

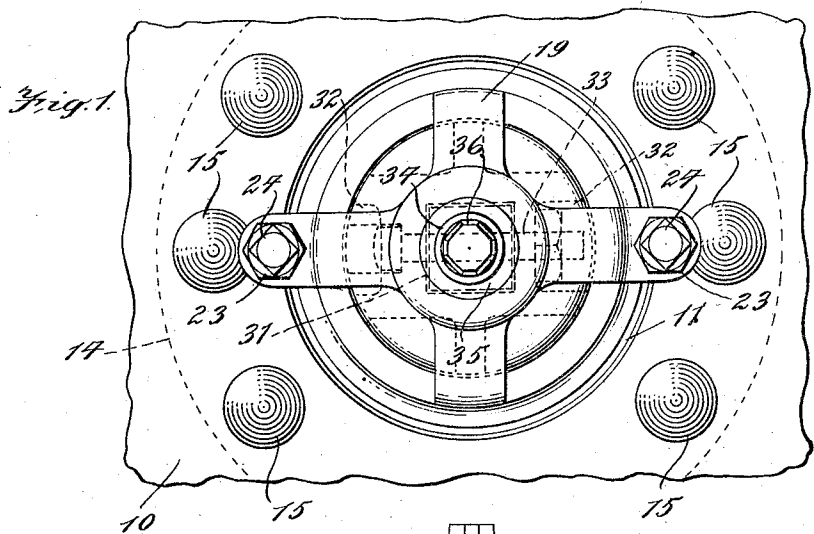
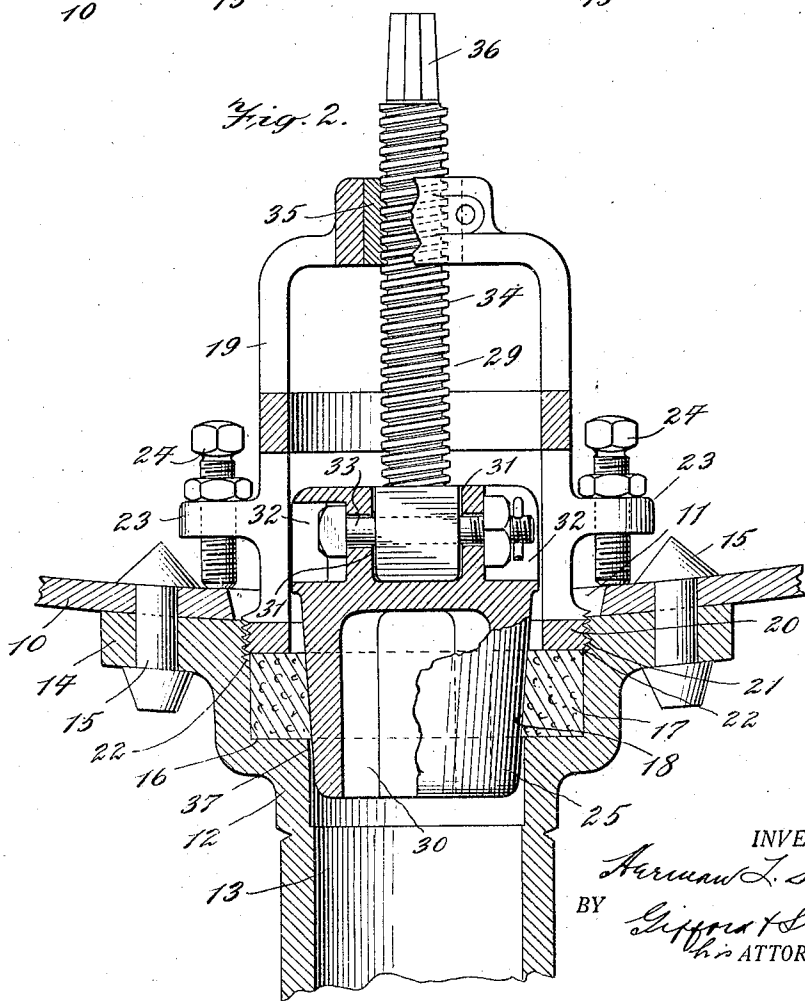
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VALVE

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INVENTOR.

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VALVE

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My invention more particularly relates to a new and useful valve particularly intended as an outlet valve. While my invention is not limited thereto, it is particularly applicable as an outlet valve for a tank car, and my invention is described in connection therewith.

My invention will best be understood by reference to the accompanying drawings, in which Fig. 1 is a plan view of an outlet valve embodying my invention, and Fig. 2 is a vertical section, partially in side elevation, through Fig. 1.

Like reference characters indicate like parts throughout the drawings.

In the selected embodiment of my invention which I have illustrated, the valve is shown as applied to a container, illustrated as a tank, having a wall 10 formed of a usual tank sheet and provided with an opening 11. Surrounding the opening on the outer side of the tank sheet, is a casing 12 provided with a passage 13 which is adapted to discharge the liquid contents from the tank or container. The casing 12 is provided with a laterally extending flange 14 secured to the tank sheet 10 as by rivets 15.

The casing or nozzle 12 is also provided with a shoulder 16 on which is received a valve seat 17, preferably formed of cork or other resilient material, and provided with an opening 18 flared upwardly and outwardly. The valve seat is retained in position by a cage 19 the lower portion of which is formed with a ring 20 threaded on its exterior as at 21 and adapted to engage screw threads 22 formed in the wall of the casing 12 surrounding the upper portion of the passage 13.

The cage 19 is preferably provided with a plurality of outwardly extending lugs 23, each provided with a set screw 24 adapted to engage the inner surface of the tank sheet 10. This arrangement prevents the cage from becoming loosened and effectively secures the valve seat 17 in position. The cage is preferably of skeleton form, as illustrated, whereby openings are provided to insure proper drainage.

A valve member 25, flared upwardly and outwardly, is adapted to engage the valve seat 17. The valve member 25 is preferably

hollow, as at 30, to prevent breakage of the outlet casing, due to expansion caused by water in the outlet casing freezing and thereby expanding. It sometimes happens that there is some water in the bottom of the storage tanks from which the tank cars are filled, and occasionally a small amount of this water is pumped into the tank car with the gasoline or other material with which the tank car is charged, and as the specific gravity of the water is higher than the gasoline, it naturally settles to the bottom of the tank car. In case there is a leak at the outlet valve plug, this water will find its way into the nozzle and, in winter weather, will freeze. Such freezing will cause breakage of the outlet nozzle unless provision is made to prevent it, the lower end of the nozzle 12 being closed by a cap (not illustrated) when not in use. The air pocket 30 in the valve member provides a substantial space that takes care of the expansion of any water that might find its way into the nozzle or casing 12 without causing breakage of the same.

The upper portion of the valve member is preferably provided with a recess 31 in the top thereof, in which is received the lower end of the valve operating stem 29. The top of the valve member is also preferably provided with recesses at its sides, as at 32, in one of which is received the head of a bolt 33 which passes through the valve member and the lower end of the valve operating stem, as illustrated in Fig. 2. The valve stem is preferably screw threaded as at 34, the upper end of the valve operating stem 29 passing through a nut 35 secured in the upper end of the cage 19. The upper end of the valve operating stem is provided with a shank 36 suitably shaped to engage a rod or the like by which it may be operated from the top of the tank, as is customary in tank cars.

The wall surrounding the passage 13 of the casing 12, immediately beneath the valve 17, is preferably flared upwardly and outwardly somewhat, as indicated at 37, and is located adjacent to the valve member 25 and forms an auxiliary or emergency valve seat for the valve member in case of failure of the resilient valve seat 17.

I have found in practice that a resilient valve seat of the character described, is effective in operation, and the valve member readily forms a liquid-tight joint therewith, particularly when there is a loose connection between the valve member and the valve operating stem as illustrated. Furthermore, a resilient valve seat of the character illustrated requires no grinding to make a tight joint, and is not subjected to corrosion as is the case with a metal valve seat. When the valve seat is worn out, it is readily replaced by removing the cage and inserting a new one in position. The emergency valve seat is particularly valuable when the resilient valve seat becomes too badly worn to make a tight joint at times when it is inconvenient or perhaps impossible to renew the resilient valve seat. At such times, the valve member 25 is forced downwardly into engagement with the auxiliary or emergency valve seat 37 to prevent loss of contents of the container until such time as the resilient valve seat may be renewed.

I claim:

1. In a valve device comprising a main valve seat of resilient material and an auxiliary seat formed of nonresilient material, a valve member adapted to engage either of said seats, and means for rotating said valve member and seating the same against said seat formed of resilient material, the parts being constructed and arranged to cause said valve member to engage said seat of resilient material only during normal operation and to engage said seat of non-resilient material under abnormal conditions only.

2. In a valve device for withdrawing liquid from a tank, a casing attached to said tank and provided with a passage for the liquid, a main valve seat formed of resilient material mounted on said casing and provided with an opening flared upwardly and outwardly, means for retaining said valve seat in position, a flared valve member adapted to engage said valve seat, the wall of said casing surrounding said passage being formed beneath said valve seat with an annular metal portion located adjacent to said valve member and adapted to be engaged by said valve member and form an auxiliary seat therefor in case of failure of said main valve seat, and means for rotating said valve and causing the same to engage said seat of resilient material.

3. In a valve device for withdrawing liquid from a tank, a casing attached to said tank and provided with a passage for the liquid, a main valve seat formed of resilient material mounted on said casing and provided with an opening flared upwardly and outwardly, means for retaining said valve seat in position, a hollow flared valve member adapted to engage said valve seat, the wall of said casing surrounding said passage be-

ing formed beneath said valve seat with an annular metal portion located adjacent to said valve member and adapted to be engaged by said valve member and form an auxiliary seat therefor in case of failure of said main valve seat, and means for rotating said valve member and causing the same to engage said seat of resilient material.

4. In a valve device for withdrawing liquid from a tank, a casing attached to said tank and provided with a passage for the liquid, a main valve seat formed of resilient material mounted on said casing and provided with an opening flared upwardly and outwardly, a member secured to said casing and adapted to engage the upper side of said valve seat and secure the same in position, a flared valve member adapted to engage said valve seat, the wall of said casing surrounding said passage being formed beneath said valve seat with an annular metal portion located adjacent to said valve member and adapted to be engaged by said valve member and form an auxiliary seat therefor in case of failure of said main valve seat, and means for rotating said valve and causing the same to engage said seat of resilient material.

5. In a valve device for withdrawing liquid from a tank, a casing attached to said tank and provided with a passage for the liquid, a main valve seat formed of resilient material mounted on said casing and provided with an opening flared upwardly and outwardly, a cage secured to said casing and adapted to engage the upper side of said valve seat and secure the same in position against said casing, a flared valve member adapted to engage said valve seat, the wall of said casing surrounding said passage being formed beneath said valve seat with an annular metal portion located adjacent to said valve member and adapted to be engaged by said valve member and form an auxiliary seat therefor in case of failure of said main valve seat, and means supported by said cage for rotating said valve member and causing the same to engage said seat of resilient material.

6. In a valve device for withdrawing liquid from a tank, a casing attached to said tank and provided with a passage for the liquid, a main valve seat formed of resilient material mounted on said casing and provided with an opening flared upwardly and outwardly, a cage having a ring at its lower portion provided with screw threads adapted to engage screw threads in said casing, said casing being adapted to engage the upper side of said valve seat and secure the same in position against said casing, a flared valve member adapted to engage said valve seat, the wall of said casing surrounding said passage being formed beneath said valve seat with an annular metal portion located adjacent to said valve member and adapted to be engaged by

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said valve member and form an auxiliary seat therefor in case of failure of said main valve seat, and means supported by said cage for rotating said valve member and causing the same to engage said seat of resilient material.

(2) 7. In a valve device for withdrawing liquid from a tank, a casing attached to said

