

No. 814,880.

PATENTED MAR. 13, 1906.

H. J. SMALL & J. B. SPEED.

RAILROAD TANK CAR.

APPLICATION FILED SEPT. 19, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

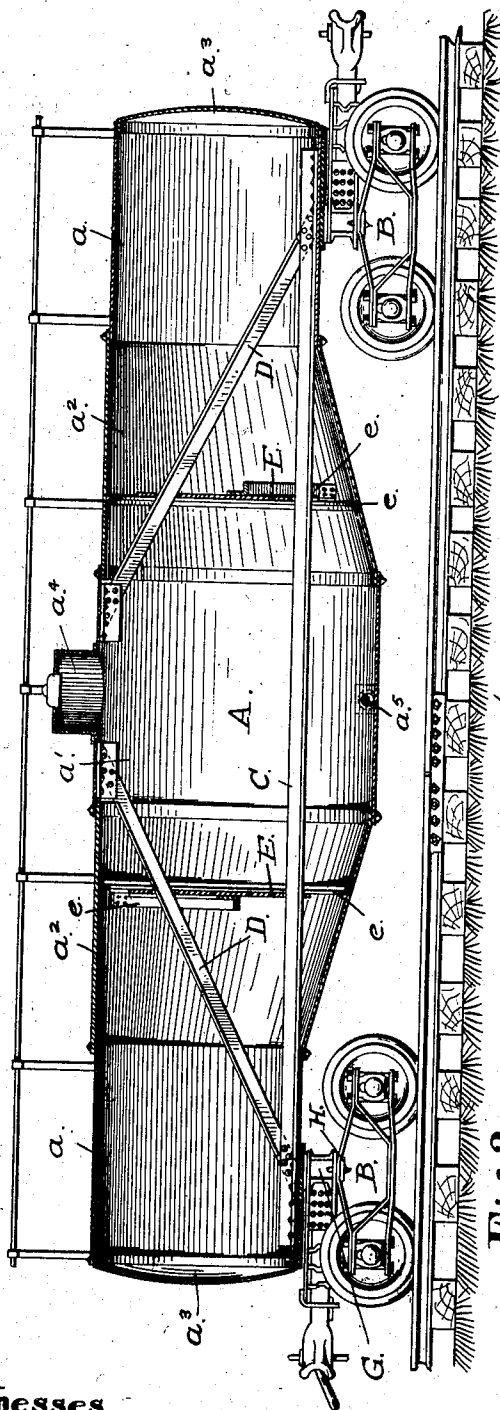
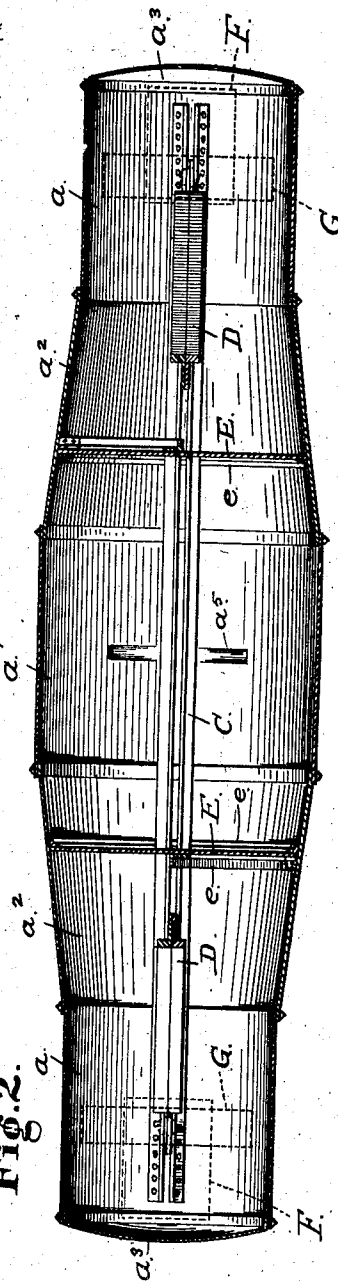


Fig. 2.



Witnesses.

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2 SHEETS—SHEET 2.

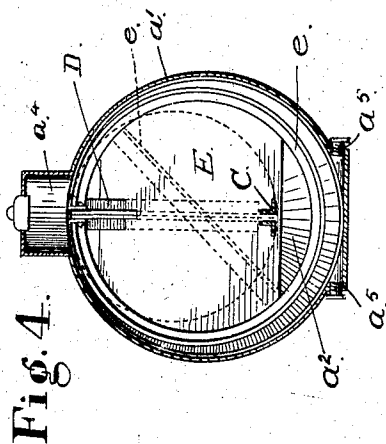


Fig. 4.

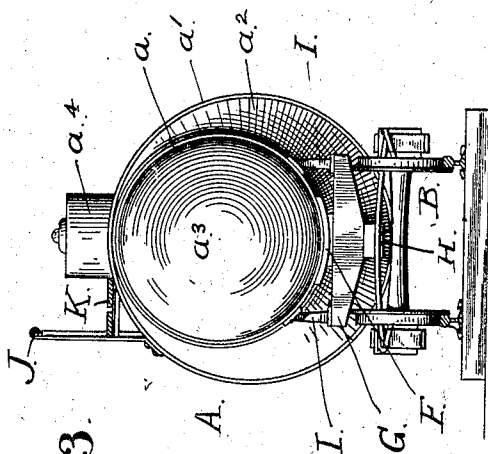


Fig. 3.

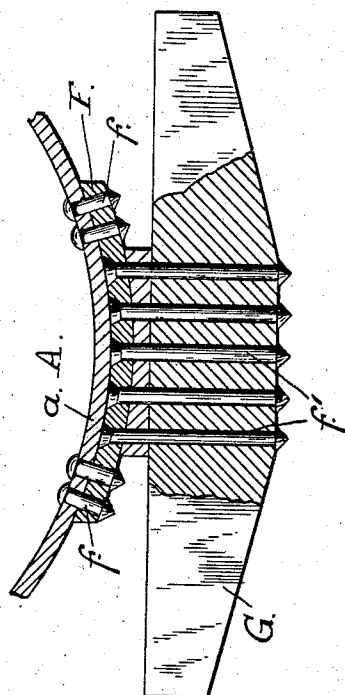


Fig. 5.

Witnesses.

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UNITED STATES PATENT OFFICE.

HENRY JOHN SMALL, OF SAN FRANCISCO, AND JAMES BUCKNER SPEED,
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RAILROAD TANK-CAR.

No. 814,880.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed September 19, 1905. Serial No. 279,112.

To all whom it may concern:

Be it known that we, HENRY JOHN SMALL, of the city and county of San Francisco, and JAMES BUCKNER SPEED, of Berkeley, Alameda county, State of California, have invented certain new and useful Improvements in Railroad Tank-Cars; and we do hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to the class of tank-cars for railroads.

The objects of our invention, briefly stated, are to simplify the construction of the car consistently with strength and to increase its stability by lowering the center of gravity.

To these ends our invention consists in the novel tank-car hereinafter described and in the construction, arrangement, and combinations of its several parts, as will be fully described by reference to the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of the tank-car. Fig. 2 is a horizontal longitudinal section of same. Fig. 3 is an end view. Fig. 4 is a central transverse section. Fig. 5 is a detail showing the connection of the tank ends with the body-bolsters of the trucks.

The tank A of the car is itself the body thereof, being mounted upon and extending and supporting itself between the wheeled trucks B, the tank and the trucks thus constituting in and of themselves the whole car to the exclusion of any other supporting body, platform, or connecting frame between the trucks.

The tank body or shell intermediate its ends is depressed between the trucks. This depression applies in the best construction to its bottom only, the top of the tank extending throughout its length on substantially the same level as seen in Fig. 1. This depression between the ends is in the best construction attained by making the tank of a plurality of overlapping sections of varied cross-sectional form and areas—as, for example, the sections here shown, wherein the end sections *a* are cylindrical and of the same diameter. The middle section *a'* is also cylindrical, but of greater diameter than the end sections, while the sections *a''*, which join the ends to the middle, are frustums of cones. These sections are relatively arranged so that their tops lie in the same horizontal

plane throughout the length of the tank, thereby relegating the whole of the increasing and increased diameters of the sections *a''* and *a'* to the bottom to form the depression, as shown in Fig. 1.

The several sections are properly riveted together, and the end sections are closed by suitable heads *a³*. In the top of the tank is the feed-hole *a⁴*, and in the bottom at the middle are the side outlets *a⁵*.

In order to properly stiffen the tank A and to stay it against strains induced by pushing and pulling on the trucks, there is the following arrangement of interior struts, which together form a truss: C represents horizontal struts which lie in the longitudinal central portion of the tank, bridging the depressed center and resting upon the bottoms of the end sections and suitably secured. D represents inclined struts reaching from the horizontal struts near each end obliquely upwardly to the top of the tank on each side of its feed-hole, said inclined struts being properly secured at each end. These sustain the upper side of the middle tank-section against depression or collapse in case of severe shocks. E represents baffle-diaphragms, which, with their securing-irons *e*, further serve to stiffen the tank. The struts C and D pass these baffle-diaphragms, as shown, and said diaphragms serve in addition the usual purpose of preventing too sudden motion of the liquid content of the tank.

In order to relieve the tank-shell at its connection with the trucks from the unequal straining on the securing-rivets, due to shocks and blows, the connection is made as shown in Fig. 5. Under each end section is riveted a thick plate F, the rivets *f* passing through the tank-shell and the patch-plate only. The body-bolster G of the truck is also riveted to the thick plate, the rivets *f'* passing through the bolster and through the plate with their heads countersunk in said plate next to the tank-shell. By this connection the plates F serve as strain-distributing plates, the strains being received by the bolster-rivets *f'*, thus saving the shell-rivets *f* and preventing any tendency of the tank to leak. The bolster G is connected with the truck by a king-pin H.

I represents the side standards from the bolster ends to the tank.

J is a hand-rail, and K is a running-board, both properly secured to the upper portion of the tank.

From this description it will be seen that no other body or intertruck frame is used or required than the tank itself, thereby simplifying the construction of the car and reducing the cost of manufacture. It will also be seen that the depressed bottom of the tank between the trucks lowers the center of gravity, thereby giving greater stability and safety, and, further, that in the shape here shown as attained by the forms of tank-sections used the depressed center is of the best form consistent with strength and capacity. Also it will be noted that though the tank-shell is relatively light it is stiffened by the struts and baffle-diaphragms to the required degree, and, finally, by the intervention of the thick plates F the connection of the tank-shell with the body-bolsters is such as to relieve the tank-connecting rivets of the strains of blows and shocks and to prevent said rivets from becoming loosened under said strains, thereby avoiding any tendency of the tank to leak.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A railroad tank-car, the tank of which is composed of cylindrical end sections, a middle cylindrical section of greater diameter than that of the end sections, and conical intervening sections uniting the end and middle sections, said tank-sections being relatively arranged to depress the intertruck portion of the tank below the level of its ends.

2. A railroad tank-car, the tank of which is composed of cylindrical end sections, a middle cylindrical section of greater diameter than that of the end sections, and conical intervening sections uniting the end and middle sections, said tank-sections being relatively arranged to form of their tops a continuous level throughout the length of the tank, while their bottoms, intermediate the trucks, are depressed below the level of the end sections.

3. In a railroad tank-car, a tank having an interior stiffening-truss comprising horizontal struts extending lengthwise of its bottom, and inclined struts extending from the ends of said horizontal struts to the middle top of said tank.

4. In a railroad tank-car, a tank having an interior stiffening-truss comprising horizontal struts extending lengthwise of its bottom, and inclined struts extending from the ends of said horizontal struts to the middle top of said tank, and interior baffle-diaphragms on

each side of the median transverse plane of such tank.

5. In a railroad tank-car, a tank constituting, of itself, the sole intertruck connection, said tank having an interior stiffening-truss comprising horizontal struts extending lengthwise of its bottom, and inclined struts extending from the ends of said horizontal struts to the middle top of said tank.

6. In a railroad tank-car, a tank composed of cylindrical end sections, a cylindrical middle section of diameter greater than that of the end sections, and intervening conical sections uniting the end and middle sections, said tank-sections being relatively arranged to depress the bottom of the tank intermediate the trucks, in combination with an interior stiffening-truss comprising horizontal struts extending lengthwise of the bottom of the tank and bridging its depressed portion, and inclined struts extending from the ends of said horizontal struts to the middle top of said tank.

7. In a railroad tank-car, a tank composed of cylindrical end sections, a cylindrical middle section of diameter greater than that of the end sections, and intervening conical sections uniting the end and middle sections, said tank-sections being relatively arranged to depress the bottom of the tank intermediate the trucks, in combination with an interior stiffening-truss comprising horizontal struts extending lengthwise of the bottom of the tank and bridging its depressed portion, and inclined struts extending from the ends of said horizontal struts to the middle top of said tank, and interior baffle-diaphragms on each side of the median transverse plane of said tank.

8. In a railroad tank-car in which the tank constitutes, of itself, the sole intertruck connection, the means for connecting the tank ends with the body-bolsters of the trucks consisting of the intervening stress-distributing plates independently riveted to both tank and bolsters.

9. In a railroad tank-car, the combination of a tank; wheeled trucks; a body-bolster connected with each truck; a stress-distributing plate under each end of the tank; rivets passing through said plates and tank-shell only; and other rivets passing through the bolsters, and through said plates only.

In witness whereof we have hereunto set our hands.

HENRY JOHN SMALL.
JAMES BUCKNER SPEED.

Witnesses:

E. L. ALLEN,
M. H. SHIELDS.