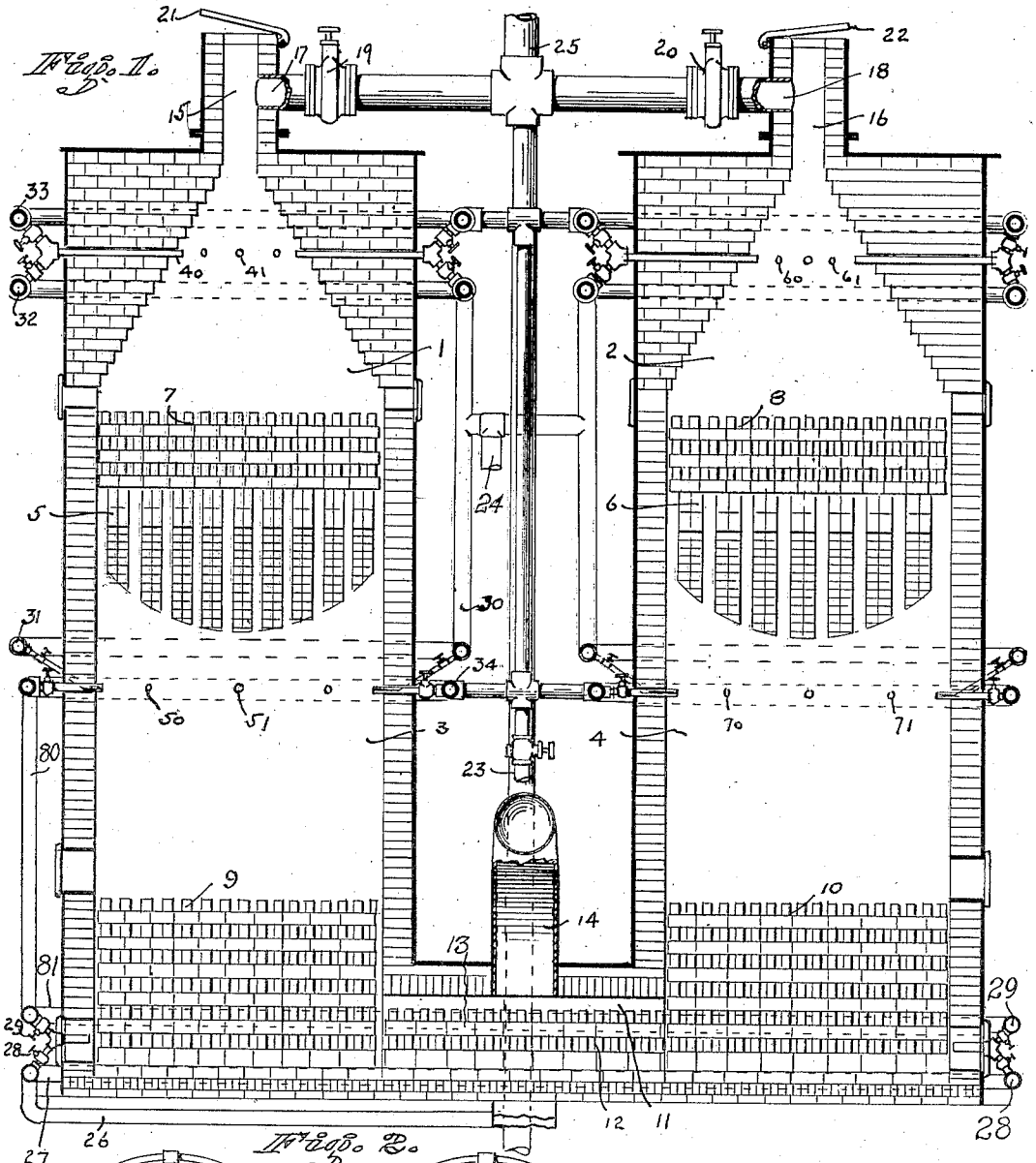
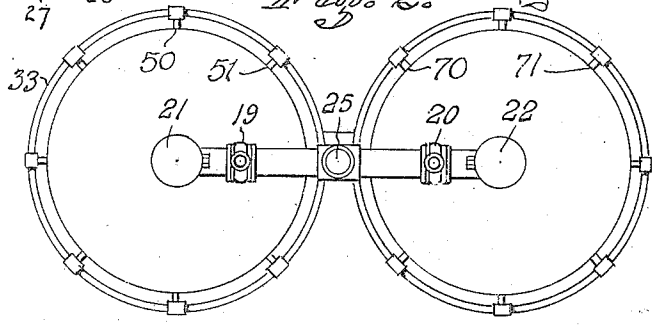
June 2, 1925. 1,540,541

W. E. L. CALVIN

OIL GAS MAKING APPARATUS

Filed May 31, 1923





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UNITED STATES PATENT OFFICE.

WILLIAM E. L. CALVIN, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO JOSEPH VELLONE, OF SAN FRANCISCO, CALIFORNIA.

OIL-GAS-MAKING APPARATUS.

Application filed May 31, 1923. Serial No. 642,455.

To all whom it may concern:

Be it known that I, WILLIAM E. L. CALVIN, a citizen of the United States, and resident of the city and county of San Francisco, State of California, have invented new and useful Improvements in Oil-Gas-Making Apparatus, of which the following is a specification.

My invention has for its object apparatus for efficiently, quickly and continuously producing gas from fuel oil.

By referring to the accompanying drawing my invention will be made clear.

Fig. 1 is a vertical cross section through apparatus embodying my invention.

Fig. 2 is a plan view of reduced scale of the apparatus of Fig. 1 for the purpose of better showing certain of the pipe connections.

Throughout the figures similar numerals refer to identical parts.

It will be noted that the apparatus consists of two vessels which may with advantage be made of cylindrical shape and stand vertically and these vessels are substantial duplicates of each other arranged right and left and consisting each of a pair of upper or "heating" chambers 1 and 2 and a pair of lower or "making" chambers 3 and 4, respectively. A partition floor is shown at 5 and 6 which has a large number of openings therethrough and thereabove is the checker brick work 7, 8, 9, 10, and which is built up with numerous spaces or interstices therebetween whereby vapors may pass freely through the said brick from the upper chambers to the lower chambers. A connecting passageway for making and fixing the oil gas is shown between the lower portions of the two chambers at 11, and at 9, 10, 12, are shown other built-up portions of checker brick work, the purpose of which will be more fully described below. At 13 is a passage connecting the lower chambers 3, 4, from which a common gas off-take connection 14 discharges to the conventional wash box or scrubber. At 15, 16, are passages having air inlets at 17, 18, under the control of valves 19, 20, respectively, and at 21, 22, are conventional stack valves preferably of the trap form. A steam pipe is shown at 23 supplying a net-work of pipes, valves, and nozzles, more particularly described below, and an oil supply pipe at 24 also supplies a network of distributing pipe outlets and valves as 31, 32.

An air supply pipe 26 which may be connected with a master air supply pipe 25, supplies the valves and bifurcated nozzles 28, 28 with air through connecting pipe 27, valve and bifurcated nozzle connections 29, 29 are supplied with steam through connections 80, 81, from the master steam supply as 34. These nozzles are primarily controlling the temperature and for cleaning purposes and may be arranged in any position desired, but should be directed so as to create a velocity through the connecting passage 11.

At 31 is shown a pipe externally encircling the chamber 3 fed from the oil supply pipes 24, 30, whereby oil may be introduced as desired into the upper portion of the lower chamber 3 and around the periphery thereof. A similar oil distributing ring pipe is shown at 32 for the upper chamber and at 33 and 34 are shown steam pipes preferably also encircling the said chamber for the purpose of supplying steam to the oil supply nozzles in the conventional way.

The operation is as follows:

It is to be understood that each of the pairs of chambers are substantial duplicates and each is equipped with the oil, air and steam pipes and nozzles to effect the heating of the chambers as specifically described for one of said chambers above and the making of gas. Various arrangements of piping and valves and accessory devices may be employed other than those shown and within the spirit of my invention and I desire to be understood as claiming all such.

The trap valve 21 being closed and 22 being open an air blast is turned through the pipe 17 and passage 15 into the chamber 1. The spray nozzles as 40, 41, are lighted and the flame blown down against, and heats the bricks at 7, 9, 12, 10, and to a less degree the bricks at 6, and 8. When these have been heated to the desired degree the spray nozzles are closed off, the trap valve 22 and valve 19 closed whereby no air is admitted and combustion cannot be supported. The flames from the oil sprays 40, 41, cease and oil and steam are now admitted as from the nozzles 50, 51, and also from the nozzles 70 and 71.

Oil gas is now generated and flows off

freely through the duct 14 from chambers 3 and 4. The quantity of the oil and steam is regulated by the operator depending upon the area of the heated brick and the heat intensity thereof, with which the oil from the spray nozzles comes in contact. This gas making step exhausts the heat of the bricks and when they have become chilled to a degree which will not efficiently produce further gas, the trap valve 21 and valve 20 is opened and air is then blown through the chamber 2, and the nozzle sprays 60, 61, lighted and the bricks 8, 10, 12 and 9, and to a less degree 7, are in the order named heated from the said sprays, after which trap valve 21 and the valve 20 are closed and the oil and steam are fed into the chamber 3 and 4 in the same manner as formerly described. It will thus be seen that a perfect heat interchange is attained between the two vessels and a most efficient and steady operation is secured.

The process described therefore results in, first, the heating of the two chambers in series from left to right, followed by the making of gas which flows in the same direction, namely: from left to right, after which through the manipulation of the valves as described above the chambers are again heated in the opposite direction, namely: from right to left, after which comes the gas making step from right to left, which completes the cycle; the process being thereafter repeated continuously.

I claim:

1. In a gas making apparatus, a plurality of vertical vessels each having a grill partition dividing the vessel into upper and lower chambers, the said lower chambers cross-connected by a gas making and fixing passage having a gas outlet, checker brick in said chambers and in said passage, a valve controlled air inlet to and a valved outlet from the top of each upper chamber and steam and oil spray nozzles in each of the upper and each of the lower chambers.

2. In gas making apparatus, a plurality of vertical vessels each having a grill partition dividing the vessel into upper and lower chambers, the said lower chambers cross-connected by a gas making and fixing passage having a gas outlet, checker brick in said chambers and in said passage, a valve controlled air inlet to and a valved outlet from the top of each upper chamber and steam and oil spray nozzles in each of the upper and each of the lower chambers, and steam and air inlet connections to the lower part of lower chambers.

3. In gas making apparatus, a plurality of vertical vessels each having a grill partition dividing the vessel into upper and lower chambers, the said lower chambers cross-connected by a gas making and fixing passage having a gas outlet, checker brick in said chambers and in said passage, a valve controlled air inlet to and a valved outlet from the top of each upper chamber and steam and oil spray nozzles in each of the upper and each of the lower chambers, said nozzles spaced about the periphery of the chambers and each of said nozzles valve controlled.

4. In gas making apparatus, a plurality of vertical vessels each having a grill partition dividing the vessel into upper and lower chambers, the said lower chambers cross-connected by a gas making and fixing passage having a gas outlet, checker brick in said chambers and in said passage, a valve controlled air inlet to and a valved outlet from the top of each upper chamber and steam and oil spray nozzles in each of the upper and each of the lower chambers, and steam and air inlet connections to the lower part of lower chambers, said nozzles spaced about the periphery of the chambers and each of said nozzles valve controlled.

5. In gas making apparatus, a plurality of vertical vessels each having a grill partition dividing the vessel into upper and lower chambers, the said lower chambers cross-connected by a gas making and fixing passage having a gas outlet, checker brick in said chambers and in said passage, a valve controlled air inlet to and a valved outlet from the top of each upper chamber and steam and oil spray nozzles in each of the upper and each of the lower chambers, said nozzles spaced about the periphery of the chambers and each of said nozzles valve controlled, and valved stem inlet nozzles and valved air inlet nozzles disposed in the lower part of each lower chamber and directed toward said making and fixing passage.

WILLIAM E. L. CALVIN.