

No. 635,894.

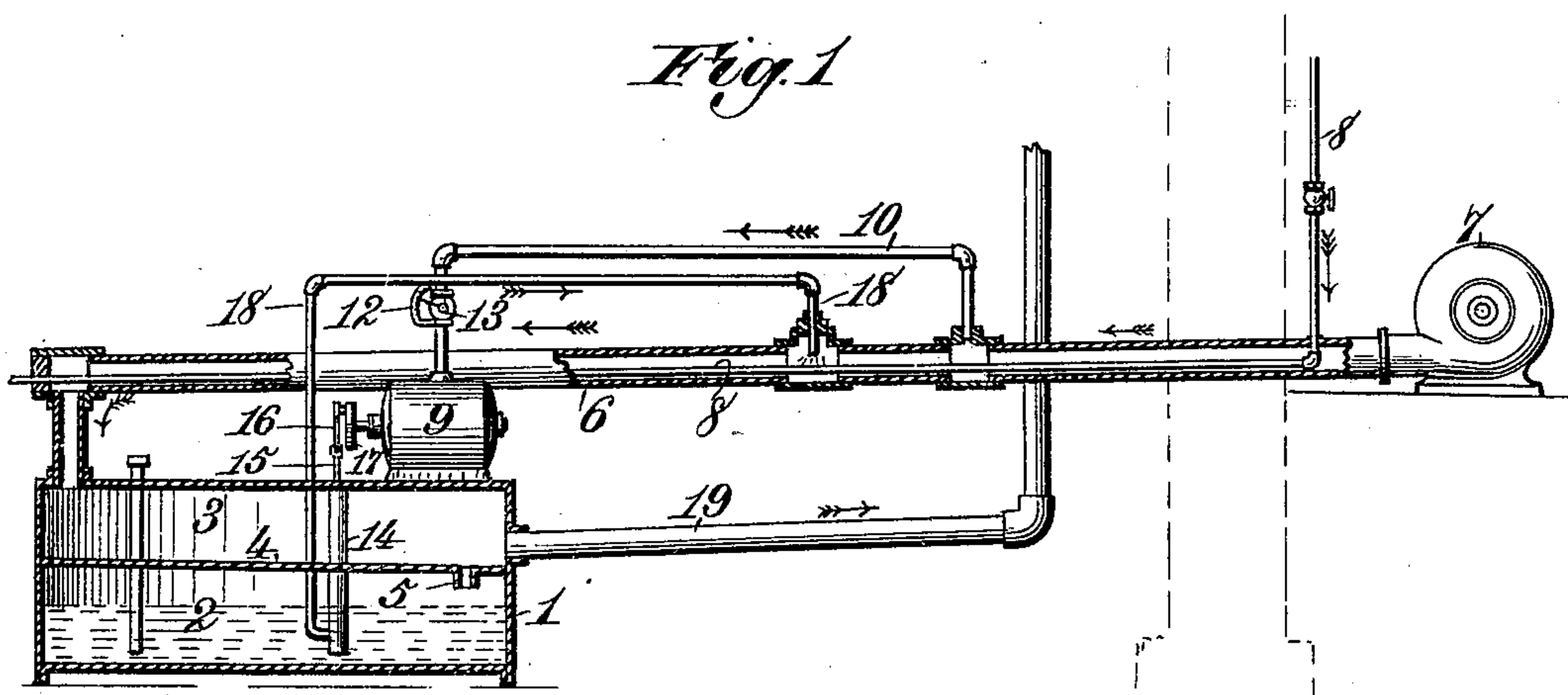
Patented Oct. 31, 1899.

C. M. KEMP.  
CARBURETER.

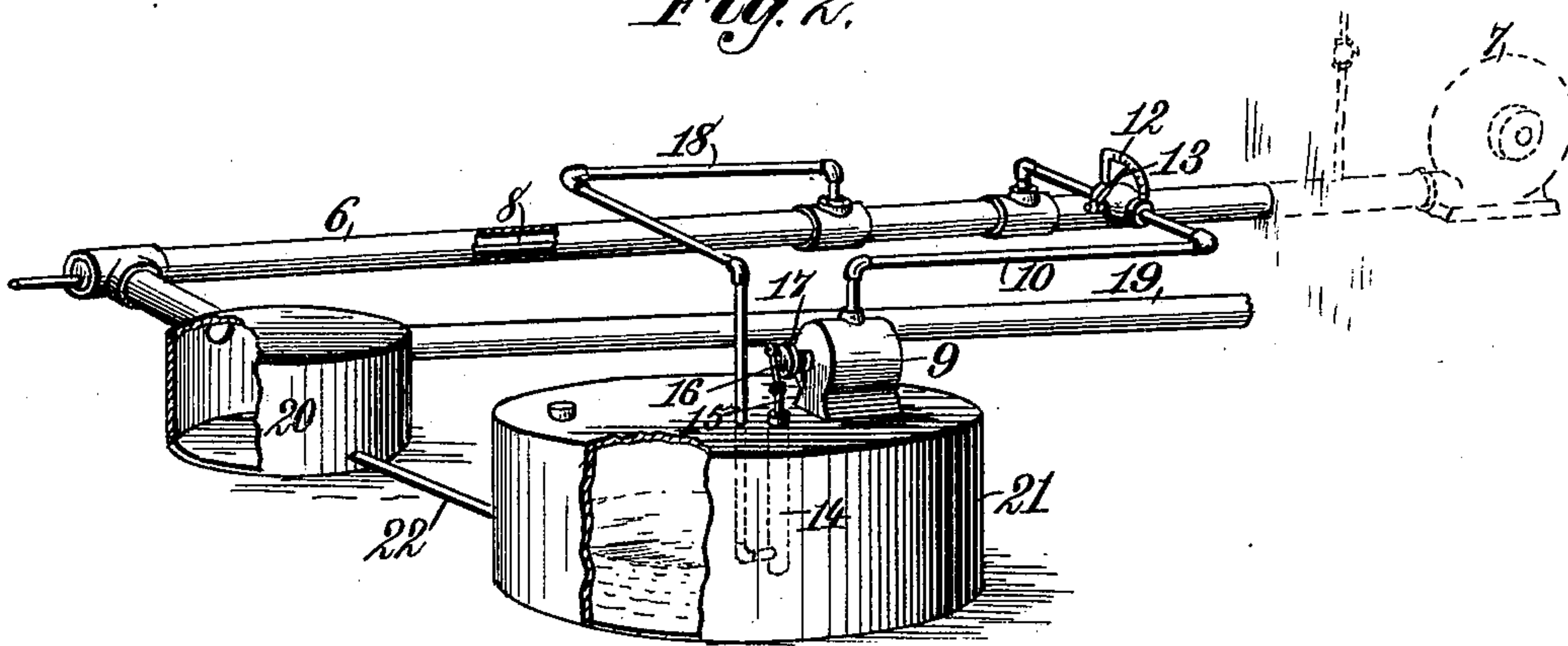
(Application filed Feb. 13, 1899.)

(No Model.)

*Fig. 1*



*Fig. 2.*



Witnesses.  
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# UNITED STATES PATENT OFFICE.

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## CARBURETER.

SPECIFICATION forming part of Letters Patent No. 635,894, dated October 31, 1899.

Application filed February 13, 1899. Serial No. 705,405. (No model.)

*To all whom it may concern:*

Be it known that I, CLARENCE M. KEMP, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Gas-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to certain new and useful improvements in apparatus for making gas, and more particularly to that type of gas apparatus wherein a highly-volatile hydrocarbon fluid—such as gasolene, naphtha, or the like—is vaporized and mixed with a sufficient quantity of air to produce gas of a practically uniform degree of richness.

It is the purpose and object of the invention to provide an extremely simple gas-making apparatus of the above-mentioned type capable of producing a comparatively large yield of gas at small cost and one wherein the operation is automatic throughout.

It is a further purpose of the invention to provide simple and improved means for regulating the degree of richness of the gas.

Briefly stated, the invention comprises an oil-tank, a condensing-chamber having communication with said oil-tank, a combined air-forcing and vaporizing pipe leading to and discharging within said condensing-chamber, means for forcing air through the vaporizing-pipe and means for heating the air and oil, a pump for forcing a regulated supply of oil from the oil-tank into the said vaporizing-pipe, and an air-operated motor for operating the oil-pump, said air-motor being operated by the air-forcing means which supplies air to the vaporizing-pipe.

The invention further comprises the details of construction and arrangement and combination of parts hereinafter referred to and then more definitely pointed out in the claims which conclude this specification.

In order to enable others skilled in the art to understand, make, and use my invention, I will now proceed to describe the same in detail, reference being had for this purpose to the accompanying drawings, wherein—

Figure 1 is a longitudinal sectional view of

a gas-making apparatus constructed in accordance with my invention. Fig. 2 is a perspective view, partly in section, of a slightly-modified form of apparatus.

Referring first to the apparatus illustrated in Fig. 1, the reference-numeral 1 designates a tank or vessel, which may be divided into two compartments 2 and 3 by a horizontal partition 4, the lower compartment 2 serving as a storage-tank for a supply of hydrocarbon fluid and the upper compartment 3 acting as a mixing and condensing chamber. I connect the said condensing-chamber 3 and oil-tank 2 by means of a drain pipe or opening 5 for a purpose hereinafter to be explained. If desired, the partition 4 in the tank may be dispensed with and the result would be practically the same. In either case the tank would serve both as an oil-compartment and a condensing-chamber. Leading to and discharging within the said mixing and condensing chamber 3 is a slightly-inclined vaporizing-pipe 6, and attached to or communicating with one end of said pipe is some suitable air-forcing means, which in the present instance I have shown in the shape of a rotary fan 7, although I do not wish to be understood as limiting myself to this particular form of air-supply, for any other means suited to the purpose may be equally as well employed, a blower being here shown simply for the purpose of illustration. A small heating-pipe 8 is passed longitudinally through the vaporizing-pipe 6, and through this pipe is forced a supply of steam, hot water, or hot air for a purpose presently to appear. The heating-pipe 8 preferably rests upon the bottom of the vaporizing-pipe 6, so that the oil as it flows along the incline will be vaporized through its intimate contact with the said heating-pipe.

Located above the tank 1 is a meter-wheel or other form of rotary air-pump 9, which is operated by a current of air passing through a branch air-pipe 10, tapped into the said vaporizing-pipe 6 at any convenient point, and located in said branch pipe is a dial-cock 12, provided with a hand or pointer 13, which operates with said dial, so as to determine the extent of opening of said cock and regulate the quantity of air passing through said pipe to the air-pump. By providing the dial-cock



it will be apparent that the supply of air passing through the same can be controlled, and consequently the speed of the air-pump may be regulated to operate either fast or slow, as occasion may demand. Submerged within the body of oil in the oil-compartment 2 of the tank 1 is an oil-pump 14 of any preferred type, the piston-rod 15 of which is connected in any suitable manner, as by a link 16, to a disk or cam 17 on the shaft of the rotary pump 9, so that as said shaft is rotated the piston of the oil-pump will be reciprocated to force a supply of oil from the oil-compartment 2 through an oil-pipe 18, which leads to and discharges, preferably in spray form, within the vaporizing-pipe 6 and upon the heated pipe within the said vaporizer.

In the drawings I have shown a simple single-acting force-pump to supply the oil to the vaporizer; but I wish it understood that I may employ any form of pump, either single or double acting, as may be desired.

The operation of the apparatus may be briefly stated as follows: A supply of oil having been placed in the oil-compartment 2, the air-forcing means 7 is set in operation, so as to force the supply of air through the vaporizing-pipe 6 into the condensing-chamber 3. At the same time a portion of said air is taken off through the branch air-pipe 10 to operate the rotary air-pump, which latter operates the oil-pump to supply a regulated quantity of oil into the vaporizing-pipe 6. This oil is sprayed within said pipe over and upon the heated pipe 8, is quickly and thoroughly vaporized, and commingles with the body of air passing through the vaporizing-pipe, and the whole is then carried forward and discharges into the condensing and mixing chamber 3, from whence it is delivered by a supply-pipe 19 to a gasometer (not shown) or to any point of consumption. As the combined air and gasoline vapor enters the condensing-chamber they are more fully mixed, and if there should be an oversupply of vapor or gasoline in the gas this will readily condense and drain back into the oil-compartment through the pipe or opening 5. This is a very important consideration, for if the mixing and condensing chamber were not provided and the gas should immediately return to the house or point of consumption, even though a bleeder were used for removing the surplus condensation, yet the current of air or gas passing through the pipe would spray the surplus gasoline contained in the gas, which is very light, and carry it along to the house, producing condensations therein, where the presence of gasoline is dangerous and obnoxious. Hence by providing a mixing and condensing chamber between the oil-supply tank and vaporizing-pipe I completely avoid the objection just referred to and add to the efficiency of the apparatus.

In the modified form of apparatus illustrated in Fig. 2 the construction, arrangement, and operation of the same are precisely like

that illustrated in Fig. 1, except that instead of forming the condensing-chamber and oil-chamber in one and the same tank I have provided separate tanks or vessels for the same, as will be seen by referring to the drawings, wherein the numeral 20 indicates the mixing and condensing chamber, and 21 the oil tank or chamber, said chambers having communication by means of a drain-pipe 22. All the other parts of the apparatus are precisely the same as in the apparatus first described, and I have therefore designated these parts by the same reference-numerals and will not describe them again.

The apparatus herein shown and described is extremely simple in construction, comprises very few parts, and is practically automatic in operation. The air-supply pipe 6 also serves the purpose of a vaporizer or converter, thus dispensing with the employment of a separate tank or vessel for this purpose, and the means for operating and controlling the rotary air-pump is automatic and very simple and commends itself for the reason that no separate operating mechanism, such as a weight or the like, is necessary.

In the practical application or installation of my invention all that part of the apparatus shown to the left of the wall in the drawings is supposed to be under ground, and an opening will be provided leading down to the air-operated pump and oil-pump only, whereby a person can reach these-parts of the mechanism.

What I claim is—

1. In a gas-making apparatus, the combination with an oil-supply tank, of a vaporizing-pipe leading to and discharging within said tank, an oil-pipe leading from said oil-tank and entering the vaporizing-pipe at a point wholly outside the tank, means for forcing oil through the said oil-pipe, and a gas-discharge pipe for the tank.

2. In a gas-making apparatus, the combination with an oil-supply tank, of a combined mixing and condensing chamber having communication with said oil-tank, a vaporizing-pipe leading to and discharging within said chamber, an oil-pipe leading from said oil-tank and entering the vaporizing-pipe at a point wholly outside the tank, means for forcing oil through the oil-pipe into the vaporizing-pipe, and a gas-discharge pipe leading from the said condensing and mixing chamber.

3. In a gas-making apparatus, the combination with an oil-tank, of a vaporizing-pipe provided with means for heating the same, an air-forcing device communicating with one end of said vaporizing-pipe, and a delivery-opening at the opposite end, an oil-pipe leading from the said tank and discharging into the vaporizing-pipe, a pump for forcing the oil through the said oil-pipe, means controlled by the said air-forcing device for operating the oil-pump, and means for conveying the condensation of the vaporizing-pipe back into the oil-tank.



4. In a gas-making apparatus, the combination with an oil-supply tank, of a vaporizing-pipe, means for forcing air through said pipe, an oil-pipe leading from the supply-tank  
5 and discharging into the said vaporizing-pipe, a pump for feeding the oil to said oil-pipe, an air-pump for operating said oil-pump, and a branch air-pipe leading to and supplying air to the air-pump for operating the latter, said  
10 branch air-pipe being supplied with air from the said air-forcing means.

5. In a gas-making apparatus, the combination with an oil-tank, of a vaporizing-pipe leading to and discharging within said tank,  
15 an oil-pipe leading from the tank and opening into the said vaporizing-pipe, an air-operated pump arranged to force oil through the said oil-pipe, and a branch air-pipe leading from the vaporizing-pipe and serving to  
20 operate the said air-pump.

6. In a gas-making apparatus, the combination with an oil-supply tank, of a condensing and mixing chamber, a vaporizing-pipe leading to and discharging within said chamber means for forcing air through said vaporizing-pipe, an oil-pipe leading from the oil-tank and discharging into the vaporizing-pipe, an air-operated pump arranged to force oil through said oil-pipe, a branch air-pipe  
25 leading from said air-forcing means and serving to operate the air-pump, and a cock in said branch air-pipe to regulate the flow of air therethrough to control the speed of the said air-pump.  
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7. In a gas-making apparatus, the combination with an oil-tank, of a vaporizing-pipe, an air-forcing device communicating with said vaporizing-pipe to force air thereinto, an oil-pipe leading from the said tank and discharging into the vaporizing-pipe, a pump for forcing oil through said oil-pipe, means controlled by the said air-forcing device for operating the oil-pump, and means for conveying the condensation of the vaporizing-pipe  
40 back into the oil-tank.  
45

8. In a gas-making apparatus, the combination with an oil-supply tank, of a relatively large, horizontally-disposed vaporizing-pipe, a combined mixing and condensing chamber  
50 having communication with said oil-tank and

vaporizing-pipe, means for forcing air into said latter-named pipe, and means for forcing oil from the oil-tank into the vaporizing-pipe.

9. In a gas-making apparatus, the combination with an oil-supply tank, of a relatively large, horizontally-disposed vaporizing-pipe, means for forcing air into said pipe, an oil-pipe leading from the tank and opening into the said vaporizing-pipe, an air-operated  
55 pump arranged to force oil through said oil-pipe, and a branch air-pipe leading to and supplying air to operate the air-pump, said branch air-pipe being supplied with air from the said air-forcing means.  
60

10. In a gas-making apparatus, the combination with an oil-supply tank, of a relatively large, horizontally-disposed vaporizing-pipe having a communication at one end with said tank, means for forcing air into the opposite  
65 end of said pipe, an oil-pipe leading from the tank and opening into the vaporizing-pipe, an air-operated pump arranged to force oil through the oil-pipe into the vaporizing-pipe in regulated quantities, and a branch air-pipe  
70 tapped into the vaporizing-pipe at a point behind the discharge of the oil-pipe, and leading to the said air-pump to operate the latter.  
75

11. In a gas-making apparatus, the combination with an oil-supply tank, of a vaporizing-pipe, means for forcing air through said pipe, a pump submerged within the oil-tank, an oil-pipe leading from said pump and discharging into the vaporizing-pipe to supply oil thereto in regulated quantities, an air-  
80 pump for operating said oil-pump, a branch air-pipe tapped into the said vaporizing-pipe at a point back of the discharge of the oil-pipe and leading to the air-pump to operate the latter, and a dial-cock in said branch air-  
85 pipe serving to regulate the flow of air therethrough to control the speed of the said air-pump and oil-pump and consequently the feed of the oil to the vaporizing-pipe.  
90

In testimony whereof I affix my signature '95  
in presence of two witnesses.

CLARENCE M. KEMP.

Witnesses:

SAMUEL S. BOGGS,

W. B. BOYD.