

No. 769,004.

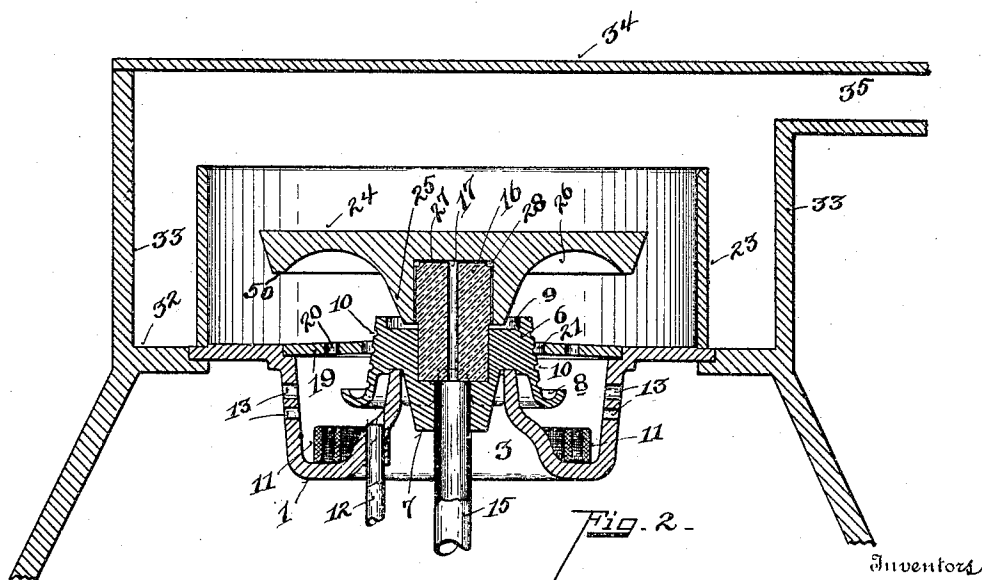
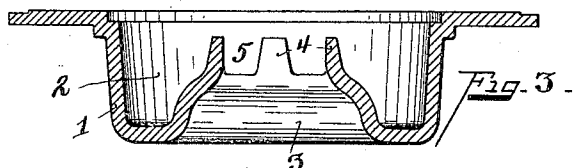
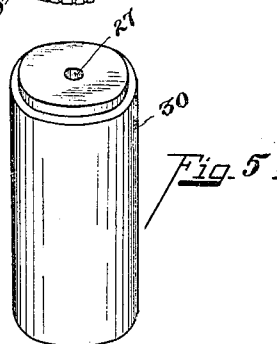
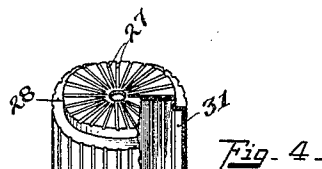
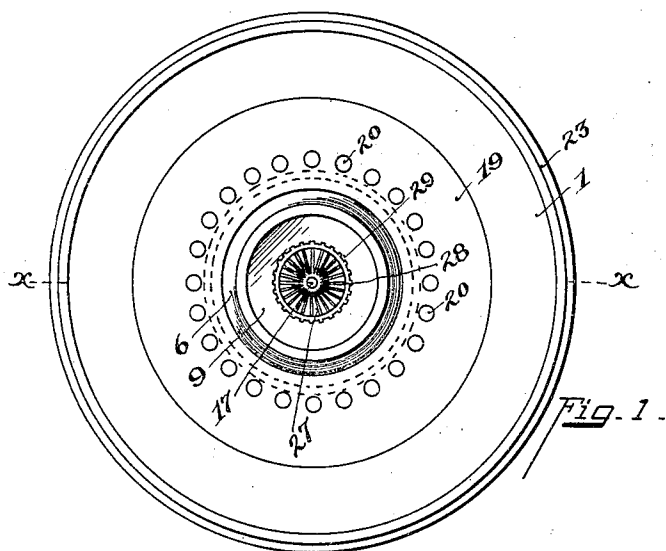
PATENTED AUG. 30, 1904.

A. A. MARGESON & J. B. SCHMITT.

OIL BURNER.

APPLICATION FILED NOV. 12, 1903.

NO MODEL.



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UNITED STATES PATENT OFFICE.

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OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 769,004, dated August 30, 1904.

Application filed November 12, 1903. Serial No. 180,967. (No model.)

To all whom it may concern:

Be it known that we, ANDREW A. MARGESON and JACOB B. SCHMITT, citizens of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Oil-Burners, of which the following is a specification.

Our invention relates to an oil-burner.

One of the objects of our invention relates to the organization of the burner itself, whereby the oil is vaporized and thoroughly mixed with heated air before it arrives at the point of combustion.

Our invention chiefly relates, however, to the production of an oil-burner capable of being used in a closed stove or range with the ordinary top or side draft.

The features of our invention are more fully set forth in the description of the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a top plan view of our improvement. Fig. 2 is a section on line *xx*, Fig. 1, showing the burner in the combustion-chamber of a cook-stove. Fig. 3 is a detail section view of the base of the burner. Figs. 4 and 5 are detail perspective views of a modification of a vaporizer.

The burner is provided with a base 1, having an annular chamber 2 and a central orifice 3. The inner annular wall of the chamber 2 terminates in the fingers 4, forming between them the large air-passages 5.

6 represents a support which has a downwardly-projecting cone 7 and the downwardly-projecting flange or peripheral oil-cup 8. The support rests on the fingers 4, the cone 7 extending into the orifice 3 of the base, the cup 8 extending into the annular chamber of the base, and the passages 5 serving to admit air from the central orifice 3 into the annular chamber 2. The air thus is admitted into the burner in contact with the outside of the cone 7 and with the inside of the flange-cup 8, which parts being highly heated serve to thoroughly heat the air before it is brought into contact with the vapor. The top of the said support 6 has formed thereon the oil-tray 9. The sides of the support 6

are preferably provided with the annular grooves 10 for retarding the flow of oil down the sides of the support. The support 6, having the two oil-trays, (8, a bottom flange-tray, and 9 a top tray,) both for the reception of oil from the vaporizer, gives to the support the quasi function of a generator at times, as will be later explained.

In the bottom of the annular chamber 2 is the gauze or wicking 11.

12 represents an overflow-pipe engaging through the bottom of the chamber 2 and extending above the top of the wicking to maintain a safe oil-level in the chamber during the initial combustion. The outside walls of the oil-chamber 2 are provided with the air-inlets 13.

The support 6 is provided with a central vertical bore larger at the top than at the bottom. Into the bottom of the said orifice is fitted the oil-delivery pipe 15. Into the enlarged end of the bore is seated a vaporizer 16, having a central feed-duct 17 registering with the oil-delivery pipe 15.

The base 1 is provided with an internal peripheral receiving-socket upon which is seated the air-distributing plate 19, provided with the air-passages 20. The center of the distributing-plate is bored to loosely pass over the barrel of the support 6, which leaves the annular air-space 21 between the distributing-plate 19 and the sides of the support 6. The base 1 is also provided with an external socket upon which is fitted the ring 23.

24 represents a mixer provided with a central depending limb 25. Limb 25 is circularly bored centrally to receive and fit the sides and top of the vaporizer 16, the lowest extremity of the said member 25 terminating a slight distance above the floor of the oil-tray 9. The under side of the mixer 24 is provided with a depending lip 50, formed by the concave of the arch 26 on the lower surface of said plate. The vaporizer 16 has the grooves or fluid-conducting ducts 27 cut in the top surface and radiating from the top of the central feed-duct 17. The top periphery of the mixer 16 is preferably cut away, forming the annular groove or offset 28, into which groove the ducts 27 discharge. The sides of the mixer

are provided with vertical grooves or ducts 29, said ducts leading from the annular groove 28 to the tray 9. Groove 28 is between and communicates with ducts 27 and 29, so that the vapor formed in ducts 27 will be discharged in jets into grooves 29. If a higher degree of combustion be desired, more oil is supplied, which overflows from the vaporizer through these ducts onto the top of tray 9, and for a higher degree still the oil overflows the top edge of tray 9 into the flange-cup 8. The fitting of the bore of the limb 25 over the top and sides of the vaporizer 16 obviously has a function of converting these ducts 27, 28, and 29 into confined passages. Thus the oil from the feed-duct 17 is diffused in minute stream uniformly around the vaporizer 16, passing between closely-confined highly-heated metallic surfaces. Also the ducts 27 being horizontal and the ducts 29 vertical force the fluid through tortuous passages. If the oil had a free egress, it would be forced into the burner in an unvaporized condition or else too freely.

In Figs. 4 and 5 we have shown the vaporizer as composed of the solid casting 30 and the detachable cap 31, said cap containing the fluid-diffusing ducts.

In Fig. 2, 32 represents the bottom of the combustion-chamber of a side-draft stove; 33, the sides; 34, the top, and 35 the flue. It is obvious that this burner forms a bottom of the combustion-chamber, so that all the air furnished into the combustion-chamber is forced through the orifices 5 and 13 and conforms to the conditions of the burner above described.

In starting the oil is admitted into the pipe 15, flows up through the duct 17, out through the diffusing-ducts 27, 28, and 29 into the tray 9, overflowing the sides thereof, falling into the cup 8, and then into the wicking 11. When ignited, the flame heats the support 6 and gradually vaporizes the incoming oil, so that some time between the entrance of the oil into the pipe 15 and its delivery onto the tray 9 it has vaporized. The air drawn through the sides of the chamber 1 and through the center thereof is heated by contact with support 6 and drawn through the annular jacket 21, where it meets the oil-vapor. The draft influencing these vapors upwardly throws them against the archway 26 of the mixer 24, whereby they are given a cyclonic movement and deflected downward and outward, escaping between the edge of the plate 24 and the surrounding wall 23. Combustion occurs at this point.

Our burner is designed to supply three degrees of combustion in the following manner: After initial combustion the oil-supply is adjusted, if the lowest grade is desired, so that the oil will be vaporized by the time it reaches the tray 9. If a higher degree of combustion is required, more oil is supplied, and the oil partly vaporized will flow into the tray 9, which is highly heated, and generate vapor

there. If the highest degree of combustion is desired, a greater supply of oil is admitted, enough to overflow the edges of the tray 9 and be vaporized as it comes upon the tray 8 and over the annular grooves 10 of the support, these surfaces being highly heated. When using this highest degree of combustion, the orifices 5 of the inner wall of the burner and 13 of the outer wall of the burner are particularly in juxtaposition to supply air to the vapor directly at the chief point of the generation.

The top plate 34 is, in effect, a reverberatory plate, throwing down all of the heat on the burner parts beneath. The ring 23, being close to the burner, becomes red-hot and consumes carbon from the oil which would otherwise be deposited. Obviously these parts being simply supported by their superimposed relationship without specific fastening attachments are readily detachable for cleaning or renewing. The invention does not reside in the mere shape of these elements, and we do not wish to be limited thereby any further than specifically called for in the claims. It is also obvious that various parts could be formed in a greater or lesser number of castings without departing materially from their functions.

This oil-burner as a part of the combustion-chamber of a heating-stove has a wide field of practical utility.

Whereas we have found the burner organized and constructed specifically as shown to be the best possible form of burner to be used as a part of the bottom of the combustion-chamber of a stove, other burners not identical with ours could be successfully employed.

Having described our invention, we claim—

1. In an oil-vapor burner, a base having an oil-chamber formed therein, said base having aerating-ducts formed therein and a central orifice for the delivery of the oil, a support held by said base over said central orifice, a vaporizer held by the support, means for supplying oil to the vaporizer, a plate seated on the vaporizer and forming an archway around the vaporizer, there being formed between the meeting surfaces of the plate and vaporizer, passages for the distribution of the fluid and means for supplying air to the vapor, substantially as described.

2. In an oil-burner a vaporizer having vertical and horizontal surfaces, a central feed-duct, means for supplying oil thereto, a plate seated upon the vaporizer engaging its horizontal and vertical surfaces, there being formed between said surfaces horizontal ducts radiating from the central feed-duct, an annular groove into which the horizontal ducts discharge, and vertical ducts leading from the annular groove, substantially as described.

3. In a vapor-burner, a vaporizer, a plate seated thereon having a depending lip on its outer rim formed by the annular concave on

the lower surface of the plate, adapted to deflect the products, there being formed between the meeting surfaces of the vaporizer and plate, distributing-ducts radiating from the central supply-duct, the latter duct being formed in the vaporizer, substantially as described.

4. In a vapor-burner, a vaporizer having a central feed-duct, a plate seated on said vaporizer, there being cut in the top surface of the vaporizer horizontal ducts radiating from the feed-duct, the outer upper periphery of the vaporizer being provided with an annular groove into which the horizontal grooves discharge, there being cut in the sides of the vaporizer vertical ducts taking from said annular groove, said plate being formed with a depending lip on its outer end formed by the concave under surface of the plate, and means for supplying oil and air, substantially as described.

5. In an oil-vapor burner, a vaporizer having horizontal and vertical surfaces, the horizontal surface having formed therein a central feed-orifice, a plate fitting over and directly engaging said horizontal and vertical surfaces of the vaporizer, there being formed between said contacting surfaces, horizontal and vertical feed-ducts, a tray surrounding the vaporizer adapted to catch oil from the vertical ducts, said plate having a peripheral flange provided with a concave annular depression, forming an arch around and over the edges of said tray, an annular oil-chamber in the burner under and around the tray, means for supplying air to the chamber, and an air-distributing plate supported around and under the tray, and separating the said oil-chamber from the combustion-chamber, substantially as described.

6. In an oil-vapor burner, a support, a vaporizer seated thereon, the top of the support forming a tray around the vaporizer, a plate seated on the vaporizer, a central feed-duct through the vaporizer, the contacting surfaces of the plate and vaporizer being formed with horizontal ducts radiating from the central feed-duct, an annular groove into which the radiating ducts discharge, and vertical ducts taking from the annular groove and discharging upon the top of the tray, the plate being formed with a depending lip on the outer rim, and means for supplying oil and air, substantially as described.

7. In an oil-vapor burner, a support having a top tray and a bottom flange-tray, the top tray being adapted to overflow upon said flange-tray, a vaporizer seated on the support, and provided with a central feed-duct, the said vaporizer being adapted to overflow upon the top tray of the support, a plate seated upon the vaporizer, the contacting surfaces of the plate and vaporizer being formed with fluid-distributing ducts leading from the central feed-duct to the top tray of the support, the said

plate having a depending lip on its outer rim formed by the concave under surface of said plate and means for supplying oil and air, substantially as described.

8. In an oil-vapor burner, a base having formed therein an annular oil-chamber, with a central orifice for the admission of oil, the walls of said base having formed therein aerating-ducts, a support seated on the inner wall of said base, a vaporizer seated on the support, a deflector-plate centrally seated on the vaporizer, means for supplying oil to the vaporizer, the meeting surfaces of said plate and vaporizer having fluid-distributing ducts, the top of the support being formed with an oil-tray upon which ducts discharge, said plate having a deflecting-flange, and an air-diffusing plate supported by the base around the support, substantially as described.

9. In an oil-vapor burner, a base having outer and inner walls, an annular chamber being formed between them, and a central orifice being formed by the inner wall, for the admission of oil, the said walls being provided with aerating-ducts, a support seated on the inner walls having a top tray and a peripheral flange-tray, a vaporizer seated on the support, a plate centrally seated upon the vaporizer, the said plate having a flanged deflector extended over and around said annular chamber of the base, there being formed between the meeting surfaces of the plate and vaporizer, fluid-distributing ducts, discharging on the top tray of the support, substantially as described.

10. In an oil-vapor burner, a base having outer and inner walls, an annular chamber being formed between them, and a central orifice being formed by the inner wall, for the admission of oil, the said walls being provided with aerating-ducts, a support seated on the inner walls having a top tray and a peripheral flange-tray, a vaporizer seated on the support, a plate centrally seated upon the vaporizer, the said plate having a flanged deflector extended over and around said annular chamber of the base, there being formed between the meeting surfaces of the plate and vaporizer, fluid-distributing ducts, discharging on the top tray of the support, an air-distributing plate around the support and between the top and bottom trays of said support, substantially as described.

11. In an oil-vapor burner, a base having outer and inner walls, an annular chamber being formed between them, and a central orifice being formed by the inner wall, for the admission of oil, the said walls being provided with aerating-ducts, a support seated on the inner walls having a top tray and a peripheral flange-tray, a vaporizer seated on the support, a plate centrally seated upon the vaporizer, the said plate having a flanged deflector extended over and around said annular chamber of the base, there being formed between the meeting surfaces of the plate and vaporizer, fluid-

distributing ducts, discharging on the top tray of the support, air-distributing plate around the support and between the top and bottom trays of said support, a ring supported
5 around the peripheral edge of said flanged deflector, substantially as described.

12. In an oil-vapor burner, a support having a top tray and a bottom flange-tray, the top tray being adapted to overflow upon said
10 flange-tray, a vaporizer seated on the support and adapted to overflow thereon, the vaporizer being provided with a central feed-duct, a plate seated upon the vaporizer, the contacting surfaces of the plate and vaporizer being
15 formed with fluid-distributing ducts leading

from the feed-duct to the top tray of the support, the said plate having a depending lip on its outer rim formed by the concave under surface of said plate, a wall surrounding the support, vaporizer, and depending lip of the
20 plate, and means for supplying air and oil, substantially as described.

In testimony whereof we have hereunto set our hands.

ANDREW A. MARGESON.
JACOB B. SCHMITT.

Witnesses:

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LUISE BECK.