No. 656,849. Patented Aug. 28, 1900.

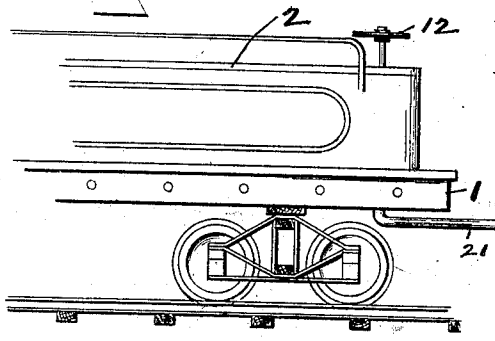
J. E. MINOR.

TANK VALVE.

(Application filed May 8, 1900.)

(No Model.)

Fig. 1.



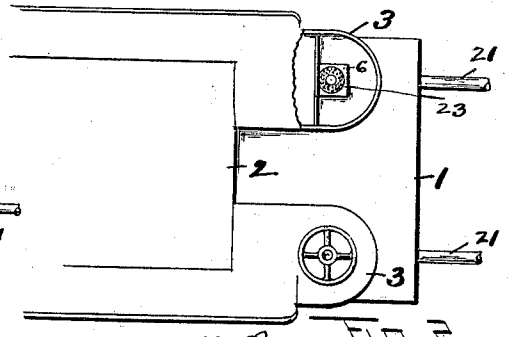


Fig. 2.

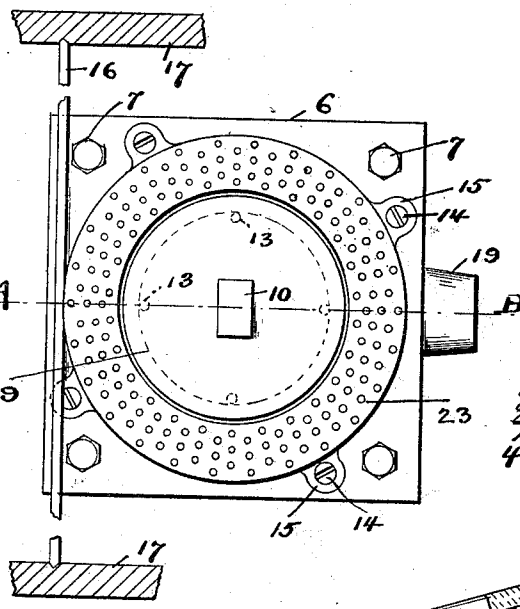


Fig. 3.

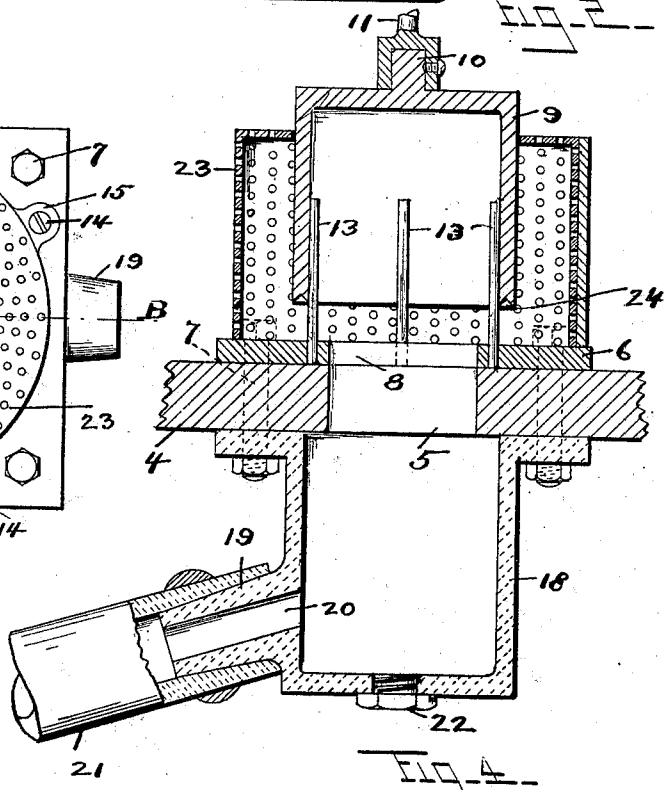


Fig. 4.

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UNITED STATES PATENT OFFICE.

JAMES E. MINOR, OF NEW HAVEN, CONNECTICUT.

TANK-VALVE.

SPECIFICATION forming part of Letters Patent No. 656,849, dated August 28, 1900.

Application filed May 8, 1900. Serial No. 15,968. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. MINOR, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Tank-Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in tank-valves, and refers more especially to outlet-valves connected with the water-tanks of a locomotive-tender.

It is the object of my invention, among other things, to construct a valve from which there will be a continuous and uninterrupted flow of water from the tank free from air and to combine therewith a strainer and swash-board.

It is a further object of my invention to construct a valve having the fewest possible parts, designed so as to be economically manufactured and so combined as to make all of the parts readily accessible when it is desired to clean the valve.

To these and other ends my invention consists in a tank-valve having certain details of construction and combination of parts, as will be hereinafter described, and more fully pointed out in the claims.

Referring to the drawings, in which like numerals designate like parts in the several views, Figure 1 is a side elevation of the forward end of a locomotive-tender. Fig. 2 is a plan view thereof. Fig. 3 is a plan view of the valve, and Fig. 4 is a section thereof upon line A B of Fig. 3.

It is desirable that the water from the supply-tank upon the tender should be fed in a continuous and unobstructed stream to the pump or injector connected with the locomotive-boiler, which can only be done by preventing the air from mingling with the water and passing through the outlet-valve. This is not so difficult to accomplish when the tank is substantially full; but when the water-level is lowered and the mass of water swashes back and forth in the tank, owing to the movement of the tender, the air reaches the outlet-valve and mingles with the water, which prevents the pump or injector from throwing its proper quantities or capacities into the boiler. The lower the water-level the greater the opportunity for the air to mingle with the water, and hence the greater the reduction in the capacity of the pump. When the locomotive is traveling on an upgrade, the water all rushes to the rear end of the tender, leaving the bottom of the front end almost uncovered, which permits the air to have an uninterrupted entrance to the outlet-valve. To overcome these objections in the valves used at the present time, I have designed a valve which is substantially an inverted cup held against lateral movement by pins or supports and upon which it is movable vertically in any convenient or well-known manner. Surrounding the valve is a strainer, which prevents the dirt or sediment from reaching the valve, and extended across the tank to the rear of the said valve is a swash-board, which forms between itself and the front end of the tank a well within which the water is contained and cannot escape therefrom except-ing through the valve, the motion and movement of the tender having substantially no action upon this water. Beneath the bottom of the tank I have secured a valve-well into which the water drops after passing through the valve and from which it is conveyed through a flexible pipe to the injector or pump upon the locomotive.

In the drawings the numeral 1 designates a locomotive-tender the construction of which is immaterial to my invention, which tender is provided with the usual water-tank 2, having the two wings 3 3 at the forward end thereof. 4 is the bottom plate of said tank, having a hole 5 therethrough within the wings 3 3.

The valve mechanism consists of a bottom plate 6, which is securely fastened to the tank-bottom 4 by the bolts 7, and through the center of which plate is a hole 8 of substantially the same diameter as the hole 5, which holes register with each other.

9 is a valve preferably cup-shaped and having an integral neck 10, to which is removably fixed the lower end of the adjusting-rod 11, which rod passes up through the top of the tank and is provided with a hand-wheel 12, affixed thereto. Projecting upwardly from

the plate 6 are the guide-pins 13, preferably four in number, which pins project into the interior of the valve 9 and prevent lateral movement thereof, as shown by dotted lines in Fig. 3. I prefer to affix these pins to the plate 6, as shown, but do not desire to be limited thereby, as they can be made integral or fastened in any other convenient manner. The construction of the rod 11 is not shown in detail, as the valve-rods now in use can be used with my invention, it being sufficient to say that the rod is threaded in a nut at the top of the tank, so that by rotating the same a vertical movement is imparted to the rod and to the said valve. It is apparent, therefore, that by rotating the hand-wheel 12 a vertical movement is given the valve 9 and the space between the bottom thereof and the top of the plate 6 is increased or diminished, as desired, thereby providing an outlet of variable area. Surrounding the said valve is a perforated strainer 23, which is preferably attached to the plate 6 by means of screws 14, passing through the ears 15. This strainer prevents the solid foreign matter which always enters the tank with the water from reaching the valve and thence into the boiler and insures a water-supply as free from foreign substance as is possible to secure it. To the rear of the strainer is a swash-board 16, which extends across the full width of the wings 3 3 and is fitted into grooves at either end of the sides 17 of the tank-wings 3. (See Fig. 3.) This swash-board prevents the water that is between it and the forward end of the tank from escaping to the rear end of the tank when the tender is moving, and the valve is always thus surrounded by a sufficient water-supply. The air cannot reach the valve, and, as it will be noted that the outlet for the water is beneath the bottom of the valve 9, which is but slightly above the bottom of the tank itself, no air can possibly reach the valve until the water in the tank is substantially exhausted and when it is far below its working level.

Attached by the bolts 7 to the under side of the bottom plate of the tank 4 is a well 18. Integral with the said well and projecting from one side thereof is a nipple 19, having a hole 20 therethrough opening into the interior of the said well, and connecting the said nipple with the pump or injector of the engine is the usual flexible pipe 21. In the bottom of the well 18 is a plug 22, through which the sediment or dirt is removed from the well if, perchance, any should pass through the strainer. The bottom edge of the valve 9 is recessed, as shown at 24, so that when the valve is screwed down tightly upon the top of the plate 6 a water-tight joint is secured.

There are minor changes and alterations that can be made within my invention, and I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but claim all that falls fairly within the spirit and scope of my invention.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a valve of the character described, the combination with an inverted-cup-shaped valve, adapted to be moved vertically, means, as guide-pins, for holding said valve against lateral movement, a base-plate having a hole therethrough concentric to said valve, and a perforated strainer surrounding the said valve and secured to the said base-plate, substantially as described.

2. In a valve of the character described, the combination with the base-plate 6 having the aperture 8 therethrough; of the inverted-cup-shaped valve 9 having a vertical movement upon guide-pins 13; a strainer 23 surrounding the said valve 9, and a swash-board 16, all constructed and operating substantially as described.

3. In a tank-valve of the character described, the combination with a tank; of a cup-shaped valve held against lateral movement; means for moving said valve toward and away from its seat; and a well secured to said tank in a line with said valve, substantially as described.

4. In a tank-valve of the character described, the combination with the tank having a valve-port therethrough; of a cup-shaped valve movable within said tank toward and away from said valve-port; and a well secured to said tank in line with the said valve-port and valve, substantially as described.

5. In a tank-valve of the character described, the combination with a tank having a valve-port, as 5, therethrough; of a cup-shaped valve 9 having a movement upon guides, as the pins 13, toward and away from said valve-port; a strainer 23 surrounding said valve; and a well 18 secured to said tank adjacent to said valve-port and having an outlet 20 therefrom, substantially as described.

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

JAMES E. MINOR.

Witnesses:
GEORGE E. HALL,
WALLACE S. MOYLE.