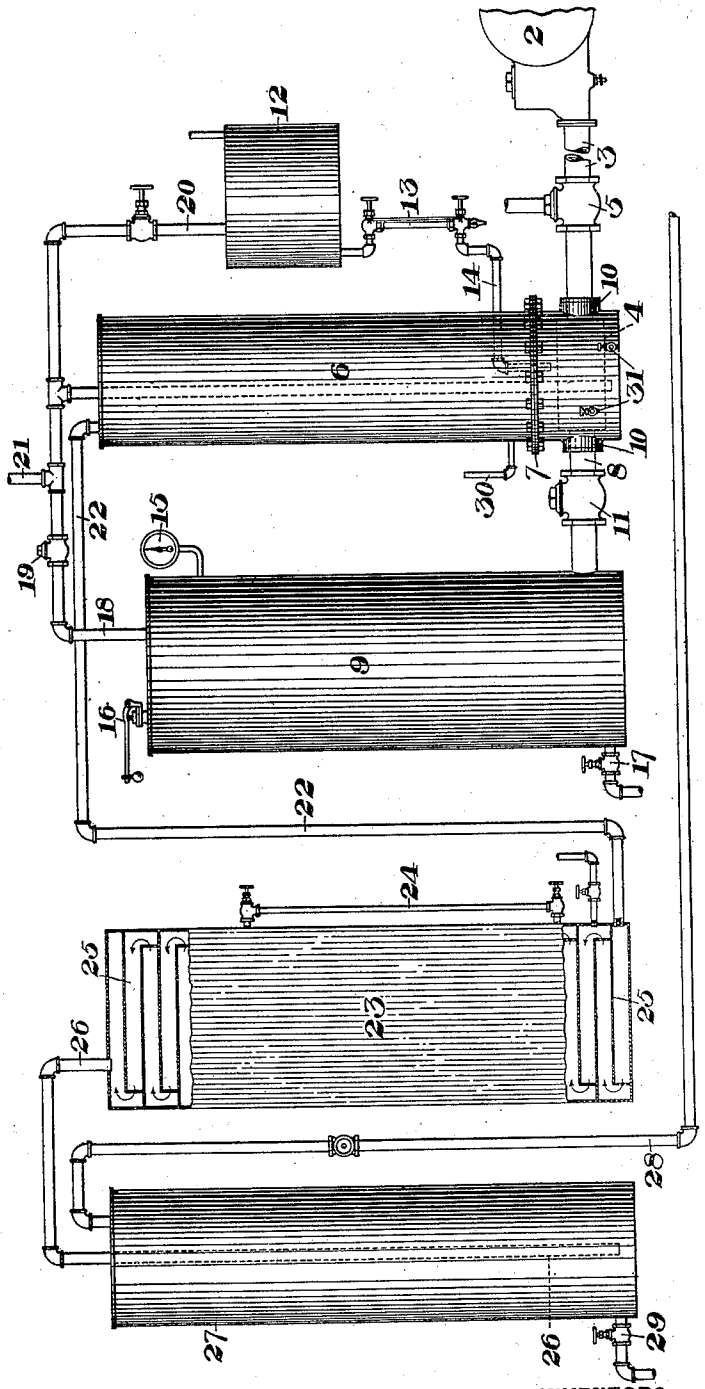
No. 644,922. Patented Mar. 6, 1900.

G. R. JOHNSON & T. F. GILLOOLY.

CARBURETER.

(Application filed Feb. 20, 1899.)

(No Model.)



WITNESSES

A. M. Comman

L. M. Eddman

INVENTORS

George R. Johnson

Thomas F. Gilloolly

by Baldwin & Hewell

their attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE R. JOHNSON AND THOMAS F. GILLOOLY, OF KELLETTVILLE, PENNSYLVANIA.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 644,922, dated March 6, 1900.

Application filed February 20, 1899. Serial No. 706,095. (No model.)

To all whom it may concern:

Be it known that we, GEORGE R. JOHNSON and THOMAS F. GILLOOLY, of Kellettville, in the county of Forest and State of Pennsylvania, have invented a new and useful Improvement in the Manufacture of Gas, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, in which the figure is a side elevation, partly in section, of a gas-making plant constructed in accordance with our invention.

Our invention relates to the manufacture of gas, and more particularly to that used in gas-engines, though the plant may be used for making gas for other purposes; and its object is to obtain a cheap and simple method of and apparatus for making gas from oils, preferably by the aid of the hot products taken from the exhaust of a gas-engine.

In the drawing, 2 represents the gas-engine, the exhaust-pipe 3 of which leads to a short cylindrical drum 4, having a flat top and bottom. A vacuum check-valve 5, which seats upwardly by the pressure of the exhaust products and is normally open at other times, is interposed in the exhaust-pipe 3, thus causing the hot products of combustion to close this valve and pass on to the heating-drum, while on the other stroke of the engine the valve will be opened to prevent the formation of a vacuum.

The drum 4 is located in the lower portion of a vertical retort 6, which is made in two parts having flanges 7, which are removably bolted together, so that the lower part may be taken off when necessary for cleaning, repairs, &c. The drum is supported upon the pipe 3 and another pipe 8, leading therefrom to an expansion-tank 9, and these two pipes extend through stuffing-boxes 10 in the sides of the retort 6 in order to allow for contraction and expansion of the parts under heat. A check-valve 11, which seats in the direction of the drum 4, is placed in the pipe leading from the drum to the tank, so as to prevent backflow of the products after entering the tank.

Oil is led from a tank 12 through a controllable sight-feed device 13 and pipe 14 into the retort so that it drops from the end of this pipe upon the top of the heated drum 4 and is thereby vaporized, any non-vaporized portion passing down into the lower end of the retort. The expansion-tank is provided with pressure-gage 15, a blow-off valve 16, and a drip-cock 17, through which any water condensing in this tank may be drawn off. A pipe 18 leads from the top of this tank, in which a substantially-uniform pressure is maintained, over and down to a point near the bottom of the retort, the heated products escaping from the open lower end of the pipe and entering any layer of oil at this point. A check-valve 19 is interposed in the pipe 18 to prevent backflow into the expansion-tank, and a branch pipe 20 may be provided, which leads from the pipe 18 into the top of the oil-tank, so as to supply pressure upon the top of the oil, if desired.

21 is a small branch pipe leading from pipe 18 to a hand-operated air-pump, by which air may be forced into the pipe 18 and the retort when starting the system into operation.

From the retort 6 the vaporized oil formed by the oil dripping upon the heated drum and the products of combustion from the engine being mingled together, the heated products having absorbed a portion of the oil in the bottom of the retort, pass through a pipe 22 into the lower end of a carbureter 23, which is partially filled with oil, the depth of which may be seen in the glass gage 24. This carbureter consists of a riveted tank containing a series of chambers formed by boxes 25, extending alternately from either side of the carbureter and having their ends provided with a series of perforations, thus affording a tortuous passage through which the mingled gaseous products and vaporized oil pass and are thoroughly broken up and commingled in passing through the perforations of each box, at the same time absorbing a further increment of oil as they pass through the oil-bath contained therein. The gas thus formed passes out through pipe 26, which extends downwardly into the lower portion of the storage-tank 27, from which the gas is taken through valve-controlled pipe 28 to the mixer for the engine. A cock 29 is applied to the lower end of the storage-tank, by which any deposited oil may be drawn off. The re-

tort is provided with a small side inlet-pipe 30, closed by a plug, by which oil may be introduced into the retort, and petcocks 31 are applied to the lower end of the retort at different levels, so that the depth of oil therein may be ascertained at any time.

When the plant above described is in operation, the hot products from the engine will bring the drum 4 up to a high heat, so that the oil dripping thereon will be vaporized. The products pass on into the expansion-tank, and from this tank they pass into the lower end of the retort and taking up a portion of any oil therein they mingle with the vaporized oil and the mixture passes on into the lower end of the carbureter, where it is thoroughly mixed, broken up, and caused to absorb a portion of the oil therein. The gas thus formed passes to a storage-tank and is thence taken to the engine as desired. In starting the apparatus when the parts are cold a quantity of oil is poured into the retort through the pipe 30, which is then closed. The hand-pump then being operated forces air through pipe 21, which, entering the retort, takes up a portion of the oil and then passes on to the carbureter, where a further increment of oil is absorbed, and the gas thus made passes from the storage-tank to the engine. As soon as the engine starts into operation the heated products passing from its exhaust will heat the drum, and the system then starts into normal operation.

The apparatus may be used without a carbureter, if desired, the pipe 22 leading from the retort 6 directly to the storage-tank 27.

The advantages of our invention will be apparent to those skilled in the art. The hot products of combustion from the engine serve not only to vaporize oil dropped on heated surfaces, but are themselves used to absorb oil, for which they are peculiarly adapted, and being carbureted are returned as a combustible gas in the engine. Any surplus products pass into the open air from the expansion-tank through the blow-off valve, which may be set at any desired point. The system may also be used independently of an engine, though it is especially adapted therefor.

Many changes may be made in the form and arrangement of the various parts without departing from our invention, since

We claim—

1. In a gas plant, a gas-engine, a pipe leading from its exhaust-port to an expansion-tank, and having a backwardly-seating check-valve, a pipe leading from the expansion-tank to a retort arranged to supply oil or combustible matter to the products and means for heating said retort; substantially as described.

2. In a gas plant, a gas-engine, a pipe leading therefrom to an expansion-tank, and having a vacuum check-valve arranged to intermittently admit air, and means for applying oil or combustible matter to the exhaust products taken from the expansion-tanks; substantially as described.

3. In a gas plant, a gas-engine, a pipe leading from its exhaust-port to a heating-drum, said pipe having a vacuum check-valve opening into the outer air, a pipe leading from the drum to an expansion-tank, a pipe leading from the expansion-tank into a retort inclosing the drum, and means for supplying oil to the outside of the heating-drum; substantially as described.

4. In a gas plant, a gas-engine, a heating-drum connected with its exhaust-port, a pipe leading from the heating-drum to an expansion-tank, and containing a check-valve, a retort surrounding the heating-drum, means for supplying oil to the outside of the drum, a pipe leading from the expansion-tank into the retort inclosing the drum, and a pipe leading from the retort to a storage-tank; substantially as described.

5. In a gas plant, a gas-engine, a heating-drum connected to its exhaust-port, a pipe leading from the drum to an expansion-tank, a retort inclosing the drum, an oil-tank having a feed-pipe leading to the outside of the drum within the retort, a pipe leading from the expansion tank into the retort, and a pipe leading from the expansion-tank to the oil-tank; substantially as described.

6. In a gas plant, a retort, a heating-drum therein, a pipe leading from the exhaust-port of a gas-engine to the drum, means for supplying oil to the outer surface of the drum, a pipe leading from the drum to an expansion-tank, a pipe leading from the expansion-tank into the retort, and a pipe arranged to lead the mingled products of combustion and vaporized oil from the retort to the carbureter; substantially as described.

7. In a gas-making plant, a retort containing a drum, means for heating said drum, means for forcing air or gases through the retort, an oil-supply pipe arranged to drop oil upon the retort, a pipe leading from the drum to a tank, a pipe arranged to supply air or gases from the tank to the retort, and a pipe leading from the retort to the carbureter; substantially as described.

In testimony whereof we have hereunto set our hands.

GEORGE R. JOHNSON.
THOMAS F. GILLOOLY.

Witnesses:
R. Z. GILLESPIE,
O. L. JOHNSON.