(No Model.) 2 Sheets—Sheet 1.

A. J. HUBER.

KEROSENE GAS BURNER.

No. 546,644. Patented Sept. 17, 1895.

Fig. 1.

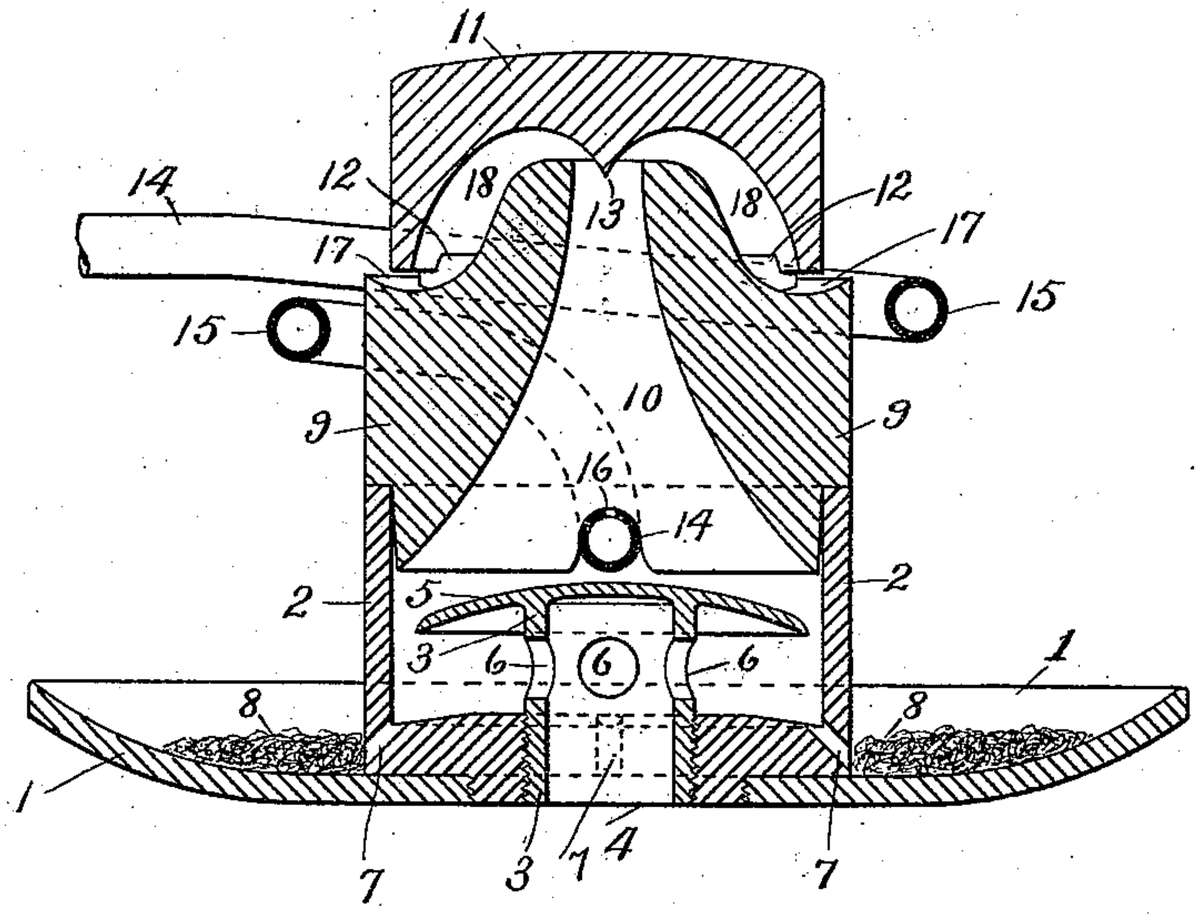
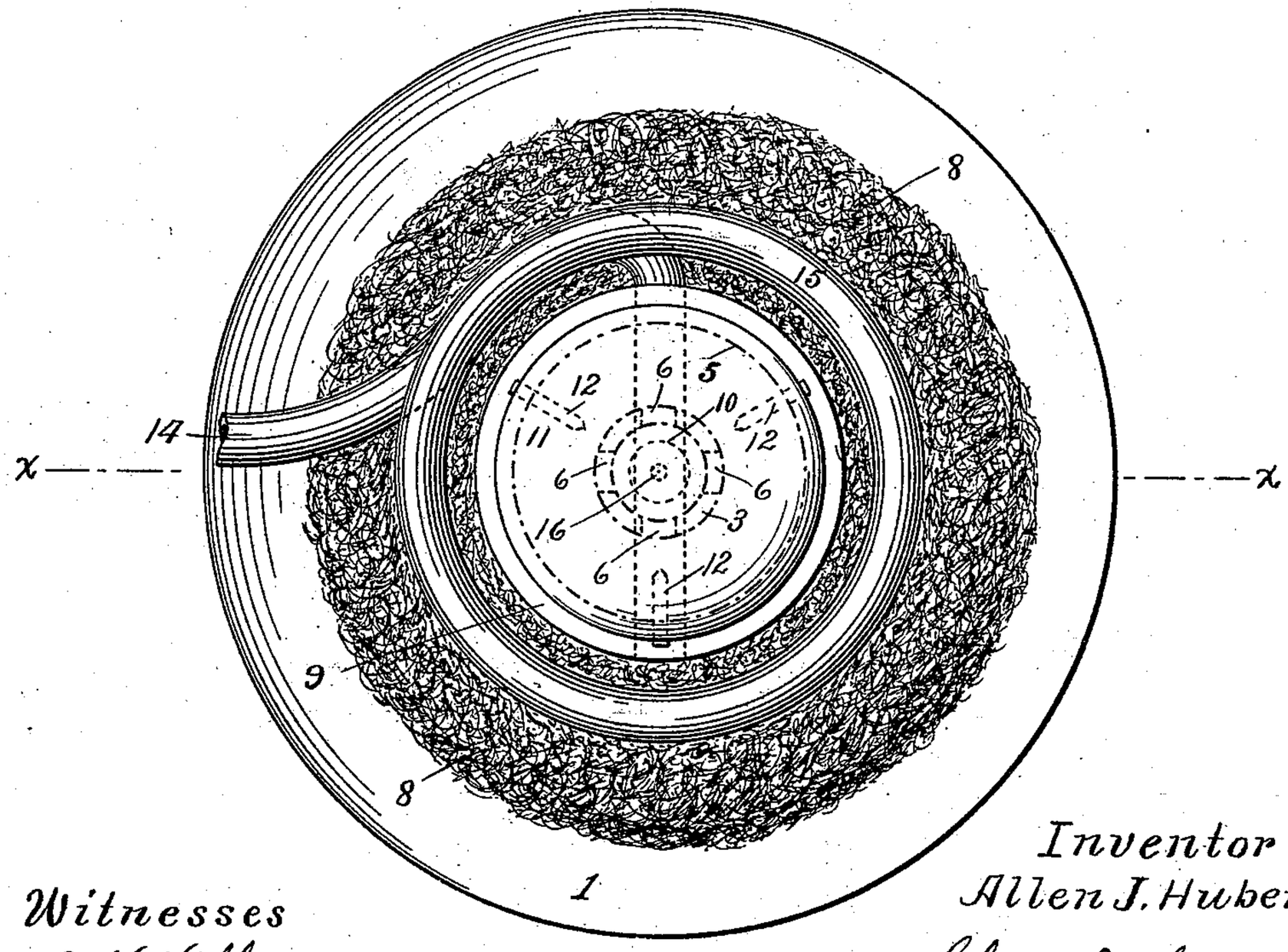


Fig. 2.



Witnesses
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W. A. Newton.

Inventor
Allen J. Huber
By Chas. S. Cairns
Attorney

(No Model.)

2 Sheets—Sheet 2.

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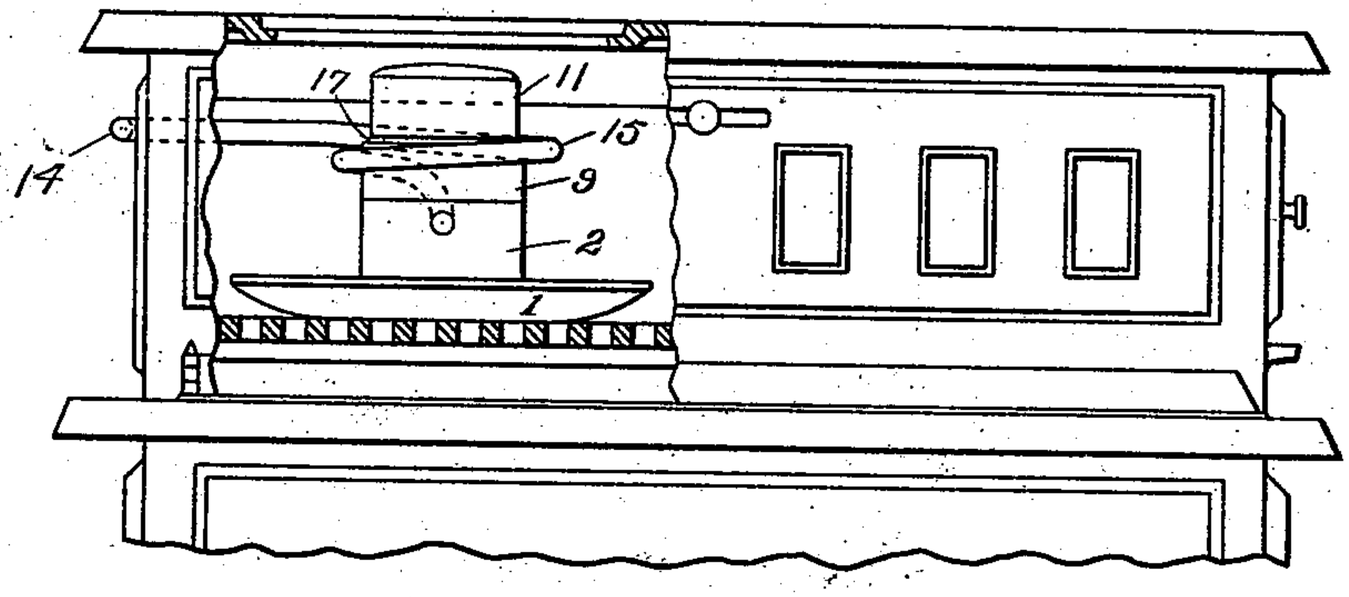

Fig. 3.

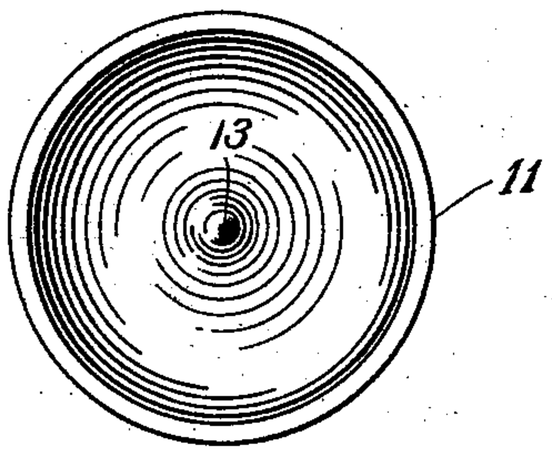

Fig. 4.

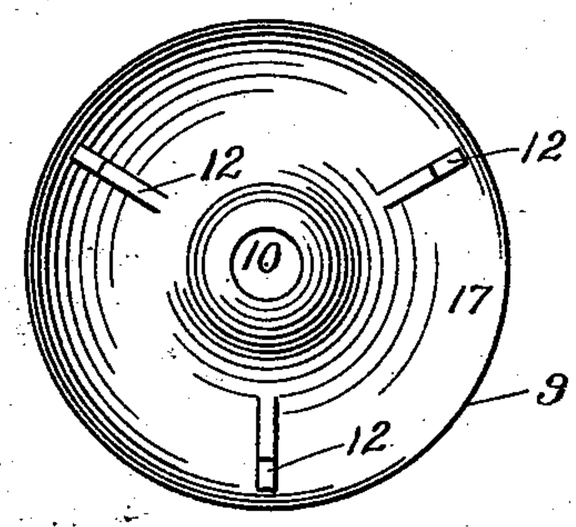

Fig. 5.

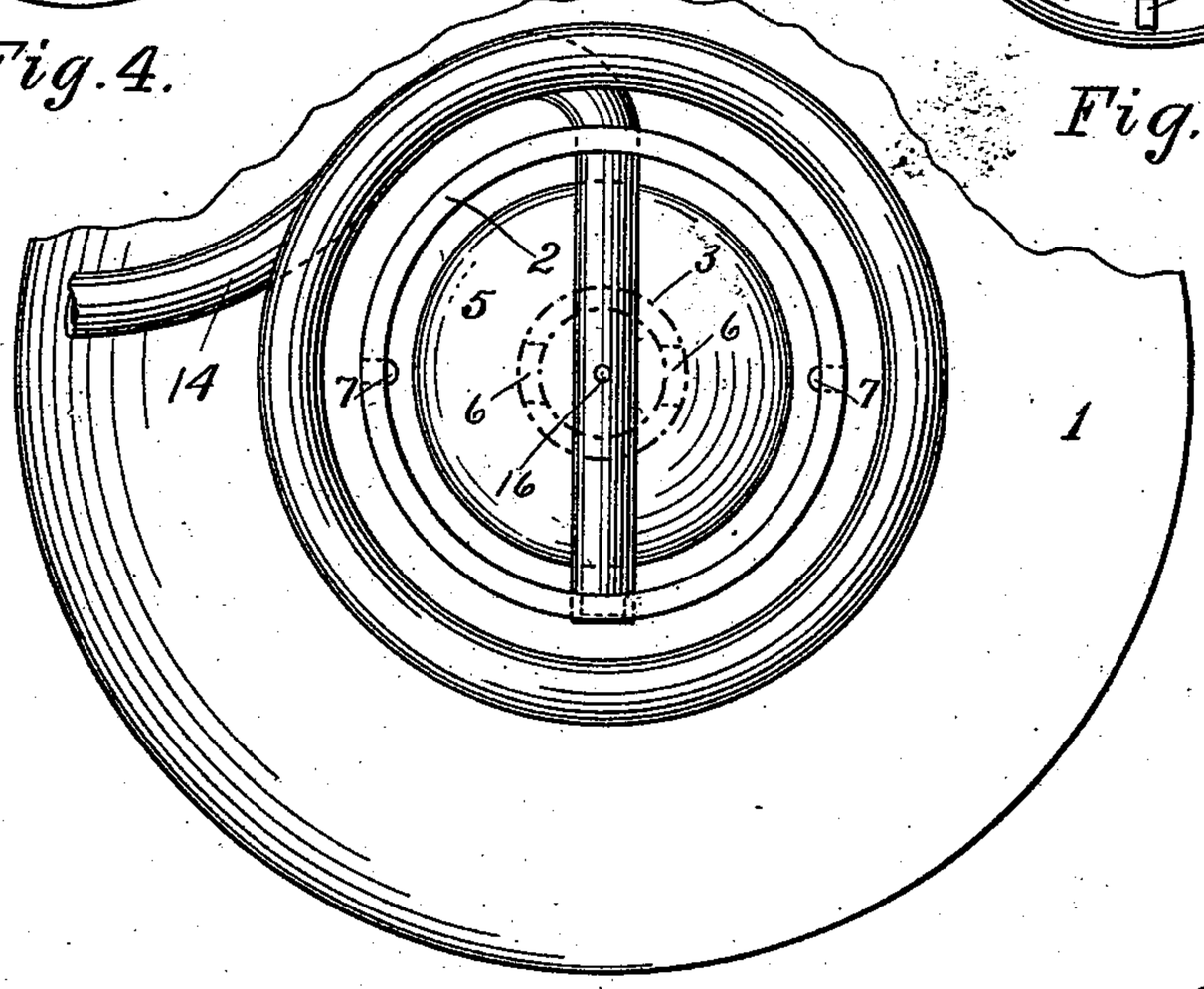

Fig. 6.

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UNITED STATES PATENT OFFICE.

ALLEN J. HUBER, OF MINNEAPOLIS, MINNESOTA.

KEROSENE-GAS BURNER.

SPECIFICATION forming part of Letters Patent No. 546,644, dated September 17, 1895.

Application filed August 6, 1894. Serial No. 519,594. (No model.)

To all whom it may concern:

Be it known that I, ALLEN J. HUBER, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Kerosene-Gas Burners, of which the following is a specification.

My invention relates to hydrocarbon-burners in which kerosene-oil is converted into gas by the heat of the flame and burned for heating and cooking purposes; and the objects of my invention are to produce an economical burner of the highest efficiency by the combination of parts that will render it durable and uncomplicated and yet will avoid the nuisance of puffing and noise heretofore incident to kerosene-gas burners. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the burner through the line *x x*, Fig. 2. Fig. 2 is a top or plan view of the same. Fig. 3 is a side elevation of a burner placed in a cooking-stove, with parts of the front of the stove broken away. Fig. 4 is a plan view of the top cap of the burner when removed and turned bottom upward. Fig. 5 is a top view of the main body of the burner when the top cap is removed. Fig. 6 is a plan view of the lower portions of the burner when the cap and body are removed, one side being broken away.

Similar numerals refer to similar parts throughout the several views.

The burner rests upon a pan or tray 1, into which a hollow cylinder 2 is fitted by screw-threads, as shown in Fig. 1, or is attached by any suitable means. Within the cylinder 2 is an air-tube 3, having an opening 4 downward through the head of the cylinder and through the tray 1. A shield 5 covers the top of the air-tube 3 in the form of an inverted saucer, while openings 6 beneath the shield 5 lead from the air-tube into the cylinder-chamber. Openings 7 lead from the cylinder-chamber onto the tray 1, upon which I prefer to place some mineral wool or other porous non-combustible substance 8. Upon the cylinder 2 rests the main body 9 of the burner, having within it a chamber 10, preferably bell-shaped, its larger end opening into the cylinder-chamber. Upon the top of the body 9 is placed the cap 11, supported by any suitable rests 12, so that an annular opening 17 is left between the rim of the cap and the upper portion of the body 9. At the under side of the cap 11 is a conical projection 13, pointing to the center of the upper opening of the chamber 10 when the cap is in place. The inner surface of the cap 11 runs from the point 13 of the cone to the rim of the cap by an upward curve, while the surface of the upper end of the body 9 runs from the circumference toward the center by an opposite or downward curve, as shown in cross-section in Fig. 1, leaving a curved space 18 between the cap 11 and the body 9. An oil-supply pipe 14, connecting with any suitable reservoir containing oil, is formed in a coil 15 about the burner near the annular opening 17, and then descends and passes into and transversely across the chamber 10. A jet-orifice 16 in the pipe 14, immediately beneath the conical projection 13, is provided.

The operation of the burner is as follows: When the oil is turned on, it passes through the coil 15 and escapes at the jet-orifice 16. Thence it drops upon the shield 5, is cast upon the head of the cylinder 2, and escapes through the openings 7 to the tray 1 and is absorbed by the mineral wool 8. A lighted match applied to the wool starts a flame, which quickly heats the generator-coil 15 to such an extent as to convert the kerosene within it to gas. The temporary flame in the tray then dies out, while the gas ignites in the burner above. The gas escapes through the jet-orifice 16 into the chamber 10, where it is mingled with air, which is drawn in through the opening 4 and openings 6 in the air-tube 3, and rises around the shield 5 into the chamber 10. The rising column of gas and air is projected with force against the conical projection 13 and is divided equally in all directions. It sweeps thence through the curved space 18 between the body 9 and the cap 11 and escapes through the annular opening 17 at the rim near the coil 15, where it burns. The flame passing near the coil-generator 15 imparts sufficient heat to convert the oil to gas, but by passing above it, as I prefer, relieves the coil from excessive heat, which might soon destroy the pipe. By having mineral wool 8 upon the tray the generator 15 will be heated sufficiently to convert the oil into gas in start-

ing the burner much more quickly than when it is omitted—that is, in about one minute with the wool as compared with six without it. The gas and air, being forced through the narrow throat of the chamber 10 and divided by the point 13, are thoroughly commingled before reaching the annular opening 17 and prepared for perfect combustion. The cone, in connection with the throat of the chamber 10, the curved space 18, and the annular opening 17, conducts the aerated gas to the point of burning, so as to prevent roaring, puffing, or blowing, and renders the burner practically noiseless. It also prevents choking and the gas from burning within the aerating-chamber or other interior part of the burner, which affects the efficiency of the burner and soon destroys it. When such burner is placed within a cooking-stove, as shown in Fig. 3, the removal of the stove-lid over the burner does not put the fire out nor interfere with the operation of the burner in any manner, the cap protecting it, while in other burners it frequently puts out the fire or causes it to puff and roar louder than when the lid is on. Two or more chambers 10 might be arranged the one above the other and opening into each other, the cap 11 being over the last chamber, and the same beneficial results reached; but in the form of burner shown such multiplication of chambers is unnecessary.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a kerosene gas burner, the combination of a generator, a jet orifice opening into an aerating chamber, an air inlet opening into the chamber, a conical projection at the escape opening of the chamber, a cap supported over said opening the lower surface of which runs from said cone to the rim of the cap by an upward curve, while the top of the opposite surface of the burner runs from the circumference toward the center by a downward curve, leaving a space between said opposite surfaces, substantially as shown and described.

2. In a kerosene gas burner, the combination of an aerating chamber into which the gas is discharged, a cap supported over the escape opening of the aerating chamber, having on its lower surface at said escape opening, a conical projection and said surface running from the conical projection toward the rim of the cap by an upward curve, while the opposite surface of the burner runs from the circumference toward the center by a downward curve, a space between said opposite surfaces, and an annular opening at the rim of the cap, substantially as shown and described.

3. In a kerosene gas burner, the combination of an aerating chamber into which the gas is led, a cap supported over the escape opening of the aerating chamber, having on its lower surface, at the center of said escape opening, a conical projection, a space bounded by curved surfaces between said cap and the body of the burner, said surface of the cap running from the cone toward the rim by an upward curve and said surface of the body running from the circumference thereof toward the center by a downward curve, an annular opening at the rim of the cap, and a gas generator near said annular opening, substantially as shown and described.

4. In a kerosene gas burner, the combination of an aerating chamber into which the gas is led from the generator, a cap supported over the escape opening of the aerating chamber, having on its lower surface, at the center of said opening, a conical projection, a gas jet orifice in said chamber, toward which orifice said conical projection points, a space bounded by curved surfaces between said cap and the body of the burner, an annular opening at the rim of the cap, and a gas generator near said annular opening, substantially as shown and described.

5. In a kerosene gas burner, the combination of a bell shaped aerating chamber, an air inlet opening into the chamber, a cap supported over the escape opening of the aerating chamber, having on its lower surface, at the center of said opening, a conical projection; a gas jet orifice in said chamber adapted to discharge the gas toward said projection, a space bounded by curved surfaces between said cap and the body of the burner, an annular opening at the rim of the cap, and a generator near said annular opening, substantially as set forth.

6. In a kerosene gas burner, the combination of a bell shaped aerating chamber, an air inlet opening into the chamber, a cap supported over the circular escape opening of the aerating chamber, said cap having on its lower surface, at the center of said opening, a conical projection, a gas jet orifice in said chamber, a space bounded by curved surfaces between said cap and the body of the burner, an annular opening at the rim of the cap and a generator coil around the burner near said annular opening, substantially as set forth.

7. In a kerosene gas burner, the combination of an aerating chamber, a gas jet orifice within the chamber, an air inlet pipe entering the chamber beneath the jet orifice, and having its interior end covered, one or more air openings in the air pipe, a tray beneath the burner, one or more oil openings leading from the interior of the burner to the tray, a cap supported above the escape opening of the aerating chamber, an annular opening at the rim of said cap, a gas generator near said annular opening and over said tray, and a porous non-combustible substance adapted to receive oil upon the tray, substantially as shown and described.

8. In a kerosene gas burner, the combination of a bell shaped aerating chamber, a gas jet orifice within the chamber, an air inlet pipe entering the chamber beneath the jet orifice, and having its interior end covered, one

or more air openings in the side of the air pipe, a tray beneath the burner, one or more oil openings leading from the interior of the burner to the tray, a cap supported above the escape opening of the aerating chamber, a space bounded by curved surfaces between said cap and the body of the burner, an annular opening at the rim of the cap and a generator near said annular opening and over said tray, substantially as shown and described.

9. In a kerosene gas burner, the combination of a bell shaped aerating chamber, a gas jet orifice within the chamber, a chamber beneath said aerating chamber, adapted to receive air from the exterior and conduct it to the larger end of the aerating chamber, an air inlet pipe entering the chamber beneath the aerating chamber and beneath the jet orifice, having its interior end covered by a shield which extends beyond the circumference of the pipe, an annular opening around said shield, one or more air inlets in said air pipe beneath said shield, one or more oil escape openings leading from the interior beneath said shield to a tray upon which the burner rests, a cap supported above the escape opening of the aerating chamber, a space bounded by curved surfaces between the cap and the body of the burner, an opening at the rim of said cap, and a generator near said opening and above said tray, substantially as set forth.

10. In a kerosene gas burner, the combination of a bell shaped aerating chamber, a gas jet orifice within the chamber, a chamber beneath said aerating chamber, adapted to receive air from the exterior and conduct it to the large end of the aerating chamber, an air inlet pipe entering the chamber beneath the aerating chamber and beneath the jet orifice, having its interior end covered by a shield, an annular opening around said shield, one or more air inlets in said air pipe, one or more oil escape openings leading from the interior to a tray upon which the burner rests, a cap supported above the circular escape opening of the aerating chamber, having on its lower surface at said escape opening a conical projection, a space bounded by curved surfaces between said cap and the body of the burner, an annular opening at the rim of the cap, and a generator coil near said annular opening, and above said tray, substantially as set forth.

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