R. P. WHITE.

TANK CAR FOR TRANSPORTING CEMENT AND THE LIKE.

APPLICATION FILED APR. 10, 1913.

1,165,736.

Patented Dec. 28, 1915.

2 SHEETS—SHEET 1.

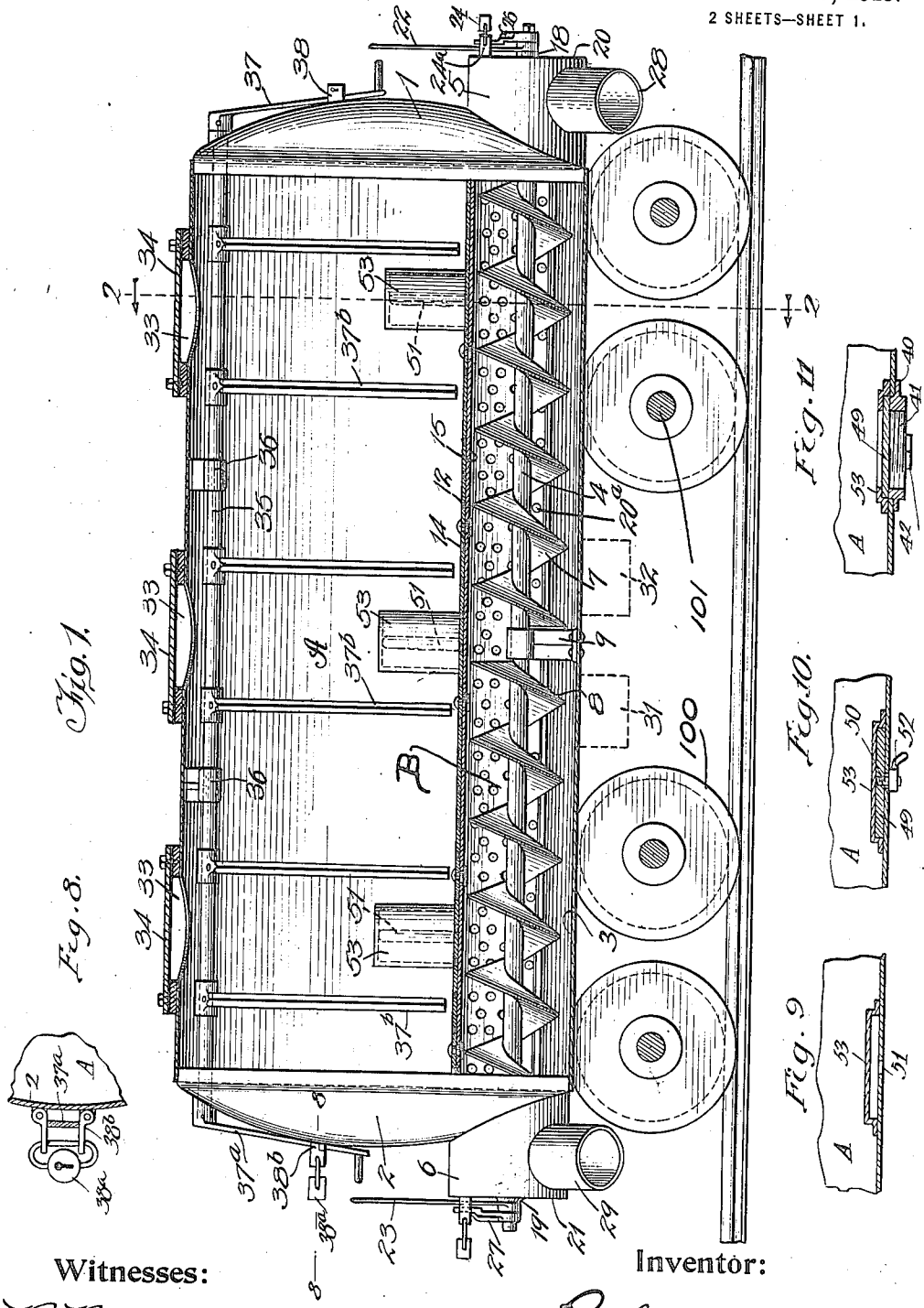


Fig. 1.

Fig. 8.

Fig. 11.

Fig. 10.

Fig. 9.

Witnesses:

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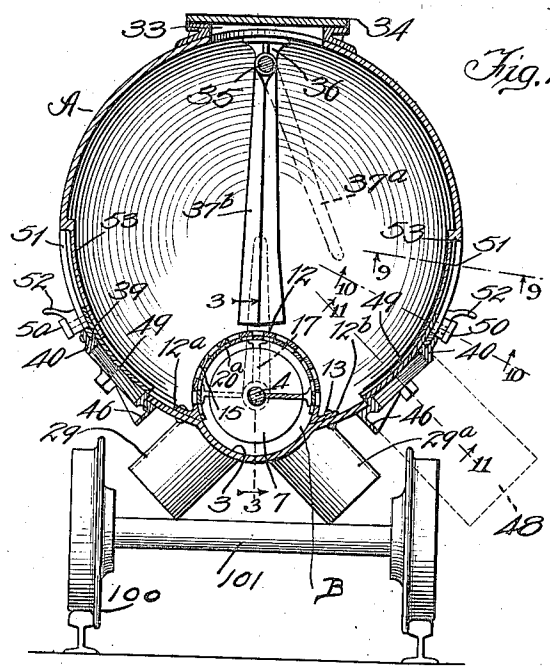


Fig. 2.

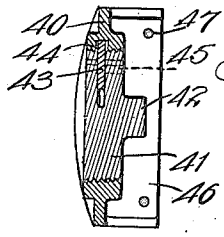


Fig. 6.

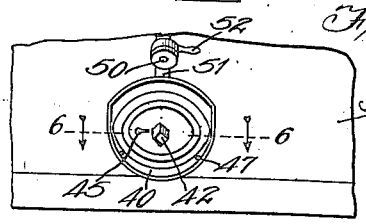


Fig. 5.

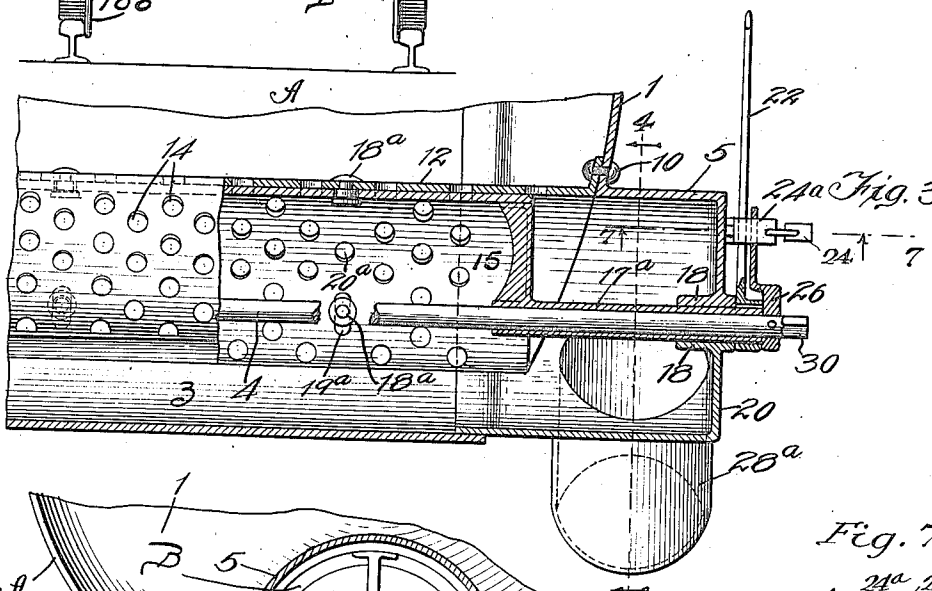


Fig. 3.

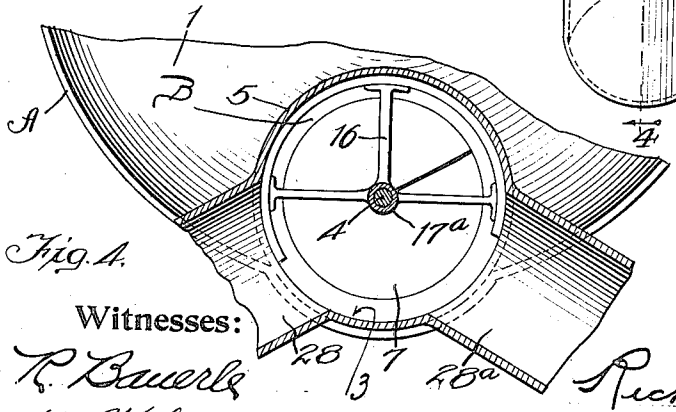


Fig. 4.

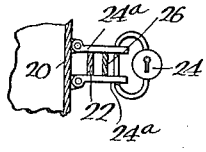


Fig. 7.

Witnesses:

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UNITED STATES PATENT OFFICE.

RICHARD P. WHITE, OF CHICAGO, ILLINOIS.

TANK-CAR FOR TRANSPORTING CEMENT AND THE LIKE.

1,165,736. Specification of Letters Patent. Patented Dec. 28, 1915.

Application filed April 10, 1913. Serial No. 760,126.

To all whom it may concern:

Be it known that I, RICHARD P. WHITE, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tank-Cars for Transporting Cement and the like; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheets of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to tank cars for transporting cement and the like, and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described, and then pointed out in the claims.

In the drawings already referred to, which serve to illustrate my said invention more fully, Figure 1 is a longitudinal, vertical section of a tank car embodying my invention, the heads of the tank thereof being shown in elevation. Fig. 2 is a transverse, vertical section in line 2—2 of Fig. 1. Fig. 3 is a section, on an enlarged scale, of a fragment of the tank in line 3—3 of Fig. 2. Fig. 4 is a cross section in line 4—4 of Fig. 3. Fig. 5 is an elevation of a fragment of the tank, showing closures for openings in the sides thereof. Fig. 6 is a cross section, on an enlarged scale, in line 6—6 of Fig. 5. Fig. 7 is a horizontal section on an enlarged scale in line 7—7 of Fig. 3. Fig. 8 is a horizontal section of a fragment in line 8—8 of Fig. 1. Figs. 9, 10, and 11 are sections of fragments in lines 9—9, 10—10, and 11—11, respectively, of Fig. 2.

Like parts are designated by corresponding symbols or characters of reference in all the figures of the drawings.

Cement has heretofore been transported in bags or in wooden barrels containing the equivalent quantity of four bags. Said bags have always been subject to return to the cement manufacturer, with a consequent rebate to the user of the contents. But, it is well known, especially on large works or contracts, where a large quantity of cement is being used, the proportion of bags returned to the mill is exceedingly small. Again, bags are subject to tears in transit, as are barrels to breakage, with the resultant loss of the contents. This loss has been the subject of constant trouble, annoyance, and disaffection between the cement manufacturer and the contractor, with the result that for some time past several of the largest manufacturers of cement have been agitating the advisability of shipping this material in bulk, and advocating the construction of large bins at the place of consumption for the reception thereof.

At the present time only the usual type of box cars are available for such bulk shipments, from which the cement would have to be shoveled into barrows or small dump carts. This mode of procedure is both unsatisfactory and expensive, and it is the aim of my invention to produce a railway tank car in which the material may be transported, there being mechanical means within said tank adapted to move the cement toward suitable spouts located at the ends or intermediate the ends of the tank, from which the same will flow by gravity into barrows or carts placed under the ends of said spouts.

While cement is hygroscopic, it is not so much so as sugar or salt, and it is not necessary that the interior of the tank be hermetically sealed from the exterior thereof. The cement when loaded into the car through suitable spouts, is very hot, and any surface moisture on the inner wall of the tank will be quickly absorbed in the relatively large mass, without affecting the cement in any way.

Inasmuch as my invention resides in the peculiar construction of the tank and of the means and mechanisms within the same, I deem it unnecessary to show a mounting for the tank, aside from the car wheels, I therefore wish it understood that said tank may be mounted upon any of the standard trucks and sills now in use.

To better understand my invention, I now refer to the drawings, in which—

A is the tank body proper having domed ends or heads 1 and 2. Said body A, at its lowest portion, is formed with an arcuate,

longitudinal channel 3, Fig. 1, the entire length thereof, the radius of which arc is coincident with the axis of a longitudinal shaft 4, extending the entire length of the tank body and through cylindrical extensions 5 and 6 of heads 1 and 2. On shaft 4 are affixed helical conveyer flights 7 and 8, there being a supporting journal box 9 medially of the length of the body A, to form a central support for said shaft. The flights 7 and 8 extend from journal 9 to closely adjacent the ends or heads 1 and 2, respectively.

Surrounding the conveyer flights 7 and 8, extending from head 1 to head 2, and fixed thereto by flanges 10 and rivets 11, there is a continuous sheet metallic guard 12. This guard has the same radius and is struck from the same center as the arcuate channel 3 and is a continuation thereof, the whole forming a tunnel B, circular in cross section, for the helical conveyer flights 7 and 8. Said guard 12 is provided with longitudinal lower flanges 12^a and 12^b, through which and body A, rivets 13 are passed to fixedly retain the same in position. The guard 12 is perforated with a multiplicity of holes 14 throughout its entire periphery and length, to permit a flow of cement from the interior of the tank body A to the interior of the tunnel B. The object of this guard is to prevent the superimposed weight of the cement above the flights 7 and 8 from choking the conveyer and rendering the same inoperative, as would happen were said guard non-existant.

In order to prevent influx of cement into the tunnel B while the tank car is in transit, I place within guard 12 a similarly shaped, continuous gate 15. This gate is supported by a pair of triple armed spiders 16 and 17 at the extreme ends of said guard, said spiders being formed integral with sleeves 17^a, which sleeves are freely rotatable upon shaft 4 and are, in turn, journaled in journal boxes 18 and 19, located in ends 20 and 21 of the cylindrical extensions 5 and 6 of the heads 1 and 2. At the exterior of said ends 20 and 21, said sleeves are provided with lever handles 22 and 23, wherewith said sleeves 17^a, spiders 16 and 17, and gate 15 may be oscillated. Gate 15 receives intermediate support, between spiders 16 and 17, from guard 12, by means of a series of rigidly fastened headed bolts 18^a, passing through oblong slots 19^a in said gate 15, as clearly seen in Fig. 3, in which figure the helical flights 7 are not shown on the shaft 4, so as to more clearly illustrate this construction.

Gate 15 is punctured with holes 20^a, registering with openings 14 in guard 12, but both series of holes are so spaced apart that a slight oscillatory movement of gate 15 will remove holes 20^a from register with holes 14, thereby closing ingress to the tunnel B.

When the tank car is in transit gate 15 should be in this so called closed position, and, in order to insure the same, pad locks 24 and 25, passed through swinging arms 24^a and 25^a attached to the heads 20 and 21, are provided to embrace lever handles 22 and 23. These locks also embrace arms 26 and 27, fastened to shaft 4, to prevent the rotation of said shaft while the car is traveling.

Cylindrical extensions 5 and 6 of the heads 1 and 2 of the tank body A are provided with outlets and spouts 28, 28^a and 29, 29^a, under which wheel barrows or carts are adapted to be placed, to receive the cement conveyed into said cylindrical extensions 5 and 6 by the rotation of shaft 4, in a manner readily comprehended. The shaft 4 is provided with squared ends 30, for the application of handles, by which said shaft may be rotated by manual labor, or mechanical power may be applied thereto, as may be desired. Additional spouts 31 and 32, indicated by dotted lines in Fig. 1, may be located under the tank body A, communicating directly with the tunnel B, if found desirable. In the top of the tank body A there are a series of openings 33, closed by covers 34, through which openings the cement is introduced into the tank at the mill.

Located in the upper part of the tank body A and extending longitudinally throughout its entire length and exteriorly of the heads 1 and 2, is a shaft 35, supported within said tank body by journal brackets 36. Fastened to this shaft and depending therefrom are a series of agitator arms 37^b, the lower or free ends of which extend to within a short distance of the guard 12. Exteriorly of the heads 1 and 2, said shaft 35 is possessed of handled levers 37 and 37^a, by which said shaft and arms 37^b may be oscillated, so as to agitate, loosen, and distribute the contained cement, to cause the same to flow more freely through openings 14 and 20^a to the interior of the tunnel B. Handles 37 and 37^a are provided with pad locks 38 and 38^a passed through swinging arms 38^b, to prevent manipulation of shaft 35 during transit.

Along both sides of the tank body A, at spaced intervals throughout the entire length, and near the bottom thereof, adjacent to the guard 12, are produced a series of round openings 39, in which openings there are fitted internally screw threaded frames 40. Into these frames are adapted to be screwed closure plugs 41, by means of squared shanks 42, said plugs being capable of locked in position by bolts 43, entering pockets 44 in frames 40, said bolts being actuated by a suitable key (not shown) entering keyholes 45. Along the lower

edges of these frames 40 are formed lips 46, having openings 47 for the reception of the ends of chutes 48, shown in dotted lines in Fig. 2.

Covering the openings 39 on the interior of the tank body A, are flat metallic slides 49, having studs 50, projecting through slots 51, in the tank body, upon which studs are handled, threaded nuts 52. Surrounding these slides 49 are frames 53, which frames are rigidly affixed to the tank body A, and are so constructed as to prevent any seepage of cement between the surface of said tank body and slides 49. The object of openings 39, frames 40, lips 46, and chutes 48 is to afford additional points of egress for the cement, to facilitate the unloading thereof, and, another object is to enable the removal of that comparatively small portion of cement in the lowest part of the tank which will not flow into the tunnel B. Closure plugs 41 are provided to prevent leakage of cement through the openings 39 while the car is in transit, it not being intended that slides 49 be more than reasonably tight. In unloading a car, slides 49 are first permitted to slide down to cover the said openings, after which plugs 41 are unlocked and unscrewed. Wheel barrows or carts are then placed under the ends of chutes 48 and slide 49 drawn up to uncover the openings, a slight turn being given to handled nuts 52 to pinch said slides against the tank body and maintain them in open position. When a barrow or cart has its full quota of material, said nuts 52 are loosened a trifle, permitting slides 49 to again drop by gravity and cut off the flow of cement until another barrow is placed in position, when the previous procedure is repeated.

In the drawings, 100 represents the car wheels and 101 the car axles therefor, supporting the tank mounting, which is not shown, as said tank may be mounted on any of the M. C. B. standard mountings and trucks now in use.

While herein I have disclosed the preferred method of practising my invention, I may make changes and alterations therein, as conditions may require and experience dictate. For instance, instead of oscillating the gate 15, within the guard 12, to afford admittance of cement to the tunnel B, I may reciprocate said slide, producing the same result in an equivalent manner. Or, I may change the construction of slide 49, forming the auxiliary closure for the openings 39. I may, if desirable, make the conveyer flight 7 of right hand pitch and flight 8 of opposing lead, so that cement will be discharged from the outlets at both ends of the car simultaneously. All these alterations and changes are within the skill of the mechanic and are to be considered within the spirit and scope of this invention.

While this invention is particularly intended for the transportation of cement in bulk, other substances may be carried therein, as sand, flour, sugar, salt, wheat, corn, oats, or barley, and the like.

Having thus fully described my invention, I claim as new and desire to secure to myself by Letters Patent of the United States:—

1. A tank car for transporting cement and the like, including a wheel-mounted, horizontally disposed, cylindrical tank having closed heads at both ends and a series of filling openings in the top wall thereof, closures for said openings, there being a longitudinally arranged closed tunnel located in the lowest part of said tank, said tunnel extending the entire length of said tank, said tunnel having outlets therefrom, a conveyer in said tunnel, and operable means on the inner walls of said tunnel affording ingress thereinto.

2. A tank car for transporting cement and the like, including a wheel-mounted, horizontally disposed, cylindrical tank having closed heads at both ends and a series of filling openings in the top wall thereof, closures for said openings, there being a longitudinally arranged closed tunnel located in the lowest part of said tank, said tunnel extending the entire length of said tank and projecting exteriorly of said heads, said tunnel having outlets therefrom exteriorly of said heads, a conveyer in said tunnel, and operable means within said tunnel affording ingress thereinto.

3. A tank car for transporting cement and the like, including a wheel-mounted, horizontally disposed, cylindrical tank having closed heads at both ends and a series of filling openings in the top wall thereof, closures for said openings, there being a longitudinally arranged closed tunnel located in the lowest part of said tank, formed partially by an arcuate longitudinal channel in said tank wall, said tunnel extending the entire length of said tank, said tunnel having outlets therefrom, a conveyer in said tunnel, and operable means on the inner walls of said tunnel affording ingress thereinto.

4. A tank car for transporting cement and the like, including a wheel-mounted, horizontally disposed, cylindrical tank having closed heads at both ends and a series of filling openings in the top wall thereof, closures for said openings, there being a longitudinally arranged closed tunnel located in the lowest part of said tank, formed partially by an arcuate, longitudinal channel in said tank wall, said tunnel extending the entire length of said tank and projecting exteriorly of said heads, and having outlets exteriorly of said heads, a conveyer in said tunnel, and operable means on the inner

walls of said tunnel affording ingress thereinto.

5. A tank car for transporting cement and the like, including a wheel-mounted, horizontally disposed, cylindrical tank having closed heads at both ends and a series of filling openings in the top wall thereof, closures for said openings, there being a longitudinally arranged tunnel located in the lowest part of said tank, the walls of which tunnel are perforated with a multiplicity of perforations, said tunnel extending the entire length of said tank and provided with outlets, a gate arranged adjacent the inner walls of said tunnel adapted to close said perforations, and a conveyer within said tunnel.

6. A tank car for transporting cement and the like, including a wheel-mounted, horizontally disposed, cylindrical tank having closed heads at both ends and a series of filling openings in the top wall thereof, closures for said openings, there being a longitudinally arranged tunnel located in the lowest part and extending the entire length of said tank, said tunnel being formed by an arcuate depression in the bottom wall of said tank and a longitudinal shell fastened to said bottom wall, said shell being provided with a multiplicity of perforations around its periphery and along the entire length thereof, a gate adjacent the inner face of said shell adapted to cover said perforations, and a conveyer in said tunnel, there being outlets from said tunnel.

7. A tank car for transporting cement and the like, including a wheel-mounted, horizontally disposed, cylindrical tank, having closed heads at both ends and a series of filling openings in the top wall thereof, closures for said openings, there being a longitudinally arranged tunnel located in the lowest part and extending the entire length of said tank, said tunnel being formed by an arcuate depression in the bottom wall of said tank and a longitudinal shell fastened to said bottom, said shell being provided with a multiplicity of perforations around its periphery and along the entire length thereof, a gate adjacent the inner face of said shell adapted to cover said perforations, a conveyer in said tunnel, and cylindrical extensions on said tank heads forming continuations of said tunnel, said extensions having outlets therefrom.

8. A tank car for transporting cement and the like, including a wheel-mounted, horizontally disposed, cylindrical tank having closed heads at both ends and a series of filling openings in the top wall thereof, closures for said openings, a perforated, longitudinal shell located at the bottom of said tank and extending the entire length thereof, there being outlets from said shell, a conveyer within said shell, and distributing means within said tank, located above said shell, to accelerate the flow of substances through said perforations in said shell.

9. A tank car for transporting cement and the like, including a wheel mounted, horizontally disposed, cylindrical tank having closed heads at both ends and a series of filling openings in the top wall thereof, closures for said openings, a perforated, longitudinal shell located at the bottom of said tank and extending the entire length thereof, there being outlets from said shell, a conveyer within said shell, a longitudinal shaft in said tank, extending exteriorly of said heads, and depending arms fixed on said shaft, said arms depending to within a short distance above said perforated shell.

10. A tank car for transporting cement and the like, including a wheel-mounted, horizontally disposed, cylindrical tank having closed heads at both ends and a series of filling openings in the top wall thereof, closures for said openings, a longitudinal cylindrical shell located at the bottom of said tank and extending the entire length thereof, a longitudinal shaft in said tank extending exteriorly of said heads, depending arms fixed on said shaft, openings in the walls of said tank adjacent said cylindrical shell, closures for said openings, and auxiliary closures for said openings located within said tank, directly adjacent the walls thereof.

11. A tank car for transporting cement and the like, including a wheel-mounted, horizontally disposed, cylindrical tank having closed heads and a series of filling openings in the top wall thereof, closures for said openings, a longitudinal cylindrical shell located at the bottom of said tank and extending the entire length thereof, a longitudinal shaft in said tank extending exteriorly of said heads, depending arms fixed on said shaft, openings in the walls of said tank adjacent said cylindrical shell, closures for said openings, auxiliary closures for said openings located within said tank, directly adjacent the walls thereof, and means for actuating said auxiliary closures from the exterior of said tank.

12. A tank car including, in combination, a tank having openings thereinto and outlets therefrom, agitating means in said tank, conveying means within said tank, and means preventing the entrance of the contents of said tank to said conveying means.

13. A tank car including, in combination, a tank having openings thereinto and outlets therefrom, agitating means in said tank, conveying means within said tank, and externally operable means preventing or permitting the entrance of the contents of said tank to said conveying means.

14. A tank car including, in combination,

a tank having inlets thereinto and outlets therefrom in the sides thereof, closures for said outlets, auxiliary closures for said outlets within said tank operable from the exterior thereof, and agitating means within said tank directing the contents therein toward said outlets.

15. A tank car including, in combination, a tank having inlets thereinto and outlets therefrom in the sides thereof, closures for said outlets, auxiliary closures for said outlets within said tank operable from the exterior thereof, means to maintain said closures in open position, and agitating means within said tank directing the contents therein toward said outlets.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

RICHARD P. WHITE.

In the presence of—
W. HARDING,
WILLIAM O. STARK.