

No. 629,300.

Patented July 18, 1899.

H. MERKEL.
INCANDESCENT VAPOR BURNER.

(Application filed Feb. 4, 1899.)

(No Model.)

Fig. I.

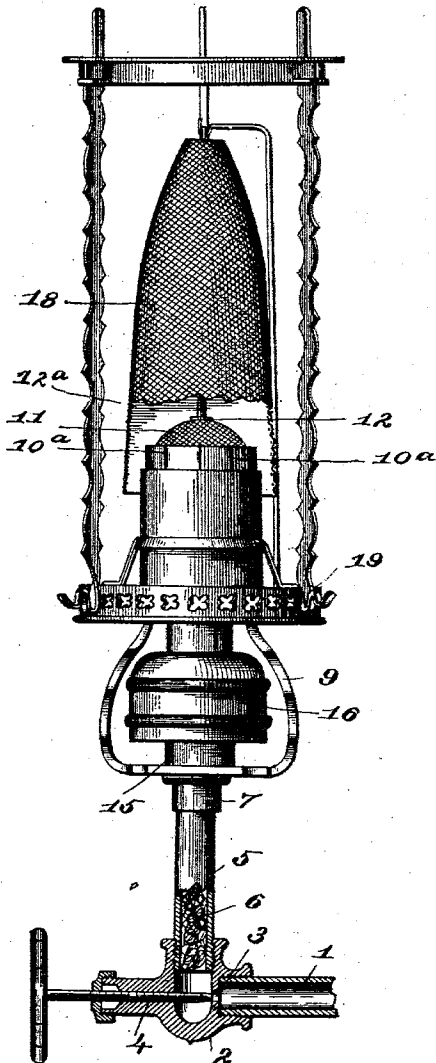


Fig. II.

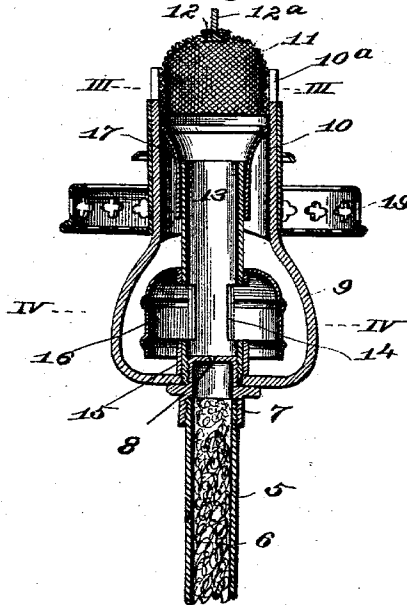


Fig. III.

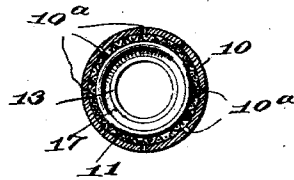
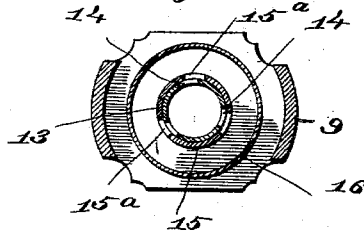


Fig. IV.



WITNESSES—

G. A. Pauberschmidt.
E. S. Knight

INVENTOR—

Hermann Merkel

By *Wigley & Burt*

Attorneys.

UNITED STATES PATENT OFFICE.

HERMANN MERKEL, OF ST. LOUIS, MISSOURI.

INCANDESCENT VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 629,300, dated July 18, 1899.

Application filed February 4, 1899. Serial No. 704,513. (No model.)

To all whom it may concern:

Be it known that I, HERMANN MERKEL, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Incandescent Vapor-Burners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a burner for vaporizing hydrocarbon oils and burning the vapor within a gauze mantle to produce an incandescent or white flame for illuminating purposes.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a side elevation of my burner with parts shown in vertical section. Fig. II is an enlarged vertical sectional view of the burner. Fig. III is a cross-sectional view taken on the line III III, Fig. II. Fig. IV is a cross-sectional view taken on the line IV IV, Fig. II, looking downward.

1 designates the supply-pipe, to which a coupling 2, that supports the burner, is applied. The coupling 2 is provided with an aperture 3, providing communication from the supply-pipe, said aperture being controlled by a valve 4, the inner end of which is adapted to be moved into or out of the said aperture.

5 designates a conveying-pipe connected to the coupling 2. This pipe contains a filling 6, of asbestos or other suitable material, through which the hydrocarbon oil may flow, the filling being designed to control the flow of the oil for the purpose of maintaining a uniform supply to the burner, so as to avoid pulsation in the operation of the burner.

On the upper end of the conveying-pipe 5 is a jet-tube 7, that contains a jet-orifice 8, through which generated vapor passes from the pipe 5 into the burner.

9 designates a heat-conductor supported on the jet-tube 7, which is of open form at its lowermost portion and extends upwardly to its cylindrical hollow portion 10. This heat-conductor is designed to transmit the heat from the burning vapor consumed at its upper end down to the jet-tube 7 for the pur-

pose of vaporizing the hydrocarbon oil before it reaches the jet-orifice 8.

In the upper cylindrical end of the heat-conductor 9 is a gauze distributing-cap 11, through which the vapor passes to be consumed. In the center of this distributing-cap is a spreader 12, that serves to prevent the direct upward flow of the vapor as it passes through the distributing-cap and causes it to be directed in outward or diverging directions in its passage through said cap.

13 designates an air and vapor mixing tube containing apertures 14, through which air may enter into said tube to combine with the vapor as it is admitted into said tube from the jet-orifice 8. The apertures 14 are controlled by a regulating-sleeve 15, containing apertures 15^a, adapted to register with the apertures 14, so as to regulate the admission of air to the desired extent into the air and gas mixing tube 13. The regulator-sleeve 15 is provided with an annular dome-shaped turn-piece 16, which may be grasped by the fingers to turn the sleeve on the mixing-tube 13 to cause the desired registering or partial registering of the apertures in the mixing-tube and regulator-sleeve. The interior of the cylindrical portion 10 of the heat-conductor also provides for the mixing of the air and gas before they reach the distributing-cap 11, and for the purpose of regulating the size of the mixing-chamber I provide a flaring collar 17, surrounding the upper end of the tube 13, this collar being movably mounted on said tube, so that it may be slipped up and down thereon for the purpose of increasing or diminishing the extent of the mixing-chamber above the tube 13.

18 designates a gauze mantle supported above the main portion of the burner and having its lower open end inclosing the distributing-cap 11 of the burner, so that the discharge through said cap is directed to the interior of said mantle.

I have shown a chimney-supporting frame 19, which may or may not be used in connection with the burner, as it is not essential to the burner operation.

In the use of this burner the initial vaporization of the hydrocarbon oil is accomplished by applying for a short period heat to the con-

veying-pipe 5 or jet-tube 7, after which the created vapor is ignited to burn within the mantle 18 as it passes through the distributing-cap 11. The heat from the consumption
 5 of the vapor causes the heating of the upper end 10 of the heat-conductor 9, and as this heat-conductor becomes hot at its upper end the heat travels downwardly throughout its extent and reaches its connection with the
 10 jet-tube 7, the said jet-tube becoming heated, whereby the oil within said tube is superheated and vaporized and vaporization is continued within said jet-tube throughout the operation of the burner. For the purpose of
 15 causing a more effective heating of the heat-conductor I provide slits 10^a in its upper end, through which small jets of flame may pass and thereby cause an acceleration in the heating process of the said heat-conductor.

20 While I have shown and described this burner as used for burning hydrocarbon oils, it is evident that it may be used for burning gases, and I therefore do not limit myself to its use as a vapor-burner.

25 The spreader 12 is provided with a stem 12^a, projecting above the top of the distributing-cap.

I claim as my invention—

30 1. In a burner, the combination of a conducting-pipe, a jet-tube, a heat-conductor having communication with said jet-tube, said heat-conductor being provided with a cylindrical upper end, a distributing-cap located in the upper end of said heat-conductor,
 35 and a gauze mantle surmounting said distributing-cap, and surrounding the upper end of said heat-conductor; substantially as set forth.

40 2. In a burner, the combination of a conveying-pipe containing a porous filling, a jet-tube mounted on said conveying-pipe, a heat-

conductor mounted on said jet-tube, said heat-conductor having a cylindrical upper end provided with slits, a distributing-cap mounted in the upper end of said heat-conductor, and
 45 a gauze mantle surmounting said distributing-cap, and surrounding the upper end of said heat-conductor; substantially as set forth.

3. In a burner, the combination of a conveying-pipe, a jet-tube mounted on said conveying-pipe, an apertured mixing-tube surmounting said jet-tube, an apertured regulating-sleeve surmounting said mixing-tube, a
 50 flaring collar on the upper end of said mixing-tube, a heat-conductor supported on said jet-tube and having cylindrical upper end, a distributing-cap in the upper end of said heat-conductor, a spreader in said distributing-cap,
 55 and a gauze mantle surmounting said distributing-cap, and surrounding the upper end 60 of said heat-conductor; substantially as set forth.

4. A vapor-burner comprising a conveying-pipe adapted to contain a filling of oil-controlling material, a jet-tube having a jet-orifice and secured to the conveying-pipe, an
 65 open heat-conductor having a longitudinally-slitted cylindrical portion and seated on the jet-tube, the gauze distributing-cap located in the upper end of the cylindrical portion, the
 70 mixing-tube having apertures, surrounding the jet-tube and extending into the cylindrical portion, the vertically-movable upwardly-flaring collar mounted on the mixing-tube, and the regulating-sleeve having apertures and a dome-shaped turn-piece and surrounding the mixing-tube; substantially as
 75 described.

HERMANN MERKEL.

In presence of—

E. S. KNIGHT,

STANLEY STONER.