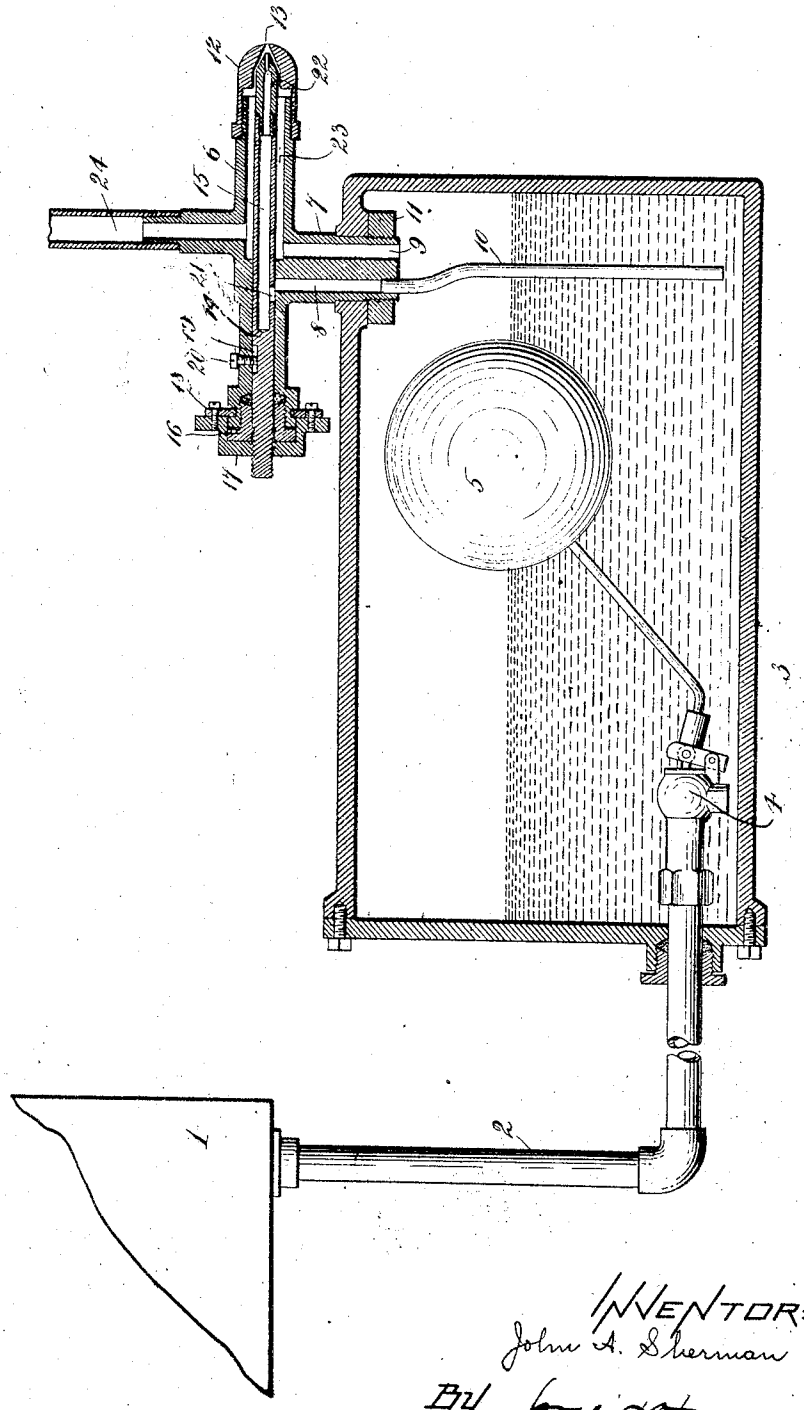
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J. A. SHERMAN

BURNER

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JOHN A. SHERMAN, OF WORCESTER, MASSACHUSETTS.

BURNER.

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To all whom it may concern:

Be it known that I, JOHN A. SHERMAN, of Worcester, in the county of Worcester and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Burners, of which the following is a specification.

My invention relates more particularly to burners for use with heating systems, more especially for a system such as is described in application Serial No. 243,875, filed by William H. Sheppard and myself July 6, 1918, though it has other uses.

It comprises a burner constructed and arranged to draw up its fuel by suction so that in case the air pressure which causes the suction fails or is cut off, the fuel in the burner will fall back by gravity into the tank or source of supply.

My invention will be understood by reference to the drawings in which a burner embodying my invention is shown in vertical section.

1 is a reservoir which is connected by a pipe 2 with the tank 3 from which fuel (in this case oil) is drawn to feed the burner. The end of the pipe 2 is controlled by a ball valve 4 of any suitable construction. No oil will flow from the reservoir 1 to the tank 3 unless the level of the oil in the tank falls below a certain height, the lowering of the level of the oil causing the dropping of the float 5 and hence the opening of the valve 4 in the usual way. The tank then fills until the float 5 is lifted high enough to close the valve.

The tank 3 is closed airtight except that at some convenient point in its top there is mounted the burner. This burner comprises a hollow casing 6 having a neck 7 on its under side in which are, as shown, two passages 8 and 9. The passage 8 has connected to it a pipe 10 which runs nearly to the bottom of the tank. The lower end of the neck is threaded and a nut 11 fitted on the neck holds the casing in place. On one end of the casing is threaded a nozzle 12 having an opening 13.

Within the casing is a rod 14, which is hollow for a portion of its length as at 15, its solid portion extending rearward, and passing out from the casing through a gland 16 held in place by a cap 17. The casing is shaped to receive this gland in an enlarged chamber and has a circular groove about it, to receive a two-part ring 18 bolted to the cap 17. The rear end of the rod 14 is threaded and the cap 17 is correspondingly threaded so that by turning the cap 17 and ring 18 the position of the rod in the casing may be adjusted. A groove 19 and screw 20 prevent the rod from being turned when turning the cap 17 and the screw 20 may serve as a set screw if desired.

The hollow or tubular portion of the rod has an opening 21 which may register with the passage 8, and may be more or less closed by the movement of the rod 14 so as to allow more or less oil to be drawn from the tank. As shown it is about one third open. The tubular portion of the rod thus forms an oil chamber through which the oil passes from the tank to the nozzle and its end is preferably provided with a tip 22 having a suitable passage through its end which is preferably adjustable and removable so that it may be removed if desired.

The annular chamber 23 in the casing 6 is supplied with compressed air directly from the pipe 24, and said chamber 23 communicates with the burner opening 13 through a chamber in the nozzle 12, into which last-named chamber the tip 22 extends, said tip being preferably removably attached to the tubular end of the rod 14. The chamber 23 communicates with the chamber of the oil tank 3 through the passage 9, so that the compressed air from the pipe 24 will not only serve to force up oil through the pipe 10 but will also draw up oil by suction, thus ensuring a proper injector operation of the burner.

It will be seen that with a given air pressure, the amount of oil fed to the burner can be controlled by adjusting the size of the opening 21, and the strength of the mixture of oil and air can be controlled by adjusting the position of the nozzle 12 so as to allow more or less air to pass in contact with the oil in front of the tip 22 and between it and the interior of the nozzle 12.

A burner of the above type is easy to adjust to get the best combustion. While the oil is fed to the burner by suction, this feed is materially assisted by the establishment of air pressure above the fuel in the tank. A great practical advantage of the burner is the fact that as soon as the air pressure is released the burner becomes self-draining, emptying itself at once into the tank without flooding the fire box.

Other embodiments of my invention will

occur to those skilled in the art, but the above is the best embodiment now known to me.

While as above described oil flows from reservoir 1 to tank 3 by gravity, when the valve 4 is open, the tank may be otherwise filled if thought best.

What I claim as my invention is:—

1. An oil burner comprising a hollow casing provided with a hollow nozzle having a burner opening, a tubular oil supplying member mounted in said casing and having an opening in its side and having also a perforated tip which is in alinement with said burner opening, said tip extending into said hollow nozzle, said tubular member being of lesser diameter than the chamber of said hollow casing and the said tip being of lesser diameter than the chamber of said hollow nozzle, thus affording an annular air passage to said burner opening, and a compressed air supply pipe opening directly into said annular air passage, thus producing a strong injection suction action at the burner tip, said burner casing having a neck by which it may be attached to an oil tank, said neck having an air passage opening into the oil tank, so that compressed air from said air supply pipe may flow to said tank through said annular air passage, to force up oil, said neck having also an oil passage communicating with said tubular oil-supplying member through said opening with which said oil-supplying member is provided.

2. An oil burner comprising a hollow casing provided with a hollow nozzle having a burner opening, a tubular oil-supplying member mounted in said casing and having an opening in its side and having also a perforated tip which is in alinement with said burner opening, said tip extending into said hollow nozzle, said tubular member being of lesser diameter than the chamber of said hollow casing and the said tip being of lesser diameter than the chamber of said hollow nozzle, thus affording an annular air passage to said burner opening, a compressed air supply pipe opening directly into said annular air passage, said burner casing having a neck by which it may be attached to an oil tank, said neck having an air passage opening into the oil tank, so that compressed air from air supply pipe may flow to said tank through said annular air passage, to force up oil, and an oil passage communicating with said tubular oil-supplying member through said opening with which said oil supplying member is provided, and means for adjusting said tubular member longitudinally in said casing to vary the working size of said opening and thereby regulate the oil feed.

3. An oil burner comprising a hollow casing provided with a hollow nozzle having a burner opening, a tubular oil-supplying member mounted in said casing and having a perforated top in alinement with said burner opening, said tip extending into said hollow nozzle, said tubular member being of lesser diameter than the chamber of said hollow casing and the said tip being of lesser diameter than the chamber of said hollow nozzle, thus affording an anular air passage to said burner opening, a compressed air supply pipe communicating directly with said annular air passage, said burner casing having a neck by which it may be attached to an oil tank, said neck having an air passage communicating with said annular air passage and an oil passage communicating with said tubular oil supplying member through an opening with which said oil-supplying member is provided, a cap with which said tubular member has a screw-threaded connection, said casing having an annular groove adjacent said cap, and a two-part ring attached to said cap and extending into said groove, so that by turning said cap said oil-supplying member may be adjusted longitudinally to vary the operative size of said opening to regulate the oil feed.

4. An oil burner comprising a hollow casing forming an enclosed chamber, said casing having a nozzle, an oil-supplying tubular member located in said chamber and having a tip at its end in close proximity to said nozzle, said tubular member having an opening in its side, means for connecting said chamber with a compressed air supply and with an oil container, and means for adjusting said tubular member longitudinally to vary the operative size of said opening and thus regulate the oil feed.

JOHN A. SHERMAN.