(No Model.) 2 Sheets—Sheet 1.

R. M. BIDELMAN.

APPARATUS FOR THE MANUFACTURE OF GAS.

No. 518,582. Patented Apr. 24, 1894.

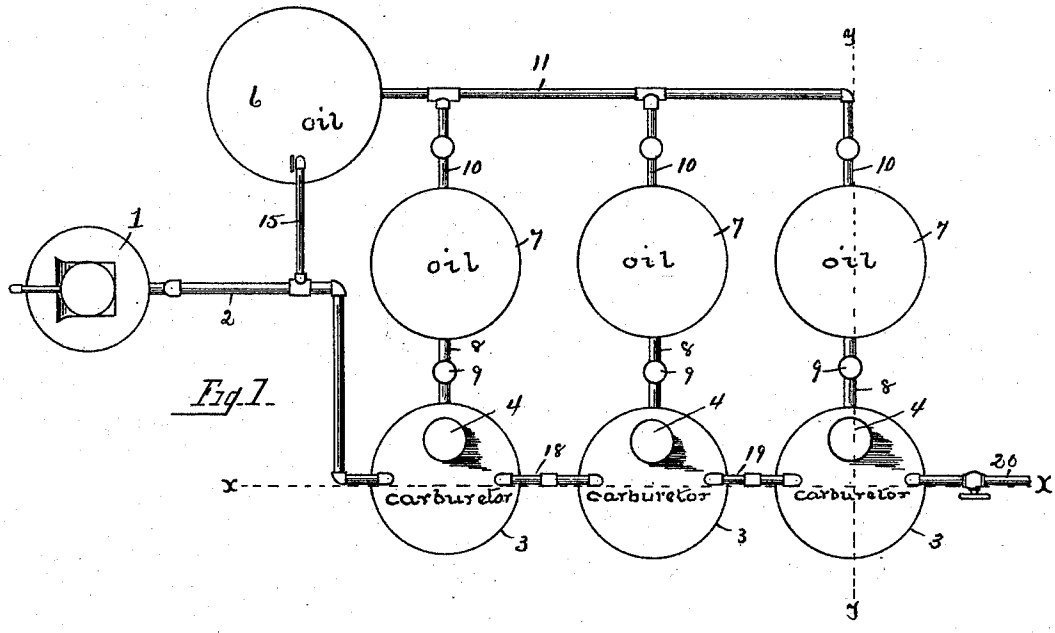

Fig 1.

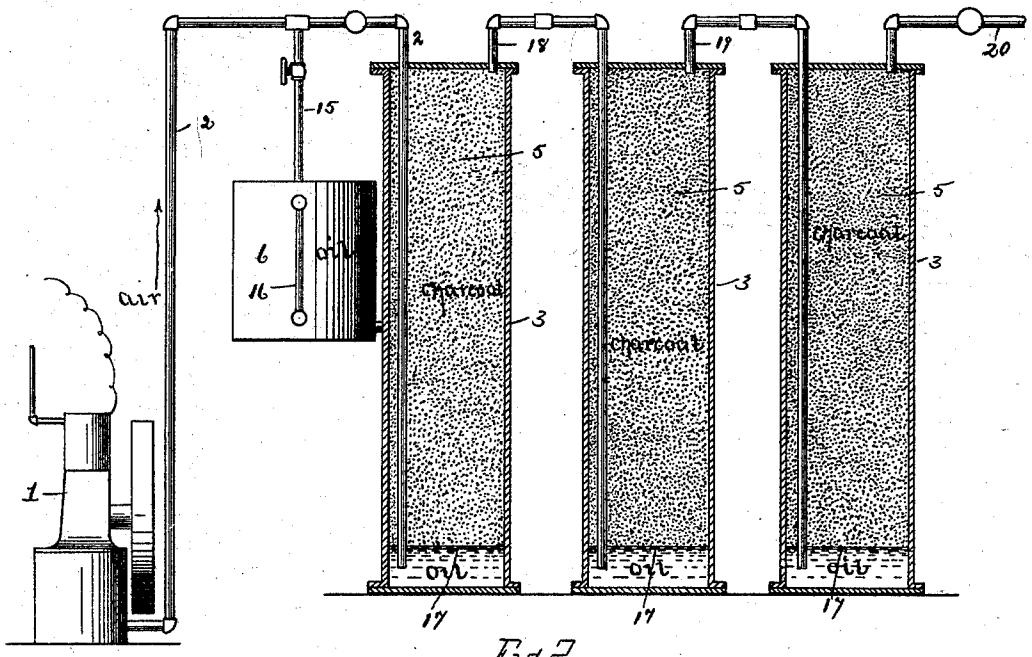

Fig 2.

WITNESSES.

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(No Model.) 2 Sheets—Sheet 2.

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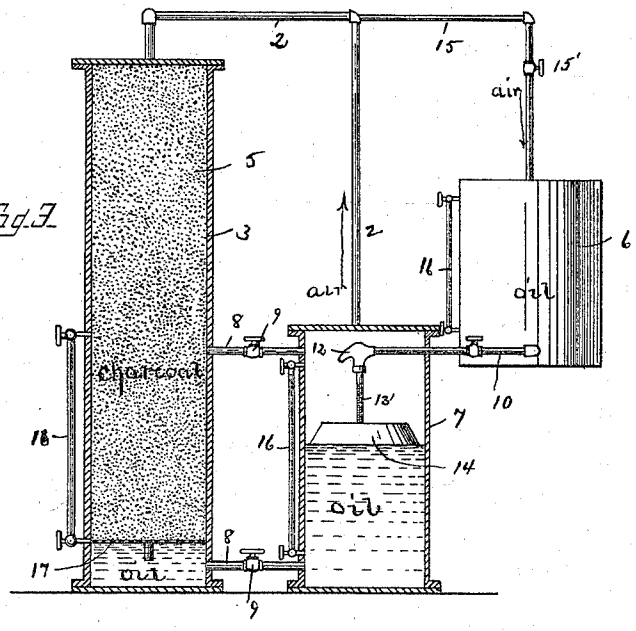
Fig. 1.



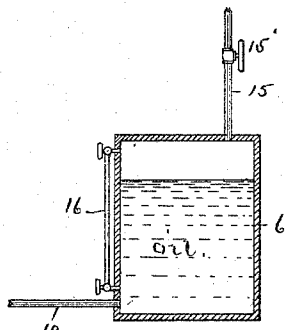


Fig. 4.

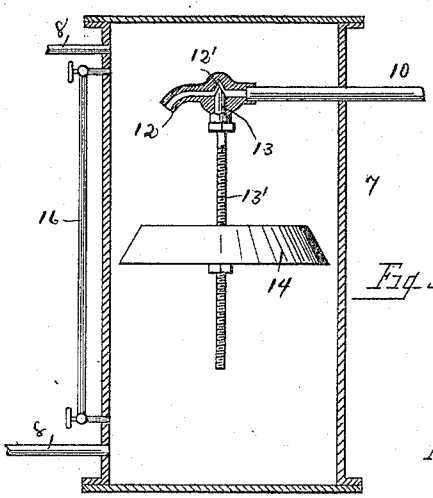


Fig. 5.

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UNITED STATES PATENT OFFICE.

ROBERT M. BIDELMAN, OF ADRIAN, MICHIGAN.

APPARATUS FOR THE MANUFACTURE OF GAS.

SPECIFICATION forming part of Letters Patent No. 518,582, dated April 24, 1894.

Application filed June 9, 1892. Serial No. 436,073. (No model.)

To all whom it may concern:

Be it known that I, ROBERT M. BIDELMAN, of Adrian, county of Lenawee, and State of Michigan, have invented certain new and useful Improvements in the Manufacture of Gas; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

My invention relates to the manufacturing of gas, and has for its object to provide an apparatus for carrying out a process of manufacturing a fixed gas, more particularly adaptable for illuminating purposes by forcing an aeriform fluid through a petroleum distillate, in such a manner, that the product shall be non-condensible.

The invention consists in the means for and process of forcing an air current through petroleum distillate by an equalized pressure, whereby the air shall be revolved in its passage and all condensible vapors eliminated.

In the drawings: Figure 1 is a plan view of the complete apparatus. Fig. 2 is a longitudinal vertical section on line *x—x* Fig. 1. Fig. 3 is a transverse vertical sectional view on line *y—y* Fig. 1. Fig. 4 is a vertical section of the tank for the petroleum distillate supply. Fig. 5 is a vertical section of one of the reservoirs connected with the carbureting cylinders, this view being drawn on an enlarged scale to disclose the valve and float.

In carrying out my process of manufacturing gas, I employ any suitable compressor, or pumping gas engine (as shown), and force a volume of atmospheric air through a plurality of carbureting cylinders densely packed with an absorbent material such as charcoal charged with a petroleum distillate supplied from reservoirs of considerable less height than the carbureting cylinders, and communicating therewith at both the top and bottom of the reservoirs to insure an equilibrium of pressure and cause the distillate in the reservoirs to maintain a proper level. I also employ a peculiarly arranged valve in each reservoir to insure a proper feed of distillate from the supply tank to the reservoirs.

By the arrangement briefly summarized I am enabled to introduce atmospheric air under a pressure that will cause the same to pass through the distillate, and thereby take up the volatile portion and then pass through the densely packed absorptive material to be caused to frictionally deposit any of the oil particles that may have been incorporated whereby the gas is discharged to the gas holder or main practically incondensible.

1 designates a gas engine as the motor for actuating the air forcing device which may be of any preferred construction to force a current of air under a pressure of from say two to five pounds, through pipe 2, which is connected with one of a series of carbureting cylinders 3, the pipe extending vertically from the compressor to a greater height than the height of the carbureting cylinder, and by means of a horizontal and vertically disposed portion extending to the bottom or nearly to the bottom of the first cylinder, each carbureting cylinder 3 is formed of metal of a strength to withstand the necessary pressure the top and bottom portions being firmly secured to the flanged ends of the cylinder, the tops 4 having removable portions to allow of introducing the granular filling 5, preferably of charcoal.

6 designates the supply tank for the petroleum distillate and any crude petroleum distillate may be used. This tank is connected with a plurality of reservoirs 7 arranged one in rear of each carbureting cylinder, and preferably of about one-third the height of the same, each reservoir being connected with a carbureting cylinder at two points, preferably at the top and bottom of the reservoirs by means of pipes 8 each of which is supplied with a cock 9 to allow of using one or all of the carbureting cylinders as desired. Within each reservoir is arranged a branch pipe 10 leading from the tank pipe 11 and discharging into the reservoir. Each pipe 10 is formed with a discharge nozzle 12 having a valve seat 12′ into which seats a needle valve 13 formed with a threaded stem 13′ upon which is adjustably sustained a float 14, the float being perforated centrally and screw-threaded to allow of running the same upon the stem to any desired adjustment.

From pipe 2 there is extended a branch

pipe 15, which enters the top of the tank 6 whereby there is an equilibrium of air pressure upon the distillate when the cock 15′ in said pipe is opened.

Upon each of the receptacles, to-wit the tank, the carbureting cylinders, and the reservoirs, I generally arrange glass gages 16 to allow of observation of the amount of distillate in each.

Each carbureting cylinder is provided with a foraminous diaphragm 17 secured transversely of the carbureting cylinder near the bottom, to sustain the packing 5, and to form a receptacle for the distillate into which the ends of the pipes may enter to cause the air to enter the distillate and rise through the same under pressure before being urged through the packing.

From the top of the first carbureting cylinder there extends a pipe 18 tapped into the top, and extending to the bottom of the same or below the diaphragm of the second carbureting cylinder, there being a like pipe 19 tapped into the top of the second carbureting cylinder and extending to the bottom of the third carbureting cylinder whereby the aeriform fluid is immersed below each diaphragm and rises through the granular packing and finally finds an egress through pipe 20 to a place of storage, or to the main for use.

From the foregoing, it will be seen that by reason of the communication established at the top and bottom of the reservoirs with the carbureting cylinders, there is a perfect equilibrium established when air pressure is on and that the distillate is maintained in the carbureting cylinders at a uniform height a result that could not be obtained were there but one source of communication. It will be further understood that by reason of the reservoirs in communication with the cylinders, and in communication with the supply tank, there is a uniform supply of distillate in the carbureting cylinders, as by the equilibrium established by the separate reservoirs the air pressure is equal at all points. It will be further understood, that by reason of the separate reservoirs in communication with the supply tank, and the tank in communication with the air pipe, by reason of the connections with the reservoirs there is an equilibrium of pressure throughout the passage of the aeriform fluid until finally discharged in an incondensible condition.

In operation, power being communicated to the pump or compressor by means of the gas engine, or the motor, a volume of air is forced through pipe 2 to the bottom of the first cylinder, and is saturated by being passed through the distillate, and rising from thence is forced through the densely packed material in the carbureting cylinder where by the frictional contact with the packing, the aeriform fluid is relieved of any condensible particles, that might have been incorporated, and as thus primarily enriched it is forced through pipe 18 into and through the second carbureting cylinder, and from thence through pipe 19, to the bottom of the third carbureting cylinder from whence it rises thoroughly enriched, and passes out through pipe 20 to a place of storage or combustion.

During the process just described a uniform supply of distillate is maintained in the reservoirs by means of the float valves, as upon any failure of supply below a predetermined height, the float will drop accordingly and open valve 13 to allow the distillate to flow to the reservoir.

What I claim is—

1. The combination with an air supply pipe, and forcing apparatus, of a series of carbureting cylinders, the first cylinder being connected with the air supply pipe, pipes connecting the cylinders with one another, an oil tank, connected also with the air pipe, a series of oil reservoirs, one for each cylinder, pipes arranged at the top and bottom of each reservoir, and connected with its respective cylinder, pipes connecting the oil tank with each reservoir, a valve casing arranged upon the end of said pipes within the reservoirs, a needle valve and stem for regulating the supply and a float adjustable upon the stem of the needle valve.

2. In a carbureting apparatus, a carburetor, an oil tank, an air pipe having branches, one of which enters the carburetor, the other entering the oil tank, an oil reservoir connecting the tank and carburetor, the oil reservoir being connected with the carburetor at its upper and lower ends, whereby an equality of air pressure is maintained throughout the carburetor, oil tank, and reservoir.

3. In a carbureting apparatus, an air supply pipe having branches, a series of carburetors connected with one another, and one of them with a branch of the air pipe, a series of oil reservoirs, one for each carburetor, connected therewith and provided with a regulating float valve, a single oil tank, one of the branch air pipes being connected therewith, and all of the oil reservoirs being connected with the oil tank and to each other, whereby an equality of pressure is maintained throughout the entire apparatus.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

ROBERT M. BIDELMAN.

Witnesses:
HENRY C. SMITH,
JOHN A. RILEY.