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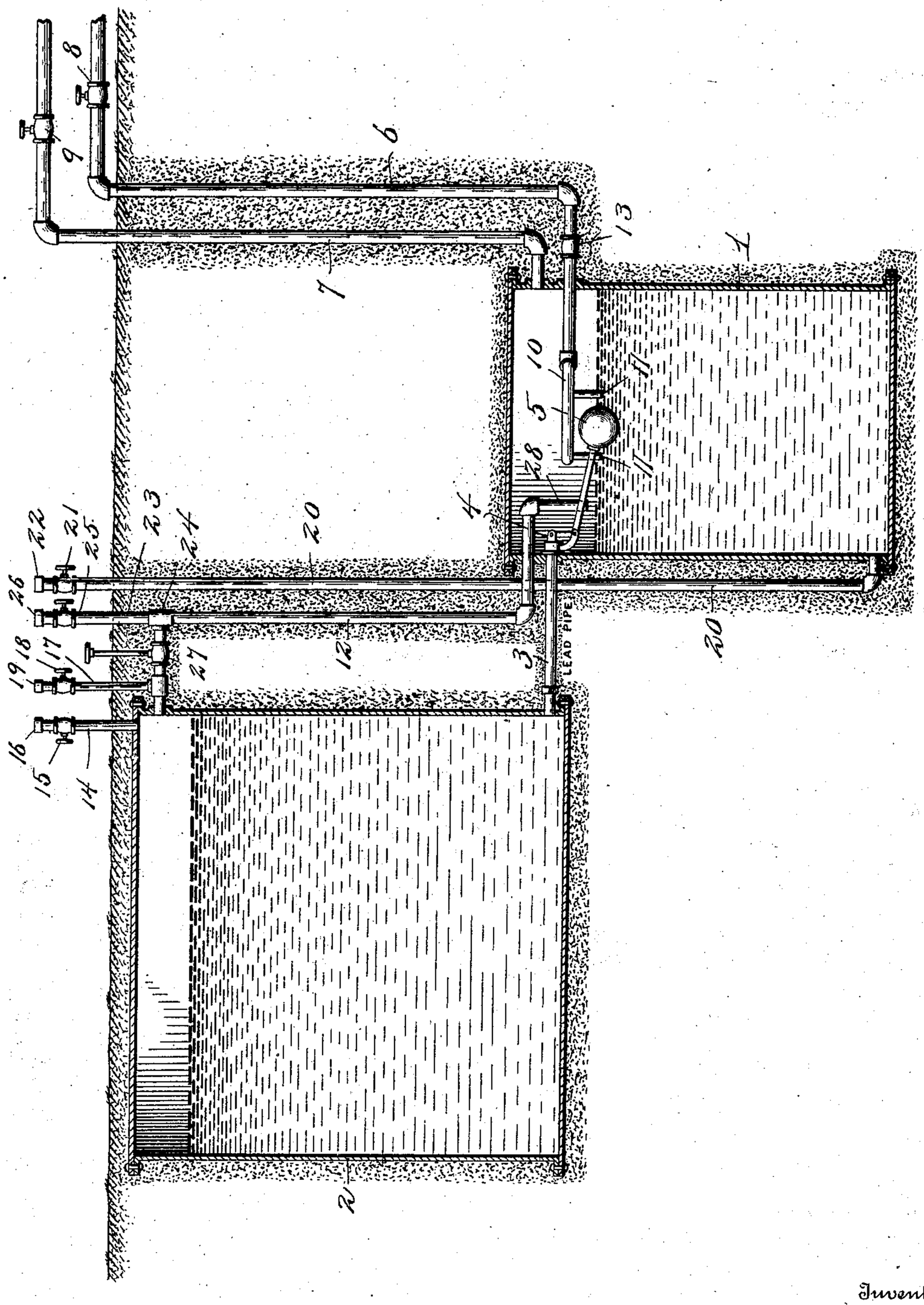
F. W. JERVIS.

CARBURETER.

(Application filed Aug. 3, 1901.)

(No Model.)



Witnesses
Hally L. Ames.
L. E. Tibbetts.

Inventor
Frederick W. Jervis.
By Rexford N. Smith.
Attorney

UNITED STATES PATENT OFFICE.

FREDERICK W. JERVIS, OF BALTIMORE, MARYLAND, ASSIGNOR TO WILLIAM HENRY JERVIS, OF CLINTON, CANADA.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 693,273, dated February 11, 1902.

Application filed August 3, 1901. Serial No. 70,782. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK W. JERVIS, a subject of the King of Great Britain, residing at Baltimore, in the State of Maryland, have invented a certain new and useful Carbureter, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to carbureters, and has for its object to produce a simple, economical, and efficient gas-machine, especially designed for individual or private plants and adapted to be located beneath the surface of the ground at any point safely remote from the dwelling or other house or building to be illuminated. The oil contained within a supply or storage tank is fed automatically by gravity into the carbureter, the bottom of the storage-tank being located substantially in line with the normal level of oil in the carbureter, and provision is made for automatically maintaining an equal air-pressure within the tank and carbureter, thereby insuring the proper feeding of the oil. The oil in the carbureter is maintained at a predetermined level by means operating automatically. Air is fed to the carbureter by any suitable air-compressor and in a way to agitate the oil and intermingle therewith and produce gas of uniform richness.

The invention also embodies novel means for discharging the residue and sediment which settle to the bottom of the carbureter and equalizing the air-pressure in the oil-tank and carbureter during the operation of charging the same with oil.

The invention also has for its object to provide for a thorough circulation of oil in the carbureter without the aid of a mixer, thereby producing a uniform quality of gas without resort to apparatus which is liable to get out of order.

Another object of the invention is to provide a special form of tubular connection between the storage or supply tank and the carbureter which will admit of the settling of either or both tanks without causing a leak.

Another object in view is to extend the pressure-equalizing pipe so as to form in connection with the rising oil in the carbureter a check which will automatically cut off the flow of oil to the carbureter and prevent the flooding of the carbureter and gas or service pipe.

With the above and other objects in view the invention consists in the novel construction, combination, and arrangement of parts hereinafter fully described, illustrated, and claimed.

The accompanying drawing represents a vertical section through a gas-machine complete constructed in accordance with the present invention.

Referring to the drawing, 1 designates a carbureter adapted to receive a suitable supply of oil fed from an oil-tank 2, the bottom of which is located about in line with the normal level of the oil in the carbureter, both the tank and carbureter being ordinarily buried beneath the surface of the ground, as illustrated in the drawing. An oil connection 3 in the form of a lead pipe affords communication between the bottom of the oil-tank and upper part of the carbureter and enables the oil to feed by gravity from the tank into the carbureter, where the oil is automatically maintained at a predetermined level by means of a float-operated valve 4, associated with the discharge end of the connection 3 and controlled by a float 5. By forming the connection 3 of lead pipe provision is made for the settling of either or both tanks without danger of springing the joints between such pipe and the supply-tank and carbureter, and thereby causing a leak.

Air is fed into the carbureter under pressure through an air-supply pipe 6, which may connect with any form of air-compressor, and the gas is carried out of the carbureter through a service-pipe 7, both of the pipes 6 and 7 leading into the upper portion of the carbureter and being provided with cut-off valves 8 and 9, respectively. Within the carbureter the air-supply pipe 6 connects with an air-distributing pipe 10, having a plurality of downwardly-pointing nozzles 11, which terminate several inches below the maintained level of the oil in the carbureter. The air entering the carbureter under compression is thus forced in a number of jets into

and through the oil and, rising, is carried outward through the service-pipe 7 and distributed to the burners.

A pressure-equalizing pipe 12 connects the upper portions of the carbureter and oil-tank and allows the air to escape from the carbureter to the oil-tank as the oil is fed from the tank into the carbureter, thus insuring the feeding of the oil by gravity. A check-valve 13 is associated with the air-supply pipe 6, and while permitting the air to pass readily into the carbureter it prevents the oil from passing to the air-compressor.

The oil-tank 2 is equipped with a filling-pipe 14, having a stop-cock 15 and sealing-cap 16, enabling the tank to be filled with oil from the surface of the ground. The pressure-equalizing pipe has a vent-pipe 17 extending to the surface of the ground and provided with a stop-cock 18 and cap 19. This vent is left open when filling the tank 2 with oil in order that the air may escape from the tank and carbureter.

A residue-discharge pipe 20 connects with the bottom of the carbureter and extends to the surface of the ground, where it has a stop-cock 21 and cap 22. Said pipe is designed to carry off all residue, heavy oil, and sediment which accumulate in the bottom of the carbureter. In order to accomplish this, an air-inlet pipe 23 is connected with the pressure-equalizing pipe 12 at the point 24 and provided with a stop-cock 25 and cap 26. This pipe 23 is designed to receive a force-pump, and air is forced downward through pipe 12 into the carbureter until the pressure is sufficient to expel the residue in the bottom of the carbureter through the pipe 20.

In order to entirely cut off communication through the pressure-equalizing pipe 12, the latter is provided with a stop-cock 27, located between the air-inlet pipe 23 and the oil-tank. This prevents the air from the force-pump from passing to the oil-tank and directs it to the carbureter.

In refilling the oil-tank the vent-pipe 17 is opened and the stop-cock 27 is closed, thus permitting the air in the tank to pass out as the oil fills the same. The filling and vent pipes are then closed, and the machine is ready for operation. When it becomes necessary to clean the carbureter, the stop-cock 27 and the valves 8 and 9 are closed, the discharge-pipe 20 opened, and air pumped into the carbureter through the pipe 23, thus forcing the residue from the bottom of the carbureter outward through pipe 20.

In order to provide against the contingency of the float-valve failing to operate or getting out of order, the pressure-equalizing pipe 12 is provided within the carbureter with an extension 28, which terminates slightly above the predetermined level of oil in the carbureter, as clearly shown in the drawing. Should the float-valve fail to operate, the oil will rise in the carbureter until it covers and seals the open end of the pressure-equalizing pipe, which will have the effect of cutting off connection between the air-spaces of the carbureter and storage-tank, and consequently cutting off the flow of oil to the carbureter. This prevents flooding the carbureter and also prevents oil from finding its way into and through the gas or service pipe.

By reason of the construction illustrated and described I get a uniform quality of gas and an entire absence of the refrigerating effect so common in machines of this type, in connection with which a mixer must necessarily be employed in order to obtain a uniform quality of gas. As is well known, refrigeration is caused by evaporation which takes place at the surface of the oil in the carbureter, where it is agitated by air passing through it. As the oil becomes chilled it naturally falls or settles to the bottom of the caburetor, while the warmer oil at the bottom moves upward and takes the place of the chilled oil. In this way a thorough mixture of the oil is obtained and the whole body of oil kept at a normal temperature. Both the storage-tank and carbureter are also buried in the ground, and this also assists in maintaining the normal temperature of the oil in the carbureter. In a cold climate the upper portions of the pipe should be incased in jackets of metal or other material in order to prevent the frost from lifting them out of place.

The machine is simple in construction, economical in manufacture, easily filled, cleaned, and maintained in working order and is entirely automatic in operation. I do not desire to be limited to the details of construction hereinabove described, as changes may be made in the form, proportion, and minor details of construction and arrangement without departing from the principles of the invention.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

A gas-machine comprising a carbureter, an oil-tank adapted to supply the carbureter, an oil-feed connection between the oil-tank and carbureter, a pressure-equalizing pipe connecting the upper portions of the oil-tank and carbureter, an inlet communicating with said pressure-equalizing pipe and adapted to have pressure applied therethrough to the carbureter, a residue-discharge pipe connected to the lower portion of the carbureter, and a stop-cock located in the pressure-equalizing pipe between the air-inlet pipe and oil-tank, substantially as described.

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

FREDERICK W. JERVIS.

Witnesses:
N. B. HENRY,
W. BRYDONE.