

(No Model.)

2 Sheets—Sheet 1.

W. B. WRIGHT.
GAS GENERATOR.

No. 510,462.

Patented Dec. 12, 1893.

FIG. 3.

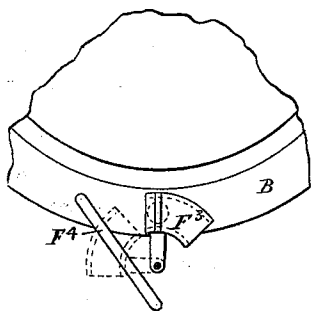


Fig. 2.

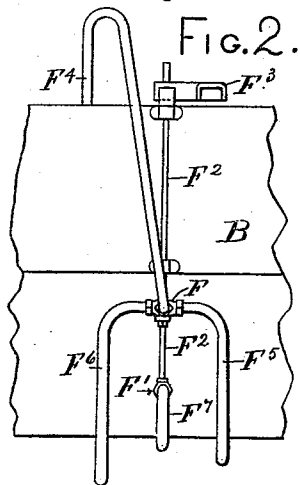
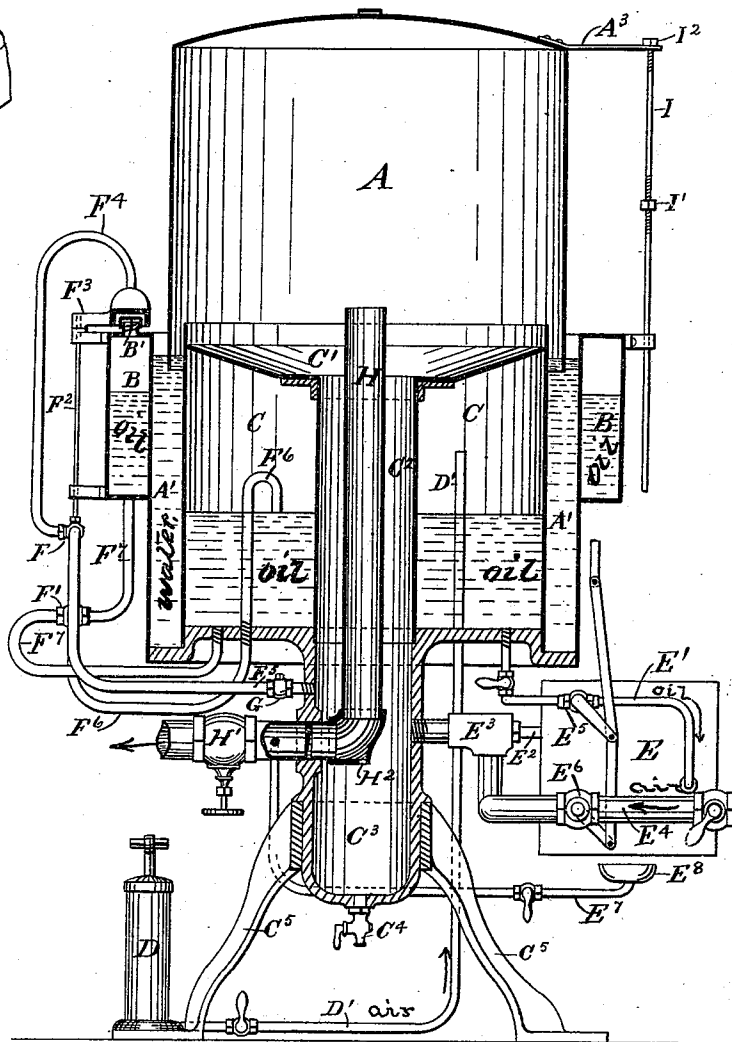


FIG. 1.



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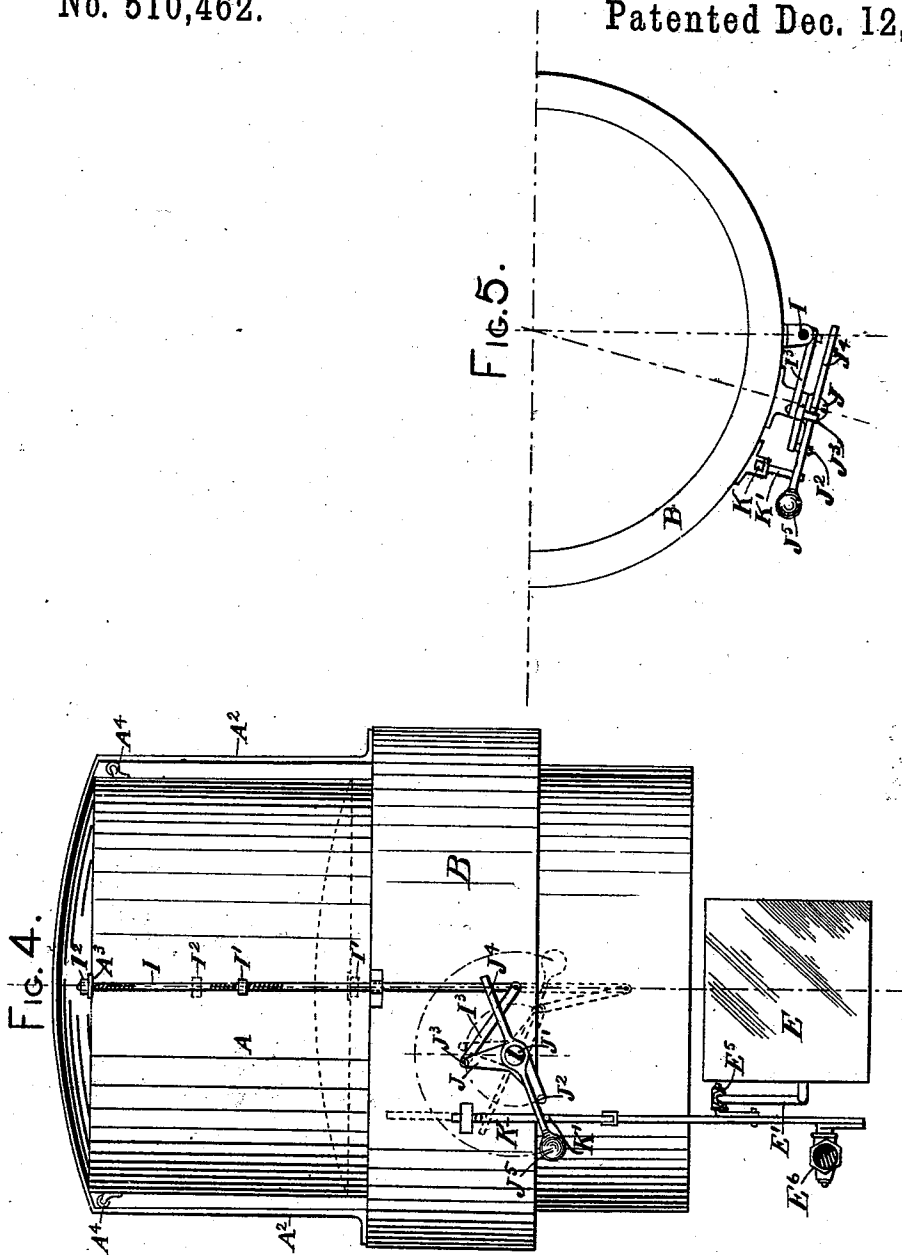
(No Model.)

2 Sheets—Sheet 2.

W. B. WRIGHT.
GAS GENERATOR.

No. 510,462.

Patented Dec. 12, 1893.



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UNITED STATES PATENT OFFICE.

WALTER BLAKE WRIGHT, OF CHICAGO, ILLINOIS.

GAS-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 510,462, dated December 12, 1893.

Application filed December 12, 1892. Serial No. 454,907. (No model.)

To all whom it may concern:

Be it known that I, WALTER BLAKE WRIGHT, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented a new and useful Improvement in Gas-Generators, of which the following is a specification.

My invention relates to improvements in apparatus for the manufacture of illuminating gas from hydro-carbons and air, and has for its object to provide new and simple devices for this purpose, and particularly such as shall be contained in the smallest possible space, and wherein the process of filling may be accomplished with very little difficulty and the heat employed may be utilized to the best possible advantage. It is illustrated in the accompanying drawings, wherein—

Figure 1 is a vertical section; Fig. 2 a part elevation showing arrangement of pipes. Fig. 3 is a broken plan view of the part shown in Fig. 2. Fig. 4 is a side elevation; and Fig. 5 is a part plan view.

Like parts are indicated by the same letters in all the figures.

A is the gasometer, A' the water annulus thereabout, and in which the gasometer rests to form a seal.

A² A² are the guides along which the gasometer rises and falls, being guided therein by the rollers A⁴ A⁴. The lowest point to which the gasometer may pass is indicated by dotted lines in Fig. 4.

B is an oil receptacle in the shape of an annulus, encircling the water annulus, and covered at the top, and having a filling hole B', closed by a screw cap.

C is a pressure chamber containing oil at the bottom and air at the top, pressure being obtained by means of the air pump D, from which the pipe D' leads to such pressure chamber. The upper head of the pressure chamber is concave as shown, and dish-shaped above to form the bottom of the gasometer, and collect and conduct condensations of water or oil to the central pipe C², which passes downwardly through the chamber C, and terminates in a pocket C³ with a blow-off cock C⁴. On the exterior of the pocket is arranged a flange to receive the upper portion of the pedestal C⁵ on which the apparatus rests.

E is a retort, the interior of which may be

arranged as desired with coils of pipe or the like.

E' is a pipe to convey oil thereto from the pressure chamber, E² a pipe leading thence to the mixer, E³, in which also air is led, and from which leads a pipe to the pocket C³. The gas as it enters C³ is possessed of a large amount of heat derived from the retort E and in passing up to the gasometer A through compression chamber C it gives off to the contents of C the greater portion of this heat, said heat being thereby saved and utilized and considerable economy effected. By this means, connection is made with the gasometer A.

E⁴ is a pipe leading to the mixer E³, and E⁵ is a valve controlling the pipe E', and E⁶ a valve controlling the pipe E⁴. The air is drawn into the mixer by the action of the fluid in the mixer on the principle of an injector. The valves E⁵ and E⁶ are connected by links so as to be operated by the rise and fall of the gasometer.

E⁷ is a gas pipe connected with the gasometer, and adapted to supply gas to heat the retort by means of the burner E⁸.

F is a three-way valve, and F' a straight-way valve, both connected to a rod F² which has at its upper extremity a lever or handle F³, which, when the rod and consequently the valves are in their normal position, projects over and covers the filling hole in the oil reservoir B. From the three-way valve F leads one pipe F⁴ into the top of the oil reservoir B, one pipe F⁵ to the pocket C³ and one pipe F⁶ to the compression chamber C, the last having a curved top as indicated, so as to make its end point downward. The straight-way valve F' controls the pipe F⁷ leading from the bottom of the reservoir to the bottom of the compression chamber. In its normal position, the three-way valve makes connection between the pressure chamber and oil receptacle through pipes F⁴ and F⁶. At the same time, the valve F' is open, and oil flows from the reservoir to the compression chamber, the pressures being equal.

In order to fill the oil receptacle with oil when it is empty, the lever handle F³ must be turned to the position shown in dotted lines in Fig. 3 before the cap of the filling hole can be uncovered and removed, but this readjusts the valves, closing the valve F and pipes F⁴

and F⁶, and at the same time, connecting pipe F⁴ to pipe F⁵, and allowing the compressed and carbureted air to pass out of the top of the oil receptacle and into the gasometer.

5 By this means, this gas is preserved for use, and the dangerous and disagreeable consequences following from its escape into the atmosphere are obviated.

10 H is a pipe leading from the gasometer having controlling valves H' and an opening H² at its lowest point to permit the liquid to escape.

A³ is a projection on a gasometer having at its extremity a hole through which passes 15 loosely the rod I having at points above and below A³ nuts or collars I' I² capable of adjustment up and down the rod I, and against which the piece A³ will act as the gasometer rises and falls to raise and lower the rod I. 20 Attached to the lower end of the rod I is the connecting rod I³ which connects together the rod I and one arm of the elbow crank lever J, which revolves easily around the pivot J', having at each of its extremities projecting 25 pins J² J³ in position so as to engage and lift the lever J⁴ with its weight J⁵, which lever also revolves about the pivot J'. The rod K is also attached to the valves E⁵ E⁶ by short links, and has a projection K' against which 30 the lever J⁴ strikes.

The use and operation of my invention are as follows: The device constructed and operating substantially as in Fig. 1 will be full of gas. By means of the blow-off cock C⁴ the 35 drippings from the gasometer may be discharged. When it is necessary to supply more oil to the compression chamber from the oil receptacle, the valves F and F' will be so disposed as to place the oil chamber and the 40 compression chamber in a circuit or series, the bottom of the oil receptacle connected with the bottom of the compression chamber, and the top of the oil receptacle with the upper portion of the compression chamber so 45 that oil will flow into the latter until it has reached a predetermined height. When the oil receptacle is to be filled with oil or to be supplied therewith, it is necessary to interrupt this connection so as to retain the pressure 50 in the compression chamber, to prevent the oil from being discharged therefrom by a reversal of its flow through the pipes. It is equally necessary to prevent the escape into the open air of the vapors in the upper part 55 of the oil receptacle. These results are accomplished by turning the part F³ into the position indicated in dotted lines in Fig. 3, which motion turns the rod F² on its axis, and interrupts both of the passage ways from the 60 oil receptacle into the compression chamber, while at the same time, it opens into the three-way valve F, and passes through the compression chamber through the pipe F⁵ into the gasometer where the vapors escape and 65 are utilized. The filling of the oil receptacle may then be accomplished without fear of the escape of the contents, and the receptacle may

be filled and the parts then be restored to position, but by so doing, the filling hole is again covered so that the oil chamber can only be 70 filled when the other parts are in a proper position for the filling. The retort receives its supply of oil from the bottom of the compression chamber, and this oil passes through and is treated in a proper manner in such retort 75 until passing therefrom to the mixer, it is incorporated with atmospheric air, and then discharged into the pipe C² when it passes into the gasometer ready for use. The production of gas, however, is not designed to be 80 continuous, but is only to take place when the gasometer has become so far emptied that an additional supply is necessary. The valves for the flow of the oil into the retort and for the flow of the air into the mixer are therefore normally closed, but their controlling 85 handles are connected by a link with the reciprocating rod K. The gasometer has associated with it a vertical moving rod I, which is connected by a link with the elbow crank 90 lever J, and as the rod descends, this lever is moved about until the parts assume the position shown in dotted lines; but in this position, the end of the rotating part J⁴ engages the pin K' on its under side, and by means 95 of the weighted end of such rotating part lifts the rod K, and thus opens both of the valves. When a sufficient amount of gas has been generated to fill and raise the gasometer, the action is reversed, the rod K is driven down in 100 the position shown in full lines, and the formation of gas ceases.

One of the important points in this invention is that the pressure need never be removed from what I have called the compression chamber, and that therefore the manufacture of gas is never suspended for the purpose of filling as in other machines for like purpose.

This is not a vapor machine, but makes a 110 fixed and non-condensable gas being therefore different from a carbureting apparatus.

The pressure chamber C and the oil receptacle B are first filled with oil through the filling hole B', and the filling hole then closed 115 and the handle F³ turned to its position covering the filling hole B'. Air is now forced into the compression chamber C until the desired pressure is obtained. The retort E is now heated by a lamp or any convenient 120 means sufficiently to start the vaporizing of the oil. The oil and air valves E' and E⁶ are now opened by hand and the pressure in compression chamber C forces the oil to the retort where it is vaporized and passes to the 125 mixer E³ where it draws in air, and forces the mixture into the pocket C³, and so to the gasometer A. The valve in pipe E⁷ is now opened and the vapor lighted at the burner E³ under the retort, and the retort is thereby 130 heated sufficiently to produce a fixed gas which flows into the gasometer causing it to rise until a predetermined height is reached when its projection A³ comes in contact with

the collar I² on rod I, and carries rod I up with it, thereby rotating elbow crank lever J, and also lever J⁴ until the weight J⁵ on J⁴ passes outside the center of gravity when it falls, bringing the lever J⁴ in contact with the projection K' on rod K, thereby driving K to its highest position and closing the oil and air valves E' E⁶ and stopping the manufacture of gas. The consumption of gas now causes the gasometer to descend and at a predetermined point its projection A³ comes in contact with collar I' on rod I, and carries rod I down with it, rotating J in the opposite direction until weight J⁵ again falls, on the other side of the center, and the lever J⁴ again drives the rod K to its first position opening valves E' and E², and starting again the manufacture of gas. Burner E³ is kept constantly lighted.

I claim—

1. In a gas generator, the combination of a gasometer with a compression chamber, and oil reservoir, and a water jacket between the compression chamber and the reservoir, and two passages connecting the reservoir and compression chamber, one for the transmission of oil, the other for the transmission of the gas or atmosphere of the chambers, the latter constructed so that when the oil in the compression chamber rises to a predetermined height, it is cut off and the flow of oil stopped.

2. In a gas generator, the combination of a gasometer with a compression chamber, an oil reservoir with oil normally at a higher level than the oil in the compression chamber, two passages connecting the reservoir and chamber, one for the transmission of oil, the other for the transmission of air or vapor between them, means for supplying pressure to the compression chamber, a pipe from the oil reservoir to the gasometer and controlling valves whereby the passages connecting the oil reservoir and compression chamber may be closed while the latter is under pressure, and the air or vapor in the oil reservoir may be discharged into the gasometer preliminary to filling the oil reservoir.

3. In a gas generator, the combination of a gasometer with a compression chamber, an oil reservoir, and a water jacket between the compression chamber and the reservoir, and two passages connecting the reservoir and compression chamber, one for the transmission of air, the other for the transmission of the gas or atmosphere of the chambers, the latter shaped so that when the oil in the compression chamber rises to a predetermined

height, it is cut off and the flow of oil stopped, and a gas retort, and a pipe leading thence through the middle of the compression chamber to the gasometer so that the heated gas passing through the compression chamber heats the contents thereof.

4. In a gas generator, the combination of a gasometer with a compression chamber, an oil reservoir with oil normally at a higher level than the oil in the compression chamber, two passages connecting the reservoir and chamber, one for the transmission of oil, the other for the transmission of air or vapor between them, means for supplying pressure to the compression chamber, a pipe from the oil reservoir to the gasometer and controlling valves whereby the passage connecting the oil reservoir and compression chamber may be closed while the latter is under pressure, and the air or vapor in the oil reservoir may be discharged into the gasometer preliminary to filling the reservoir, and a gas retort and a pipe leading thence through the middle of the compression chamber to the gasometer, so that the heated gas passing through the compression chamber heats the contents thereof.

5. In a gas generator the combination of a gasometer and a heated compression chamber thereunder, with a retort supplied from the contents of the heated compression chamber, a connection for that purpose from such retort to such compression chamber, and a passage way leading from the retort through the midst of the compression chamber to heat the same and into the gasometer, said pipe projecting downwardly, and a pedestal connected therewith so as to support the entire device thereon.

6. In a gas generator, the combination of a gasometer with a retort, a valve for the supply pipe of said retort, a mechanism consisting of a rod I, collar I', I², projections A³, link I³ bell crank lever J, pins J², J³ lever J⁴ rod K and projection K', by which said valve is opened and closed by the motion of said gasometer, substantially as described.

7. In a gas generator, the combination of an oil storage tank having a filling plug therefor with a compression chamber connected therewith, a valve in the connection between the two, a valve stem or handle therefor, and a cover on such handle adapted to cover the filling plug and prevent the opening thereof when the valve is open.

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Witnesses:

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