

A. C. & A. J. BEHNKE.
VAPORIZER AND VAPOR BURNER.
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1,061,518.

Patented May 13, 1913.

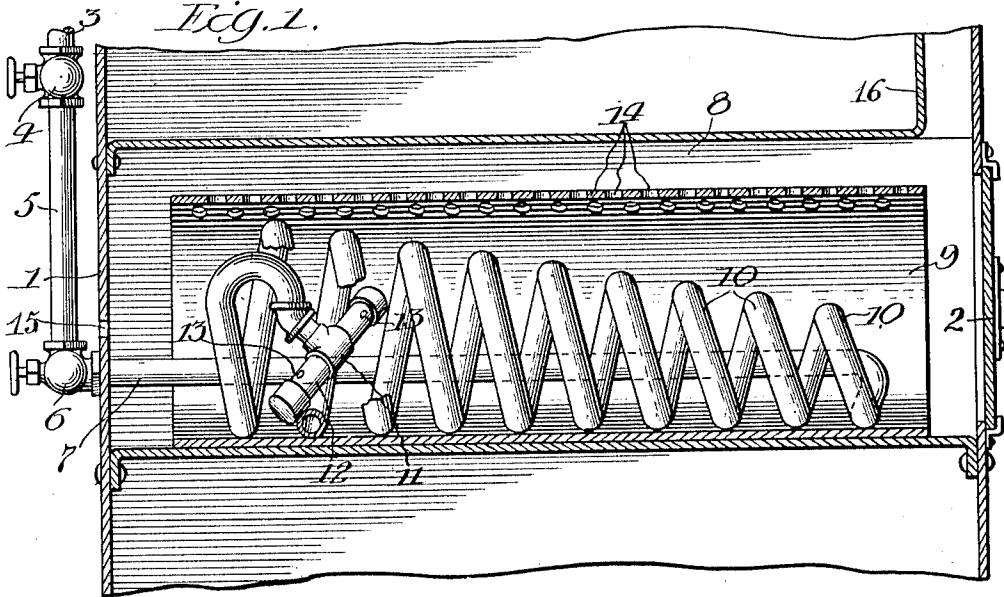
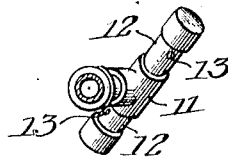


Fig. 2.



Witnesses
O. W. Hummel
Hazel Jones.

Inventors
Adolph C. Behnke
Albert J. Behnke
by May W. Zabel atty

UNITED STATES PATENT OFFICE.

ADOLPH C. BEHNKE AND ALBERT J. BEHNKE, OF VALDERS, WISCONSIN.

VAPORIZER AND VAPOR-BURNER.

1,061,518.

Specification of Letters Patent.

Patented May 13, 1913.

Application filed December 14, 1911. Serial No. 665,740.

To all whom it may concern:

Be it known that we, ADOLPH C. BEHNKE and ALBERT J. BEHNKE, citizens of the United States, residing at Valders P. O., in the county of Manitowoc and State of Wisconsin, have invented a certain new and useful Improvement in Vaporizers and Vapor-Burners, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

Our invention relates to kerosene gas heaters and has for its object the provision of a new and improved apparatus of this character in which kerosene may be used as a fuel for heating purposes, but in which this kerosene is first vaporized by the action of the apparatus itself, and this vaporized kerosene is then combusted.

In the preferred form of the invention, we utilize a suitable tank where the kerosene may be stored at a suitable elevation so that this kerosene may be fed under pressure to a coil of pipe forming a vaporizing apparatus in which to properly vaporize the kerosene. The vaporized kerosene is emitted within a chamber containing the coiled pipe aforesaid and there burns to supply heat and to likewise heat the kerosene in the pipe so as to vaporize it to issue in vapor form from the nozzle. In starting the apparatus it is found very simple to permit some of the kerosene to flow through the vaporizer and issue from the nozzle openings in liquid form which falls to the bottom of the apparatus and may there be properly ignited to supply the initial heat necessary to vaporize the kerosene in the coil. After the initial vaporization the vapor issuing from the nozzle becomes ignited and the action of the apparatus thereafter is continuous and the degree of heat supplied may be suitably regulated as desired.

The invention will be described in detail by reference to the accompanying drawing illustrating one form of carrying out the invention, in which:

Figure 1 is a sectional view illustrating the improved apparatus, and Fig. 2 is a detail view of the nozzle or vaporizer.

In the illustration is set forth a suitable retainer 1 within which the apparatus is supposed to be mounted, and to which access may be had by means of the door 2. This retainer may form part of a suitable

oven, a portion of whose walls are illustrated. A pipe 3 leads from a kerosene tank not shown, from which kerosene is fed through the pipe 3, the valve 4, and into the pipe 5, the elevation of the tank serving to place the kerosene within the pipe 5 under sufficient pressure to properly operate the apparatus. A controlling valve 6 connects the pipe 5 with the pipe 7 and this controlling valve 6 is utilized to regulate the flow of kerosene into the apparatus.

Within the retainer 1, we provide a suitable burning chamber 8 within which a cylindrical tube 9 open at both ends is mounted. Within this cylindrical tube the pipe 7 extends and this pipe after running substantially the full length of the tube 9 is bent in a spiral manner back toward the left of the apparatus, the pipe thus forming coils 10, 10. At the extreme left end of the apparatus the last coil is bent downwardly and then toward the right, terminating in a nozzle 11, which nozzle may be constructed for instance in the form shown having two ends of pipe 12, 12, provided with suitable discharge openings 13, 13. The valve 4 is designed to entirely prevent or permit the flow of kerosene.

Now in order to start the apparatus the valve 4 is opened to permit a small amount of kerosene to flow through the openings 13, 13, and fall to the bottom of the tube 9. This liquid kerosene is then ignited and in the course of the combustion serves to supply sufficient heat to the kerosene at the nozzle to vaporize the kerosene therein so that this kerosene issues from the openings 13 in vapor form and this vapor is ignited by the burning kerosene. The increased heat causes an increased flow of this vapor and the burning vapor, when the machine is operating normally, fills the entire interior of the tube 9. Heat is thus given out by this burning vapor and this heat at the same time serves to heat the kerosene in the coils so that it may continue to issue as a vapor and the apparatus may continuously operate as a vapor burning device. Openings 14, 14 are provided in the tube 9 to admit additional air to the interior of the tube 9 to cause complete combustion and also to permit heat to easily travel therethrough. By means of the valve 6 the supply of kerosene may be regulated so that more or less heat may be given out by the machine as desired.

The opening 15 in the left hand wall of the retainer 1 permits air to enter for the process of combustion, and the products of combustion are withdrawn through the tube 5 or stack 16.

It is of course apparent that many changes and modifications may be made of the apparatus herein described, but the specific form herein shown will serve to indicate the invention disclosed herein.

Having, however, thus described a specific form of carrying out the invention, the following is claimed as new and desired to be secured by Letters Patent:

15 A liquid fuel burner consisting of a combustion chamber, a hollow tube open at both

ends disposed therein and having apertures through the upper portion thereof, a coiled pipe disposed throughout the length of said tube and having its end extending to within 20 the interior of said coil, a nozzle consisting of a pipe arranged at right angles upon said pipe end, and apertures in said nozzle through which the fuel escapes.

In witness whereof, we hereunto subscribe 25 our names this 4th day of December, A. D., 1911.

ADOLPH C. BEHNKE.
ALBERT J. BEHNKE.

Witnesses:

LILY HAMACHECK,
OREN A. ALTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."