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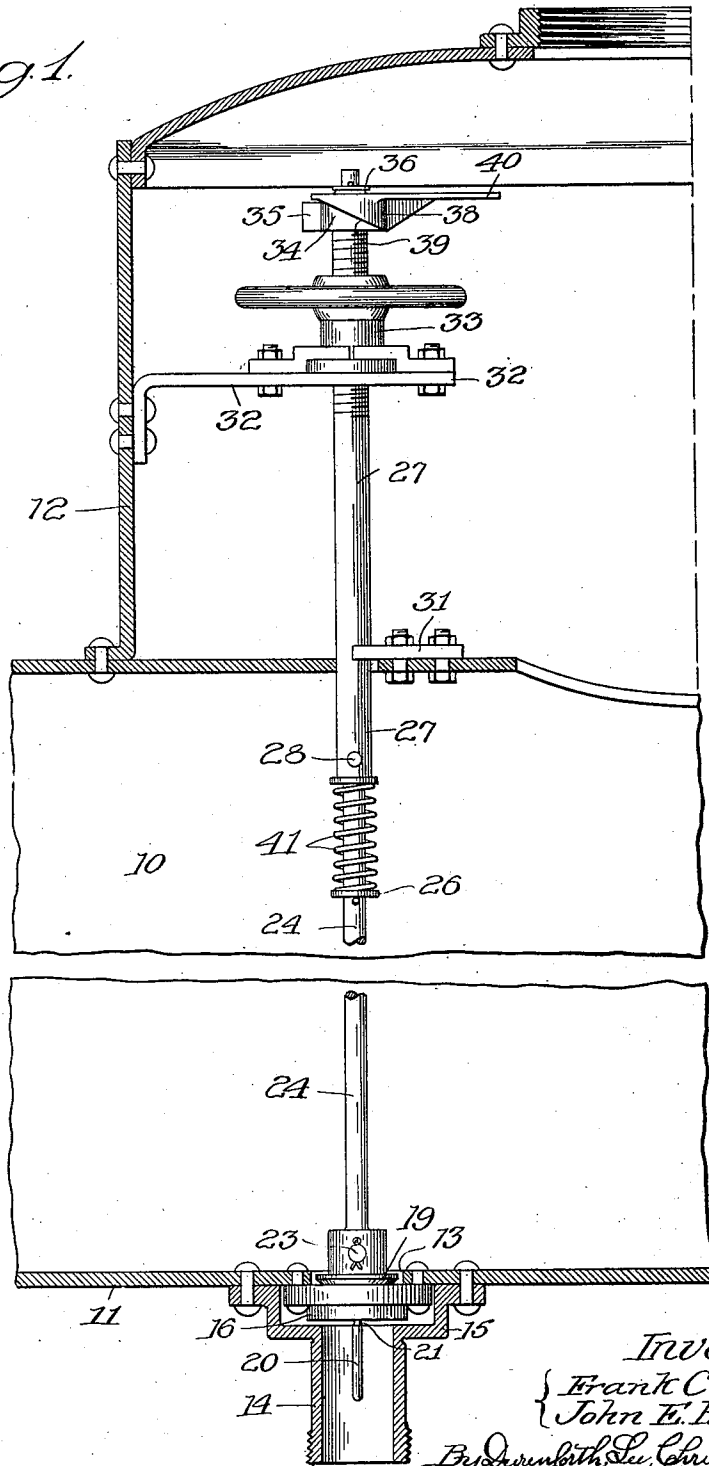
F. C. FYKE ET AL

TANK OUTLET VALVE

Filed Nov. 26, 1920

2 Sheets-Sheet I

Fig. 1.



Inventors:
} Frank C. Fyke
} John E. Hunt,
By *Dezunforth, Lee, Christian and Miles,*
Attys

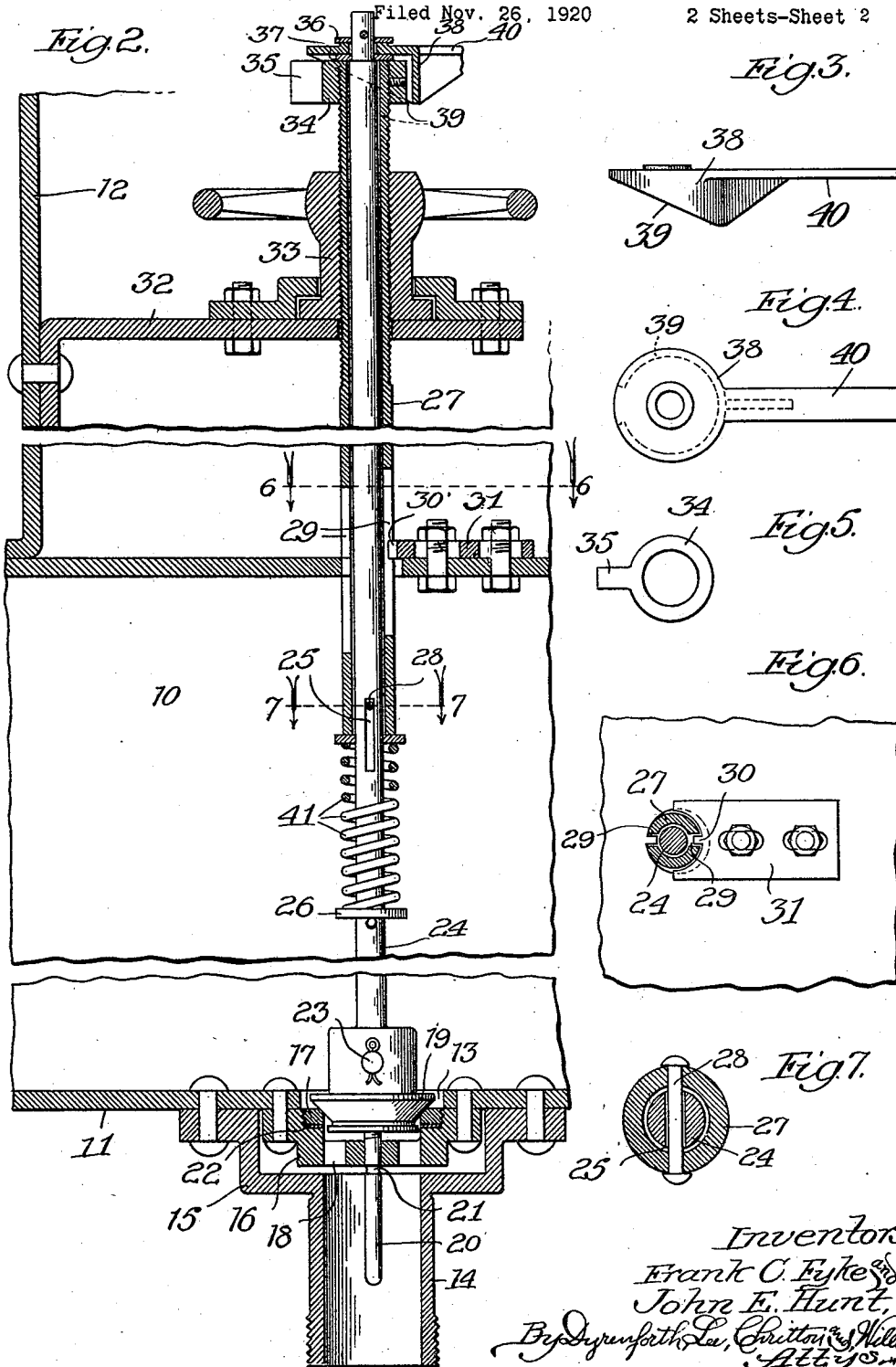
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Inventors,
Frank C. Fyke &
John E. Hunt,
By *Byrd Jenkinson, Law, Chittenden & Niles,*
Attys.

UNITED STATES PATENT OFFICE.

FRANK C. FYKE AND JOHN E. HUNT, OF ELIZABETH, NEW JERSEY, ASSIGNORS TO
STANDARD DEVELOPMENT COMPANY, A CORPORATION OF DELAWARE.

TANK-OUTLET VALVE.

Application filed November 26, 1920. Serial No. 426,424.

To all whom it may concern:

Be it known that we, FRANK C. FYKE and JOHN E. HUNT, citizens of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented a new and useful Improvement in Tank-Outlet Valves, of which the following is a specification.

The present invention relates to tank car outlet valves and more particularly to such valves arranged in the bottom of the car tank and adapted to be operated by means located within the dome of the tank. It will be fully understood from the following description, illustrated by the accompanying drawings, in which:

Fig. 1 is a partial longitudinal section through the tank, showing the mechanism for operating the valve in elevation; Fig. 2 is a broken sectional view through the valve and the operating mechanism therefor.

Fig. 3 is a detail view in elevation of the valve elevating lever;

Fig. 4 is a plan view of the same.

Fig. 5 is a detail view of a cam member co-operating with the lifting valve;

Fig. 6 is a horizontal sectional view on the line 6—6 of Fig. 2, and

Fig. 7 is a detail sectional view on line 7—7 of Fig. 2.

Referring more particularly to the drawings, the numeral 10 indicates the body of the car tank and numeral 11 the bottom of the tank proper.

The tank is surmounted by a dome 12 in the usual manner. In the bottom 11 of the tank an opening 13 is provided. An outlet nozzle 14 having an enlarged upper portion 15 is secured to the bottom of the tank in any suitable manner, for example, by riveting, its upper portion surrounding the opening 13. Within the upper portion 15 of the nozzle a casting 16 is secured to the bottom of the tank and likewise surrounds the opening 13. This casting is provided in its upper portion with a threaded opening into which is screwed a suitable valve seat 17, preferably of brass. Below the valve seat the casting 16 is provided with a spider 18 having a central opening through which the valve stem protrudes and which serves as a guide for the latter.

The valve 19 is preferably formed as an inverted conical frustrum and in closed position rests upon the valve seat 17, being

guided into its position by the downwardly protruding stem 20 which passes through the central opening in the spider 18. The guide stem 20 is weakened as at 21, just below the spider, so that in case the tank car nozzle 14 is torn away by accident, the end of the valve stem will break off without unseating the valve and no protruding part will be left below the spider 18. The guide stem 20 is preferably screwed into the bottom of the valve 19. A lead gasket 22 is provided, upon which the valve seat 17 is secured in order to make a tight joint.

The valve 19 is connected within the tank 10 by pin 23 to the rod 24 which extends upwardly into the interior of the dome 12. At an intermediate point a vertical slot 25 is formed in the rod 24 and spaced below it a collar 26 is fixed to the rod. A sleeve 27 is slidably mounted upon the rod 24, and a pin 28 through its lower end passes through the slot 25 in rod 24. Where the rod passes through the top of the tank 10 into the dome 12 a vertical slot 29 is formed in the sleeve 27 and a lug 30 provided on a plate 31 secured to the top of the tank projects into the slot 29 and prevents rotation of the sleeve 27. Above the top of the tank 10 and within the dome 12 the rod 24 and sleeve 27 pass through an opening in a bracket 32 secured to the side of the dome 12. To the bracket is rotatably secured an internally threaded hand wheel 33, the sleeve 27 being correspondingly threaded. To the top of the sleeve 27 is fixed a cam member 34 provided with a projecting fin 35. To the top of the rod 24 is rotatably secured between washers 36 and 37 a cam 38 having an inclined cam surface 39 and an operating lever 40.

In Figs. 1 and 2 of the drawings the device is shown with the parts in their relative positions at a time when the rotation of the cam 38 will lift the valve 19 from its seat, the sleeve 27 being at its highest point relative to the rod 24. With the parts in this position, rotation of the cam 38 causes the cam surface 39 to ride upon the top of the fin 35, thereby vertically lifting the rod 24 within the sleeve 27 and likewise lifting the valve 19 from its seat. In closing the valve from open position the cam 38 is returned to the position shown in Figs. 1 and 2, thereby permitting the rod 24 and the valve 19 to drop into their lower-

most position with the valve 19 resting upon its seat, this action being aided by the coil spring 41 interposed between the bottom of the sleeve 27 and the collar 26. The hand wheel 33 is then rotated to effect downward movement of the sleeve 27, this effecting compression of the spring 41 which tends to hold the valve 19 tightly upon its seat. At the same time the cam fin 35 at the top of the sleeve 27 is lowered to a position so that there is no play upon it on rotation of the cam 38. On reopening the valve the hand wheel 33 is rotated to raise the sleeve 27, thereby loosening the tension upon spring 41 and bringing the cam 35 into position for co-operation with cam 38, the valve being then readily opened by rotating the last named cam.

Although the present invention has been described in connection with the details of a specific form of construction, it is not intended that these should be regarded as limitations upon the scope of the invention except in so far as included in the accompanying claims.

We claim:

1. In a car tank outlet, a car tank bottom having an outlet opening, a nozzle attached to said bottom externally of the tank and surrounding the said opening, a casting secured externally to said bottom and within said nozzle, a valve seat threaded into said casting and supported thereby within the outlet opening, the casting being provided with a spider below the valve seat, the spider having a central opening, a reciprocable valve adapted to seat upon the valve seat, and a guide stem secured to the valve and adapted to pass through the opening provided in the spider, said guide stem being weakened at a point just below the spider when the valve is seated.

2. In a car tank, an outlet secured to the bottom thereof, a reciprocable valve within the tank and adapted to close said outlet, a vertical rod secured to said valve, a sleeve surrounding said rod, means for reciprocating said sleeve relative to the rod, and co-acting means on said sleeve and rod for

raising the rod relative to the sleeve, said coacting means being inoperative when the sleeve is lowered relative to the rod.

3. In a car tank, an outlet secured to the bottom thereof, a reciprocable valve within the tank and adapted to close said outlet, a vertical rod secured to said valve, a sleeve surrounding said rod, a collar mounted on the rod below the sleeve, a coil spring surrounding the rod between the sleeve and the collar, means for reciprocating said sleeve relative to the rod, said coil spring being compressed on lowering the sleeve and relaxing on raising it, and coacting means on said sleeve and rod for raising the rod relative to the sleeve, said coacting means being inoperative when the sleeve is lowered relative to the rod.

4. In a car tank, a tank bottom having an outlet opening, a nozzle attached to said bottom externally of the tank and surrounding the said opening, a casting secured externally to said bottom and within said nozzle, a valve seat threaded into said casting and supported thereby within the outlet opening, the casting being provided with a spider below the valve seat, the spider having a central opening, a reciprocable valve adapted to seat upon the valve seat, a guide stem secured to the bottom of the valve and protruding downwardly through the opening provided in the spider, said guide stem being weakened at a point just below the spider when the valve is seated, a rod secured to the valve and extending vertically upwards, a sleeve surrounding said rod, a collar mounted on the rod below the sleeve, a coil spring surrounding the rod between the sleeve and the collar, means for reciprocating the sleeve relative to the rod, said spring being compressed on lowering the sleeve and relaxing on raising it, and coacting means on said sleeve and rod for raising the rod relative to the sleeve, said coacting means being inoperative when the sleeve is lowered relative to the rod.

FRANK C. FYKE.
JOHN E. HUNT.