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QUICK-SETTING RATE FLOW NOZZLE

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Fig. 1.

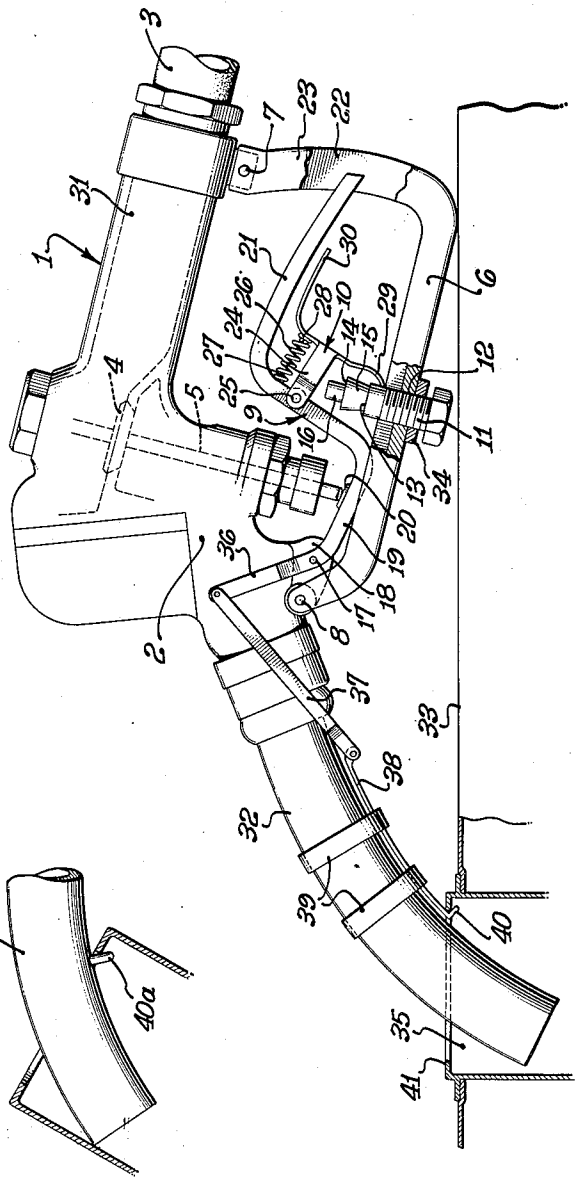

Fig. 2.

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QUICK-SETTING RATE FLOW NOZZLE

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7 Claims. (Cl. 226—129)

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This invention relates to filling nozzles, and is particularly applicable to filling nozzles of the type employed in gasoline filling stations, for replenishing gasoline in the tanks of automobiles.

The attendants in such filling stations, usually obligingly wipe off the windshield of the automobile, and perform other incidental duties in connection with the car which, of course, consume a considerable amount of their time. This time, of course, is in addition to the time which the attendant consumes in holding the nozzle of the hose in the tank opening while the attendant watches the dial-hand that is driven by the meter that is measuring the quantity of gasoline being delivered. In the use of nozzles of this kind, a considerable amount of time could be saved if the attendant could leave the nozzle in place with the gasoline being delivered through it, long enough to enable him to wipe the windshields, check the pressure in the tires, and perform other services before the quantity of gasoline ordered has been delivered to the nozzle. However, the delivery nozzles in use generally do not have any means for latching the valve in the nozzle casing in its open position, and even if such means were provided, the rate of flow through the nozzle with the valve wide open, would be relatively rapid, and hence an ordinary latch for latching the valve wide open would be of slight benefit.

One of the objects of the present invention is to provide a filling nozzle of this type with simple means for enabling its valve to be set quickly when desired, in a predetermined partially open position, that will permit the gasoline to flow at a reduced rate, thereby increasing the time necessary to deliver the required amount of gasoline, and enabling the attendant to place the nozzle in the tank opening and leave it for a few moments while he performs other services in connection with the car.

Another object of the invention is to provide means such as described above, including a movably mounted hook or dog that will enable the end of the nozzle that is inserted in the tank, to be manipulated in such a way that when the end of the nozzle is being hung in the tank opening, the valve will be automatically set in partially open position that will give the desired reduced rate of flow in delivering the gasoline.

Another object of the invention is to provide a nozzle of the type referred to, with a latch device capable of being readily attached to the usual hand lever that controls the valve, and to provide a stop-member of simple construction to be

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mounted on a part of the nozzle casing or frame, to co-operate with the latch; also to construct and mount the stop-member in such a way as to facilitate its being adjusted to adapt it for holding the valve-lever temporarily in a predetermined position to give the valve a desired low rate of flow for the delivered gasoline.

Further objects of the invention will appear hereinafter.

The invention consists in the novel parts and combinations of parts to be described hereinafter, all of which contribute to produce an efficient quick-setting rate flow nozzle.

A preferred embodiment of the invention is described in the following specification, while the broad scope of the invention is pointed out in the appended claims.

In the drawing:

Fig. 1 is a side elevation of a filling nozzle of a common type illustrating an embodiment of this invention applied thereto. In this view certain parts are broken away and shown partially in section, and such parts include the upper portion of the tank which is shown partially in section at the filling opening.

Fig. 2 is more or less of a diagrammatic nature, and illustrates the filling opening in an inclined position, as sometimes occurs in practice; and showing the end of a nozzle hung in the opening by means of a fixed projection or dog on the under side of the spout of the nozzle. This is a modification in which the dog on the spout is fixed, instead of movable as in Fig. 1.

Fig. 1 illustrates a filling nozzle 1 of a common type, including a nozzle casing 2, one end of which is coupled to a flexible gasoline hose, the broken end of which is indicated at 3. The gasoline flows through the inlet duct which delivers the gasoline above the valve 4 indicated in dotted lines, and the stem 5 of this valve projects from the lower side of the casing 2 and rests against a manually operated lever which, when operated to open the valve, presses upwardly against the lower end of the stem and opens the valve against the force of its coil spring (not illustrated).

The nozzle 1 usually is provided with a guard 6 in the form of a bar, the ends of which are either formed integrally with the ends of the nozzle casing, or may be secured to the same by bolts or pins 7 and 8, as illustrated in Fig. 1. In applying my invention to the filling nozdle such as illustrated, I prefer to provide the valve lever 9 with a latch 10 which is movably mounted upon it, and which co-operates with a stop-member,

which stop-member is preferably carried on the bar 6 so as to project transversely to the same and toward the valve lever. The stop-member illustrated is a bolt 11, the threads of which are mounted in the threaded opening 12 in the bar 6, so that the inner portion of the bolt projects toward the lever 9. This bolt is provided with one or more shoulders such as the abrupt shoulders 13 and 14. These shoulders are preferably annular shoulders formed by turning a tapered neck 15 on the bolt; and a tip 16 beyond the shoulder 14, which may be of cylindrical form.

The lever 9 is pivotally mounted on a bolt or pin 17 that passes through a fin 18 projecting downwardly from the body of the nozzle casing 2. This lever 9 has an extension 19 provided with a pad 20 that rests against the projecting end of the valve stem 5, and the outer portion of the lever is offset upwardly and bent around to form a handle or handle-grip 21. The end of this handle is usually guided in an opening or slot 22 formed in the extension 23 of the bar 6 that connects to the inlet end of the nozzle casing.

The body of the latch 10 is preferably in the form of a yoke presenting two arms such as the arm 24, and these arms are connected by a pivot pin 25 to the lever. This latch is spring-biased in a direction to enable it to co-operate with the stop-member 11 to hold the valve 4 in a partially open position. In the present instance a coil spring 26 may be employed, the ends of which fit over small centering spurs 27 and 28 formed respectively on the latch and on the body of the lever 9. The latch 10 is preferably formed by bending up a blank struck from sheet metal, and is formed at its lower side as illustrated in Fig. 1, with a downwardly projecting tongue 29, the tip of which is held yieldingly by the spring 26 against the side of the stop-member. The latch has an upwardly extending integral extension that is bent around to form a handle 30, which extends along under the handle 21 of the lever and lies adjacent to the same.

In nozzles of this type, the attendant usually grasps the tubular neck 31 of the nozzle in the palm of his hand and extends his fingers down to reach the lever 21, and by pulling up on this lever the pad 20 will push up the valve stem 5. With my nozzle as described, when this upward movement is given to the lever 9, the tongue 29 will first trip over the shoulder 13. When the attendant hears the accompanying click, he releases the upward pressure on the lever handle 21, and this will set the valve 4 for a slight opening which would give considerable time for the gasoline flowing through the spout 32 of the nozzle to deliver the required amount into the tank 33. If the customer receiving the gasoline has ordered a relatively small number of gallons, for example, five gallons, the attendant will leave the valve 4 in the setting that it would have when the tongue 29 is resting on the first shoulder 13. If the customer has ordered a considerable number of gallons, the attendant may, if desired, use the shoulder 14 as a rest for the end of the tongue 29 instead of the shoulder 13. This will set the valve 4 in a further open position and give an increased rate of flow for the gasoline as compared with the greatest reduced flow that is possible when using the shoulder 13.

As there may be considerable variation in the rate of flow in different filling stations due to variations in details of the filling apparatus, it is desirable to have the stop-member 11 adjustable. For this purpose I prefer to use a bolt that is sufficiently long to permit a check nut 34 to be used on it between its head and the under side of the bar 6, against which the check nut would be tightened up in order to hold the stop-member in a fixed position.

By a slight variation in the structure described, it can be readily adapted to enable the act of the attendant in putting the spout 32 in the filling opening 35, to automatically set the valve by exerting a backward pull on the nozzle after the spout 32 has been inserted in the filling opening. In order to accomplish this, I prefer to provide the lever 9 with an arm 36 that extends upwardly as indicated in Fig. 1 from the pivot pin 17, and this arm is pivotally connected to a link 37 which extends outwardly toward the spout 32 and which, at its forward end, is attached to the rear end of a slide bar 38 which is guided by guide collars 39 to slide along the under side of the spout. The forward end of this slide is bent to form a finger or hook 40, which may be hooked against the edge of the flange 41 that is usually present, extending at least partially around the opening; a flange is useful to cooperate with the cap that normally closes the filling opening. If desired, another arm similar to the arm 36, can be carried at the other side of the filling nozzle, in which case the pin 17 would project beyond the side of the fin 18, and would be rigidly secured to the other arm. If this secondary arm is employed, a link similar to the link 37 would be attached to it, to connect it also to the end of the slide 38.

When an attendant is using a nozzle such as described, provided with the automatic actuating dog 40, he can stop pulling back on the nozzle when he hears the first click of the tongue 29 when it snaps over the shoulder 13; and if he wishes to set the valve for a shorter time of flow, he would continue the backward pull on the nozzle until he hears the tongue snap over the shoulder 14.

It will be noted that the presence of the latch 10 and the stop-member 11 on the valve lever 9, does not interfere in any way with the normal use of the lever 9 to open the valve 4 to its full open position, and maintained there by pressure against the handle 31.

In Fig. 1, the nozzle is illustrated as resting on the upper side of the tank 33 with the spout 32 extending down into the filling opening 35. The relation of the parts in this view is based upon the assumption that the filling opening is disposed in a substantially horizontal plane. However, sometimes the filling opening is disposed in an inclined position such as that illustrated in Fig. 2. In this view I illustrate a filling opening inclined as suggested, and I also illustrate a spout 32*a* which is inserted in the filling opening, but which is provided with a fixed dog or hook 40*a* which enables the spout to be hung in position in such a way that it will support the nozzle casing.

By reason of the annular form of the shoulders 13 and 14, it will be evident that in any oriented position of the stop-member 11 the tongue 29 can always engage the shoulders.

Many other embodiments of the invention may be resorted to without departing from the spirit of the invention.

I claim as my invention:

1. In filling apparatus for dispensing a liquid through a hose with a hand-nozzle into a tank having a filling opening into which the nozzle may be inserted; the combination of a spout, a casing carrying the same, a valve in the casing

past which the liquid flows, a manually operated member on the casing operatively connected with the valve, capable of moving the same to its full open position, a spring-biased latch associated with the manually operated member, and an adjustable stop on the casing having a shoulder, a dog movably mounted on the side of the spout for engaging the edge of the said opening, and means connecting the same to said manually operated member; all of said parts co-operating when the dog is pulled against the edge of the opening, to move said manually operated part to enable the latch to snap over said shoulder and hold the manually operated member in an intermediate position with the valve in a partially open position to deliver the liquid at a reduced rate of flow.

2. Filling apparatus according to claim 1, in which the said manually operated member is in the form of a hand lever, and a bracket-bar carried on the casing in which the said adjustable stop is mounted so as to extend toward the manually operated member.

3. In filling apparatus for dispensing a liquid through a hose, with a hand-nozzle, into a tank having a filling opening into which the nozzle may be inserted: the combination of a spout, a casing carrying the same, a valve in the casing past which the liquid flows, and having a stem, a valve-lever pivotally supported on the casing, engaging the valve stem for moving the valve toward its open position, a bar on the casing, a stop-member mounted on the bar, projecting toward the lever and having a shoulder thereon, a latch-lever movably mounted on the valve-lever, having a latch-tongue and means for yieldingly biasing the latch-lever to hold the tongue substantially in engagement with the stop-member, said parts co-operating when the lever is moved in a direction to open the valve, to snap the tongue over the shoulder and thereby set the valve in a predetermined partially open position to give a predetermined rate of flow to the liquid passing through the nozzle.

4. In filling apparatus for dispensing a liquid through a hose, with a hand-nozzle, into a tank having a filling opening into which the nozzle may be inserted: the combination of a spout, a casing carrying the same, a valve in the casing past which the liquid flows, and having a stem, a valve-lever pivotally supported on the casing at a fixed point on the lever, engaging the valve stem for moving the valve toward its open position, a bar on the casing, a stop-member mounted on the bar projecting transversely to the bar and toward the lever and having shoulders thereon, a latch-lever pivotally mounted on the valve lever, having a latch tongue to co-operate with the shoulders, resilient means for yieldingly biasing the latch lever to hold the tongue substantially in engagement with the stop-member, all of said parts co-operating when the lever is moved in a direction to open the valve, to enable the tongue on the latch-lever to snap over, and rest against, one of the said shoulders, thereby setting the valve in a predetermined partially open position to enable the valve to operate with a predetermined rate of flow for the liquid.

5. Filling apparatus according to claim 4, in which the said stop-member is in the form of a bolt threaded into the bracket bar, projecting toward the said lever, the inner end of said bolt having a tapered neck and abrupt shoulders formed adjacent to the tapered neck to co-operate with the said tongue.

6. Filling apparatus according to claim 3, in which the nozzle is provided with a fixed dog adapted to engage the edge of the opening to support the nozzle when the same has been inserted in the opening.

7. In filling apparatus for dispensing a liquid through a hose, with a hand-nozzle, into a tank having a filling opening into which the nozzle may be inserted: the combination of a spout, a casing carrying the same, a valve in the casing past which the liquid flows, and having a stem, a valve-lever pivotally supported adjacent one of its ends on the casing at a fixed point on the lever, engaging the valve stem at an intermediate point on its length for moving the valve toward its open position, a bar on the casing, a stop-member mounted on the bar, projecting toward the lever and having a shoulder thereon, a latch-lever movably mounted on the valve-lever, having a latch-tongue and means for yieldingly biasing the latch-lever to hold the tongue substantially in engagement with the stop-member, said parts cooperating when the lever is moved in a direction to open the valve, to snap the tongue over the shoulder and thereby set the valve in a predetermined partially open position to give a predetermined rate of flow to the liquid passing through the nozzle.

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