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SAFETY OUTLET VALVE FOR TANK CARS

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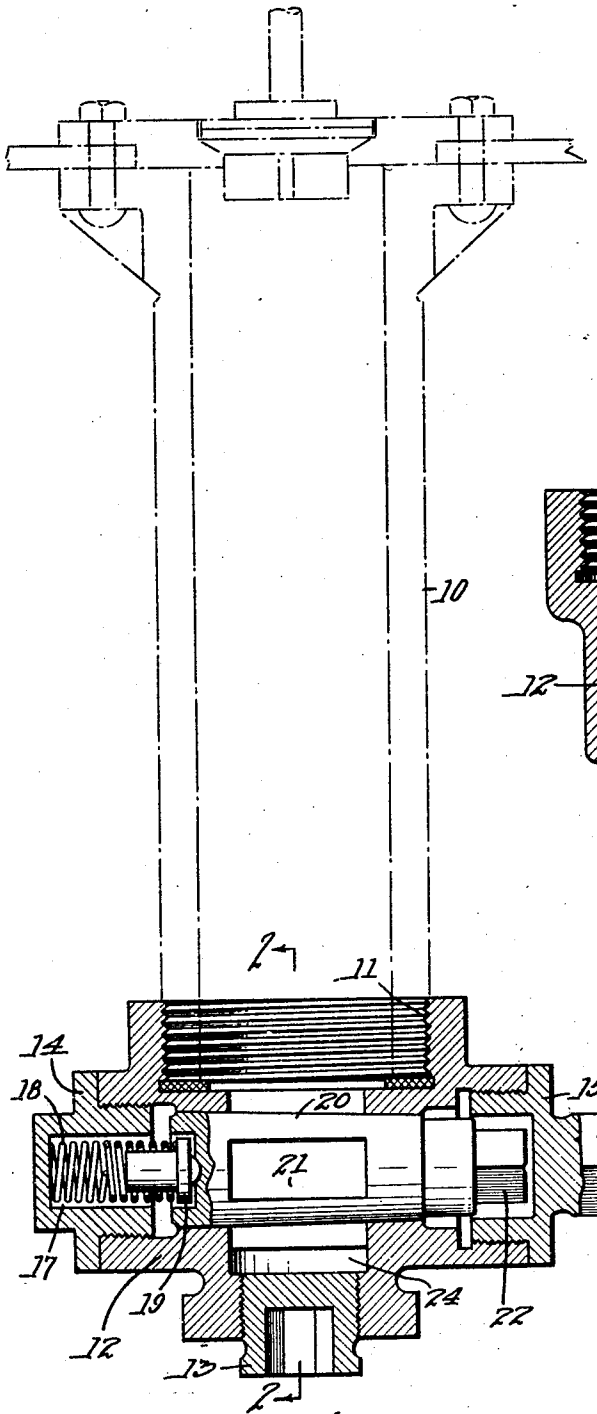



Fig. 1.

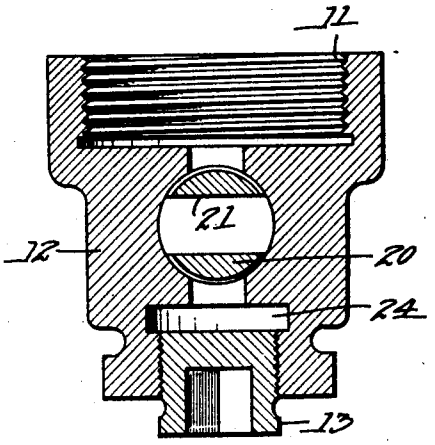



Fig. 2.

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# UNITED STATES PATENT OFFICE.

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## SAFETY OUTLET VALVE FOR TANK CARS.

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The principal objects of this invention are to provide a valve so located and arranged with respect to a tank car that it will serve as a means for controlling the outlet and will not get displaced or opened during the travel of the car on the road; to provide the valve in such position that there will be just as much clearance as has been the case heretofore, and to insure the valve against accidental opening in transit.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which

Fig. 1 is a central sectional view of an outlet valve casing for a tank car with a preferred embodiment of this invention applied thereto; and

Fig. 2 is a central sectional view on the line 2—2 of Fig. 1.

It has been customary heretofore to provide tank cars with an outlet valve casing 10 extending down materially from the bottom of the car to which it is secured and to provide the bottom of the casing with a cap screwed on the threads 11 thereof. At the top this casing has been usually provided with an inside valve (not shown) which is supposed to control the discharge of oil but which becomes displaced owing to the vibrations in transit and allows the oil to leak out. The cap at the bottom which has usually been used is intended to prevent loss of oil along the road, but leakage occurs and furthermore, when this cap is removed to empty the car, the oil in the casing is lost which, in the aggregate, is an important loss. The objects of this invention have been stated above and more specifically they relate to the provision of a substitute cap having means for preventing the discharge of the whole casing full of oil when the plug in the bottom is removed and that without any increase in the depth of the cap and therefore providing the usual clearance.

For this purpose I place on the thread 11 a cap 12 which is provided with an outlet plug 13 at the bottom as usual. This cap is provided with a passage therethrough into which fit two side plugs 14 and 15. The plug 15 is provided with a squared end 16 by which the plug can be removed. The plug 14, although removable, is not ordinarily removed in the course of its life. It is provided with a recess 17 for receiving a spring 18 bearing on a head 19 located in the end of a conical valve 20. This conical valve is located in a conical seat which is a part of the passage through the cap 12 mentioned above. It has one or more ports 21 through it which can be turned to horizontal or vertical position as usual for shutting off the oil or allowing it to pass through. It has a square head 22 located in a recess in the plug 15 by which the valve can be turned.

In order to open or close the valve the plug 15 has to be removed and the valve turned by this square head 22, which is adapted to receive a wrench for that purpose. It will be seen that the spring 18 constantly forces the conical valve to its seat so that the vibrations of travel will not allow oil to leak by at this point, although the inside valve at the top may be leaking. Furthermore, there is a cavity 24 in the cap 12 through which this valve 20 passes. This is a comparatively small cavity and, if the valve does leak, the only oil that will be lost when the plug 13 is removed, is that contained in the cavity 24 below the valve. This is a very much smaller loss than that of the whole casing 10 full of oil as often has been the case heretofore.

This device therefore is acceptacle to the trade because it does not do away with any of the safety features now employed and there is no less clearance under it than is the case with the usual cap. Furthermore, the valve 20 is kept to its seat so that there is no leakage in ordinary circumstances and, even if there is, there cannot be much waste from it as has been shown above. It does not involve the changing or displacement of the usual outlet valve casing 10 and therefore does not involve an increase in the expenditure for the principal part of the device as it is manufactured. It is a practical and simple device, saving large quantities of oil in the aggregate.

Although I have illustrated and described only a single form of the invention, I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to all the details of construction herein shown and described, but what I do claim is:—

1. The combination with an outlet valve casing for a tank car, of a cap secured to the bottom of said casing and having an outlet

plug, said cap having a transverse conical passage therethrough closely adjacent said plug, a conical valve located in said passage, a plug screwing into the side of the cap and having a recess, and a spring projecting into said recess and engaging the large end of the conical valve for holding the valve against its seat.

2. In a tank car outlet valve, the combination with the outlet valve casing secured to the bottom of the car, of a cap secured on the bottom of said casing and having a valve located transversely of said cap for normally preventing the leakage of the oil through said casing, an outlet plug in the bottom of said casing and projecting therewithin to a point closely adjacent said valve, said valve having a non-circular end, and a plug removably mounted in the side of the cap and adapted to be unscrewed to expose the non-circular end for turning the valve.

3. The combination with an outlet valve casing for a tank car, of a cap screwed to the bottom of said casing and having an outlet plug at the bottom, said cap having a conical passage therein closely adjacent said plug, of a conical valve located in said passage horizontally, a plug screwing into the side of the cap and having a recess, a spring projecting into said recess and engaging the large end of the conical valve for holding the valve against its seat, said valve having a non-circular smaller end, and a plug removably mounted in the side of the casing and adapted to be unscrewed to expose the non-circular end.

4. In a valve, the combination with an open ended casing having a transverse conical passage therein, of a conical valve located in said passage, a plug screwing into the side of the casing and having a recess, a spring projecting into said recess and engaging the large end of the conical valve for holding the valve against its seat, said valve having a non-circular smaller end, and a plug removably mounted in the side of the casing and adapted to be unscrewed to expose the non-circular end, and means to fill the portion of the casing below said valve.

5. The combination with an outlet valve casing for a tank car, of a cap screwed to the bottom of said casing, said cap having a transverse conical passage therein, of a conical valve located in said passage, a plug screwing into the side of the cap and having a recess, a spring projecting into said recess and engaging the large end of the conical valve for holding said valve against its seat, said valve having a non-circular smaller end, and a plug removably mounted in the side of the casing and adapted to be unscrewed to expose the non-circular end, and means to block substantially all of the portion of the casing below said valve.

In testimony whereof I have hereunto affixed my signature.

FREDERIC A. GURNEY.