J. M. MILLER.

HYDROCARBON BURNER.

APPLICATION FILED FEB. 6, 1919.

1,302,827. Patented May 6, 1919

FIG. 1.

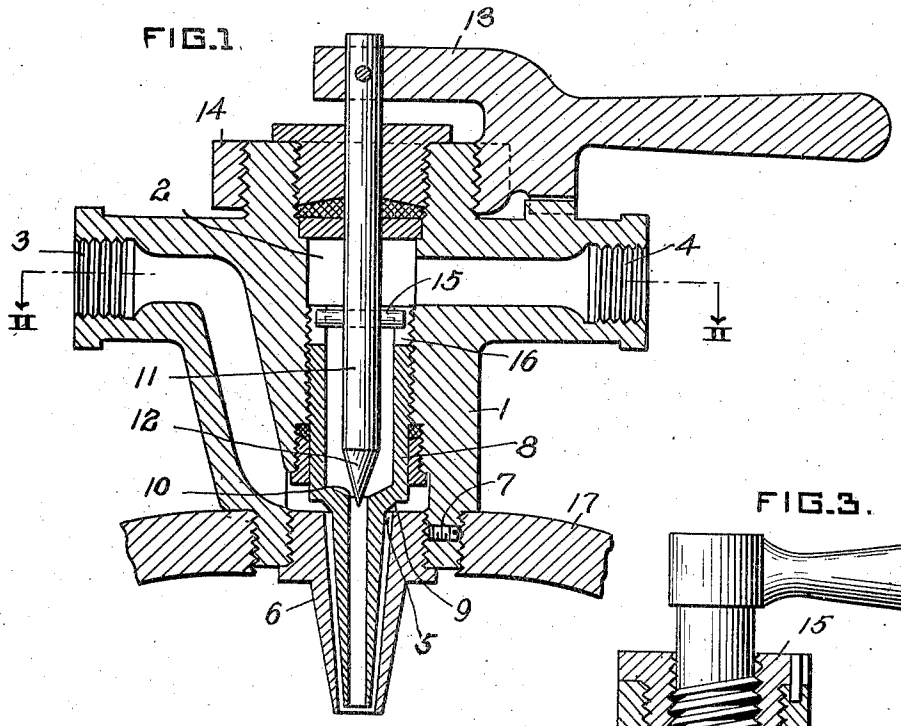


FIG. 3.

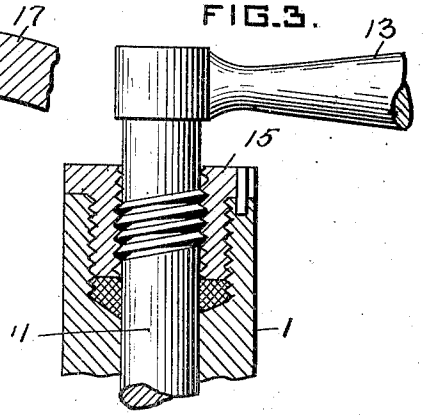
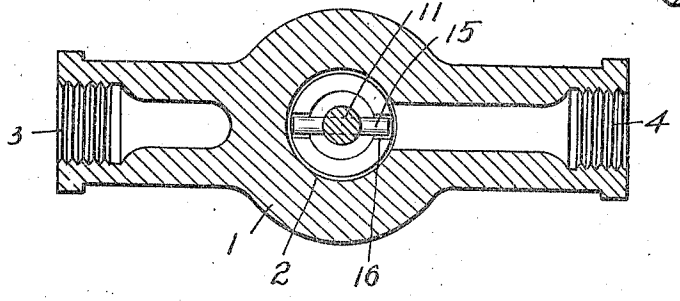


FIG. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

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HYDROCARBON-BURNER.

1,302,827. Specification of Letters Patent. Patented May 6, 1919.

Application filed February 6, 1919. Serial No. 275,340.

To all whom it may concern:

Be it known that I, JOHN H. MILLER, residing at Sewickley, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Hydrocarbon-Burners, of which improvements the following is a specification.

The object of my invention is to provide a hydrocarbon burner which will be simple and practical in construction and whereby a single member may operate two valves simultaneously, each valve controlling the flow of a fluid entering into a combustible mixture.

In the accompanying sheet of drawings forming part of my specification, I have illustrated the preferred embodiment of my invention. Figure 1 is a central longitudinal sectional view of the burner; Fig. 2 a sectional view taken on the line II—II, Fig. 1; and Fig. 3 a view similar to the upper portion of Fig. 1 showing a modification of construction.

The burner which I provide includes three main parts, namely, a casing provided with a central bore and with a pair of inlets for oil and air or such other fluids as may be mixed with each other to form a combustible mixture, a sleeve longitudinally movable within such casing bore, and a stem within the sleeve. To control the flow of fluid entering the casing-elements, the sleeve is provided with two valve elements, one of which coöperates with a valve element formed in the casing and the other with a valve element formed on the stem, and the three main parts of the burner are interconnected by differential threads whereby the turning of the stem becomes effective to open and close both valves simultaneously.

Referring to the illustrative embodiment of my invention, the casing 1 is provided with a central bore 2 and with inlets 3 and 4, preferably located at opposite sides of the bore 2. The inlet 3 may be for air and the inlet 4 for oil. At the lower end of the casing there is a valve port 5 preferably formed in a nipple 6 attached to the casing and in effect forming a part thereof. To hold the nipple in any desired adjustable position, a suitable set screw 7 may be provided.

The sleeve 8 within the bore of the casing has exterior screw thread engagement with the casing and is provided exteriorly with a valve 9 which coöperates with the nipple 6 to control the flow of air from the inlet 3 through the port 5 in the nipple. The interior of the sleeve 8 communicates with the casing inlet 4 and is provided with a valve port 10 forming one element of the valve controlling the flow of oil entering such inlet. The other element of such valve is the valve 12 formed on the end of the stem which extends within the sleeve 8.

The stem 11 has screw thread engagement with the casing 1, the threads for such purpose being of a greater pitch than the thread on the exterior of the sleeve 8, and the stem is so connected to the sleeve that the rotation of the stem will also cause the sleeve to rotate. In Figs. 1 and 3 of the drawings there are shown alternate means for effecting the screw thread connection between the stem and casing. In Fig. 1 the upper end of the stem is connected to an operating member 13 provided with an interiorly threaded ring 14 engaging threads formed on the upper end of the casing, while in Fig. 3 the upper end of the stem itself is provided with threads which engage threads formed on the interior of a packing nut 15.

While various means may be provided for connecting the stem 11 to the sleeve 8 so that such members, although simultaneously rotated, may move longitudinally at different rates according to the difference in the pitch of the two screw thread connections, I preferably provide a pin-and-slot connection, the stem being provided with a pin 15 and the sleeve with longitudinally disposed slots 16 into which the opposite ends of the pin extend.

In the operation of the burner, the turning of the control or operating member causes both the stem 11 and the sleeve 8 to rotate, but, by reason of the differential screw thread connections, the increment of upward longitudinal movement of the stem is greater than that of the sleeve. Hence the valves 12 and 9 simultaneously open or uncover their respective coöperating ports 10 and 5. The valves may be so constructed that at their various relative openings there may be permitted to flow the proper relative proportions of fluids to afford the most suitable combustible mixture. As will be seen, the burner as a unit may be attached to

a furnace door or plate 17, and in the operation of the valves the tip of the burner will remain in a fixed position.

According to the provisions of the patent statutes, I have described the principle and operation of my invention together with the construction which I now consider to represent the best embodiment thereof. However, I desire to have it understood that, within the scope of the appended claims, my invention may be practised by other forms of construction than that particularly shown in described.

I claim as my invention:

1. In a hydrocarbon burner, the combination of a casing having a central bore and provided with a pair of inlets communicating therewith and further provided with a valve port within such bore, a sleeve within said bore provided with an opening communicating with one of said casing inlets, and further provided with a valve controlling flow from the other of said casing inlets through said casing port and with a valve port, a stem provided with a valve controlling flow through said sleeve port, said sleeve and stem each having a separate screw thread engagement with said casing but of different relative pitches, means for rotating said stem, and means for connecting said stem to said sleeve whereby the rotation of the stem causes the stem and sleeve to simultaneously rotate and move longitudinally at different rates to control both of said valves.

2. In a hydrocarbon burner, the combination of a casing having a central bore and provided with a pair of inlets communicating therewith and further provided with a valve port within such bore, a sleeve within said bore having exterior screw thread engagement with the casing, said sleeve being provided with an opening communicating with one of said casing inlets and further provided with a valve controlling flow from the other of said casing inlets through said casing port and with a valve port, a stem within said sleeve and provided with a valve controlling flow through said sleeve port, said stem having with said casing screw thread engagement of different pitch than that of said sleeve, means for rotating said stem, and means for connecting said stem to said sleeve whereby the rotation of the stem causes the stem and sleeve to simultaneously rotate and move longitudinally at different rates to control flow through both of said valves.

3. In a hydrocarbon burner, the combination of a casing having a central bore and provided with a pair of inlets communicating therewith and further provided with a valve port within such bore, a sleeve within said bore provided with an opening communicating with one of said casing inlets, and further provided with a valve controlling flow from the other of said casing inlets through said casing port, and with a valve port, a stem provided with a valve controlling flow through said sleeve port, said sleeve and stem having differential screw-thread engagements with said casing, means for rotating said stem and a longitudinally disposed pin and slot connection between said sleeve and stem, whereby the rotation of the stem causes the stem and sleeve to simultaneously move longitudinally at different rates to control both of said valves.

In testimony whereof I have hereunto set my hand.

JOHN M. MILLER.

Witnesses:
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