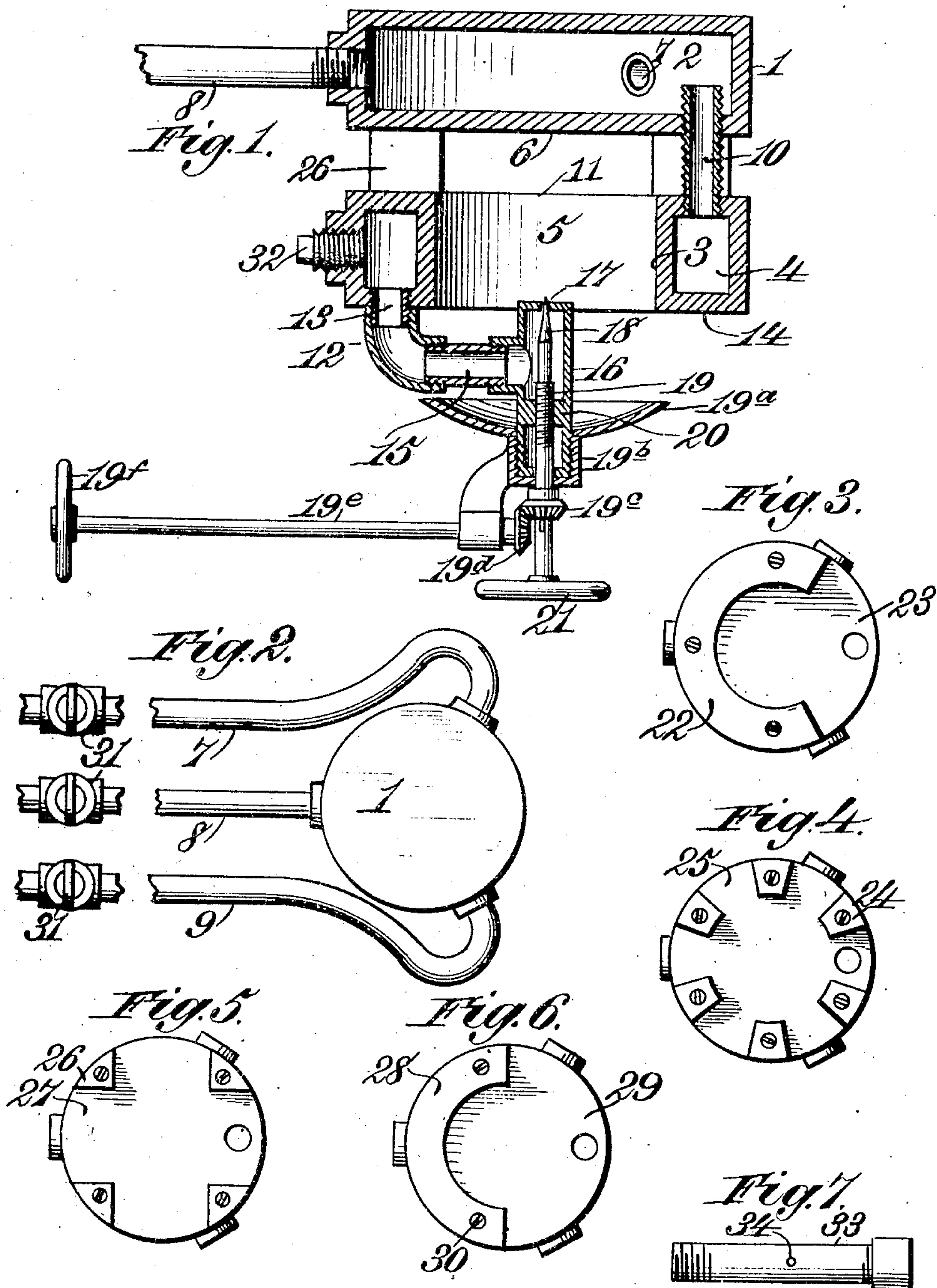


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F. G. SCHMIDT.
HYDROCARBON BURNER.
APPLICATION FILED SEPT. 9, 1907.



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HYDROCARBON-BURNER.

No. 888,453.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK G. SCHMIDT, a citizen of the United States, residing at San Jose, in the county of Santa Clara and State of California, have invented new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification.

This invention relates to hydrocarbon burners, particularly adapted for use in connection with cooking stoves, heating stoves, steam boilers, steam heaters and for other purposes wherein it is found applicable; and the object thereof is to provide, in a manner as hereinafter set forth, a hydrocarbon burner with means whereby the oil will be fed steadily and enable the vapor to be generated in an even manner, thereby causing a uniform flame at the outlet or burner.

A further object of the invention is to provide a hydrocarbon burner, in a manner as hereinafter set forth, with means to constitute deflectors for dividing the flame so that the bottom and sides of the oil-receiving chamber will be heated, causing thereby a quick generation of vapor.

Further objects of the invention are to provide a hydrocarbon burner for the purpose set forth, which shall be simple in its construction, strong, durable, efficient in its use, readily set up and comparatively inexpensive to manufacture.

With the foregoing and other objects in view, the invention consists in the novel construction, combination and arrangement of parts hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown the preferred embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In describing the invention in detail reference is had to the accompanying drawings, wherein like characters denote corresponding parts throughout the several views, and in which—

Figure 1 is a longitudinal sectional view of a hydrocarbon burner in accordance with this invention; Fig. 2 is a top plan showing the oil supply pipes, these latter being broken away; Fig. 3 is an inverted plan of the oil-receiving chamber showing the arrangement of one form of deflector; Fig. 4 is a like view showing a modified arrangement

of deflectors; Fig. 5 is a similar view of another modified arrangement of deflectors; Fig. 6 is a view similar to Fig. 3 of a modified arrangement of deflector, and, Fig. 7 is a view of a modified construction of burner.

Referring to the drawings by reference characters, 1 denotes a cylindrical receptacle forming a combined oil-receiving and vaporizing chamber 2.

3 denotes a hollow ring substantially square in cross section and forming a circular vapor heating chamber 4 and forming an opening 5. The receptacle 1 is arranged over the ring 3 and the bottom 6 of the chamber 2 extends over the opening 5 formed by the ring 3, but is positioned at a point above the same.

Communicating with the chamber 2 is a series of oil supply pipes 7, 8 and 9 which open into said chamber 2 and are connected to the side wall of said chamber at points equidistant. The pipes 7, 8 and 9 open into the chamber 2 at a point above the bottom 6 of said chamber 2. The latter communicates with the chamber 4 through the medium of a pipe 10 which is exteriorly screw-threaded and connected at its lower end to the top wall 11 of the chamber 4 and extends into the chamber 2. The chamber 1 is adjustable upon the pipe 10 so it can be moved towards or away from the chamber 4. This arrangement is made in view of the position of the deflectors between the ring 3 and the receptacle 1. The function of the deflectors will be hereinafter referred to. Preferably, the pipe 10 extends in the chamber 2 at a point above the bottom of the pipes 7, 8 and 9, as shown in Fig. 1.

The reference character 12 denotes an elbow connected to the ring 3 through the medium of the coupling piece 13, the latter being exteriorly screw-threaded and engaging in the bottom wall 14 of the chamber 4 and also engaging within the elbow 12. The coupling 13 constitutes an outlet for the vapor from the chamber 3. Attached to the elbow 12 is a pipe connection 15 which carries a burner 16, the latter being positioned approximately centrally of the opening 5 formed by the ring 3. The burner outlet is indicated by the reference character 17 and is closed through the medium of a needle valve 18. The needle valve 18 also constitutes a means for regulating the quantity of vapor passing through the outlet 17. The

stem of the needle valve is screw-threaded as at 19 and passes through a cross piece 20 carried by the burner 16. A finger-piece 21 is carried upon the outer end of the stem of the needle valve.

Interposed between the receptacle 1 and the ring 3 is a deflector or a plurality of deflectors for dividing the flame in a manner desired, and in Fig. 3 the deflector is indicated by the reference character 22 and it is formed of a circular piece of material extending two-thirds round the bottom 6. The deflector 22 can be of any suitable height and forms an opening 23 between the ring and receptacle 3 and 1 through which the flame is caused to pass. In Fig. 4 a series of deflectors is shown and which are indicated by the reference character 24. The deflectors 24 form a series of openings 25 between the receptacle 1 and the ring 3 and through which the flame is caused to pass. The deflectors 24 are wedge-shaped in contour. In Fig. 5 the deflectors are indicated by the reference character 26. Four of the deflectors 26 are shown. Openings 27 for the passage of the flame are formed by the deflectors 26. These latter are substantially triangular in contour. In Fig. 6 a single deflector is shown which is indicated by the reference character 28 and which passes round substantially half of the bottom 6. An opening 29 between the receptacle 1 and the ring 3 is formed by the deflector 28. The deflectors are secured to the lower face of the bottom 6 by the hold-fast devices 30 and are positioned at the margin of the lower face of the bottom 6.

The pipes 7, 8 and 9 are provided with valves 31 so as to regulate the supply of oil to the chamber 2 and the said pipes 7, 8 and 9 are detachably connected to the receptacle 1 so that when removed the openings formed to receive the pipes 7, 8 and 9 can be used for the removal of accumulated matter within the chamber 2. The receptacle 1 is formed with a series of removable plugs 32 (only one of which is shown) so that access can be had to the chamber 3 for cleaning it.

In lieu of employing the construction of burner 16 the burner shown in Fig. 7 may be used. This burner is indicated by the reference character 33 and has an outlet 34. It is connected to the elbow 12 in lieu of the pipe connection 15. The burner outlet 34, when the burner 33 is secured to the union 12, is positioned approximately centrally of the opening 5.

The manner of using the burner is as follows:—Oil being fed to the chamber 2, will flow into the chamber 4 and from there to the burner where it can be ignited. The ignition of the oil will vaporize the oil within the chamber 4 and also the oil within the chamber 2. After the oil in the chamber 4 has been vaporized the flame will act only upon the oil in the chamber 2 and the vapor

discharged from the chamber 2 into the chamber 4 will be heated by the flame, consequently the vapor will be what may be termed super-heated. The function of the chamber 4 materially assists in vaporizing all heavy matters so that the oil will be thoroughly vaporized before it is ignited at the burner. In some instances it has been found that all that is necessary in regard to the heating of the receptacle 1 is to divide the flame so as to contact with a portion only of the side wall, and in this connection the deflectors 22 and 28 are used. Furthermore, when the deflectors 22 and 28 are used the flame is caused to pass around the pipe connection 10 between the receptacles 1 and 3. This heats the vapor as it is passing through the pipe. In other instances it is found necessary to heat the side wall at various portions and for such purpose the deflectors 24 and 26 are used. When the deflectors 24 and 26 are used the flame is also divided so as to pass around the pipe 10 which assists in heating the vapor during its passage through said pipe.

By employing a plurality of feed pipes for the regulating valve the oil is supplied to the chamber 2 in a steady and even manner and causes the vapor to be generated in a uniform manner as the oil is supplied at various points through the chamber 2 and not in a large quantity at one point in the chamber. It has been found that the heat acts more readily upon the oil when it is evenly distributed owing to the employing of three pipes than it does if a single supply pipe is used.

The deflectors for dividing the flame materially assist in the generating of the vapor, cause the flame to pass from the opening 5 and contact the wall of the receptacle 1, so under such circumstances the bottom of the receptacle 1 is not only heated, but also the side, consequently materially assisting in the generating of vapor within the chamber 2.

Mounted upon the burner 16 is a cup-shaped member 19^a for catching any overflow of oil from the burner. The said cup-shaped member 19^a is supported and retained in position through the medium of an interiorly screw-threaded cup 19^b, the latter engaging with peripheral screw-threads formed on the burner 16, the cup 19^b being secured to the lower portion of the burner 19. Carried by the needle valve stem at a point between the finger piece for adjusting said stem and the lower end of the burner is a beveled pinion 19^c, with which is adapted to mesh a beveled pin on 19^d, carried on the inner end of an elongated rod 19^e provided with a handle 19^f. Such arrangement provides for the adjustment of the needle valve independently of the finger piece 21 and the length of the rod is such as to extend outside of a stove or furnace and by such construc-

tion it is evident that the needle valve can be conveniently adjusted without any danger of the operator being burned if the burner is mounted in a stove. The beveled pinion 19° is connected to the needle valve stem in a known manner so that the stem can be vertically shifted through the pinion 19° but at the same time be rotated when motion is imparted to the pinion.

10 What I claim is—

1. A hydrocarbon burner comprising a receptacle constituting an oil-receiving and vaporizing chamber, a plurality of oil supply pipes communicating therewith, a hollow ring constituting a superheating chamber arranged below and spaced from the receptacle the bottom of said vaporizing chamber positioned over the top of the opening through said ring, an adjustable hollow element extending through the bottom of the vaporizing chamber and into the top of the superheating chamber whereby communication is established between the said chambers and whereby provision is had for the vertical adjusting of one chamber with respect to the other, a burner positioned approximately centrally of the opening formed by said ring and means for establishing communication between the bottom of said superheating chamber at one side thereof and with said burner.

2. A hydrocarbon burner comprising a receptacle constituting an oil-receiving and vaporizing chamber, a plurality of oil supply pipes communicating therewith, a hollow ring constituting a superheating chamber arranged below and spaced from the receptacle the bottom of said vaporizing chamber positioned over the top of the opening through said ring, an adjustable hollow element extending through the bottom of the vaporizing chamber and into the top of the superheating chamber whereby communication is established between the said chambers and whereby provision is had for the vertical adjusting of one chamber with respect to the other, a burner positioned approximately centrally of the opening formed by said ring, means for establishing communication between the bottom of said superheating chamber at one side thereof and with said burner, and regulating means for said burner.

3. A hydrocarbon burner comprising a receptacle constituting an oil-receiving and vaporizing chamber, a plurality of oil supply pipes communicating therewith, a hollow ring constituting a superheating chamber arranged below and spaced from the receptacle the bottom of said vaporizing chamber positioned over the top of the opening through said ring, an adjustable hollow element extending through the bottom of the vaporizing chamber and into the top of the superheating chamber whereby communication is established between the said chambers and where-

by provision is had for the vertical adjusting of one chamber with respect to the other, a burner positioned approximately centrally of the opening formed by said ring, means for establishing communication between the bottom of said superheating chamber at one side thereof and with said burner, and a deflector mounted upon the top of the ring and against the bottom of said receptacle.

4. A hydrocarbon burner comprising a receptacle constituting an oil-receiving and vaporizing chamber, a plurality of oil supply pipes communicating therewith, a hollow ring constituting a superheating chamber arranged below and spaced from the receptacle the bottom of said vaporizing chamber positioned over the top of the opening through said ring, an adjustable hollow element extending through the bottom of the vaporizing chamber and into the top of the superheating chamber whereby communication is established between the said chambers and whereby provision is had for the vertical adjusting of one chamber with respect to the other, a burner positioned approximately centrally of the opening formed by said ring, means for establishing communication between the bottom of said superheating chamber at one side thereof and with said burner, and a plurality of spaced deflectors mounted upon the top of said ring and abutting against the bottom of said receptacle.

5. A hydrocarbon burner comprising a receptacle constituting an oil-receiving and vaporizing chamber, a plurality of oil supply pipes communicating therewith, a hollow ring constituting a superheating chamber arranged below and spaced from the receptacle the bottom of said vaporizing chamber positioned over the top of the opening through said ring, an adjustable hollow element extending through the bottom of the vaporizing chamber and into the top of the superheating chamber whereby communication is established between the said chambers and whereby provision is had for the vertical adjusting of one chamber with respect to the other, a burner positioned approximately centrally of the opening formed by said ring, means for establishing communication between the bottom of said superheating chamber at one side thereof and with said burner, said supply pipes communicating with said vaporizing chamber at equidistant points and said superheating chamber having its side provided with an opening, and a removable plug for closing said opening wherever access can be had to the superheating chamber.

6. A hydrocarbon burner comprising a receptacle constituting an oil-receiving and vaporizing chamber, means for supplying oil thereto, a hollow ring substantially square in cross section, said ring constituting a superheating chamber arranged below and

spaced from the vaporizing chamber, said vaporizing chamber having its bottom extending over the top of the opening through said ring, a burner positioned below the superheating chamber and in a line approximately central of the opening, means for establishing communication between the burner and the superheating chamber, and means attached to the bottom of the vaporizing chamber and to the top of the superheating chamber for adjustably connecting and for establishing communication between the two chambers.

7. A hydrocarbon burner comprising a receptacle constituting an oil receiving and vaporizing chamber, means for supplying oil thereto, a hollow ring substantially square in cross section, said ring constituting a superheating chamber arranged below and spaced from the vaporizing chamber, said vaporizing chamber having its bottom extending

over the top of said opening, a burner positioned below the superheating chamber and in a line approximately centrally of the opening through said ring, means for establishing communication between the burner and the superheating chamber, means attached to the bottom of the vaporizing chamber and to the top of the superheating chamber for adjustably connecting and for establishing communication between the two chambers, and deflecting means mounted upon the top of said ring and abutting against the bottom of said receptacle.

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

FRANK G. SCHMIDT.

Witnesses:

D. M. BURNETT,

F. J. HAMBLBY.