May 14, 1929. J. J. HAWXHURST 1,712,498

AUTOMATIC SHUT-OFF FOR LIQUID DELIVERY SYSTEMS

Filed March 17, 1927

Fig. 1.

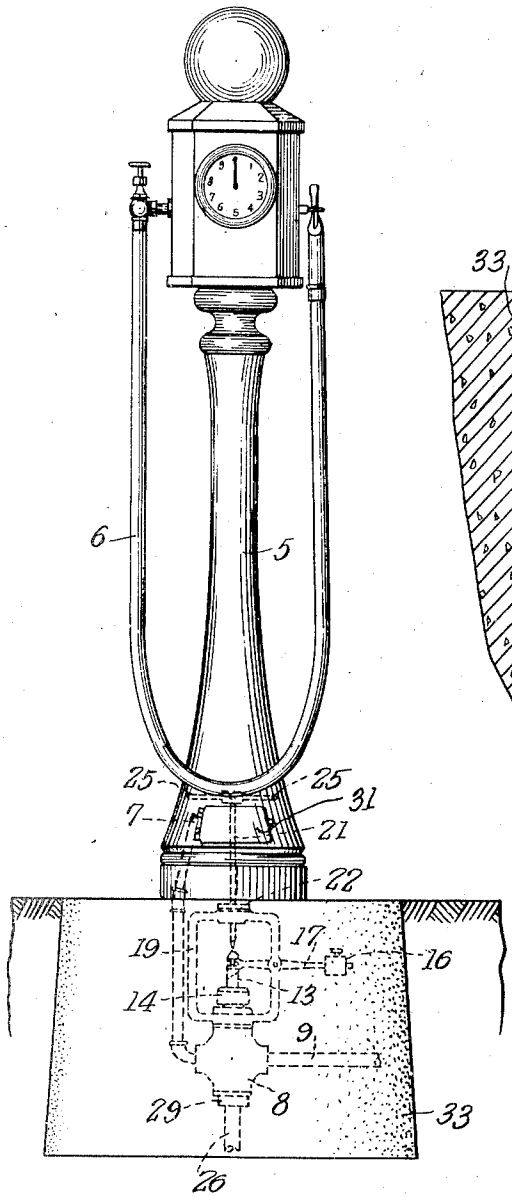


Fig. 2.

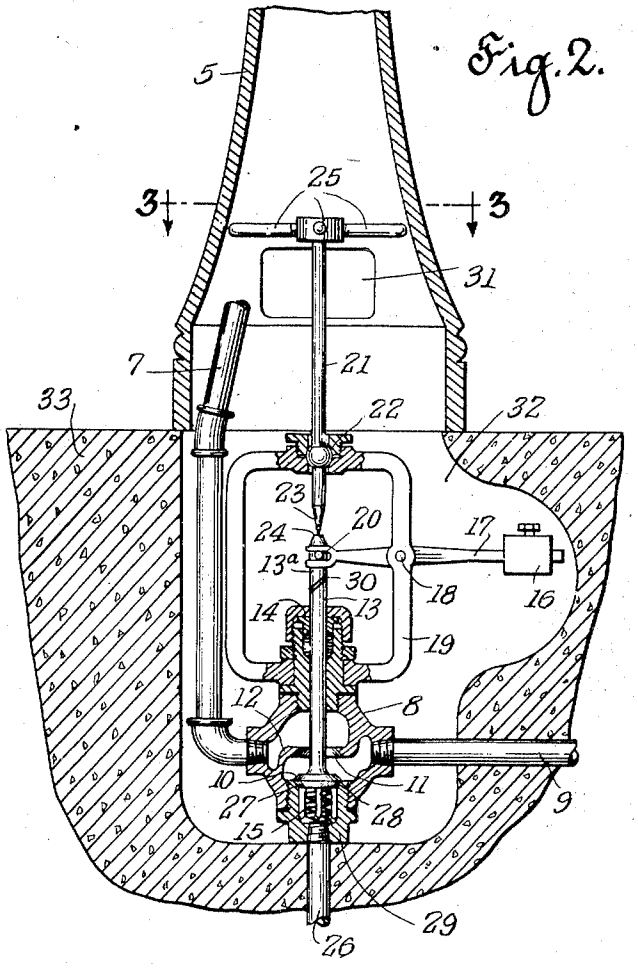
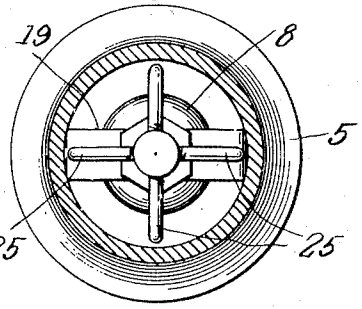


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN J. HAWXHURST, OF BROOKLYN, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO LIQUID DISPENSING SYSTEMS, INC., OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

AUTOMATIC SHUT-OFF FOR LIQUID-DELIVERY SYSTEMS.

Application filed March 17, 1927. Serial No. 176,256.

This invention relates to the delivery and dispensing of liquids and the objects of the invention are to automatically shut off the source of supply in the event of injury or danger to the system and to provide the means for this purpose in a simple practical form readily applicable to existing systems.

The foregoing and other desirable results are attained by certain novel features of construction, combination and arrangement of parts as set forth in the following specification.

The drawing accompanying and forming part of this specification illustrates an embodiment of the invention in one of its commercial forms, but it will be understood from the broad spirit and scope of the following description and claims that the structure may be modified in various respects without departure from the true spirit and scope of the invention.

Figure 1 is an elevation of a delivery stand such as is used in the dispensing of gasoline and the like with a form of the invention indicated in dotted lines as incorporated in the base of the stand.

Figure 2 is an enlarged broken sectional view of this particular form of the mechanism.

Figure 3 is a horizontal sectional view as on the plane of line 3—3 of Figure 2.

In the present illustration the invention is shown applied to and used in conjunction with a gasoline dispensing system, one of the delivery stands of such a system being indicated at 5 and shown as having the usual hose 6 for delivering the liquid. The liquid is carried to this hose by suitable piping 7 extending up through the stand.

It is recognized that these stands constitute a considerable hazard. The hose is liable to be torn from its connections by careless handling and use and the supply line is liable to be broken or made to leak by collision with the stand. In the event of fire, the supply line constitutes an immediate and continuing menace.

These dangers are removed in the presnt invention by the provision of valve means in the supply line which automatically shuts off the supply of liquid in the event of any such hazards.

The automatic valve mechanism takes the form in the present disclosure of a valve casing 8 having a through passage connected at one side with the pipe 9 leading from the supply tank and at the other side with the delivery line 7 extending up through the stand. This through passage is controlled by a valve 10 engageable with a seat 11 in a transverse wall 12 across the passage and said valve is shown as carried by a stem 13 extending up through a suitable gland or stuffing box 14. This valve is of the automatically closing type, made so by a spring 15 exerting its force to shift the valve in a seating direction and also by an adjustable weight 16 on the long arm of a lever 17 pivoted at 18 in a frame 19 and having a forked connection with the upper end of the valve stem at 20.

The automatic valve is normally held open, in the present disclosure, by a tumbler or trigger shown in the form of a rod 21 having a ball and socket mounting 22 in the frame and provided at its lower end with a pointed terminal 23 bearing on the reduced surface provided by the frusto conical upper end 24 of the valve stem. The trigger rod 21 extends up into the casing or hollow column of the stand a suitable distance and carries some kind of a head adapted to be engaged by the stand in the event of any dangerous shifting of the same. This head is shown as consisting of a series of radiating pins 25 extending into close relation with the inner wall of the convergent portion of the standard. A relatively slight shifting of the standard, therefore, will suffice to throw the trip rod one way or the other far enough to release the point of the same from holding engagement with the valve. The valve, therefore, will thus snap closed and shut off the supply of liquid to the standard if the standard is shifted as by collision of a motor car therewith. Preferably, the parts are so designed and arranged that this automatic shut-off will be effected before the shifting of the standard is sufficient to actually injure the piping.

When the shut-off valve snaps closed, as described, the supply of liquid is automatically directed from the stand through a pipe 26 entered in the bottom of the valve casing, which pipe may lead back to the suppy tank. Entrance to this return pipe is shut off in the normal position of the parts by a valve face 27 at the under side of valve 10 engaging a valve seat 28, the latter being provided at the inner end of a plug 29 screwed into the

bottom of the valve casing and having a screw seat for the return pipe 26.

In the form of the invention herein disclosed, the same valve is utilized to guard the stand against fire hazards by making the upper end 13ª of the valve stem as a separate part secured to the main body of the stem by an inclined soldered joint 30 constituting a fusible link. The fusibility of this link is such that at a predetermined temperature, the stem will give way and permit the valve to automatically snap closed under power of the valve closing spring 15.

After the valve has been tripped the same may be restored to normal open position by forcing down the valve stem, either directly or by using the lever 17 as an operating handle, access being had through the base of the stand as by means of a suitable door 31 provided in the base of the stand.

The automatic valve mechanism may all be located in a suitable well 32 provided in the concrete foundation 33 on which the stand is mounted.

What is claimed is:

1. In combination, a dispensing stand containing a liquid delivery line, valve mechanism at the foot of said stand controlling flow through said delivery line and mechanism affected by movement of said stand to control operation of the valve mechanism to automatically shut off the supply of liquid, said valve mechanism further including means for automatically diverting liquid from the stand when the supply to the stand is thus cut off.

2. In combination, a dispensing stand containing a liquid delivery line, automatically closing valve mechanism at the foot of said stand controlling flow through said delivery line and mechanism affected by movement of said stand to control operation of the valve mechanism to permit automatic closing of the valve mechanism, the control mechanism for said valve further including thermally responsive means for governing automatic shut-off action of the valve.

3. An automatic shut-off for liquid delivery stations comprising a valve casing adapted to be interposed in a liquid delivery line, a valve in said casing controlling flow therethrough, said valve having a stem, a shiftable trigger engaged with said valve stem to hold the valve open and means for automatically closing the valve when the same is released by said trigger, said valve casing having an outlet for by-passing the liquid from the delivery line and valve means associated with said valve stem for closing said outlet when the main valve is open and for opening said outlet when the main valve is closed.

4. An automatic shut-off for liquid delivery stations comprising a valve casing adapted to be interposed in a liquid delivery line, a valve in said casing controlling flow therethrough, said valve having a stem, a shiftable trigger engaged with said valve stem to hold the valve open and means for automatically closing the valve when the same is released by said trigger, the valve stem having a fusibly connected section adapted to permit automatic closure of the valve under predetermined heat conditions.

5. An automatic shut-off for liquid delivery stations comprising a valve casing adapted to be interposed in a liquid delivery line, a valve in said casing controlling flow therethrough, said valve having a stem, a shiftable trigger engaged with said valve stem to hold the valve open, means for automatically closing the valve when the same is released by said trigger and a pivoted shifting lever connected with the valve stem.

6. An automatic shut-off for liquid delivery stations comprising a valve casing adapted to be interposed in a liquid delivery line, a valve in said casing controlling flow therethrough, said valve having a stem, a shiftable trigger engaged with said valve stem to hold the valve open, means for automatically closing the valve when the same is released by said trigger and a pivoted shifting lever connected with the valve stem, said lever carrying a weight for assisting in closing the valve and serving also as a handle for shifting the valve in the opening direction.

7. An automatic shut-off for liquid delivery stations comprising a valve casing having a through passage and a return passage, valve means in said casing for closing one passage while opening the other, a mechanical trigger and thermally responsive means for holding the valve means in one of such positions and means for automatically shifting the valve means to the other of such positions when permitted by either the mechanical trigger or the temperature responsive device.

8. An automatic shut-off for liquid delivery stations comprising a valve casing having a through passage, a valve in said casing controlling said passage and provided with a stem, a shiftable rod engageable with said stem to hold the valve open, means for shifting the valve closed when released by said rod, said rod having portions for engagement by a part which is to be protected.

9. An automatic shut-off for liquid delivery stations comprising a valve casing having a through passage, a valve in said casing controlling said passage and provided with a stem, a shiftable rod engageable with said stem to hold the valve open, means for shifting the valve closed when released by said rod, said rod having portions for engagement by a part which is to be protected, the valve stem and rod having engaging portions of reduced cross sectional area and the stem having a fusibly connected end portion.

In witness whereof, I have hereunto set my hand this 15th day of March, 1927.

JOHN J. HAWXHURST.