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OIL BURNER

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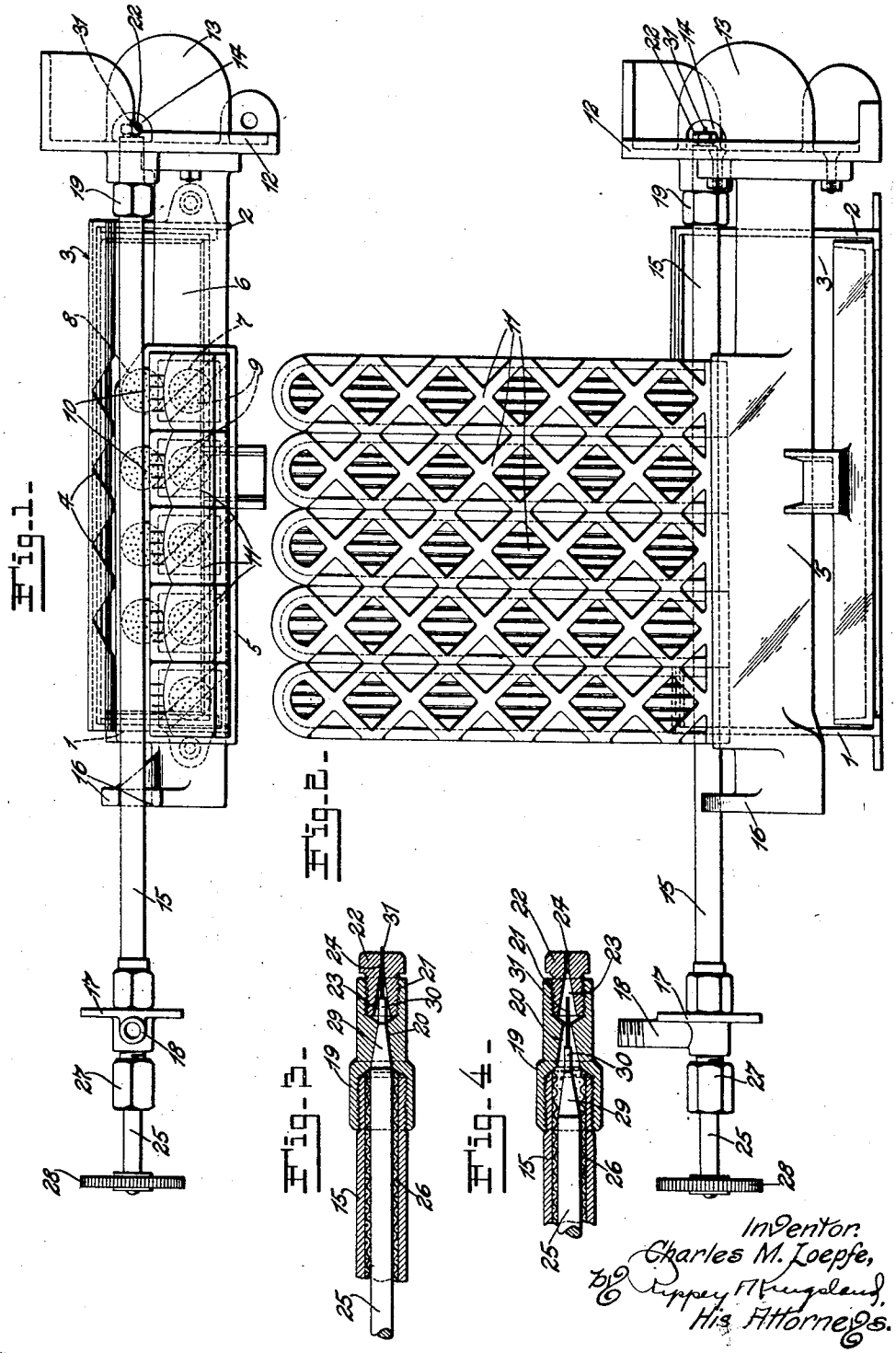

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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OIL BURNER.

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This invention relates to improvements in oil burners, and particularly to means in a burner of the class mentioned for maintaining the delivery port of the vaporizing device open so as to provide a free flow of oil vapor to the carburetor.

An object of the invention is to provide in an oil burner an improved form of vaporizer equipped with a manually operable clean-out stem so that there will be a free flow of gas from the vaporizer to the carburetor of the heater.

Another object of the invention is to provide a clean-out device that may be manually operated to reciprocate it through the small ports for the delivery of the gas from the vaporizer without wear upon the port, resulting in the maintaining of a normal delivery area from said port to the carburetor of the device.

The objects of the invention are obtained by the structure illustrated in the accompanying drawing, in which

Fig. 1 is a plan view of the burner in which the invention is incorporated.

Fig. 2 is a front view.

Fig. 3 is a cross section of the delivery end of the vaporizer with the clean out stem projecting through the delivery port of the vaporizer.

Fig. 4 is a view of the same part with the clean-out stem retracted.

In the embodiment of the invention illustrated in the drawing the improvement is shown in association with an oil burner comprising a base having end walls 1 and 2 and a back wall 3, the upper portion of the back wall curving forwardly and having a series of notches 4 in its edge. Mounted upon the base is a casting 5 having a hollow internal chamber and having a top plate 6 in which is formed parallel series 7 and 8 of burner disc openings, in which openings are set perforated burner discs 9 and 10. The rearward series of openings 8 are arranged below the notches 4 of the plate 3, the front series of openings 7 having placed thereover a plurality of refractory elements 11. At one end of the burner there is a plate 12 carrying a curved member 13 having orifices 14 therein, said member constituting the carburetor or mixing chamber for the gas.

With the structure thus described is associated the vaporizer, the improvement in which constitutes the subject matter of the present application. The vaporizer comprises a tube 15 that extends transversely across the burner piece over the burner discs 10 and is embraced at its rearward side by the forwardly curved portion of the back wall 3, the notches 4 providing an area for admitting air for completing the combustion of the gas emitted through the discs 10. The tube 15 is supported by a bracket 16 formed in connection with the end wall of the casting 5 seating in a notch in said bracket and connecting at its opposite end into the passage way in the carburteor 13.

A T-fitting 17 is connected with the end of the tube 15, the branch 18 of the T-fitting leading to a source of supply of hydrocarbon fuel. The opposite or delivery end of the tube 15 is threaded and carries by threaded engagement a connector 19 having a forwardly tapering channel 20 and a threaded recess 21 in its outer end, there being a small opening between the apex of the channel 20 and the base of the recess 21. An exteriorly threaded tip 22 threads into the recess 21, said tip being provided with an outwardly tapering channel 23, the apex of which develops into a cylindrical opening 24 of very small diameter.

It is essential in burners of this type that the outlet port from the vaporizer be of relatively small cross section, as considerable difficulty has been experienced by reason of this opening choking up from carbonization of the fuel, the accumulation of foregin matter in the fuel, or for other reasons. It is also essential in any construction in which an instrument is reciprocated through said opening that such reciprocation shall not wear the side edges of the opening, enlarging it beyond limits in which the device will operate satisfactorily. These difficulties have been overcome by provision of a long stem 25 that fits through the outer opening of the T-fitting 17 and extends longitudinally through the tube 15. The stem 25 is of less diameter than the internal diameter of the tube 15 and the space between the stem and tube contains a reticulated wire screen 26, which acts to assist the vaporization of the oil passing through the tube 15 and over the burner discs 10, where it is heated and vaporized. The screen extends from the outer end of the tube to the throat of the channel 20 in the connector 19, and acts as a bearing for the stem 25. The stem 25 ex-

tends through a packing nut 27 and is equipped at its outer end with a hand wheel 28. The stem 25 is threaded within the area of the packing nut 27 with which it has threaded engagement and the packing nut threads over the outer branch of the T-fitting 17, so that by rotating the hand wheel 28 the stem 25 is moved axially of the tube. The inner end of the stem is tapered, forming a conical portion 29 that develops into a cylindrical portion 30 of small diameter and a relatively long section of wire 31 preferably of a high flexibility and strength, such as piano wire, is swaged to the portion 30 of the end of the stem. In Fig. 3 the stem is shown as screwed to its inner position from which it will be observed that the channel 20 constitutes a bearing and guide, as well as an abutment, for the conical end 29 of the stem, the channel 23 acting as a guide for guiding the flexible wire 31 into the opening 24. The stem at the inner end is thus centered and guided so that the wire 31 will project through the opening 24, thus removing any accumulations therein. When the stem is moved to its innermost position the portion 29 of the stem 25 seats against the channel 20 and acts as a valve to cut off the flow of gas from the vaporizer. The retracted position of the stem is shown in Fig. 4, from which it will be observed that the wire is drawn outwardly from the port 24, and the conical section 29 of the stem is drawn well back into the tube so as not to restrict the free passage of gas from the vaporizer, it being understood that there is sufficient space between the wire and the opening between the channel 20 and the base of the recess 21 in the connector 19.

Inasmuch as the wire 31 is flexible and of a very small diameter it may be reciprocated indefinitely through the port 24, without in any way wearing the side walls thereof and increasing its cross sectional area.

I am aware that the invention may be varied in certain particulars without departing from the spirit and scope thereof. I do not limit myself therefore to unessential details of construction.

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

1. In an oil burner, a vaporizer comprising an elongated tube having a gas inlet at one end, a connector attached to the opposite end, said connector having a conical passage therein and a cylindrical threaded portion in communication through an orifice with said conical passage, a burner tip having a conical passage therein that communicates with a small jet opening, a rod extending entirely through said elongated tube, said rod having a conical portion and a cylindrical extension, a flexible wire needle connected with said cylindrical extension, and means for operating said rod to project said needle entirely through the jet opening and to permit said cylindrical portion to bear against the conical portion of the burner tip whereby the needle is guided axially through the outlet opening.

2. An oil burner comprising a tube having a gas inlet at one end, a connector attached to the opposite end of said tube and having a tapering passage therethrough opening at its larger end into the tube, a burner tip attached to the outer end of said connector having a tapering passage therethrough opening at its larger end into said passage through said connector, a valve stem extending through said tube having a tapered portion arranged to fit against the wall of said tapering passage through said connector, a reduced portion extending from the end of said tapered portion of said stem arranged to be extended through the smaller end of said tapering passage through said connector, a wire attached to the end of said reduced portion arranged to be extended through and withdrawn from the tapering passage through said burner tip, and means for moving said valve stem longitudinally to move said tapered portion thereof into and out of contact with the wall of said passage through said connector.

3. An oil burner comprising a tube having a gas inlet at one end, a connector attached to the opposite end of said tube and having a tapering passage therethrough opening at its larger end into the tube, a burner tip attached to the outer end of said connector having a tapering passage therethrough opening at its larger end into said passage through said connector, a valve stem extending through said tube having a tapered portion arranged to fit against the wall of said tapering passage through said connector, a reduced portion extending from the end of said tapered portion of said stem arranged to be extended through the smaller end of said tapering passage through said connector, a wire attached to the end of said reduced portion arranged to be extended through and withdrawn from the tapering passage through said burner tip, means for moving said valve stem longitudinally to move said tapered portion thereof into and out of contact with the wall of said passage through said connector, and a screen element in said tube surrounding and supporting said valve stem for movement as aforesaid.

4. In an oil burner a tube having a gas inlet, a connector attached to one end of the tube and having a tapering passage therethrough opening at its larger end into the tube, a burner tip attached to the outer end of said connector and having a tapering passage therethrough the larger end of which opens into and is of larger area than the smaller end of said passage through said connector, a valve stem extending

through said tube and having a tapered extremity movable to and from position to seat against the wall of said tapered passage through said connector, a wire element in connection with the end of said stem and movable thereby into and out of said passage through said burner tip, and a screen element in said tube surrounding and supporting the end of said valve stem adjacent to said connector.

5. In an oil burner a tube having a gas inlet, a connector attached to one end of the tube and having a tapering passage therethrough opening at its larger end into the tube, a burner tip attached to the outer end of said connector and having a tapering passage therethrough the larger end of which opens into and is of larger area than the smaller end of said passage through said connector, a valve stem extending through said tube and having a tapered extremity movable to and from position to seat against the wall of said tapered passage through said connector, a wire element in connection with the end of said stem and movable thereby into and out of said passage through said burner tip, and a screen element in said tube surrounding said stem and being longitudinally immovable.

6. In an oil burner a tube having a gas inlet at one end, a connector attached to the opposite end of said tube and having a passage therethrough opening into the tube, a burner tip attached to the outer end of said connector having an inwardly enlarging passage opening into said passage through said connector and being of larger area than the communicating portion of said passage through said connector, a valve stem extending through said tube movable to and from position to close said passage through said connector, a wire element in connection with said stem and operated thereby into and out of said passage through said burner tip, and a screen element in said tube surrounding said stem and being longitudinally immovable.

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