W. F. J. CASEY AND G. CAVIN.

TANK VALVE FOR LOCOMOTIVE TENDERS.

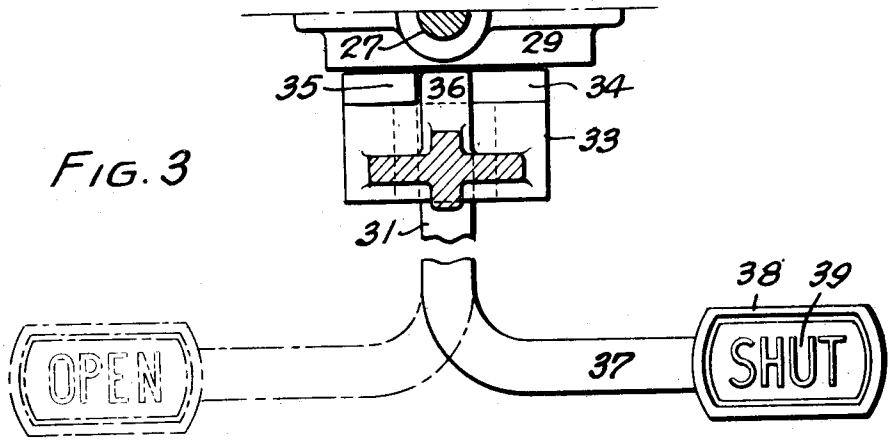
APPLICATION FILED MAY 19, 1919.

1,369,007.

Patented Feb. 22, 1921.

2 SHEETS—SHEET 1.

FIG. 3



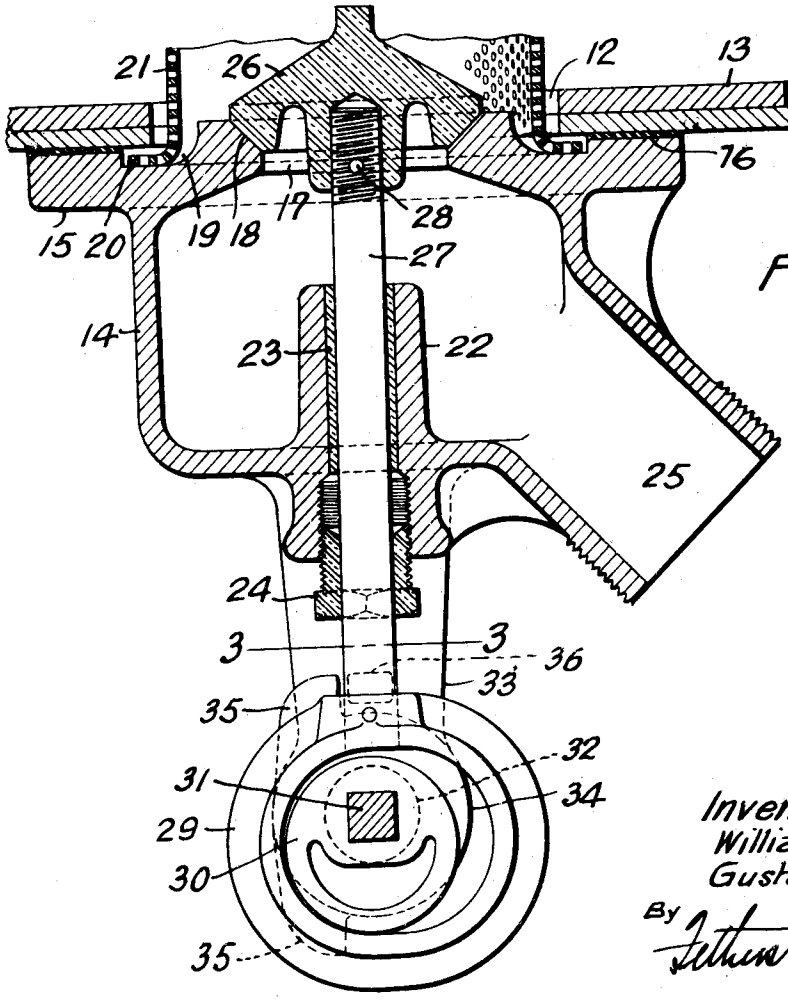


FIG. 1

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2 SHEETS—SHEET 2.

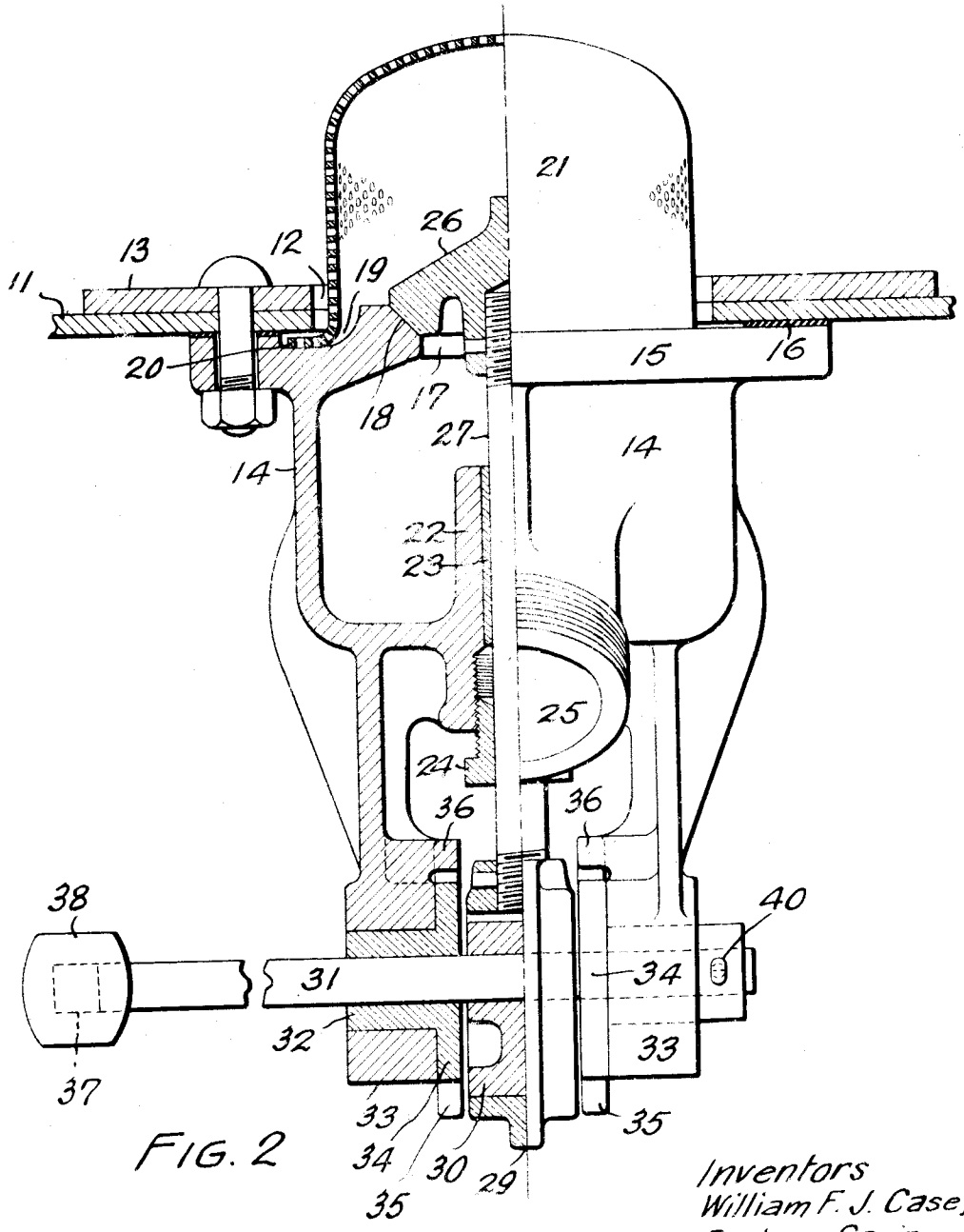


FIG. 2

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UNITED STATES PATENT OFFICE.

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TANK-VALVE FOR LOCOMOTIVE-TENDERS.

1,369,007. Specification of Letters Patent. Patented Feb. 22, 1921.

Application filed May 19, 1919. Serial No. 298,108.

To all whom it may concern:

Be it known that we, WILLIAM F. J. CASEY and GUSTAVE CAVIN, both subjects of the King of Great Britain, and residents of the city of Kingston, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Tank-Valves for Locomotive-Tenders, of which the following is a full, clear, and exact description.

This invention relates to improvements in tank valves for locomotive tenders and the object of the invention is to provide a valve of simple and durable construction which will not require the formation of additional openings in the tank for its operation.

A further object is to provide a valve which is self-indicating and which cannot be accidentally closed.

At the present time the tank valves of locomotive tenders are provided with an operating means extending to the top or out through the end wall of the tank. This arrangement necessitates an additional opening in the tank through which water is prone to escape and flood the firing-deck of the tender and apron of the locomotive, with the result that they become dangerously slippery in cold weather. In such constructions the valve head is naturally the lowest part of the mechanism and if separated from the operating mechanism will drop and cut off the supply of water to the locomotive. In such constructions the valve, strainer and all operating parts are mounted within the tank and can only be gotten at for cleaning and repairs by entering the tank.

According to this invention the valve, operating mechanism and strainer are attached from the outside of the tank and may be removed for cleaning or repair without entering the tank. The valve is supported from below and cannot drop from the operating mechanism and cut off the water supply. The operating mechanism is readily accessible, is self-indicating, is positive in action and is so constructed that accidental operation is practically impossible.

In the drawings which illustrate the invention;—

Figure 1 is a vertical sectional view of the device.

Fig. 2 is a view partly in vertical section and partly in front elevation.

Fig. 3 is a partial section on the line 3—3, Figure 1.

Referring more particularly to the drawings, 11 designates the bottom plate of a locomotive tender tank having an outlet opening 12 provided with a reinforcing ring 13.

The valve comprises a hollow substantially cylindrical body 14, having at the top an outwardly projecting flange 15 adapted to be bolted to the lower surface of the plate 11, a gasket 16 being secured between them to make a watertight joint. The top of the body is provided with a central water flow opening 17 surrounded by a frusto-conical valve seat 18. The top is also provided with a shallow annular groove 19 in which the outwardly turned foot flange 20 of a strainer 21 may be received. This groove is slightly deeper than the thickness of the strainer flange so that while the flange is caught between the body 14 and the tank bottom 11 it will not interfere with proper compression of the gasket 16. As there are no openings in the strainer for the passage of valve operating mechanism and as the strainer is not subjected to any load it may be pressed from comparatively thin, perforated sheet-metal or may be of woven wire construction. The bottom of the body is provided with a guiding neck 22 for a valve stem. The inner end of this is provided with a bushing 23 and the outer end with a packing nut 24. These two are formed of brass or other material which will not become attached to the valve stem by corrosion. An outlet nipple 25 leads from the lower part of the body at a suitable angle and is formed for connection to a flexible pipe leading to the locomotive.

The valve head 26, which is adapted to rest on the seat 18, is formed of suitable metal such as brass which will not adhere to the seat by corrosion and is mounted on the upper end of a stem 27 preferably by means of screw threads and a locking pin 28. This stem passes through the bushing 23 and packing nut 24 and is connected at its lower end to the operating mechanism.

The operating mechanism comprises an elliptical strap 29 rigidly connected to the lower end of the stem 27 and encircling an eccentric 30 mounted on a shaft 31. The eccentric may be conveniently attached to the shaft by utilizing a square bar for a shaft which will pass through a square

opening in the eccentric. The shaft is provided, at each side of the eccentric, with non-corrosive sleeves 32 which are journaled in bearings 33 projecting from the lower end of the body 14. The adjacent ends of these sleeves may conveniently be provided with flanges 34 having, at their peripheries, projections or lugs 35 adapted to engage stops 36 formed on the bearings when the valve is in fully open or fully closed position. At a point suitably remote from one of the bearings 33 the bar or shaft 31 is bent at right angles to form a lever or handle 37 for operating the mechanism and valve. The free end of this bar may be provided with a weight 38, which may be marked on opposite sides with inscriptions 39, the uppermost of which will indicate the condition of the valve. The opposite extremity of the shaft may be provided with a cotter pin 40 to prevent the withdrawal of the shaft.

The construction of the device is very simple, the parts being connected entirely by interengagement and without the use of screws or bolts. When the apparatus is assembled and in position on a tender the arrangement is such, that in the closed condition of the valve the handle 37 projects forwardly and the word "Closed" is uppermost. It therefore follows that in open condition of the valve the handle projects rearwardly and the inscription indicating open position is uppermost. This arrangement of the handle relative to the valve is such, that if a sudden stop is made the momentum of the weighted handle will tend to keep the valve open. The provision of the lugs 35 relieves the closed valve of the strain which would be incident to chance blows on the lever tending to tighten the closure and also positively limits the rotation of the shaft so that the valve cannot be moved past the full closed and full opened positions. This provision of lugs and stops is necessary where an eccentric is used but it will be understood that a cam would serve the same purpose as the eccentric and lugs and stops. When the valve is in position on a tender the shaft 31 projects through or under the side frame of the tender so that the handle 37 is readily accessible while the valve itself is protected from chance blows by the side frame and is yet readily accessible from below for repair or removal without it being necessary to enter the tender tank. It will also be seen that the operating mechanism may be very easily dismounted in the closed valve position, so that attention required by it will not necessitate emptying the tank. The operating mechanism being entirely outside the tank no opening in the tank beyond the outlet 12 is required, so that escape of water to the firing deck or locomotive apron through apertures, usually provided for operating mechanism, is entirely avoided. Not only is the valve removable from the outside of the tank but the strainer is also removable from outside, so that it is never necessary to enter the tank except to clean or repair the same.

Having thus described our invention, what we claim is;—

1. In a device of the class described, a body having a seat on the top thereof, a valve on said seat, a stem depending from said valve, a neck at the bottom of the body guiding said stem, a pair of bearings depending from said body, a polygonally bored sleeve revolubly mounted in each bearing, flanges on adjacent ends of said sleeves, a strap rigidly connected to the lower end of the stem located between said sleeves and holding the same against removal from the bearings, a polygonally bored eccentric within said strap, a polygonal shaft passing through said sleeves and eccentric, a retaining collar on one end of said shaft and an operating lever connected to the opposite end of the shaft.

2. In combination with a device according to claim 1, projections on the sleeve flanges and stops on the bearings in the path of said projections adapted to limit revolution of the sleeves, shaft and eccentric.

3. A valve of the class described comprising a body having a valve seat provided in the upper end portion thereof and opposing supporting brackets depending from the lower end thereof, a rotatable shaft extending through said brackets and supported thereby, coacting stop members carried by said shaft and brackets adapted to limit rotation of the shaft in either direction, the valve disposed for engagement with said valve seat, and a valve spindle having its upper end secured to said valve and its lower end guided to the lower portion of the valve body and operatively connected with said shaft.

4. A valve of the class described comprising a body portion having a valve seat provided in the upper end portion thereof, and opposing supporting brackets depending from the lower end portion thereof, rotatable sleeves supported by said brackets, a shaft extending through said sleeves and rotatable therewith, a valve disposed for engagement with said valve seat and operatively connected with said shaft, and coacting stop members carried by the sleeves and brackets to limit rotation of the shaft in either direction.

5. A valve of the class described comprising a body portion having a valve seat provided in the upper end thereof and supporting brackets depending from the lower end portion thereof, rotatable sleeves supported by said brackets, a shaft extending through said sleeves and rotatable therewith, a valve dis-

posed for engagement with said valve seat and operatively connected with said shaft, each of said brackets being provided with a stop member located above the shaft and each of said sleeves being provided with a pair of stop members located on one side of the shaft, the arrangement being such that the stop members of each sleeve are alternately engageable with the stop members of one of the brackets to limit rotation of the shaft in either direction.

6. A valve of the class described comprising a hollow body portion having a valve seat provided in the upper end thereof and a downwardly inclined outlet leading from the side thereof immediately above the bottom wall, the said bottom wall of the body being formed to provide a guide sleeve for the reception of a valve stem, a valve engageable with said seat, a valve stem slidably mounted in said guide sleeve and connected at one end to said valve, brackets extending from the bottom wall of the body on either side of said valve stem, a rotatable shaft extending through and supported by said brackets, an eccentric disk carried by the shaft between the brackets, an eccentric strap on the other end of the valve stem embracing said disk, and means for limiting rotation of the shaft in either direction.

In witness whereof, we have hereunto set our hands.

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