

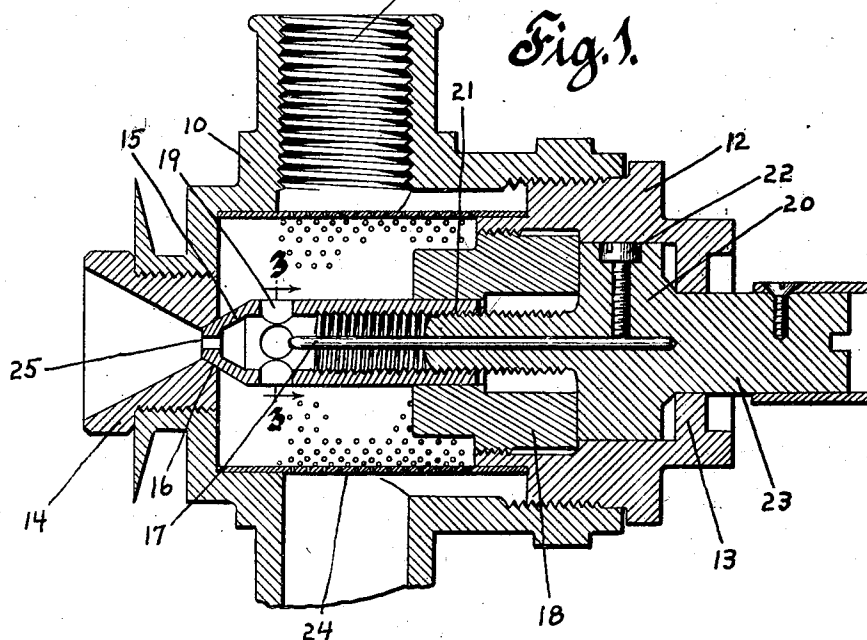
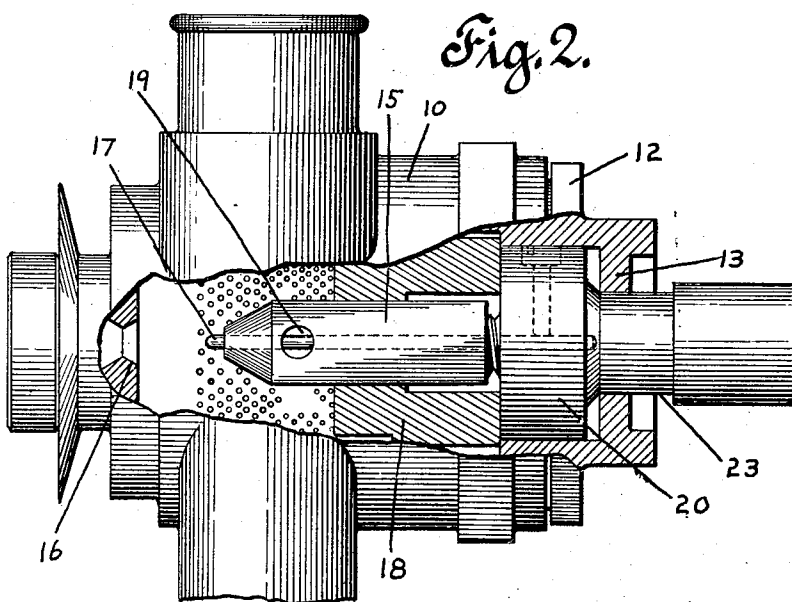
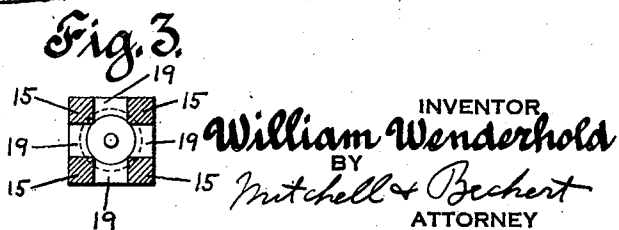
Jan. 12, 1932.

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1,840,863

NOZZLE DEVICE

Filed June 27, 1930



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## UNITED STATES PATENT OFFICE

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## NOZZLE DEVICE

Application filed June 27, 1930. Serial No. 464,127.

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 situs.

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 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 fluid regulating or nozzle member, a cleaning or scraping means, and means for moving the regulating or nozzle member so that the cleaning and scraping means will cleanse the regulating or nozzle 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 the 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 a transverse section taken upon the plane of the line 3—3 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 nozzle devices where it is desired to provide for the cleansing of

the orifice or passage of the nozzle without disassembling.

In said illustrative drawings, 10 indicates the body member of the device, having a supply pipe connection 11. A closure member 12 is screwed into one end of the body member 10. This closure member is in the form of a hollow cylinder having an annular flange 13 projecting from the interior surface thereof. Fluid passes from the body member 10 through the blind nozzle 14 and the flow is controlled by a regulating member such as the nozzle member 15. This nozzle member, as will be described more in detail, is arranged to be moved back and forth for the purpose of cleansing the passages of carbon or sediment. In its operating position the nozzle member 15 fits in a seat in the front of the body member 10 or in the blind nozzle 14. This seat is preferably conical as shown at 16 in the drawings. A cleansing member is arranged in a position to be engaged by the nozzle member 15 when it is moved back from its normal position. In the form shown in the drawings this cleansing member is in the form of a clean-out or pin member 17.

In the particular form illustrated the nozzle member 15 is guided in a nozzle guide 18 which is in fixed relation to the body member 10. As specifically illustrated this nozzle guide is in the form of a plug threaded into the closure member 12.

The nozzle member 15 may be held against rotation in the nozzle guide 18 by any suitable means, such as by angularly fitting parts. As specifically shown the nozzle member 15 is substantially square in cross section and the nozzle guide 18 is correspondingly formed. The walls of the nozzle member 15 may be provided with holes 19 for the passage of fluid to the interior of the member.

The nozzle member 15 may be retracted by an actuating member 20. As specifically shown the nozzle member 15 is connected by means of screw threads 21 to the threaded portion of the actuating member 20. The actuating member may be journaled in the closure member 12 as shown and if desired may be held against longitudinal movement between the flange 13 and the nozzle guide 18.

The clean-out or pin member 17 may be secured to the actuating member 20 as by means of a set screw 22. If desired the actuating member may have a rearward projection 23 extending to the exterior of the body member 10 by means of which the actuating member 20 may be rotated by hand or by a suitable tool such as a screw-driver.

In order to exclude foreign particles in the fuel a strainer 24 may be interposed between the supply pipe connection 11 and the nozzle member 15.

The operation of the device is as follows:

The parts are normally positioned as shown in Fig. 1. Fuel under pressure enters the device at the pipe connection 11, passes through the strainer 24, and through the holes 19 to the interior of the nozzle member 15. Thence it passes through the orifice 25 and through the blind nozzle 14. When the orifice 25 is in need of cleansing, the actuating member 20 is rotated. The screw threads of the actuating member 20 engage in the screw threads of the nozzle member 15, and since the nozzle member is prevented from rotating by reason of the engagement of its square exterior surface with the square interior surface of the nozzle guide 18, the screw effect of the threaded portion of the actuating member 20 upon the threaded surface of the nozzle member 15 serves to retract the nozzle member 15 until the pin member 17 passes through the orifice 25, thus clearing the orifice of any carbon or other clogging material. With the nozzle member 15 in its retracted position any clogging material which has collected upon the blind nozzle 14 and on the outside of the end of the nozzle member 15 will be blown off. After the cleansing operation, the actuating member 20 is revolved in the opposite direction and the screw effect of the threaded portion of the actuating member engaging in the threads on the nozzle member 15 will return the nozzle member 15 to its seat in the blind nozzle 14 and securely hold it thereon.

It will be seen that by means of my invention I have provided a very simple and effective cleansing means which is sturdy in construction and not likely to get out of order. By retracting the nozzle member, not only is the fluid passage or orifice therein properly cleaned by the pin member, but carbon or other clogging material which may collect outside of the nozzle member and would therefore not be removed by the pin member will be blown out by the passage of fluid rushing past the outside of the nozzle member at the beginning of retraction. All of the operating parts of the nozzle device may be removed as a unit with the closure member. 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 rotatable actuating member, a nozzle member having a fluid passage therein, a clean-out member which is a close fit in said fluid passage and which is fixed to said actuating member, and screw means for moving said nozzle member when said actuating member is rotated whereby said nozzle member will be retracted so that said clean-out member will pass through and clean said fluid passage in said nozzle member.

2. In a nozzle device, a body member, a rotatable actuating member having screw means thereon, a hollow nozzle member partially closed at one end and having screw means thereon adapted to engage said screw means on said actuating member and having an orifice in the partially closed end thereof, means for preventing said nozzle member from rotating, a pin member fixed to said actuating member, whereby when said actuating member is rotated said nozzle member will be retracted so that said pin member will pass through said orifice in said nozzle member.

3. In a nozzle device, a body member, a rotatable actuating member having an axial cylindrical projection formed on one side thereof, a screw thread formed on the exterior of said projection, a hollow nozzle member partially closed at one end having a screw thread cut on the interior surface thereof and having an orifice in the partially closed end thereof and an orifice connecting the interior of said member with the interior of said body member, said screw thread on the interior surface of said nozzle member engaging with said screw thread on said axial cylindrical projection of said actuating member, means for preventing said nozzle member from rotating, a pin member fixed to said actuating member, whereby when said actuating member is rotated said nozzle member will be retracted so that said pin member will pass through said orifice in said nozzle member.

4. 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 hollow nozzle member partially closed at one end and having screw means thereon adapted to engage the screw means upon said actuating member, means for preventing rotation of said nozzle member, a clean-out pin member fixed to said actuating member, said pin member projecting into the interior of said nozzle member, whereby when said actuating mem-

ber is rotated said nozzle member will be retracted so that said pin member will pass through an orifice in the partially closed end of said nozzle member.

5 5. In a nozzle device, a body member, an actuating member, a nozzle member, a clean-out pin member, and a closure member, said actuating member, said nozzle member, and  
10 said clean-out pin member being attached to said closure member so as to be removable therewith.

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