

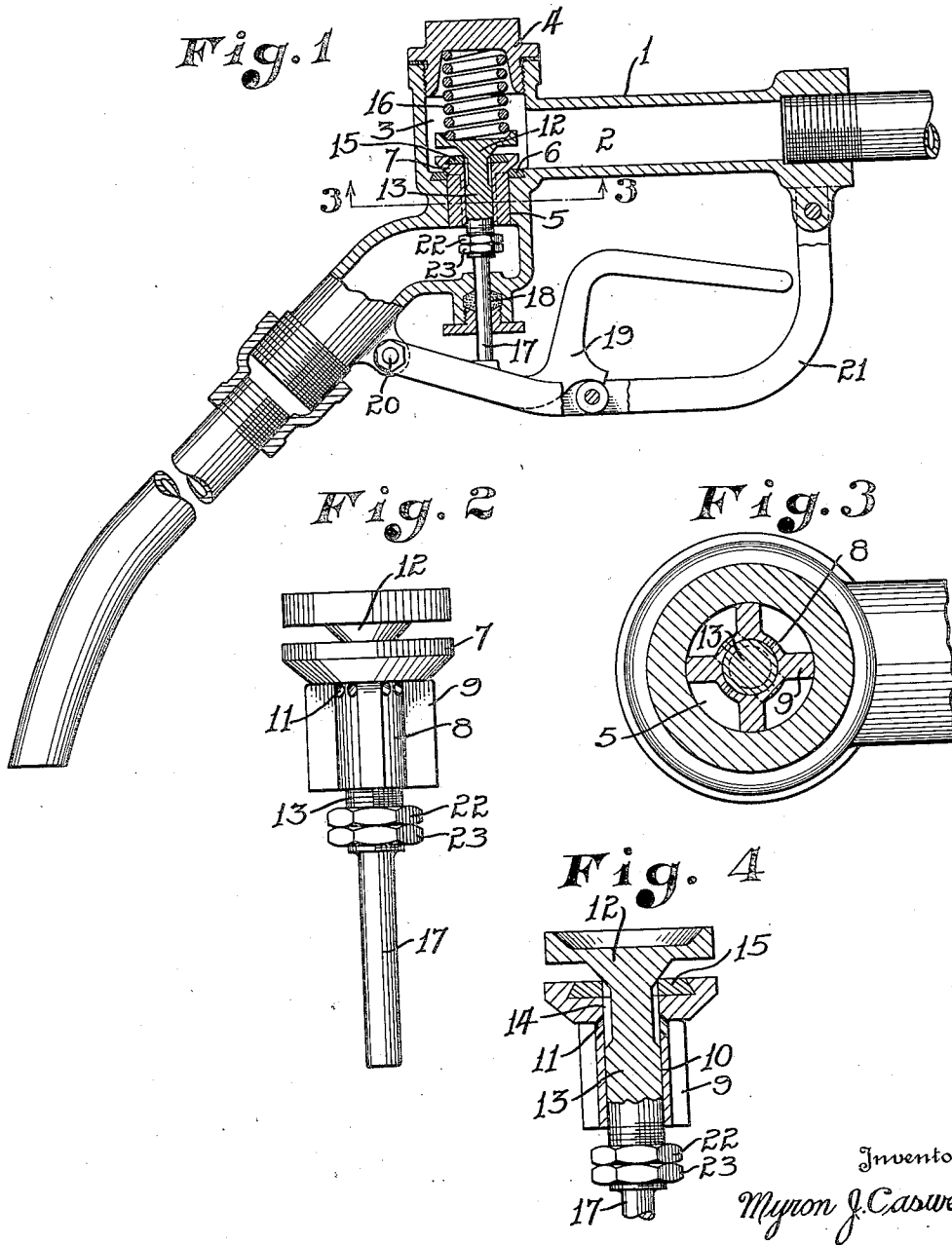
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ADJUSTABLE VARIABLE FLOW LIQUID DISPENSING NOZZLE

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## UNITED STATES PATENT OFFICE

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## ADJUSTABLE VARIABLE FLOW LIQUID DISPENSING NOZZLE

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This invention relates to a nozzle of the type commonly employed for the dispensing of liquids such, for instance, as gasoline at filling stations, and particularly relates to a manually controlled variable flow valve for such a nozzle.

In the use of nozzles of this character, it is exceedingly difficult, if not impossible, to control the quantity of flow where it is desired to discharge a lesser amount than full capacity flow and it is also difficult to initially open the valve due to the pressure of the liquid thereagainst.

The object of my invention is the provision of a valve of the character described which is manually operable in an easy manner to effect any desired partial or full opening of the valve, depending on the demand of the particular case, and is also adjustable to suit the particular job or installation requirements.

This invention is fully described in the following specification, and while in its broader aspect it is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings, in which,—

Figure 1 is a side elevation of a nozzle embodying my invention, with parts in central vertical section and parts broken away. Fig. 2 is an enlarged side elevation of the valve removed from the nozzle. Fig. 3 is an enlarged cross-section on the line 3—3 in Fig. 1 and Fig. 4 is an enlarged view of the valve with parts in section.

Referring to the drawings, 1 designates a nozzle embodying the invention, which is adapted to be connected by a flexible hose or otherwise to a source of liquid supply under pressure, and which has the discharge conduit 2 therethrough. Disposed in the conduit 2 is a valve chamber 3, in the present instance, of cylindrical form and having its top closed by the removable closure member 4. The bottom of the chamber 3 has an opening 5 therein providing communication between spaced portions of the conduit 2 and forming a valve guide, and also, at its upper marginal edge, a valve

seat. The valve seating surface is preferably faced with fibrous material 6.

A main valve 7 has a conical surface seating on the edge of the valve seat 6 and has a stem portion 8, which is smaller than the opening 5 to adapt it to project down through such opening and to provide a space therebetween, and has a series of circumferentially spaced webs 9, which extend lengthwise thereof in co-action with the wall of the opening 5 to guide the reciprocatory movements of the valve therein. The valve 7 and its stem have an opening 10 provided axially therethrough and this opening is provided in its wall immediately beneath the valve head 7 and between the webs 9 with orifices 11 through which liquid which enters the top of the opening 10 may discharge, as hereinafter described.

A secondary valve 12 is disposed above the valve 7 and provided with a conical surface which seats against the upper edge wall of the opening 10 to adapt it to close such opening, and has a stem 13 projecting downward therefrom through and below said opening with the lower portion thereof fitting the opening to guide the reciprocatory movements of the secondary valve relative to the main valve.

The stem 13 near its upper end is reduced in size so as to provide a space 14 around the stem within the opening 10 at its upper end. When the valve 12 is unseated, liquid is permitted to flow through the space 14 and thence through the orifices 11 and down between the webs 9 to the discharge end of the conduit 2. The valve 7 is preferably provided at its upper inner edge with a fiber member 15 forming a seat for the valve 12.

The upper end of the valve 12 is enlarged to receive the seating thrust of a coiled compression spring 16, which is disposed in the valve chamber 13 and has its outer end thrust against the closed member 4.

The valve stem 13 has a portion 17 projecting downward without the side wall of the conduit 2 through a stuffing box 18 provided therein and engaged at its outer end by a trigger member 19, which is pivoted to the conduit casing at 20 and has its free end

forming a finger engaging portion which extends lengthwise of the upper horizontal portion of the conduit 2 in position to be operated by a hand gripping such portion of the nozzle. The trigger 19 is protected by a guard 21, which has co-action with the trigger to limit its outward movement.

A stop nut 22 is threaded on the valve stem 13 below the stem 8 of the main valve 7 and in pre-determined spaced relation thereto so that the valve stem 13 when first moved by the trigger 19 will effect an opening of the valve 12 relative to the valve 7 and then by a continued movement thereof effect an opening movement of the valve 7. It is important in practice to have the stop member 22 adjustable so that the extent of initial opening of the valve 12 relative to the valve 7 may be gauged and the quantity of flow by reason of such opening regulated to suit the requirements of the particular installation. A lock-nut 23 coacts with the stop-nut 22 to secure it in adjusted position.

It is apparent that very little pressure is required to be exerted on the trigger 19 to initially raise the valve 12 from its seat, and furthermore that if it is desired to have a very slow flow through the valve it can be easily held in only partially open position without the chattering and other difficulties encountered in the use of an ordinary type of valve. If a greater flow than that permitted to take place through the valve 7 by an unseating of the valve 12 is desired, the trigger may be further raised to cause the stop 22 to engage and effect a raising of the valve 7 to permit a flow to take place both through such valve and downward through its seat around its stem.

I wish it understood that my invention is not limited to any specific construction, arrangement or form of the parts, as it is capable of numerous modifications and changes without departing from the spirit of the claim.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is,—

The combination with a liquid nozzle casing having a discharge conduit therethrough, and a valve chamber in said conduit with an opening in its bottom forming a valve seat at its open marginal edge, of a main valve seating on the valve seat within said chamber and having a stem portion projecting through said opening, said stem portion being spaced from the opening wall and having portions in guiding co-action with the opening wall, said valve and stem having a central opening axially there-through and the stem having side discharge ports from said axial opening and into the space between it and the bottom opening wall, a secondary valve disposed within said chamber and seating against the upper edge

wall of the valve opening and having a stem portion projecting downward through the valve and stem opening and thence through a side of the nozzle casing, said stem having a reduced portion at its upper end which, when the secondary valve is unseated, permits the flow of liquid through the opening of the primary valve to said discharge ports, means adjustably carried by the stem of the secondary valve in predetermined spaced relation to the stem of the primary valve for co-action therewith to open it when the secondary valve has been opened a predetermined extent, a spring acting on the secondary valve to normally effect a seating of both valves, and manually operable means without the nozzle casing for imparting an opening movement to the stem of the secondary valve.

In testimony whereof I have hereunto signed my name to this specification.

MYRON J. CASWELL.