

Jan. 8, 1963

M. C. MYERS

3,072,294

SAFETY CUT-OFF FOR AUTOMATIC DISPENSING VALVES

Filed Jan. 27, 1961

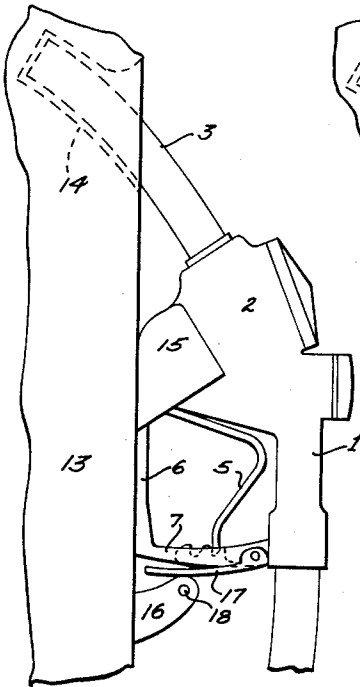


FIG. 1.

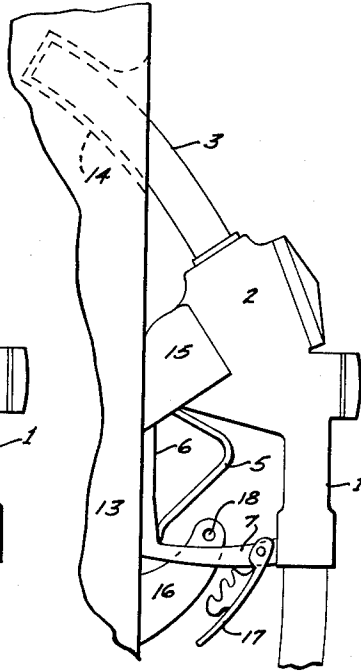


FIG. 2.

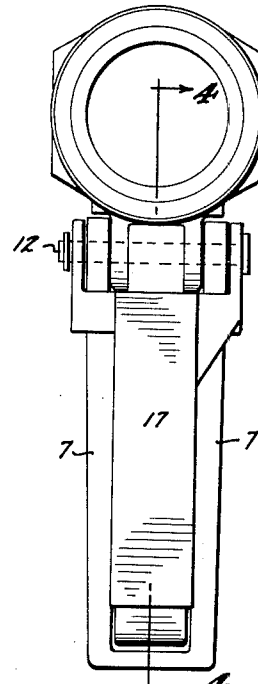


FIG. 3.

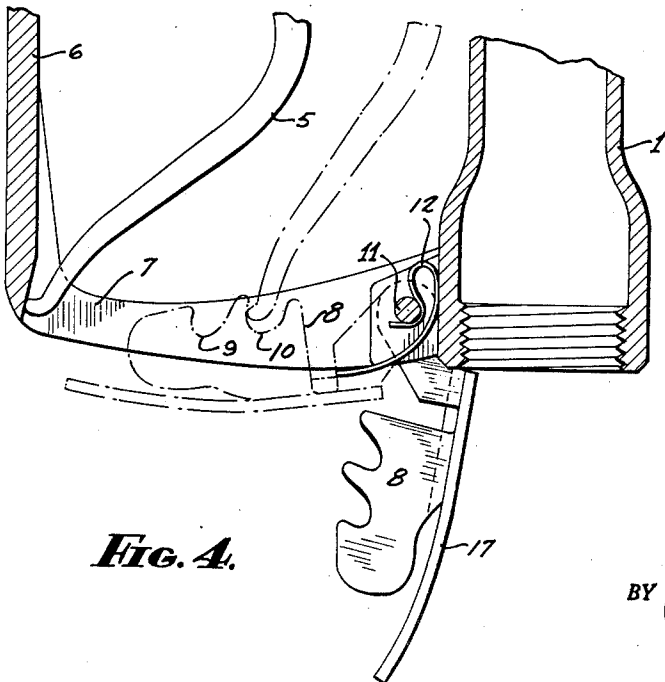


FIG. 4.

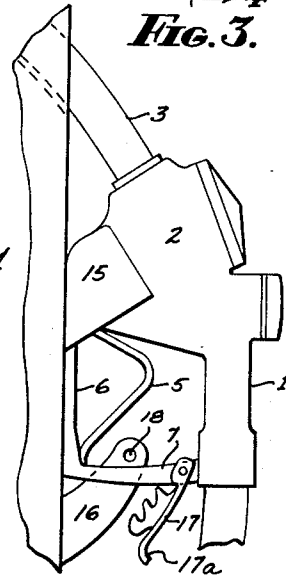


FIG. 5.

INVENTOR.
MALCOLM C. MYERS,
BY *Allen + Allen*

ATTORNEYS.

1

3,072,294

SAFETY CUT-OFF FOR AUTOMATIC DISPENSING VALVES

Malcolm C. Myers, Delhi Hills, Ohio, assignor to Dover Corporation, a corporation of Delaware
Filed Jan. 27, 1961, Ser. No. 85,354
4 Claims. (Cl. 222—74)

The application has to do with dispensing valves, such as are used for fueling automotive vehicles and the like. Most of such valves (which include nozzle means) are equipped with a sensing device which will effect closure of the main valve when the tank into which the fuel is being dispensed becomes filled to a predetermined level. While there are variations in such structures, a common type of such valve is set forth in United States Letters Patent 2,582,195 to Duerr.

In the exemplary valve of the above entitled patent, there is a main tappet which is opened when the operator actuates a lever. A latch is provided to hold the lever in the valve-open position. The end of the lever opposite the latch is pivoted to a movable plunger which is normally locked in the upward position. A portion of the interior of the valve structure through which the fuel flows is formed in such a way as to provide a venturi effect, which results in the drawing of air from a chamber within the valve above a movable diaphragm. This chamber also has connection with the outer air through a tube which, in the exemplary mechanism, extends downwardly within the spout attached to the nozzle to a position near the spout end where it is open to the outer air. Thus, the vacuum tends to be relieved above the diaphragm. When, however, the fuel being loaded into the tank reaches the point of the opening into the tube, the free passage of air through the tube is impeded. Thus, the vacuum in the chamber is enabled to draw the diaphragm upwardly. The diaphragm is connected to and operates a locking means for the plunger; and when this locking means is released, the plunger descends, lowering that end of the operating lever which is remote from the latch. The result of the descent of the plunger is to cause the main tappet to close.

The present invention, while concerned with dispensing valves having automatic operation in response to a sensing means as above described, is not limited to the specific structural details of the valve or combination of valve and nozzle; the above brief description and reference to the Duerr patent will suffice to indicate the features of an exemplary structure to which the present invention may be applied; and the details of the interior mechanism of the valve have not been indicated in the drawings of this application.

The use of an automatic valve, such as hereinabove described, enables the operator at a filling station, for example, to insert the nozzle in the opening of the fuel tank of an automotive vehicle, turn on the valve, and then go about the performance of other duties, being assured that the valve will close when the tank is full. The cessation of the flow of the fuel through the valve and nozzle normally occurs because of the action of the sensing means, indicating that the tank has been filled. However, if the fuel pressure fails ahead of the valve in the nozzle, there will be a cessation of fuel flow even though the valve is open and the sensing means has not operated. Under these circumstances the operator may assume that the tank is full when this is not the case, and the customer may not receive all of the fuel he desires. When a filling operation is finished, the valve and nozzle are removed from the automotive vehicle and hung up on a pedestal. If this is done while the main valve tappet is still open, a restoration of the fuel pressure ahead of the valve and

2

nozzle will cause a discharge of fuel therefrom with consequent loss of fuel and hazard of fire.

It is an object of the present invention to provide a means in connection with an automatic dispensing valve which means will give to the operator a positive indication if the main valve tappet is still in the open position.

It is an object of the invention to provide means whereby the automatic dispensing valve and its nozzle cannot be hung up on the pedestal so long as the main tappet is locked in the open position.

In one aspect of the invention, it is an object to provide a means which will unlock the operating lever at the time the valve and nozzle structure is hung on the pedestal.

These and other objects of the invention, which will be set forth hereinafter or will be apparent to one skilled in the art upon reading these specifications, are accomplished by that structure and arrangement of parts of which certain exemplary embodiments will now be described. Reference is made to the accompanying drawings wherein:

FIG. 1 is a partial elevational view showing a result of an attempt to hang an automatic dispensing valve on a pedestal while the operating lever is in the open position.

FIG. 2 is a similar view showing the correct engagement of the valve and nozzle with the pedestal when the operating lever is in the open position.

FIG. 3 is a rear elevational view of the valve structure of this invention.

FIG. 4 is a partial sectional view taken along the section line 4—4 of FIG. 3.

FIG. 5 shows a modified structure.

Automatic dispensing valves of the type herein referred to generally have an inlet portion 1 which serves as a handle, and a body 2 which contains the main tappet, the plunger, and the sensing-responsive release mechanism. The valve is provided with a spout 3. The operating lever 5, as will be most clearly apparent from FIG. 4, is located between the inlet portion 1 and body 2 of the valve and a guard element 6. The guard element is bifurcated as at 7, the end of the operating lever 5 lying between the bifurcations. A latch element 8, having one or more notches 9 and 10 to engage the end of the operating lever, is pivoted as at 11 between the bifurcations of the guard. A spring 12 is usually provided to swing the latch to the non-engaging position. Thus, if the operator grasps the handle portion 1 and the operating lever 5 and moves them toward each other, the latch will ordinarily be released. Thus, the operator can stop the flow of fuel at any time, as when the customer orders a fixed amount of fuel. Although it might be supposed that the operator would release the operating lever 5 when he removes the automatic dispensing valve and nozzle from the entrance to the fuel tank of a vehicle, it has been found in practice that when the operator believes the flow of fuel has been stopped by reason of the operation of the sensing mechanism, he will frequently hang the valve on the pedestal without determining whether the operating lever has been released by the latch. If the flow has actually stopped by reason of a failure of pressure ahead of the valve, the above noted disadvantages will be encountered.

As shown in FIG. 1, the usual pedestal 13 is provided with a recess 14 to accept the upper end of the nozzle. It also has a saddle 15 to accept the body of the valve. A blade-like element 16 projects from the pedestal. The end of this blade-like member enters between the bifurcations 7 of the valve guard hereinabove described. It may be provided with a hole 18 for accepting the hump of a padlock. In some instances the blade-like element 16 is movable and is connected inside the pedestal with

3

a switch for operating a fuel feed pump so that when the valve is hung on the pedestal, the pump will be de-engaged. The valve and nozzle are hung on the pedestal by first inserting the nozzle into the recess 4, moving the valve upwardly and inwardly into the saddle 15 and then downwardly so that the blade-like element 16 passes between the bifurcations of the guard 6. The latch, as hitherto manufactured, has been thin enough to permit the entrance of the blade-like element 16 between the bifurcations. Thus, it has been possible to hang the valve on the pedestal without releasing the operating lever 5 from its locked position.

In accordance with the practice of the invention, an element 17, which is of a size and shape to fill or block the space between the bifurcations 7, is attached to the rear edge of the latch as by welding or is formed as an integral part of the latch, as will be clear from FIG. 4. So long as the latch is in engagement with the operating lever 5, the blade-like element 16 is prevented from entering between the bifurcations 7. Thus, the automatic dispensing valve and nozzle cannot properly be hung on the pedestal in a stable fashion; and the operator is made aware that the latch is still in engagement with the operating lever. This is illustrated in FIG. 1. To hang the valve properly on the pedestal as in FIG. 2, he must release the latch, which he can most easily do by moving the operating lever 5 toward the handle portion 1, whereupon the spring 12 will move the latch to the non-engaging position.

Since the operation of hanging the dispensing valve and nozzle on the pedestal involves an upward movement followed by an inward and downward movement, it is within the purview of the invention in some instances to prolong the member 17 and curve the outer end of it away from the guard as shown at 17a in FIG. 5. Depending upon the type of pedestal and the shape of the blade-like element 16, there will, in many instances, be such an engagement of the outturned end 17a of the member 17 and the blade-like member 16 as to accomplish an automatic release of the latch during the inward movement of the automatic dispensing valve to engage it in the saddle 15.

Modifications may be made in the invention without

4

departing from the spirit of it. The invention having been described in certain exemplary embodiments, what is claimed as new and desired to be secured by Letters Patent is:

1. In combination, an automatic dispensing valve and nozzle, an operating lever for said valve, a guard element beyond said lever, said guard element having bifurcations at its rear end, a latch for engaging the end of said operating lever and pivoted to said bifurcations so as to swing therebetween, said latch being biased to a non-latching position, and the valve mechanism being of the type in which a pivot point for the lever is changed upon automatic valve operation, so that said operating lever normally releases itself from engagement with said latch, said latch having a plate shaped to close the space between said bifurcations when said latch is in the engaged position.

2. The structure claimed in claim 1 wherein the end of said plate remote from the pivot of said latch is prolonged and turned outwardly.

3. In an automatic dispensing valve and nozzle structure having an operating lever, and designed to be hung on a pedestal having a recess for the nozzle, a saddle for the valve, and a blade-like element adapted to enter between spaced elements on said valve so as to retain said valve in position, the improvement comprising a latch for engaging the end of said operating lever and pivoted between said spaced elements so as to swing therebetween, means in connection with said latch for closing the space between said spaced elements so as to prevent the entry of said blade-like element until said latch has swung to lever-releasing position.

4. The structure claimed in claim 3 wherein said last mentioned means is shaped so as to engage said blade-like element during movement of said valve and nozzle into the hanging position whereby to cause said blade-like element to move said latch to the lever-releasing position.

References Cited in the file of this patent

UNITED STATES PATENTS

2,528,747	Gravelle	Nov. 7, 1950
2,702,659	Henry	Feb. 22, 1955