Dec. 22, 1925. 1,566,478

W. S. HOFSTRA

FUEL OIL BURNER

Filed March 17, 1921

Fig. 1.

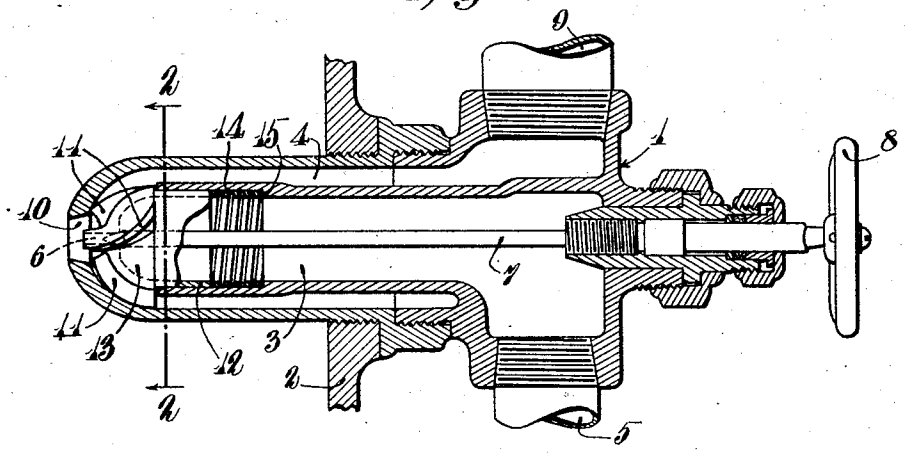
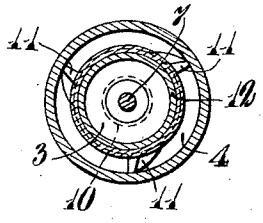


Fig. 2.



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UNITED STATES PATENT OFFICE.

WIEBE S. HOFSTRA, OF CLAREMONT, NEW HAMPSHIRE, ASSIGNOR TO SULLIVAN MACHINERY COMPANY, A CORPORATION OF MASSACHUSETTS.

FUEL-OIL BURNER.

Application filed March 17, 1921. Serial No. 453,177.

To all whom it may concern:

Be it known that I, WIEBE S. HOFSTRA, a citizen of the United States, residing at Claremont, in the county of Sullivan and State of New Hampshire, have invented certain new and useful Improvements in Fuel-Oil Burners, of which the following is a full, clear, and exact specification.

My invention relates to fuel oil burners and more especially to fuel oil burners of the type employing air or steam for the atomization of the oil.

An object of my invention is to provide an improved fuel oil burner. Another object of my invention is to provide an improved air or steam atomizing fuel oil burner. A further object of my invention is to provide an improved fuel oil burner of the air or steam atomizer type in which the parts will automatically maintain their adjustment and in which the necessity for matching threads and similarly difficult mechanical processes may be avoided.

In the accompanying drawings, I have shown for purposes of illustration, one form which my invention may assume in practice.

In these drawings,—

Fig. 1 is a central longitudinal section through an oil burner showing the illustrative form of my invention.

Fig. 2 is a transverse section taken on the line 2—2 of Fig. 1.

For purposes of illustration I have shown an oil burner generally indicated by 1 mounted in a plate 2 which may be a portion of the register of an oil burning outfit. This oil burner comprises concentrically disposed oil and atomizing fluid chambers 3 and 4, the oil chamber being disposed to the inside of the atomizing fluid chamber. Oil is supplied to the chamber 3 by way of a passage or pipe 5 and is discharged under pressure through an orifice 6 at the front end of the member 3 under the control of a needle valve 7 whose position is regulated by a hand wheel 8. The atomizing fluid, herein air, is supplied by way of a passage 9 to the chamber 4 and is discharged in a whirling cone through an orifice 10 coaxial with the orifice 6. For the purpose of imparting a conical form to the jet of air passing through the chamber 4, I provide a number of vanes 11 contacting with the forward end of the chamber 4 and spirally arranged in order to impart the necessary motion to the air. In my improved construction I form these vanes upon a sliding sleeve 12 which is closed at its front end as indicated at 13 and which forms the front closure for the oil chamber 3. The sleeve 12 has a ground fit with the front end of the chamber 3 and the spring 14, extending between the sleeve 12 and a shoulder 15, serves to maintain the vanes 11 at all times in contact with the forward interior periphery of the chamber 4.

By reason of this construction, it will be apparent that all the air passing through the orifice 10 will be guided by the vanes 11 and none will pass out without receiving the desired motion. It will also be evident that the spring automatically maintains the vanes in proper position to influence all of the air passing through the burner and that it is unnecessary to employ a system of matched threads in order that the vanes may be properly disposed. The ground surface between the sleeve 12 and the inner wall of the chamber 3 will suffice to prevent leakage, and the spring is sufficiently protected from the heat by its distance from the end of the passage and by the oil by which it is surrounded.

While I have in this application specifically described one form which my invention may assume in practice, it will be understood that this form of the same is used for purposes of illustration and that my invention may be modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. In an oil burner, means forming concentric oil and atomizing fluid passages, a resiliently positioned member disposed in said passages and having a restricted oil discharge port formed therein, and means for variably controlling the flow of oil through said port.

2. In an oil burner, means forming concentric oil and atomizing fluid passages, a resiliently positioned member provided with spiral vanes disposed in said passages and having a restricted oil discharge port formed therein, and means for variably controlling the flow of oil through said port.

3. In an oil burner, means forming an atomizing fluid passage provided with a conical

discharge orifice, means forming an oil conducting passage disposed concentric with said orifice, means including a resiliently positioned member provided with spiral vanes disposed in contiguity with said conical discharge orifice for affecting the discharge of fluid therefrom, said member having a restricted oil discharge port formed therein, and means for variably controlling the flow of oil through said port.

4. In an oil burner, means forming a passageway for atomizing fluid, means forming a passageway for fuel oil, both of said means having orifices formed therein at the forward end thereof of less diameter than said passages, a needle valve controlling the flow through the orifice communicating with the fuel oil passage, and a vane carrying member resiliently disposed in contiguity with the orifice of said atomizing fluid passageway, said last mentioned member comprising the fuel oil orifice and also comprising a seat for said needle valve.

5. In an oil burner, means forming a passageway for atomizing fluid, means forming a passageway for fuel oil, both of said means having orifices formed therein at the forward end thereof of less diameter than said passageways, a needle valve controlling the flow through the orifice communicating with the fuel oil passage, a vane carrying member disposed in contiguity with the orifices of said atomizing fluid passageway, said member also comprising a seat for said needle valve, and resilient means for maintaining said member in contiguity to the orifice in said atomizing fluid passage means.

6. In an oil burner, means forming concentric oil and atomizing fluid passages, a resiliently positioned member disposed in said passages, said member having a restricted oil discharge orifice formed therein, and valve means cooperating with said orifice for controlling the flow of oil therethrough.

7. In an oil burner, means forming concentric oil and atomizing fluid passages, a resiliently positioned member disposed in said passages, said member being provided with spiral vanes and having a restricted oil discharge orifice formed therein, and valve means cooperating with said orifice for controlling the flow of oil therethrough.

8. In an oil burner, means forming inner and outer oil and atomizing fluid passages, and a member resiliently positioned in said passages and having a reduced sleeve portion slidably mounted in said inner passage, said member being adapted to impart a whirling motion to the atomizing fluid discharging from said outer passage.

9. In an oil burner, means forming inner and outer oil and atomizing fluid passages, said inner passage forming means having a bore formed therein, and a member resiliently positioned in said passages and having a reduced sleeve portion slidably mounted in said bore, said member being adapted to impart a whirling motion to the atomizing fluid discharging from said outer passage.

10. In an oil burner, means forming inner and outer oil and atomizing fluid passages, said inner passage forming means having an enlarged bore formed therein, a member positioned in said passages and having a portion slidably mounted in said bore, said member being adapted to impart a whirling motion to the discharging atomizing fluid, and a spring disposed in said bore and acting on said member for resiliently maintaining the same in operative position.

In testimony whereof I affix my signature.

WIEBE S. HOFSTRA.