

R. L. FOWLER.

DEVICE FOR FACILITATING THE UNLOADING OF TANK CARS CARRYING BITUMINOUS MATERIALS.

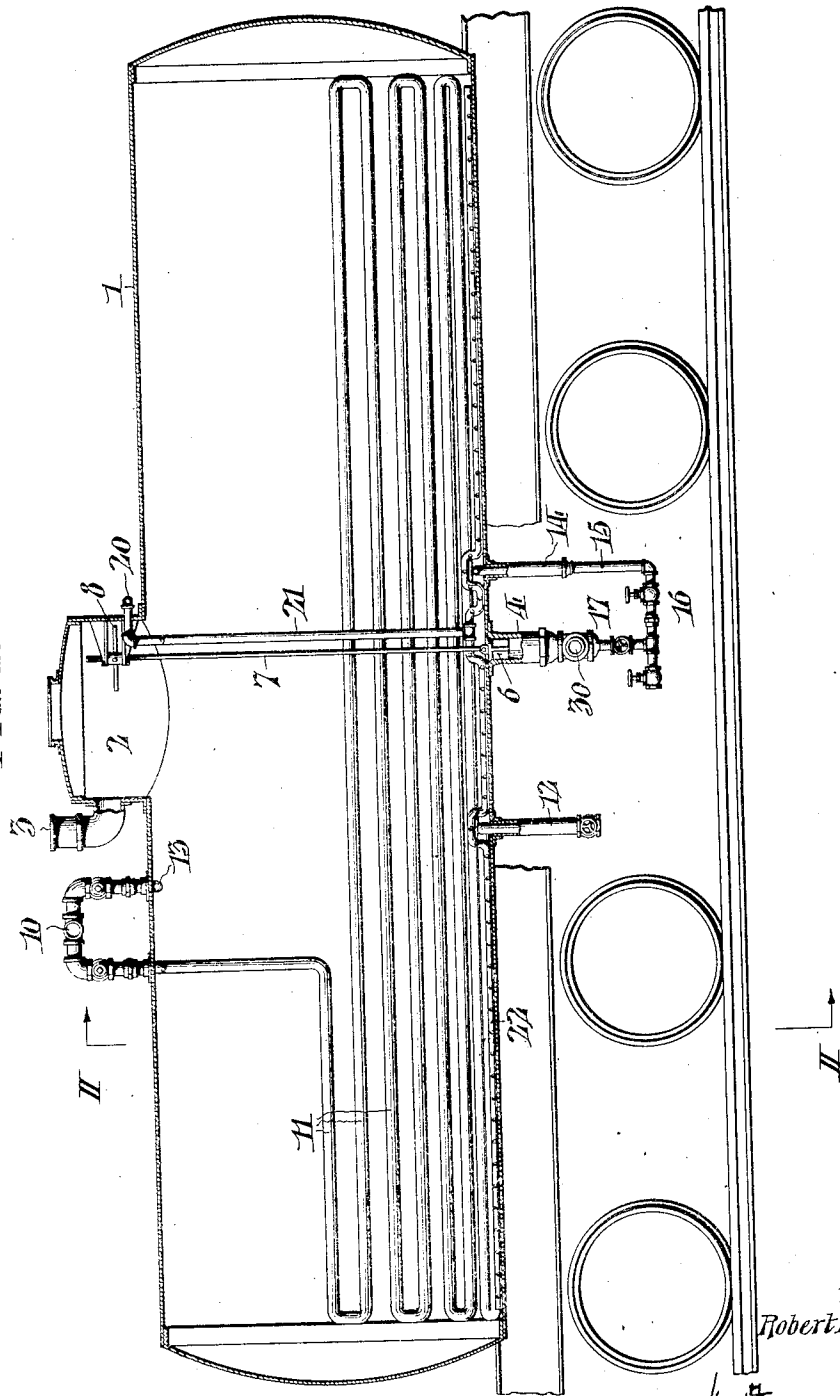
APPLICATION FILED NOV. 11, 1916.

Patented Mar. 8, 1921.

2 SHEETS—SHEET 1.

1,370,531.

FIG. I.

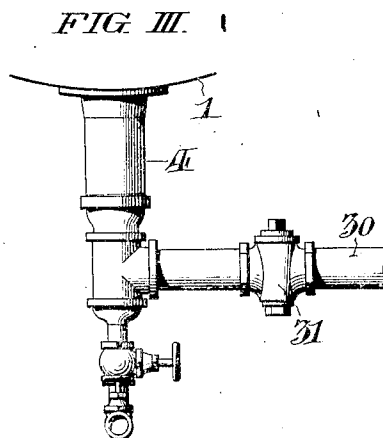
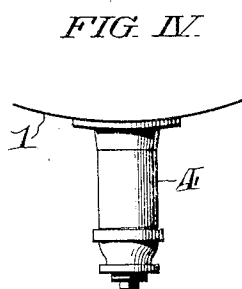
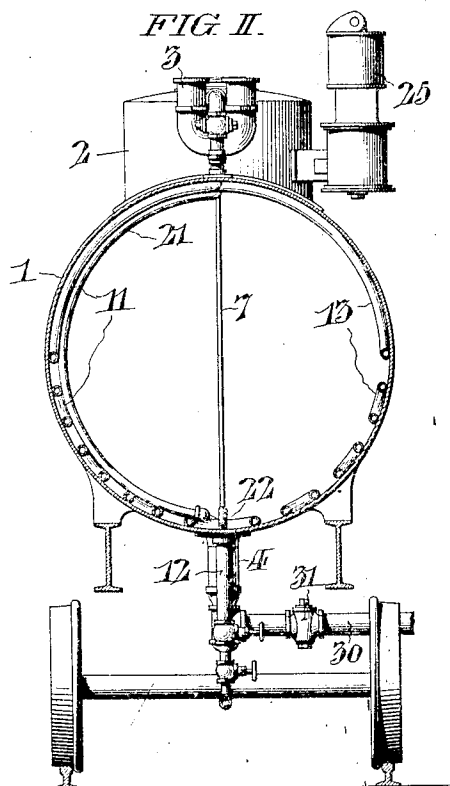


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UNITED STATES PATENT OFFICE.

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DEVICE FOR FACILITATING THE UNLOADING OF TANK-CARS CARRYING BITUMINOUS
MATERIALS.

1,370,531

Specification of Letters Patent.

Patented Mar. 8, 1921.

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To all whom it may concern:

Be it known that I, ROBERT L. FOWLER, of Perth Amboy, in the county of Middlesex and State of New Jersey, have invented certain new and useful improvements in Devices for Facilitating the Unloading of Tank-Cars Carrying Bituminous Materials, whereof the following is a specification, reference being had to the accompanying drawings.

Heavy bituminous materials such as petroleum residuum and the asphalts are difficult to unload from tank cars, especially in cold weather, because the viscosity of the materials prevents ready flow. Furthermore, the outlet must be controlled by a valve which must be situated below the lower side of the horizontal cylindrical tank. With a tank of this shape and a valved outlet so situated the sedimentation which is necessarily incident to the transportation of such materials is apt to interfere with the proper operation of the outlet valve.

The device which I have invented for the purpose of overcoming these difficulties and thus facilitating a discharge of such materials from tank cars comprises, in addition to the usual steam heating coils for rendering the material sufficiently fluid, an air agitation system whereby the contents of the tank may be agitated from the bottom of the car upward, thus distributing the sedimentation prior to or during discharge and facilitating free operation of the discharge valve. I also provide a steam connection for the temporary forcing of steam through the outlet in reverse direction in order to overcome initial clogging of the outlet.

In the accompanying drawings, Figure I, is a longitudinal sectional view of a tank car embodying my invention.

Fig. II, is a cross section of the same along the line II, II, of Fig. I.

Figs. III, and IV, are external views of the discharge pipe, Fig. III, showing it when connected up with the discharge pipe and steam pipe, and Fig. IV, showing it capped as during transit.

According to my invention the tank car is provided with a horizontal cylindrical tank 1, of the usual construction, a dome 2, inlet 3, and outlet 4, the latter being controlled by a valve 6, operated by a rod 7,

and valve handle 8. The outlet is shown as connected to a pipe 30, controlled by valve 31.

A steam heating system or apparatus is provided as follows:—From the steam inlet 10, the line divides and supplies two coils, of which the coil 11, serves one side of the tank, terminating in the steam outlet 12, while the coil 13, serves the other side terminating in the outlet 14. One of these steam outlets, for example the outlet 14, is provided with an extension 15, and valved connections 16, and 17, whereby the exhaust of the steam may be closed and in place the steam passed back into the lower end of the outlet 4.

The tank is also provided with an air system or apparatus comprising the inlet 20, the pipe 21, descending to the bottom of the car, and the perforated air discharge pipe 22, running lengthwise along the bottom of the car from one end to the other beneath its longitudinal axis. The car is also provided with an air pump 25, of ordinary construction, whereby the unloading station, if not provided with compressed air, may use steam pressure to run the pump and deliver air under pressure to the air agitating system which has been described.

In operation when the car is to be discharged steam is admitted to the steam heating pipes and passed therethrough until the contents of the tank are sufficiently fluid. Thereupon compressed air is delivered to the perforated air pipe 22, and being released along the whole length of the bottom of the car agitates the contents of the car sufficiently to overcome and prevent the deposition of sediment, along the bottom of the car which otherwise would tend to clog the outlet and prevent the free operation of the valve 6. Thereupon the valve 6, is opened. If there is any difficulty in doing this, or if the outlet is frozen below the valve, steam may be temporarily admitted to the lower side of the outlet by the pipes 15, 16, and 17. This is preferably done after the outlet has been connected up to the pipe line, by which the discharge of the contents of the car is to be effected and for this purpose the valve 31, is closed during such admission of steam to the outlet 4. As soon as the latter outlet has been cleared

the steam is disconnected and the contents of the car allowed to flow out freely through the outlet 4, and pipe line 30.

Having thus described my invention, I
5 claim:

1. An unloading device for bituminous materials contained in tank cars, comprising a horizontal cylindrical tank, a valved outlet at the bottom of the tank, a steam
10 heating apparatus for heating the contents of the tank, and an air agitating apparatus for overcoming the interference of sedimentation with discharge of the tank contents through said outlet, the latter including a
15 perforated air pipe running beneath the longitudinal axis of the tank near its bottom, and delivering air to its contents at various points.

2. An unloading device for bituminous materials, contained in tank cars, comprising a steam heating apparatus for heating the contents of the car, a valved outlet at the bottom of the car, an exhaust for the steam heating apparatus, and connections whereby steam from said exhaust may be
25 admitted to the outlet of the car below the valve, for the purpose of facilitating its operation.

In testimony whereof, I have hereunto signed my name at Maurer, New Jersey, this
30 fourth day of November 1916.

ROBERT L. FOWLER.

Witnesses:

JOHN G. HENDRIE,
STANLEY C. POTTER.