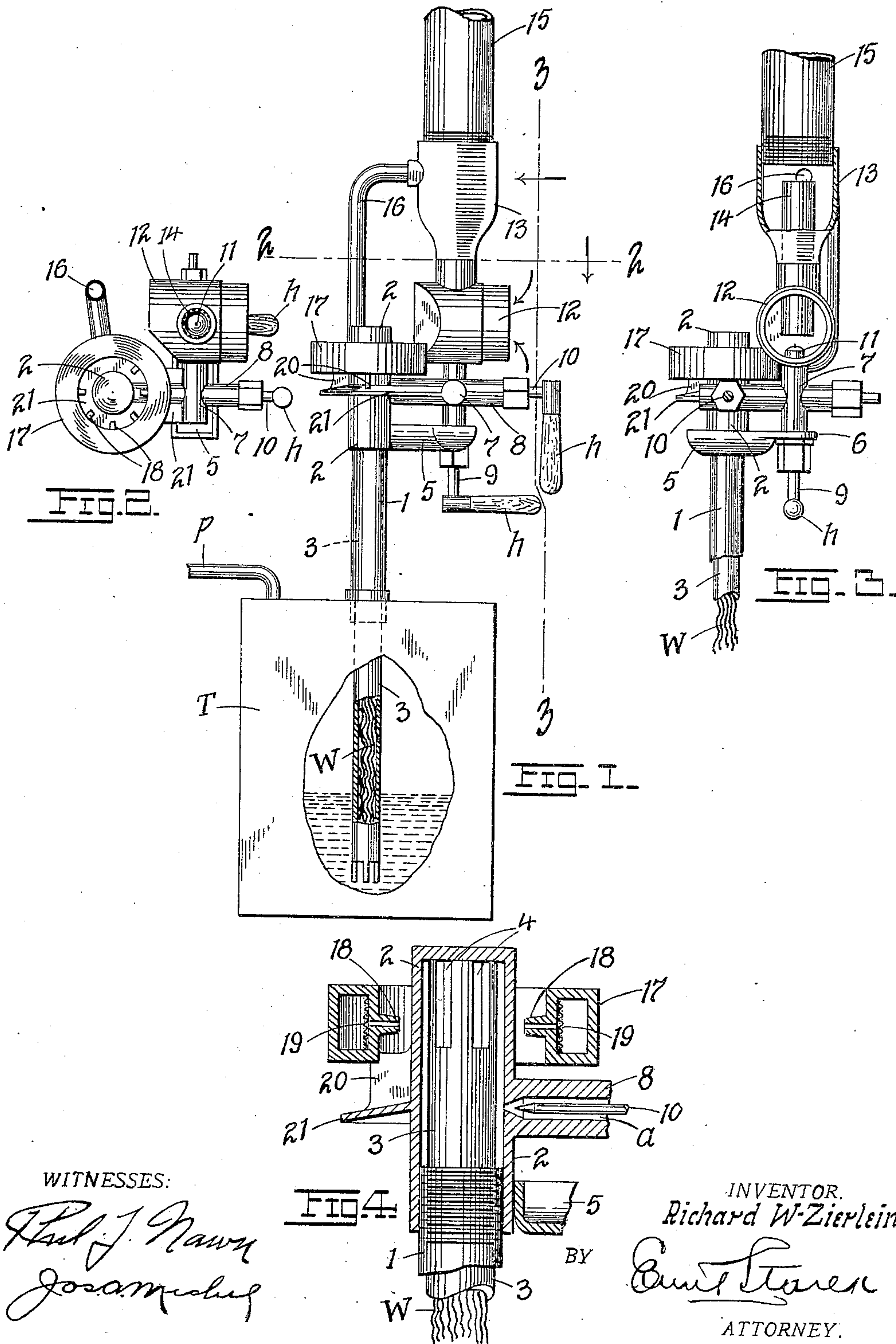


R. W. ZIERLEIN.
VAPOR GENERATOR.
APPLICATION FILED JULY 2, 1908.

931,664.

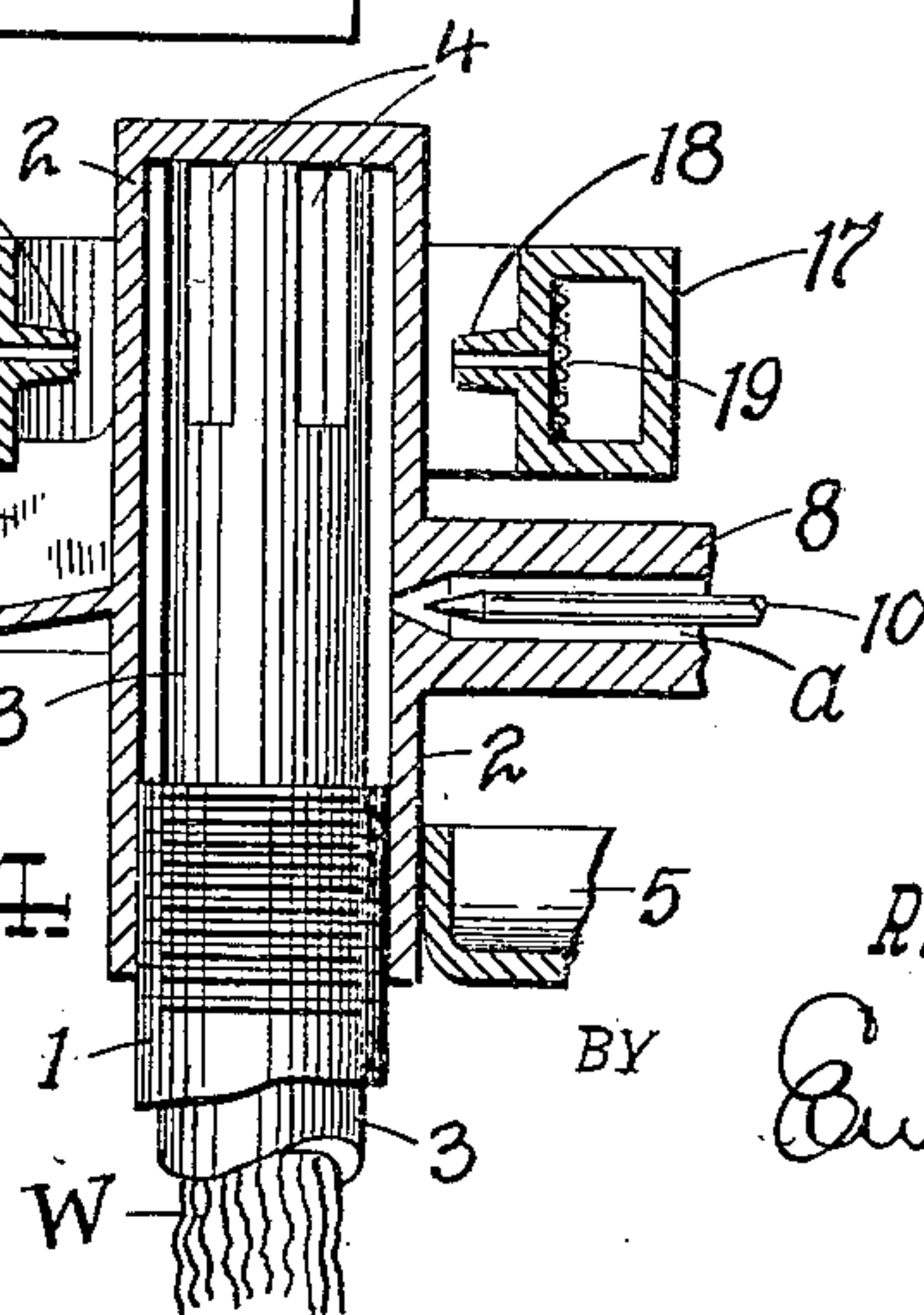
Patented Aug. 17, 1909.



WITNESSES:

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FIG. 4.



INVENTOR.

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RICHARD W. ZIERLEIN, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-FOURTH TO JULIUS C. GOEBEL, OF ST. LOUIS, MISSOURI, AND THREE-FOURTHS TO MODERN GASOLINE LIGHTING COMPANY, OF ST. LOUIS, MISSOURI, A FIRM.

VAPOR-GENERATOR.

No. 931,664.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed July 2, 1908. Serial No. 441,638.

To all whom it may concern:

Be it known that I, RICHARD W. ZIERLEIN, citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Vapor-Generators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in vapor-generators for generating vapor from hydrocarbons used in lighting and heating or for other purposes; and it consists in the novel details of construction more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a front elevation of my invention mounted over a gasoline-tank; Fig. 2 is a horizontal section on line 2—2 of Fig. 1; Fig. 3 is a vertical transverse section on the line 3—3 of Fig. 1; and Fig. 4 is an enlarged middle vertical sectional detail of the vapor generator and burner surrounding the same.

The object of my invention is to construct a vapor-generator which will supply the vapor at the point of consumption at substantially a uniform pressure, so that where for example the vapor be used for lighting purposes, the flame shall not fluctuate but remain practically constant.

A further object is to construct a generator which may be readily attached to a tank containing the hydrocarbon or gasoline to be vaporized; one which shall be compact, simple, and under ready control, and one possessing further and other advantages better apparent from a detailed description of the invention which is as follows:

Referring to the drawings T, represents a tank provided with a pipe *p* leading to any source of compressed air supply (not shown). Projecting above the tank is a sleeve 1, the upper end of which is screwed to the lower open end of the generator chamber 2 of my improvement. Inserted into the sleeve 1 and extending up against the roof of the generator 2 is a wick-holder or tube 3, said tube extending below the surface of the gasoline in the tank and having upper terminal notches or ports 4 for the escape of the vapors into the chamber 2, or rather, into the space around the tube within the generator-chamber. Cast with the generator 2 is a preheat-

ing basin 5, said basin having formed with it an extension 6 serving as a connection and support for the hollow tee 7 whose inner horizontal arm connects with the passage *a* formed in the needle-valve casing 8 cast with or otherwise secured to, the generator 2 (Fig. 4). The vertical leg of the tee 7 serves as a casing for the regulating needle-valve 9, the feed needle-valve 10 in the casing 8 being used to turn on or cut off the supply of vapor completely. The valve-stems are provided with operating handles *h* as usual.

As best shown in Fig. 3, the vertical leg of the tee 7 discharges through a tip 11 into a mixing chamber 12 one end of which is closed, and the other open to the atmosphere, the upper peripheral wall of said mixing-chamber having inserted therein a flaring coupling or union 13, the open-ended tube 14 formed with said coupling entering partially into the mixing-chamber 12 and partially into the chamber of the union, whereby the mixture of vapor and air is discharged into the union whence it is conducted through the riser pipe 15 (screwed to the union) to any suitable point of consumption.

Leading from the union 13 at a point opposite the discharge end of the tube 14 is a shunt 16 which bends downward and discharges into an annular burner 17, which latter is provided with a series of burner tips 18 along the inner wall of the ring or burner, the bases of the tips 18 being backed by a sheet of wire gauze 19 to prevent back-flashing into the burner. The burner 17 loosely encompasses the generator 2, being accurately held against displacement when once in proper position, by lugs 20 cast on the ledge 21 which is formed jointly with the walls of the chamber 2 and valve-casing 8.

To render the structure compact it will be seen (Figs. 1, 2) that the closed end of the mixing chamber 12 tapers at the bottom so as to be brought close to the burner 17.

In the operation of the device, and assuming the same to be mounted as shown in Fig. 1, the feed-valve 10 is first closed, and some alcohol or other hydrocarbon is poured into the basin 5 and ignited. The flame thus heats the walls of the valve-casing and generator 2. The valve 10 is then opened, and the gasoline, forced both by pressure in the tank T and by capillary attraction of the wick W, finds its way to the generator 2

where it is vaporized by the heated walls, the vapors passing through the valve casing 8, tee 7, tip 11 into the mixing chamber, drawing in the air after it (see arrows Fig. 1) and forming a mixture ready for any available consumption. A part of the mixture of gas and air becomes naturally shunted through the pipe 16 into the burner 17, and escapes through the burner-tips 18. This escaping vapor is now ignited, the flame permanently impinging against the walls of the generator 2 and vaporizing the gasolene as it rises through the tube 3 into the chamber 2. The hot vapor thus mixing with the air supplies the riser 15 and may be used for lighting or heating purposes as desired. The valve 9 which may be termed the regulating valve is never completely closed, but is merely turned to a position which will insure a predetermined delivery of the vapor into the mixing chamber.

The interposition of the wick between the generator and source of supply (tank T) serves to prevent any flicker in the flame due to variations of pressure in the tank, since the supply of hydrocarbon due to the capillary action of the wick is sufficient to prevent these variations being felt at the point of discharge of the gasolene into the generator; and since the presence of the wick insures a substantially uniform discharge, the flame will be constant. The wick therefore acts in the nature of a regulator and controller of the supply of the hydrocarbon to the generator, whereby such supply becomes uniform under varying conditions of pressure in the tank T.

In lieu of a wick wire tubing may be substituted for conducting and controlling the flow of the hydrocarbon from the source of supply to the generator. Where wire tubing is used the gasolene tank may be removed some distance from the generator, and out of harm's way, it being practical to employ wire tubing of any length.

Having described my invention, what I claim is:—

1. In combination with a source of hydrocarbon supply, a vapor generator, means for

conducting the hydrocarbon to said generator, a mixing chamber communicating with the generator, a burner encompassing the upper terminal of the generator and located contiguous to the mixing chamber, means for shunting a portion of the gases from the mixing chamber to the burner, and means for regulating and controlling the rate of delivery of the hydrocarbon to the generator, substantially as set forth.

2. In combination with a hydrocarbon supply tank, a generator chamber, a wick-tube leading thereinto, a valve-casing communicating with said generator, a mixing chamber into which the valve-casing discharges, a regulating-valve for regulating the discharge of the vapor into the mixing chamber, a burner contiguous to the mixing chamber encompassing the upper end of the generator, means for conducting the mixture of air and vapor from the mixing chamber to a suitable point of consumption, and a shunt leading from a point beyond the mixing chamber for conducting a portion of the mixture to the burner, substantially as set forth.

3. In combination with a hydrocarbon supply pressure-tank, a wick-tube leading therefrom and projecting out of said tank, a sleeve encompassing said tube, a generator secured to the sleeve and receiving the hydrocarbon delivered by the wick in the tube, a needle-valve casing communicating with the generator, a mixing chamber, a valve-controlled valve-casing communicating with the first mentioned valve-casing for regulating the flow of the vapor to the mixing chamber, a hollow union receiving the contents of the mixing chamber, an annular burner encompassing the generator, and a shunt leading from the union to the burner, substantially as set forth.

In testimony whereof I affix my signature, in presence of two witnesses.

RICHARD W. ZIERLEIN.

Witnesses:

EMIL STAREK,
JOS. A. MICHEL.