Dec. 29, 1931. W. WENDERHOLD 1,839,188

NOZZLE DEVICE

Filed June 27, 1930

Fig. 1.

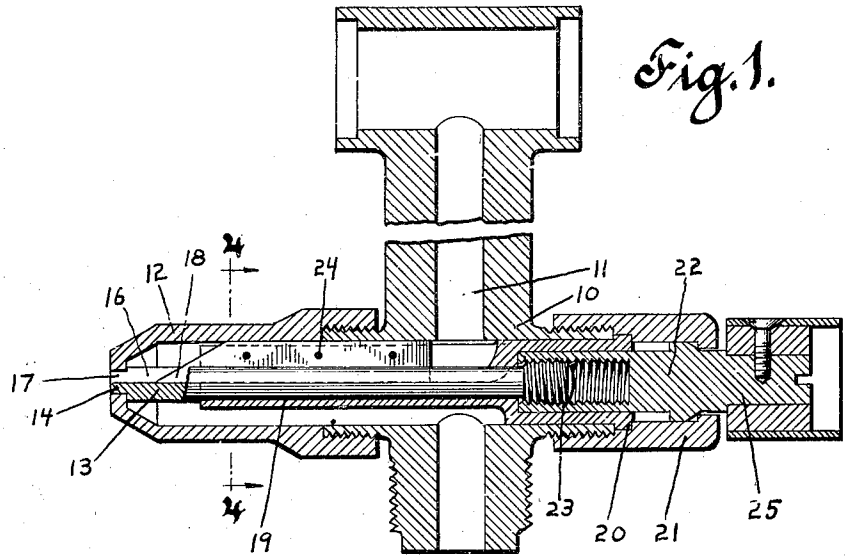


Fig. 2.

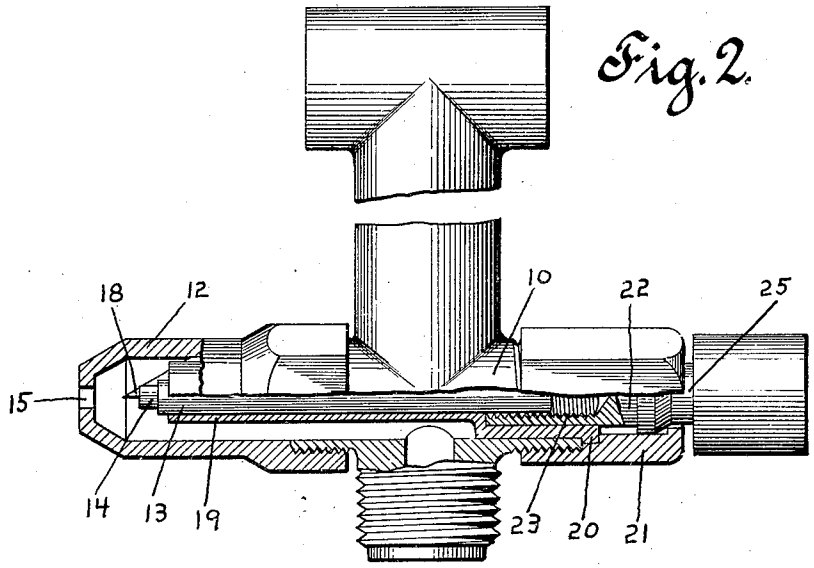


Fig. 3.

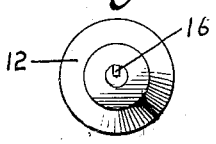
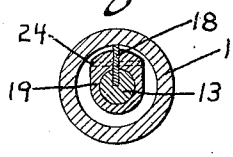


Fig. 4.



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UNITED STATES PATENT OFFICE

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NOZZLE DEVICE

Application filed June 27, 1930. Serial No. 464,128.

My invention relates to a nozzle device particularly adapted for oil burners, and more particularly to means for cleansing the fluid passages of such nozzle device while the device is in situ.

Oil burners usually include some form of atomizer to assist in the conversion of the petroleum oils into gaseous hydrocarbons. One of the most common methods of atomization is by projecting the petroleum oil under pressure from a nozzle device. The orifice or fluid passage of such nozzle device has a tendency to carbonize or clog when in use.

It is the principal object of the present invention to provide improved means for effecting the cleansing of a nozzle device for oil burners and the like and for maintaining such device in effective operating condition while the device is in use. Other objects and features of the invention will be pointed out or will become apparent upon a reading of the specification.

Briefly stated, in a preferred form of the invention I employ a body member having a passage therein and a slotted regulating member which fits into the passage in said body member so as to form an orifice for the discharge of fluid, cleansing means for cleaning the slot in the regulating member, and means for moving said regulating member so that the said cleansing means will cleanse the slot in the regulating member without the necessity of disassembling the apparatus in order to effect this cleansing operation.

In the drawings which show, for illustrative purposes only, a preferred form of the invention—

Fig. 1 is a central sectional view of a nozzle device with the parts shown in the normal operating position;

Fig. 2 is a side view of the nozzle device which has been partially broken away so as to show the interior, the parts being shown in position for cleansing;

Fig. 3 is an end view of the front or nozzle end of the nozzle device;

Fig. 4 is a transverse section taken upon the plane of the line 4—4 in Fig. 1.

While the invention will be described in connection with a nozzle device for oil burners, it is to be understood that the invention is of broader application and may be embodied in other forms of nozzles where it is desired to provide for the cleansing of the passage of the nozzle without disassembling.

In said illustrative drawings, 10 indicates the body member of the device having an opening 11 for the supply of fuel. A nozzle head or blind nozzle 12 may be screwed onto one end of the body member 10. Within the body of the device is the regulating or nozzle member 13, the front end 14 of which may be formed to fit into the passage 15 in the blind nozzle member 12. The regulating member 13 has a longitudinal slot 16. When the regulating member 13 is seated in the passage 15 in the nozzle member 12, the bottom and side walls of the slot 16 in the regulating member together with a part of the circumferential wall of the passage 15 in the nozzle member form an orifice 17 for the emission of fluid. Fluid comes in through the opening 11, passes through the body member 10, and thence out through the orifice 17. The regulating member 13, as will be described more in detail, is arranged to be moved back and forth for the purpose of cleansing the slot therein of carbon and sediment. In the form illustrated the front end 14 of the regulating or nozzle member 13 is seated in the passage 15 of the blind nozzle 12 when in operating position. A fixed clean-out member such as the knife 18 is arranged in the slot 16 of the regulating member 13 so that when the regulating member 13 is moved back from its normal position the knife 18 will cleanse the slot 16 of carbon or sediment.

In the particular form illustrated, the regulating member 13 is guided in a guide member 19 which is in fixed relation to the body member 10. This guide member may have a flange 20 which is firmly held between the body member 10 and the nut or closure member 21. The knife 18 is preferably fixed to the guide member 19 as by means of pins 24. The regulating member 13 is held against rotation in the guide member 19 preferably by means of the knife 18 which engages in the slot 16 of the regulating member.

The regulating member 13 may be retracted by an actuating member 22. As specifically shown, the regulating member 13 is connected by means of screw threads 23 to the threaded portion of the actuating member 22. The actuating member may be journaled in the guide member 19 as shown, and if desired may be held against longitudinal movement between a shoulder on the guide member 19 and the nut 21. If desired, the actuating member 22 may have a rearward projection 25 extending to the exterior of the body member 10, by means of which the actuating member 22 may be rotated by hand or by a suitable tool such as a screw-driver.

The operation of the device is as follows:

The parts are normally positioned as in Fig. 1. Fuel under pressure enters the device at 11 and passes through the body of the device to the orifice 17. When the slot 16 in the regulating member 13 is in need of cleansing, the actuated member 22 is rotated. The screw threads of the actuating member 22 engage in the screw threads of the regulating member 13, and since the regulating member is prevented from rotating by reason of the engagement of the knife 18 in the slot 16 of the regulating member, the screw effect of the threaded portion of the actuating member 22 upon the threaded surface of the regulating member 13 serves to retract the regulating member 13 so that the knife 18 passes through the slot 16, thus clearing the slot of any carbon or clogging material. When the regulating member 13 is retracted, any clogging material which has collected upon the walls of the passage 15 will be blown out. After cleansing, the actuating member 22 is revolved in the opposite direction and the screw effect of the threaded portion of the actuating member engaging in the threads of the regulating member 13 will return the regulating member 13 to its seat in the nozzle member 12.

It will be seen that I have provided a very simple and effective cleansing means which is of sturdy construction and not likely to get out of order. By retracting the regulating member 13 not only is the fluid passage 16 properly cleaned by the clean-out member 18, but carbon or other clogging material which may collect in the passage 15 and on the front end of the regulating member and which would not be removed by the clean-out member will be blown out by the passage of fluid rushing past the outside of the regulating member at the beginning of retraction. All of the parts are of simple form and readily manufactured and all parts are easily accessible for renewals or repairs.

While the invention has been described in considerable detail and one specific form shown in the drawings, it is to be understood that the invention may be otherwise embodied and employed in connection with injectors, nozzles, and the like, of various types other than that herein shown.

I claim:

1. In a nozzle device, a body member, a regulating member having a slot therein for the emission of fluid therethrough, a clean-out member for cleaning said slot, said regulating member and said clean-out member being relatively movable, and screw means operable by hand from the exterior of said body member for moving said regulating member and said clean-out member relatively to each other for cleaning said slot.

2. In a nozzle device, a body member, a regulating member having a longitudinal slot therein for the emission of fluid therethrough, a guide member for said regulating member, a clean-out member attached to said guide member for cleaning said slot, said regulating member being slidable within said guide member, said regulating member and said clean-out member being relatively movable longitudinally, and means operable by hand from the exterior of said body member for longitudinally moving said regulating member and said clean-out member relative to each other for cleaning said slot.

3. In a nozzle device, a body member, a movabe regulating member having a slot therein, a non-rotatable clean-out member, and means for moving said regulating member so that said clean-out member will clean said slot in said regulating member.

4. In a nozzle device, a body member, a movable regulating member having a longitudinal slot therein, a non-rotatable clean-out member which coacts with said regulating member so as to prevent rotation thereof, and means for moving said regulating member so that said clean-out member will clean said slot in said regulating member.

5. In a nozzle device, a body member, a rotatable actuating member, a regulating member having a longitudinal slot therein, a clean-out member fixed to said body member, and means whereby when said actuating member is rotated said regulating member will be retracted so that said clean-out member will cleanse the slot in said regulating member.

6. In a nozzle device, a body member, a rotatable actuating member, a regulating member having a longitudinal slot therein, a clean-out member fixed to said body member, and screw means for moving said regulating member when said actuating member is rotated, whereby said regulating member will be retracted so that said clean-out member will pass through said slot in said regulating member.

7. In a nozzle device, a body member, a rotatable actuating member having screw means thereon, a regulating member having a longitudinal slot and having screw means adapted to engage said screw means on said actu-

ating member, means for preventing said regulating member from rotating, a clean-out member fixed to said body member, whereby when said actuating member is rotated said regulating member will be retracted so that said clean-out member will pass through said slot in said regulating member.

8. In a nozzle device, a body member, a rotatable actuating member having an axial bore therein, a screw thread formed on said bore, a regulating member having a longitudinal slot therein and having a screw thread cut on the exterior surface thereof, said screw thread on the exterior surface of said regulating member engaging the said screw thread on said bore of said actuating member, a clean-out member fixed to said body member and engaging in said slot in said regulating member, whereby when said actuating member is rotated said regulating member will be retracted so that said clean-out member will cleanse said slot in said regulating member.

9. In a nozzle device, a body member, a rotatable actuating member within said body member having screw means thereon and having a projection which extends to the outside of said body member, a regulating member having a longitudinal slot therein and having screw means thereon adapted to engage the screw means upon said actuating member, a clean-out member fixed to said body member and engaging in said slot in said regulating member, whereby when said actuating member is rotated said regulating member will be retracted so that said clean-out member will cleanse the slot in said regulating member.

10. In a nozzle device, a body member having an orifice at the front end thereof, an actuating member at the rear end of said body member, a regulating member within said body member, a clean-out member within said body member, said regulating member being removable from the rear end of said body member independently of said clean-out member.

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