

H. M. CONNER.
HYDROCARBON VAPORIZER.
APPLICATION FILED FEB. 21, 1912.

1,046,557.

Patented Dec. 10, 1912

Fig. 1.

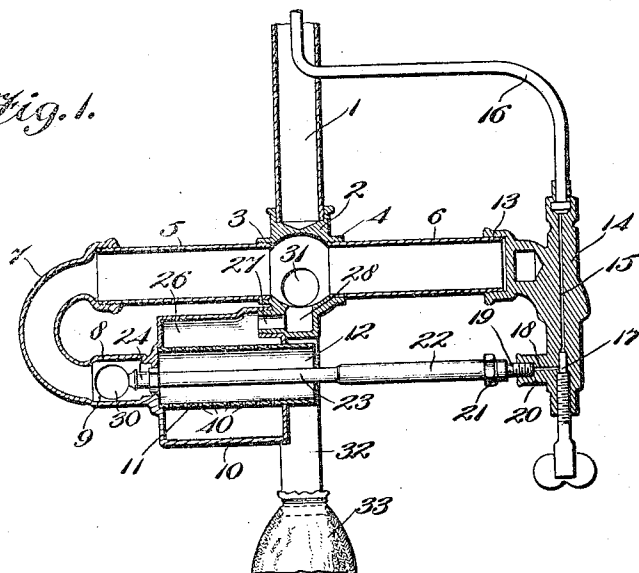


Fig. 2.

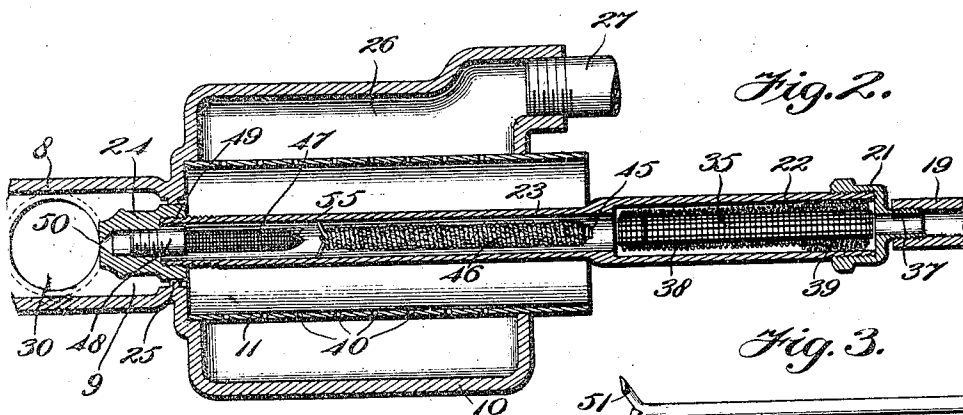


Fig. 3.



Fig. 4.

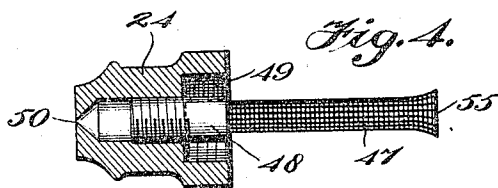
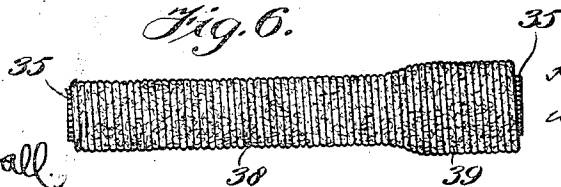


Fig. 5.



Fig. 6.



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UNITED STATES PATENT OFFICE.

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HYDROCARBON-VAPORIZER.

1,046,557.

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To all whom it may concern:

Be it known that I, HERSCHEL M. CONNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hydrocarbon-Vaporizers; 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.

This invention relates to hydro-carbon oil burners, and especially to burners of this nature which are adapted to generate hydro-carbon vapors from kerosene, although the present invention may be also utilized in burning gasoline or even hydro-carbons somewhat heavier than kerosene.

The object of the present invention is to provide a burner which will avoid the well known objections common to hydro-carbon burners heretofore proposed, and to produce at the same time, a burner which will be simple in construction, certain in action, and comparatively inexpensive to manufacture.

With these and other objects in view, the invention consists in the novel details of construction and combinations of parts more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification in which like numerals designate like parts in all the views:—Figure 1 is a longitudinal sectional view of a burner made in accordance with my invention; Fig. 2 is a detail sectional view on an enlarged scale of the vaporizing portions of my invention; and, Figs. 3, 4, 5 and 6 are detail views of certain of the individual parts employed in the vaporizing apparatus.

This invention in a sense, constitutes an improvement over the burner disclosed in my prior Patent No. 945,305 entitled Vapor burners, and dated January 4, 1910.

Referring to the above drawings:—1 indicates a portion of the frame of the burner, which is removably fitted to a hollow casting 2, provided with the nipples 3 and 4, into which are screw-threaded the pipes 5 and 6. The pipe 5 has screw-threaded on its outer end, the curved pipe 7 which may be slightly enlarged at its other end as at 8, to form an air mixing chamber 9. Attached to the enlarged portion 8 of the pipe 7 is the

outer casing 10, and inside said outer casing, is the perforated smaller casing 11 open to the air at its end 12. Screw-threaded to the outer end of the tube 6 is the nipple 13 carried by the casting 14 having the passage 15 communicating with the oil feeding pipe 16 extending into the frame or pipe 1, as illustrated. The lower end of the passage 15 is controlled by the needle valve 17, and leading from said needle valve and also controlled by the same, is the additional passage 18 entering the pipe 19, screw-threaded into the nipple 20, carried by said casting 14, and through which said passage 18 passes. The pipe 19 carries the screw-threaded thimble 21 into which fits the enlarged pipe 22, integral with the smaller pipe 23, extending through said perforated smaller casing 11, as illustrated. The extreme end of the pipe 23 screw-threads into the nozzle 24, fitting the partition 25, rigid with the member 8. The said nozzle 24 also enters the air mixing chamber 9, as shown. The outer casing 10 provides a chamber or space 26 communicating with the pipe or passage 27, connected with the passage 28 in the casting 2.

30 indicates an opening in the chamber 9 through which air may be drawn, and as will be disclosed below, hydro-carbon vapor generated in the tube 22, passes through the nozzle 24, the chamber 9, where it is mixed with air, through the bent pipe 7, and pipe 5 into the casting 2, whence it is delivered through the pipes 31 and 32 to lamp mantles 33, only one of which is shown. An additional portion of the vapor delivered to the casting 2, passes through the passage 27 into the chamber 26, through the perforations 40 into the casing 11, where it is ignited, and maintains the pipes 22 and 23 at a temperature sufficient to vaporize the oil.

I do not deem it necessary to describe more fully the above construction and its operation, for the same is, or may be, substantially like the corresponding parts disclosed in my former patent above.

In the pipe 22, I provide a wire gauze tube 35 closed at one end as by the plug 36 (see Fig. 5) and open at its other end, which is placed in register with the opening 37 through the nipple 21. I also wrap this gauze tube 35 with a plurality of layers of asbestos thread 38, and at one end, preferably the open end, I enlarge the wrappings

as at 39, so as to make a fairly tight fit with the interior of the tube 22. These wrappings are preferably in two layers along the main body of the tube 35, and are in three or more layers at the enlarged end 39, but I so adjust the wrappings as to allow a sufficient porosity to permit oil vapors to pass between the individual portions of the said wrappings, and to occupy the space between said wrappings 38 and the inner wall of the tube 22. Said pipe 22 and the parts contained therein thus serve as a vaporizer for initially vaporizing the oil. This I consider a very important feature of my invention, for by adjusting the wrappings 38, I may regulate the interstices between the threads in such a manner as to make the oil vapors feed evenly and properly, and it constitutes a valuable improvement over the asbestos wrapping 27 around the rod 32, which is disclosed in my former patent above, while the said wrappings and tube 35 serve to prevent pulsations in the light, just as efficiently as does my wrappings 27 in the said patent. The oil vapor which passes through the wrappings 38 enters the tube 23, where it flows around and along the rod 45, which is wrapped with layers of asbestos 46, and which rod and wrappings occupy a considerable portion of the said tube 23, thus causing the vapor to be formed into a thin film. Said wrapping 46 is saturated with the oil vapors delivered thereto, and thus provides a uniform and constant supply of fuel for delivery to the burners. Accordingly, when said oil vapor is driven out of the tube 23 by the high heat to which the tube is subjected, it passes through a foraminous or wire gauze tube 47 closed at its outer end 55, and at its other end, held in the metal tube 48 open at both its ends, and screw-threaded in the nozzle 24, as shown. The said tube 48 extends from the nozzle 24 into the tube 23, as shown, thereby leaving a pocket or space 49, which is closed at its bottom, and which is adapted to catch any condensed vapors or unvaporized particles of carbon, and prevent the same from passing through the very fine orifice 50 with which the nozzle 24 is provided. I consider this construction involving the foraminous tube 47, metal tube 48, and pocket 49, as another important feature of my invention, for the said foraminous tube 47 effectually prevents any flare-backs, while the pocket 49 collects the larger unvaporized particles and prevents them from clogging the burner, and therefore, enables me to maintain a steady light. The said rod 45 is provided with projections 51 and 52 at each end, in order to hold the same centrally of the tube 23, and permit a ready evolution of vapors from the asbestos cover 46.

The operation of my vapor burner will be readily understood from the foregoing, but

may be briefly summarized as follows:—The generation of vapor is started by the usual torch which may be applied to the tube 22, whereupon vapor will be emitted through the orifice 50, mixed with air coming in through the passage 30, and the mixed air and vapor will pass through the pipes 7 and 5 into the casting 2, passage 27, into the chamber 26, and through the perforations 40 in the casing 11, whereupon the said mixed air and vapor will escape at the open end 12 of the casing 11, and become ignited. The ignition of this mixed air and vapor, will heat the tube 23, and of course, generate larger quantities of vapor, whereupon the mantles 33 will be fed, and the lamps may be lighted, all in the manner well known. When unvaporized particles clog the space 49, or collect in the tube 23, the said tube may be unscrewed and the parts readily cleaned. Should the wrappings 38 on the tube 35, for any reason, become clogged, the whole tube and wrappings may be readily removed and a new tube substituted. When hydro-carbons heavier than kerosene are to be used, it is only necessary to wind the layers 38 on the tube 35 somewhat more loosely than when kerosene is to be used. In all cases, the heat from the mantles 33 serves to initially vaporize the hydro-carbon in the layers 38, and to prepare the same for the complete vaporization in the tube 23.

It is obvious that those skilled in the art may vary the details of construction as well as the arrangement of parts without departing from the spirit of my invention, and therefore, I do not wish to be limited to the above disclosure except as may be required by the claims.

What I claim is:—

1. In a vaporizer for oil burners, the combination of means to supply oil; a tube communicating with said supply; a heater for said tube; a foraminous structure in said tube adapted to receive the oil; a refractory mass comprising a thread arranged in superposed layers on said structure for absorbing and effecting partial vaporization of the oil; and a second refractory mass located in the tube adapted to hold the partially vaporized oil in a film for further vaporization, substantially as described.

2. In a vaporizer for oil burners, the combination of means to supply oil; a tube communicating with said supply; a heater for said tube; a foraminous structure in said tube adapted to receive the oil; a refractory mass comprising a thread arranged in superposed layers on said structure for absorbing and effecting partial vaporization of the oil; a second refractory mass located in the tube adapted to hold the partially vaporized oil in a film for further vaporization; a foraminous diaphragm through which said vapors pass; and means located adjacent

said diaphragm to collect unvaporized particles, substantially as described.

3. In a vaporizer for oil burners, the combination of means to supply oil; a tube communicating with said supply; a heater for said tubes; a foraminous structure in said tube adapted to receive the oil; a mass of asbestos on said structure for absorbing and effecting partial vaporization of the oil; a second mass of asbestos located in the tube adapted to hold the partially vaporized oil in a film for further vaporization; a foraminous diaphragm through which said vapors pass; and means located adjacent said diaphragm to collect unvaporized particles, substantially as described.

4. In a vaporizer for oil burners, the combination of means to supply oil; a tube communicating with said supply; a heater for said tube; a foraminous tube closed at one end mounted in the first named tube to receive the oil; a plurality of layers of asbestos wound on said foraminous tube for absorbing and effecting partial vaporization of the oil, and the layers of said asbestos winding adapted to be varied, substantially as described.

5. In a vaporizer for oil burners, the combination of means to supply oil; a tube communicating with said supply; a heater for said tube; a foraminous tube closed at one end mounted in the first named tube to receive the oil; a plurality of layers of asbestos wound on said foraminous tube for absorbing and effecting partial vaporization of the oil, and the layers of said asbestos winding adapted to be varied; and a second absorbent mass of wound asbestos cord located in the tube to receive the partially vaporized oil and spread the same into a thin film for further vaporization, substantially as described.

6. In a vaporizer for oil burners, the combination of means to supply oil; a tube communicating with said supply; a heater for said tube; a foraminous tube closed at one end mounted in the first named tube to receive the oil; a plurality of layers of asbestos wound on said foraminous tube for absorbing and effecting partial vaporization of the oil, and the layers of said asbestos

winding adapted to be varied; a rod centrally mounted within the tube; and a mass of asbestos on said rod adapted to receive the partially vaporized oil and spread the same into a thin film for further vaporization, substantially as described.

7. In a vaporizer for oil burners, the combination of means to supply oil; a tube communicating with said supply; a heater for said tube; a foraminous tube closed at one end mounted in the first named tube to receive the oil; a plurality of layers of asbestos wound on said foraminous tube for absorbing and effecting partial vaporization of the oil, and the layers of said asbestos winding adapted to be varied; a rod centrally mounted within the tube; a mass of asbestos on said rod adapted to receive the partially vaporized oil and spread the same into a thin film for further vaporization; and a second foraminous tube constituting a diaphragm mounted in the first named tube and through which said vaporized oil passes, substantially as described.

8. In a vaporizer for oil burners, the combination of means to supply oil; a tube communicating with said supply; a heater for said tube; a foraminous tube closed at one end mounted in the first named tube to receive the oil; a plurality of layers of asbestos wound on said foraminous tube for absorbing and effecting partial vaporization of the oil, and the layers of said asbestos winding adapted to be varied; a rod centrally mounted within the tube; a mass of asbestos on said rod adapted to receive the partially vaporized oil and spread the same into a thin film for further vaporization; a second foraminous tube constituting a diaphragm mounted in the first named tube and through which said vaporized oil passes; and means surrounding the diaphragm to collect unvaporized particles, substantially as described.

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

HERSCHEL M. CONNER.

Witnesses:

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N. CURTIS LAMMOND.