No. 791,334. PATENTED MAY 30, 1905.

J. H. ESKER.

GAS MACHINE.

APPLICATION FILED JUNE 1, 1903.

2 SHEETS—SHEET 1.

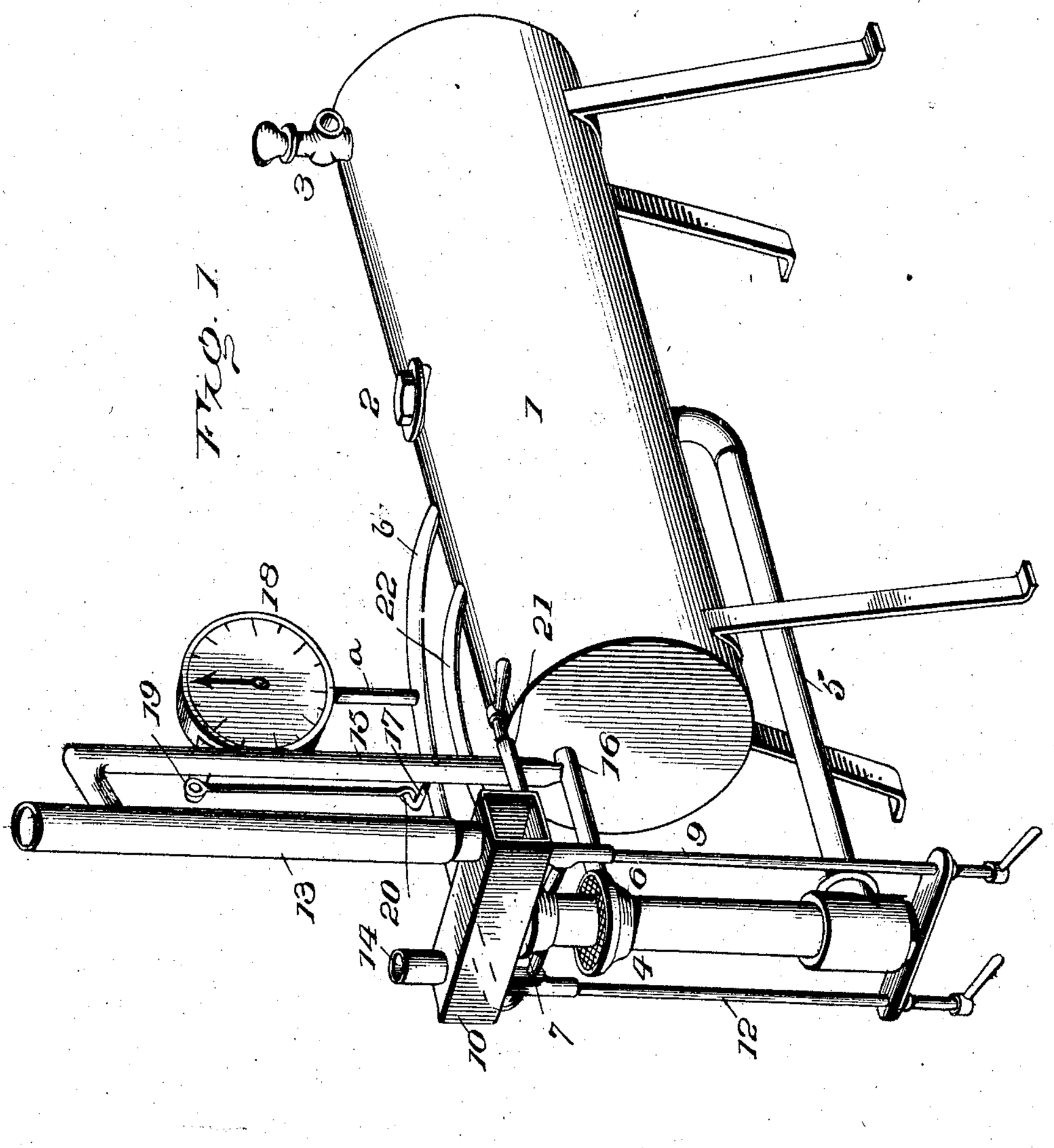

FIG. 1.

Witnesses
George G. Hatt

Inventor
J. H. Esker.

By R. S. & R. S. Lacey Attorneys

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2 SHEETS—SHEET 2.

Fig. 2

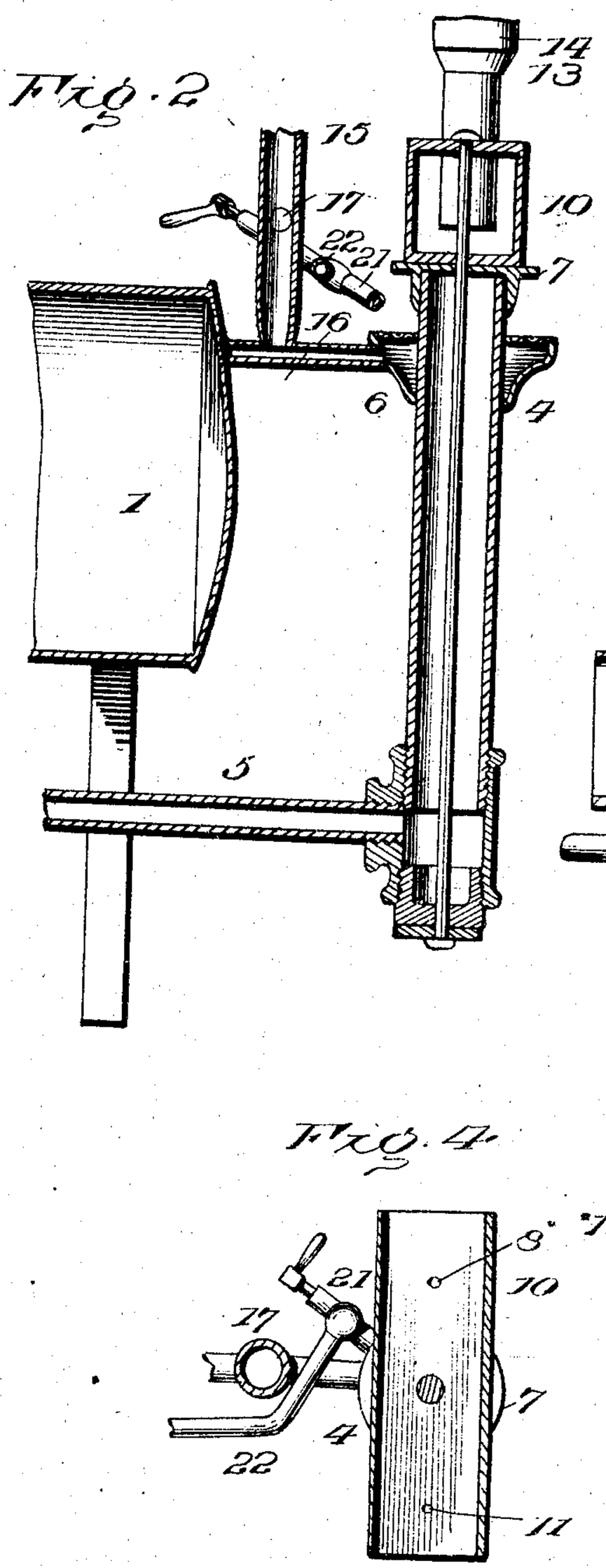

Fig. 3

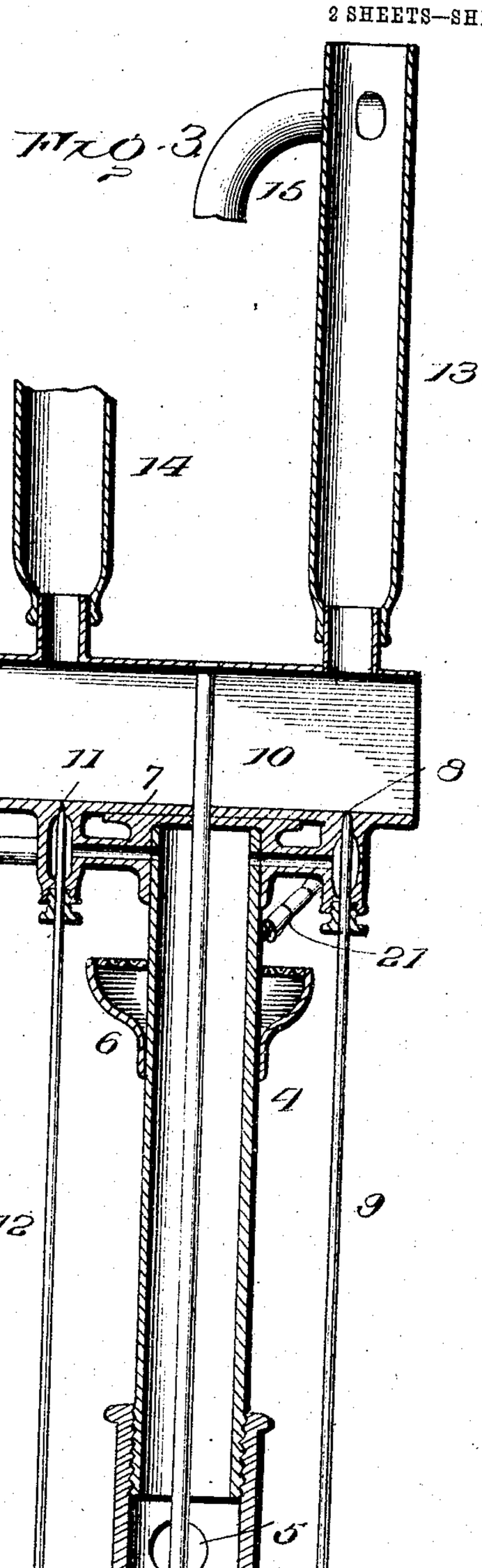

Fig. 4

Witnesses

Jno. Imrie

George G. Hatt

Inventor

J. H. Esker

By R. H. Lacey Attorneys

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UNITED STATES PATENT OFFICE.

JOHN HENRY ESKER, OF TEUTOPOLIS, ILLINOIS.

GAS-MACHINE.

SPECIFICATION forming part of Letters Patent No. 791,334, dated May 30, 1905.

Application filed June 1, 1903. Serial No. 159,613.

To all whom it may concern:

Be it known that I, JOHN HENRY ESKER, a citizen of the United States, residing at Teutopolis, in the county of Effingham and State of Illinois, have invented certain new and useful Improvements in Gas-Machines, of which the following is a specification.

The purpose of this invention is to generate gas for immediate consumption, either for heating or lighting, and to combine with the machine means for automatically regulating the supply of gas to the generator-burner according to the pressure within the tank or reservoir containing the gas-producing medium.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a gas-machine embodying the invention. Fig. 2 is a detail section through the mixing-chamber and the parts directly connected thereto. Fig. 3 is a detail view showing the main distributing-pipe, the auxiliary pipe connected thereto for supplying gas to the generator-burner, and the pressure-regulator connected with the valve of said auxiliary pipe for controlling the supply of gas to the generator-burner proportionately to the pressure within the tank or reservoir containing the hydrocarbon, said pipes and mixer being in section. Fig. 4 is a horizontal section through the mixing-chamber.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The tank or reservoir 1 may be of any construction and capacity according to the number of lights for which the machine is designed, and said tank may be arranged in any convenient position. The gasolene or other volatile hydrocarbon employed for producing gas is supplied to the tank or reservoir through an opening, its top side closed by cap or screw-plug 2. Valve 3 is fitted to the upper portion of the tank or reservoir and is adapted to have an air-pump or other pressure-creating device connected thereto for charging the tank or reservoir with air under pressure, whereby the hydrocarbon may be forced therefrom into the generator against any tendency of back pressure.

The generator 4 is located at any convenient point, so as to receive a supply of hydrocarbon or gas-producing medium from tank or reservoir 1, with which it is connected by means of pipe 5, the latter communicating with the bottom portion of the tank, so as to insure receiving a supply therefrom. The generator 4 may be of any structural type commonly employed in machines of this variety or any hydrocarbon-burners and is heated to the proper temperature by burner 6, same being of annular form and encircling the generator. In order to utilize a maximum percentage of heat from burner 6, the upper portion of generator 4 is provided with a spreader 7, overhanging burner 6 and receiving the whole effect of the flame from said burner and directing same outward. Valve 8 is connected with generator 4 and is controlled by stem or rod 9 and opens into an end portion of mixing-chamber 10. A second valve 11 is similarly connected to generator 4 and is controlled by stem or rod 12 and also communicates with mixing-chamber 10. Obviously any number of valves may be connected with the generator according to the desired number of distributing-pipes, so that the gas may be shut off from any one of the distributing-pipes without affecting the lights supplied by means of the remaining distributing pipe or pipes.

The mixing-chamber 10 is located above the generator 4 and valves 8 and 11 and may be of any size and shape, according to the general design of the machine. As shown, the mixing-chamber is approximately of box form and is open at its ends, same being cov-

ered by wire-gauze or in any similar way to freely admit air for admixture with the gas prior to entering the distributing pipe or pipes. As shown, two pipes 13 and 14 are connected with the mixing-chamber and extend into same to within a short distance of the respective needle-valves 8 and 11 and carry the gas to the required point of use. The pipe 13 is the main distributing-pipe, whereas pipe 14 is used only when isolated burners are to be lighted either for illuminating or heating purposes. An auxiliary pipe 15 connects at its upper end with main distributing-pipe 13 and at its lower end with pipe 16, having connection with generator-burner 6 for supplying gas thereto. Auxiliary pipe 15 is provided with valve 17 to admit of controlling the supply of gas to said burner as may be required, same being governed by pressure within tank or reservoir 1. Pressure-gage 18 of any make or pattern is connected with the upper portion of tank or reservoir 1 by means of the pipes *a* and *b*, and its arm 19 is connected with the stem 20 of valve 17, whereby the latter is opened more or less, according to the degree of pressure within tank or reservoir, same being determined by proper tests. In this manner the supply of gas to burner 6 is regulated.

The pipe *b* is shown extended and is connected at its outer end to the generator 4, but without communicating therewith. The pipe 16 connects the burner 6 with the tank 1, but is not in commnication with the tank. The pipes *b* and 16 are utilized as convenient means for bracing the generator, but do not establish communication between the tank and the said generator or burner.

A burner 21 is connected by pipe 22 with the upper portion of tank or reservoir 1 and is arranged to direct a jet of flame against generator 4 when heating same preliminary to starting the machine. After the generator has been sufficiently heated to convert the hydrocarbon into gas a portion of same may pass to burner 6 through pipes 15 and 16, at which time burner 21 is closed, the generator being maintained at the proper temperature by burner 6. As the pressure varies within tank or reservoir 1 valve 17 will be opened more or less, thereby regulating the flame of burner 6, so as to generate a greater or less quantity of gas.

When the machine is in operation, the gas from generator 4 passes through valve 8 into mixing-chamber 10, thence into main distributing-pipe 13 to supply the burners connected therewith. In the event of it being required to light one or more burners connected with the supplemental distributing-pipe 14 valve 11 is opened, thereby permitting a portion of the gas to pass from generator into mixing-chamber and thence into pipe 14, as will be readily comprehended.

Having thus described the invention, what is claimed as new is—

A gas-machine comprising the following elements combined, arranged and operating in the manner set forth, *i. e.*, a tank containing a hydrocarbon and provided with means for attachment thereto of an air-compressor, a vertical generator, a pipe connecting the lower end of the generator with the bottom part of the tank, a burner near the upper end of the generator, a horizontal mixing-chamber open at its ends and connected at a central point with the generator and having valves near its ends in communication with the upper portion of the generator, distributing-pipes attached to the side of the mixing-chamber opposite to that provided with the valves and in line therewith, brace-pipe 16 between said tank and burner and in communication with the latter, only, pipe 15 in communication with a distributing-pipe and the brace-pipe 16, a valve 17 in the pipe 15, brace-pipe *b* between the tank and burner and in communication with the tank, only, a pressure-gage in communication with brace-pipe *b* and connected with valve 17 for controlling the supply of gas to the burner by means of variation in the pressure within the tank, and a burner 21 connected with the upper portion of the tank and arranged to direct a flame against the generator.

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

JOHN HENRY ESKER. [L. S.]

Witnesses:
FRANK PALO,
HENRY KRONE.