottom end plate partly beyond and partly behind the tank-head and which have an end piece between said side plates, the projecting portion of said bottom end plate being provided with a deep upturned flange, substantially as described.

15. The combination with a plate projection on the tank, and side plates for the coupler-buffer, of an end piece secured between said side plates, and a deep upturned and braced flange secured to said projection, said end piece and flange being integral with each other, substantially as described.

16. The combination with the tank, and the body-bolster secured thereto, of the side plates for the coupler-buffer secured to the bottom end plate of said tank, each by its individual flange, and being each at its inner end lapped upon and fastened to an outwardly-projecting vertical flange on the said body-bolster, substantially as described.

17. The combination with a tank having a projecting bottom end plate, and a body-bolster, of brake mechanism partly supported by the projecting portion of said bottom end plate and partly by the body-bolster, substantially as described.

18. The combination with a tank having a projecting bottom end plate and a central discharge-pipe, of an air-brake mechanism having a train-pipe held partly by the projection of said bottom end plate and partly by said discharge-pipe, substantially as described.

19. A railroad-car composed of a tight metal tank in the form of a self-supporting horizontal cylinder with bottom end plates projecting after the manner of platforms beyond the tank-heads, mounted on wheeled trucks, and provided with coupler-buffers secured to said tank in such manner that the stresses of tension in hauling and of compression in coupling, stopping, and pushing are borne and transmitted by said tank itself, instead of by an underframe, substantially as described.

20. A railroad-car composed of a tight metal tank in the form of a self-supporting horizontal cylinder with bottom end plates projecting beyond the tank-heads, mounted on wheeled trucks, and provided with coupler-buffers secured to said bottom end plates partly beyond and partly behind said tank-heads in such manner that the stresses of tension in hauling and of compression in coupling, stopping, and pushing are borne and transmitted by said tank itself, instead of by an underframe, substantially as described.

21. A railroad-car composed of a tight metal tank in the form of a self-supporting horizontal cylinder, mounted on wheeled trucks, and provided with coupler-buffers held by side plates, each fastened by its individual flange to a bottom end plate of said tank in such manner that the stresses of tension in hauling and of compression in coupling, stopping, and pushing are borne and transmitted by said tank itself, instead of by an underframe, substantially as described.

22. A railroad-car composed of a tight metal tank in the form of a self-supporting horizontal cylinder with bottom end plates projecting beyond the tank-heads, mounted on wheeled trucks, and provided with coupler-buffers held by side plates, each fastened by its individual flange to a bottom end plate of said tank partly beyond and partly behind the corresponding tank-head in such manner that the stresses of tension in hauling and of compression in coupling, stopping, and pushing are borne and transmitted by said tank itself, instead of by an underframe, substantially as described.

23. A railroad-car composed of a tight metal tank in the form of a self-supporting horizontal cylinder, mounted on wheeled trucks, and provided with coupler-buffers held by side plates, each fastened by its individual flange to a bottom end plate of said tank with end pieces between the respective pairs of side plates in such manner that the stresses of tension in hauling and of compression in coupling, stopping, and pushing are borne and transmitted by said tank itself, instead of by an underframe, substantially as described.

24. A railroad-car composed of a tight metal tank in the form of a self-supporting horizontal cylinder with plate projections beyond the tank-heads and deep upturned flanges on said projections to protect against over or under riding, mounted on wheeled trucks, and provided with coupler-buffers secured to said tank in such manner that the stresses of tension in hauling and of compression in coupling, stopping, and pushing are borne and transmitted by said tank itself, instead of by an underframe, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN W. VAN DYKE.

Witnesses:
W. M. IRISH,
GEO. LEE SOUTHARD.