E. D. FERRELL.

NEEDLE VALVE.

APPLICATION FILED JAN. 22, 1917.

1,298,317.

Patented Mar. 25, 1919.

Fig. 1

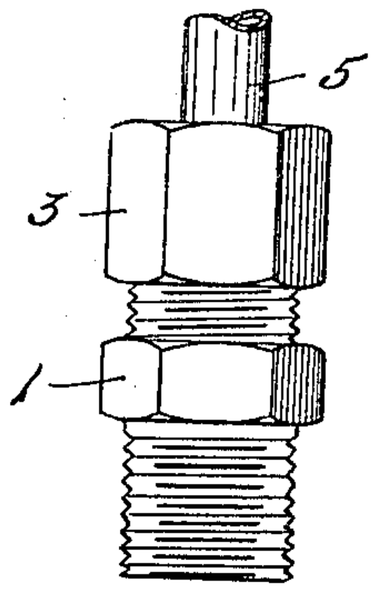


Fig. 2

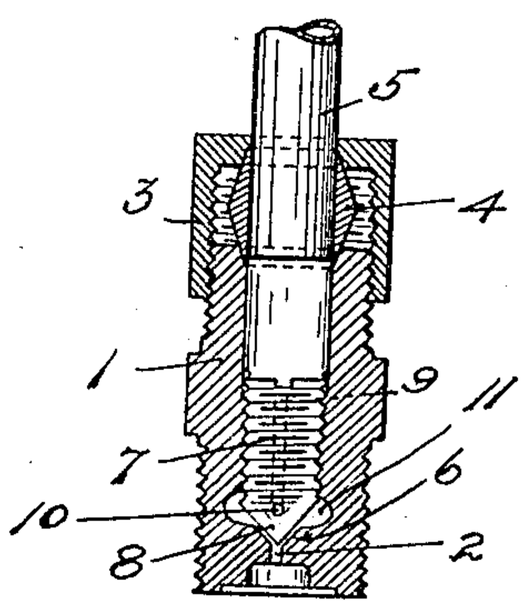
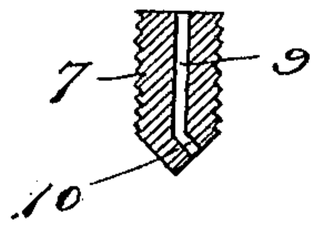


Fig. 3.



WITNESSES.

H. L. Opsahl.

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UNITED STATES PATENT OFFICE.

EUGENE D. FERRELL, OF WAYZATA, MINNESOTA.

NEEDLE-VALVE.

1,298,317. Specification of Letters Patent. Patented Mar. 25, 1919.

Application filed January 22, 1917. Serial No. 143,555.

To all whom it may concern:

Be it known that I, EUGENE D. FERRELL, a citizen of the United States, residing at Wayzata, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Needle-Valves, and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates particularly to valves of the needle type adapted for various uses, such, for instance, as in connection with vaporizers for internal combustion engines.

To the above end, generally stated, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claim.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings,

Figure 1 is a side elevation of the invention with a piece of tubing secured thereto;

Fig. 2 is a view of the invention, principally in longitudinal central section; and

Fig. 3 is a view of the needle valve in longitudinal central section.

The numeral 1 indicates a cylindrical valve casing in the form of a compound coupling having in one of its ends a contracted conduit 2. Screwed onto the other end of the casing 1, is a stuffing box 3 of the type having a transversely split collar 4 with oppositely tapered ends and which collar is circumferentially expansible or contractible under the adjustment of said stuffing box 3. One end of a connection or tube 5 is inserted into the stuffing box 3 and secured to the casing 1 by frictionally clamping the collar 4 thereon.

Formed in the inner extremity of the contracted conduit 2, is a conical valve seat 6. The valve casing 1, adjacent to the seat 6, is provided with internal screw threads into which is screwed, under friction, a needle valve 7, of the plug type, with its point 8 ground to fit said seat. When the valve 7 is turned to force its point into the seat 6, the contracted conduit 2 is closed thereby. The head of the valve 7 terminates considerably short of the adjacent end of the casing 1 and is provided with a transverse slot, into which a screw driver or other tool, not shown, may be inserted for the purpose of turning the valve 7 to adjust its point 8, with respect to the seat 6. To adjust the needle valve 7, it is, of course, necessary to remove the tube 5 from the stuffing box 3, in order that the screw driver or other tool may be inserted into the axial opening in said stuffing box and into the casing 1.

Extending axially into the needle valve 7 from the head thereof, is a passageway 9 having, at its inner end, a lateral extension 10, which extends through said valve at one side of its point and opens into an annular chamber 11 in the casing 1. This chamber 11 surrounds the valve point 8, adjacent to the seat 6. When the improved valve is used to convey water vapor or hydrocarbon vapor, the vapor delivered from the tube 5 into the casing 1 enters the passageway 9, in the valve 7, and from its lateral extension 10 is sprayed into the chamber 11 and thoroughly commingled with the air. From the chamber 11, the vapor is delivered evenly into the contracted conduit 2. The amount of vapor or other substance delivered into the contracted conduit 2 may, of course, be governed by the adjustment of the needle valve 7, which will stay where set, under its frictional screw-threaded engagement with the casing 1.

What I claim is:—

The combination with a valve casing having a contracted conduit with a valve seat at the inner extremity thereof, of a needle valve of the plug type screwed into the casing with its head terminating short of the adjacent end thereof and with its pointed end arranged, when moved into said seat, to close the contracted conduit, an annular chamber surrounding the pointed end of the valve, said valve having a longitudinal passageway affording communication between the conduit above the valve and the chamber, and a connection applied to the casing above the needle valve.

In testimony whereof I affix my signature in presence of two witnesses.

EUGENE D. FERRELL.

Witnesses:

CLARA DEMAREST,

HARRY D. KILGORE.