

No. 618,984.

Patented Feb. 7, 1899.

C. G. HOLMQVIST.
BURNER FOR PETROLEUM STOVES.

(Application filed June 17, 1898.)

(No Model.)

Fig. 1

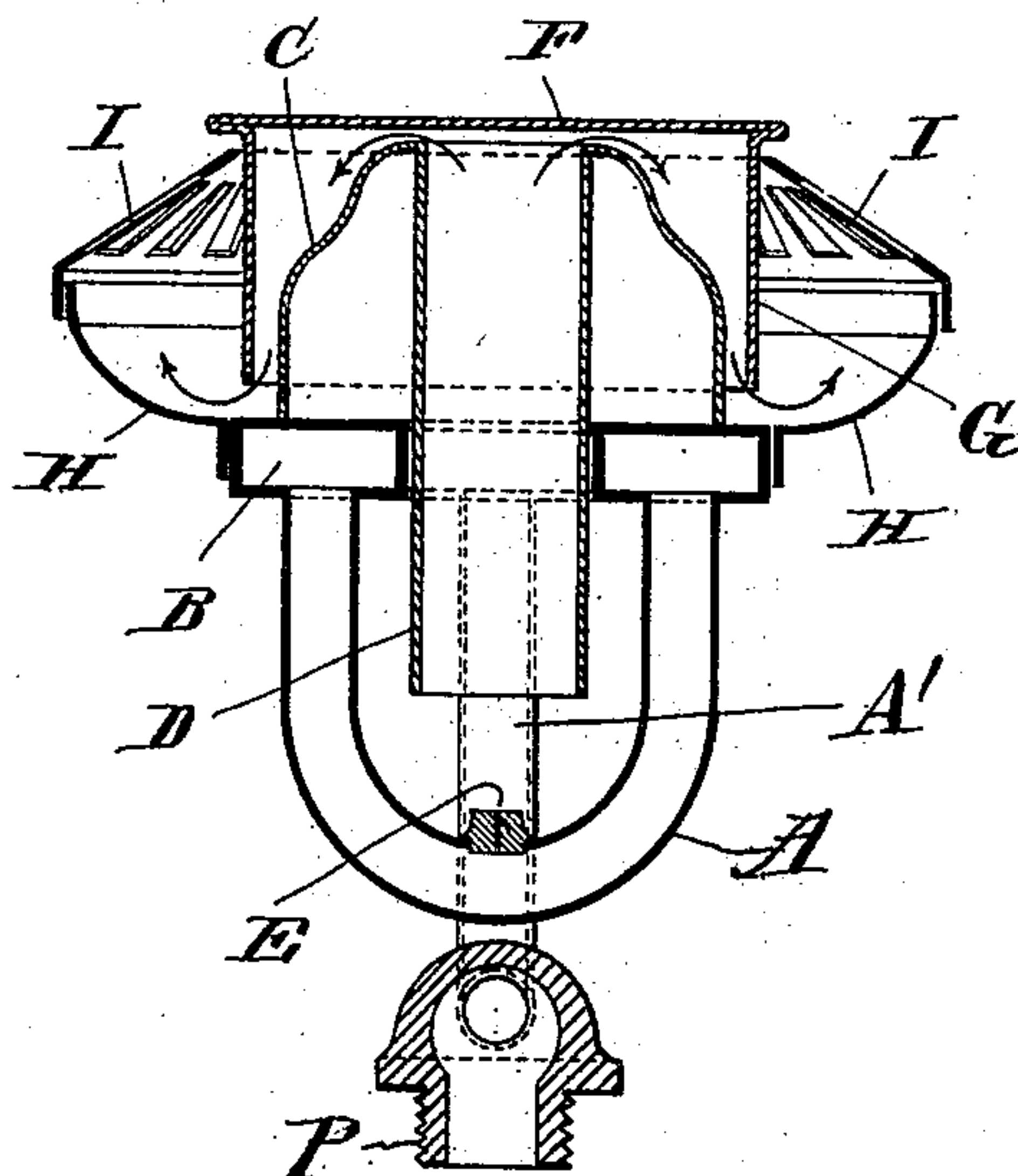
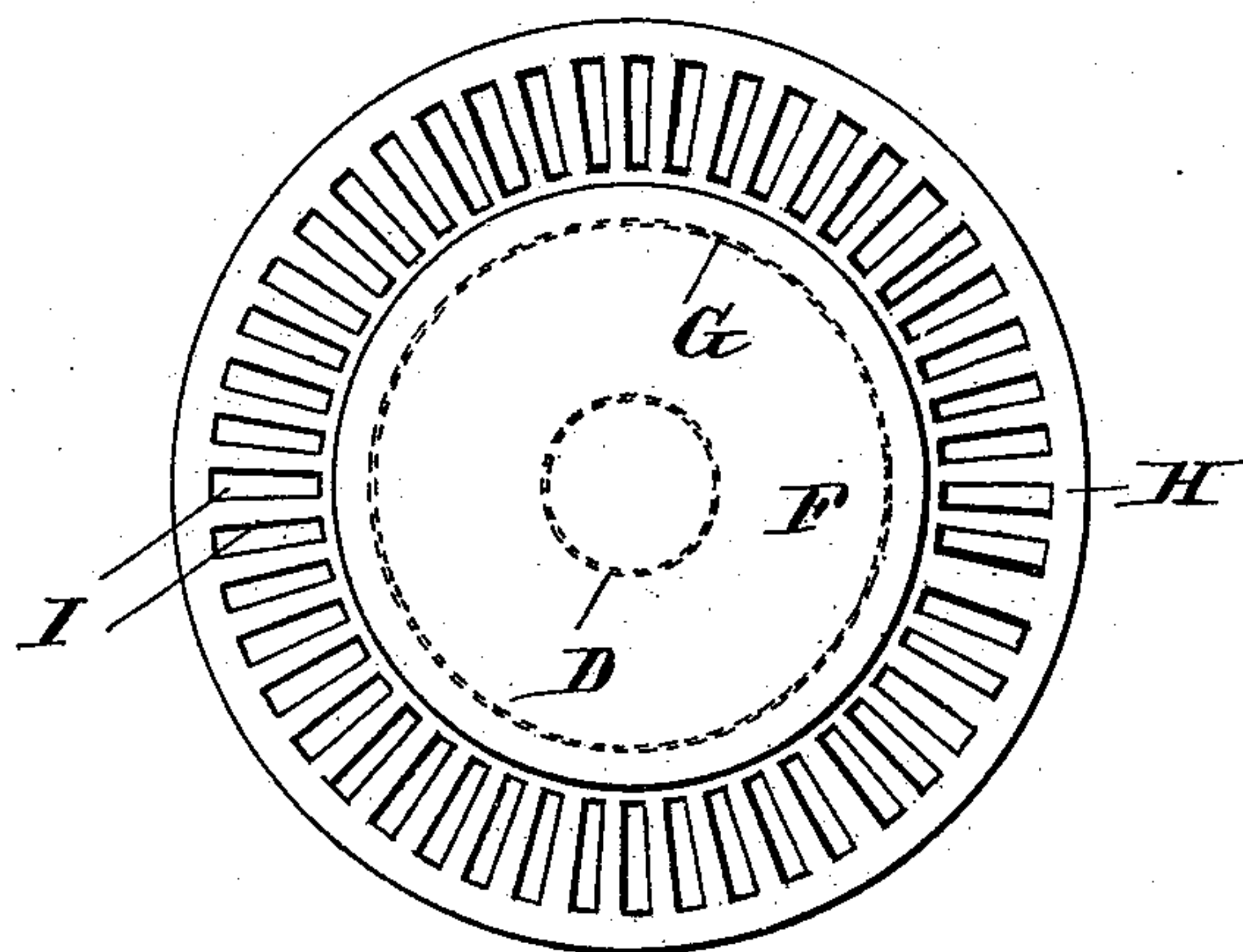


Fig. 2



Witnesses
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CARL GUSTAF HOLMQVIST, OF STOCKHOLM, SWEDEN, ASSIGNOR TO THE
AKTIEBOLAGET ARVID BOHLMARKS LAMPFABRIK, OF SAME PLACE.

BURNER FOR PETROLEUM-STOVES.

SPECIFICATION forming part of Letters Patent No. 618,984, dated February 7, 1899.

Application filed June 17, 1898. Serial No. 683,728. (No model.)

To all whom it may concern:

Be it known that I, CARL GUSTAF HOLMQVIST, a subject of the King of Sweden and Norway, residing at Stockholm, in the Kingdom of Sweden, have invented certain new and useful Improvements in Burners for Petroleum-Stoves; and I do hereby declare the following to be a full, clear, and exact description of the same.

10 This invention has relation to vapor-burners for heating purposes; and it has for its object the provision of means whereby the vaporized liquid fuel is intimately mixed with the proper amount of atmospheric air necessary to a perfect combustion, or substantially so, and whereby the fuel is more effectually vaporized and the mixture of air and vapor highly heated before it reaches the zone of combustion.

20 In the accompanying drawings, Figure 1 is a vertical transverse section, and Fig. 2 a top plan view, of a burner embodying my invention.

P indicates the hollow base of the burner, adapted to be screwed to a pipe through which the vaporizable liquid fuel is supplied thereto. From this base branch two pipes A', connected at their upper ends to an annular vaporizing-chamber B, to which are connected the legs of a U-shaped vapor-pipe A in a plane at right angles to the liquid-fuel pipes A' A'. In the bent portion of the vapor-pipe A, above the burner-base P and in the axial plane of the burner, is provided a jet-nozzle E, and above the same is arranged a conduit in the shape of a tube D of considerable cross-sectional area. This tube D passes centrally through the annular vaporizer, and to the outlet of said tube is secured a deflector casing or shell C, substantially cone-shaped and seating on the vaporizer, the outer surfaces of said casing or shell being of such curvature as to deflect the gas issuing from the tube D laterally and downwardly.

45 In order to intimately mix the vapor with air as the two fluids flow out of tube D, I place over the outlet thereof a baffle-plate F, from which depends a cylinder G, surrounding the deflector-shell C, so as to leave a comparatively narrow passage between it and the

base of said shell and between its lower edge and the top of the vaporizing-chamber, and so that the fluids issuing from the tube D are spread out by the baffle-plate F into a comparatively thin circular sheet.

The burner proper consists of a shell H, the lower part of which is dished and the upper part tapering upwardly to the confining-cylinder G below the baffle-plate F, said burner H being secured to the vaporizing-chamber B so that the arcuate bottom thereof will direct the circular sheet of gas issuing from the narrow annular slot between the confining-cylinder and top of the vaporizer to the burner-orifices I, arranged radially in the upper sloping part of the burner.

The baffle-plate F is of such diameter as to project over the edges of the confining-cylinder G to a point above the upper ends of the radial burner slots or orifices I to prevent the convergence of the gas-jets issuing therefrom and acts, therefore, as a flame-spreader. As shown in Fig. 1, the vaporizing-chamber B is sufficiently close to the zone of combustion to become highly heated, thus insuring a rapid evaporation of the vaporizable fuel, as petroleum, supplied thereto through pipe A', the vapor, issuing from the jet-nozzle E under a comparatively high pressure, being injected into tube D. The velocity of the jet of vapor issuing from nozzle, together with the fact that the upper portion of the tube D is highly heated, produce a copious flow of air into said tube with the vapor, and as the outlet of the tube is a mere circular slot the vapor and air will impinge upon the baffle-plate and their direction of flow will be reversed, whereby an intimate admixture of the two fluids is effected. This effect is heightened by the superheating and consequent expansion of the mixture of air and vapor as it flows downwardly along the highly-heated surfaces of the deflector-shell C and confining-cylinder G, the heated and expanded mixture of fluids issuing in the form of a comparatively thin circular sheet from the space between said deflector-shell and cylinder at the base of the former into the burner-shell.

It will be seen that the parts C F G form a receiving-chamber for the vapor and air flow-

ing through tube D and that the plate F spreads out the body of vapor and air into a circular sheet as it enters the receiving-chamber to effect the admixture of the vapor with the air, said chamber serving also as a heating-chamber for the mixed fluids.

In practice the burner should be so arranged relatively to the surface to be heated that the zone of combustion or zone of greatest heat will be at a point above the baffle and spreader plate F; otherwise the intense heat might act injuriously upon the burner.

As will be seen, the baffle-plate F performs the function not only of flame-spreader, but also as a means for spreading out into a comparatively thin circular sheet the body of air and vapor flowing through tube D.

Having now particularly described and ascertained the nature of my said invention, what I claim, and desire to secure by Letters Patent, is—

1. A vapor-burner comprising a vaporizing-chamber, a mixing-chamber formed by a tubular body closed at its upper end and supported above the vaporizing-chamber with its lower open end proximate to the top of said chamber, a substantially conical burner-shell encompassing and supporting the mixing-chamber and provided with a circular row of burner-orifices proximate to the upper closed end of said mixing-chamber, and an open-ended tube extending axially into said chamber near to its closed end; in combination with an injector-nozzle below and in the axial plane of said tube, said nozzle in communication with the vaporizing-chamber, and means for supplying a vaporizable fuel to said vaporizing-chamber, for the purpose set forth.

2. A vapor-burner comprising a vaporizing-chamber, a mixing-chamber formed by a tubular body closed at its upper end and supported above the vaporizing-chamber with its lower open end proximate to the top of said chamber, a substantially conical burner-shell encompassing and supporting the mixing-chamber and provided with a circular row of burner-orifices proximate to the upper closed end of said mixing-chamber, an open-ended tube extending into said chamber near its closed end, and a substantially conical deflector-shell encompassing said tube within the mixing-chamber and having its base proximate to the open end thereof; in combination with an injector-nozzle below and in the axial plane of said tube, said nozzle in communication with the vaporizing-chamber, and means for feeding a vaporizable fuel to said chamber, for the purpose set forth.

3. A vapor-burner comprising an annular vaporizing-chamber, a like mixing-chamber formed by a tubular body closed at its upper end by a disk of greater diameter than said body to form a flame-spreader, said body supported on the vaporizing-chamber with its lower open end proximate to the top of said chamber, a substantially conical burner-shell encompassing said mixing-chamber and having a dished base and provided with a circular row of burner-orifices proximate to the closed end of the mixing-chamber, and an open-ended tube projecting thereinto near to its said closed end; in combination with an injector-nozzle below and in the axial plane of said tube, said nozzle in communication with the vaporizing-chamber and means for feeding a vaporizable fuel to said chamber, for the purpose set forth.

4. A vapor-burner comprising an annular vaporizing-chamber, a like mixing-chamber formed by a tubular body closed at its upper end by a disk of greater diameter than said body to form a flame-spreader, said body supported on the vaporizing-chamber with its lower open end proximate to the top of said chamber, a substantially conical burner-shell encompassing said mixing-chamber and having a dished base and provided with a circular row of burner-orifices proximate to the closed end of the mixing-chamber, an open-ended tube projecting thereinto near to its said closed end, and a substantially conical deflector-shell encompassing said tube within the mixing-chamber and having its base proximate to the open end thereof; in combination with an injector-nozzle below and in the axial plane of said tube, said nozzle in communication with the vaporizing-chamber, and means for feeding a vaporizable fuel to said burner, for the purpose set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

CARL GUSTAF HOLMQVIST.

Witnesses:

TH. WAWRINSKY,
K. KALLENBERG.