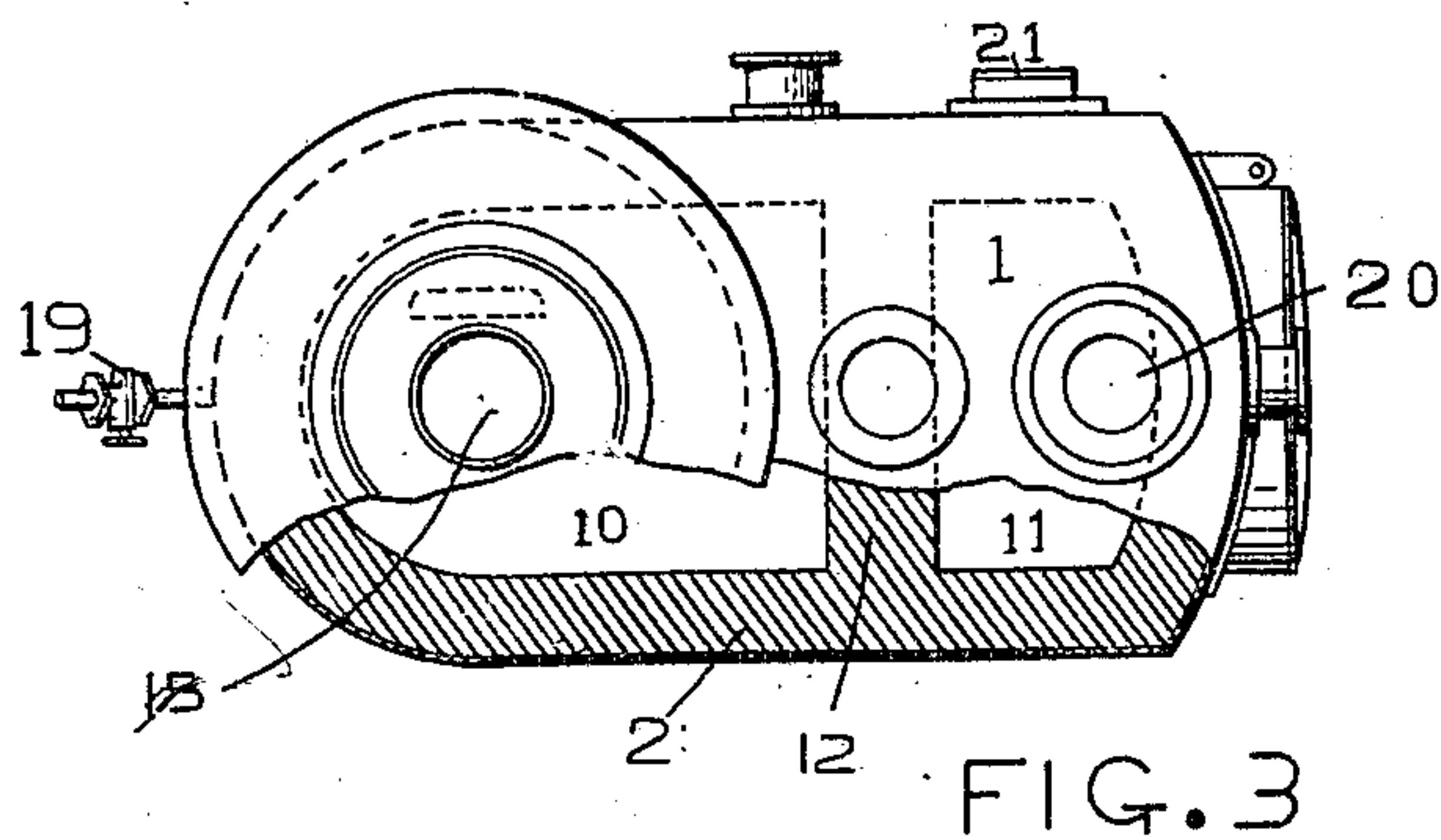
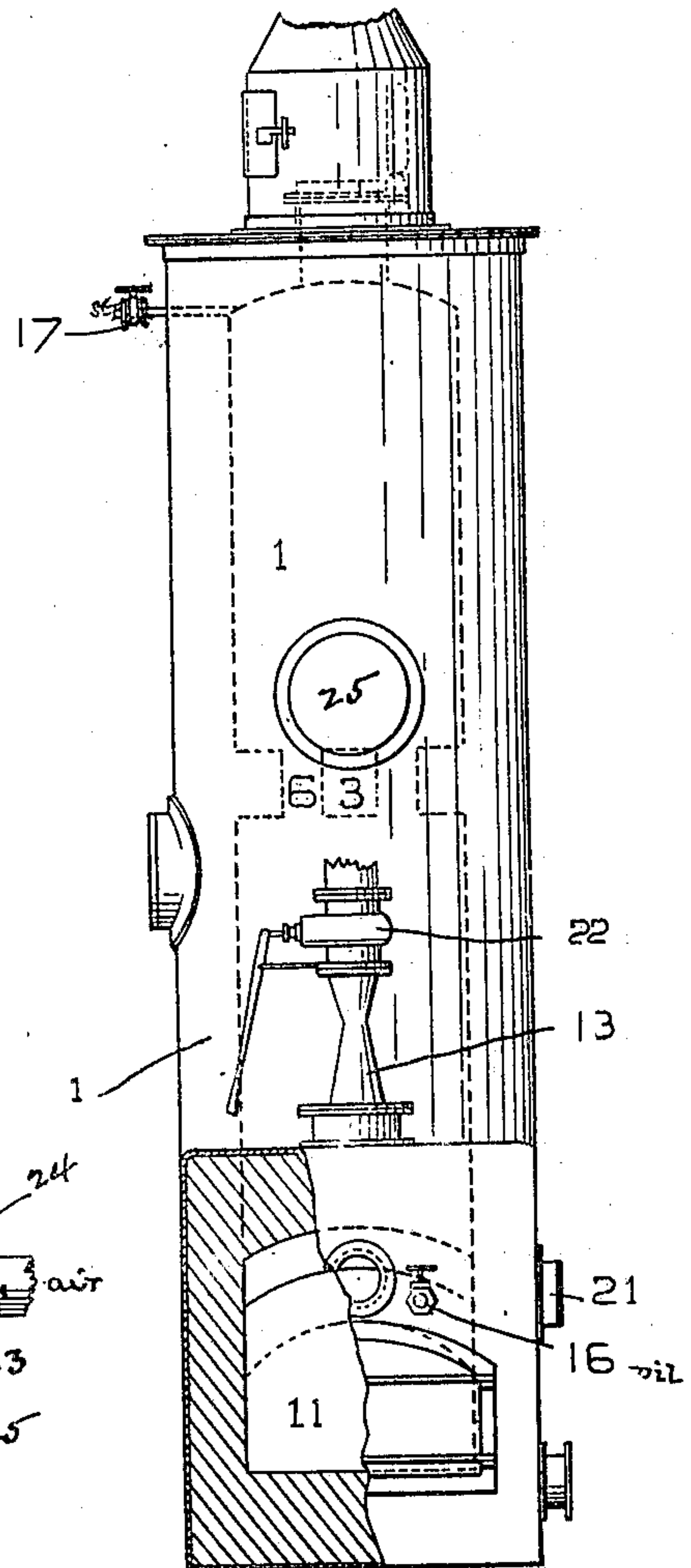
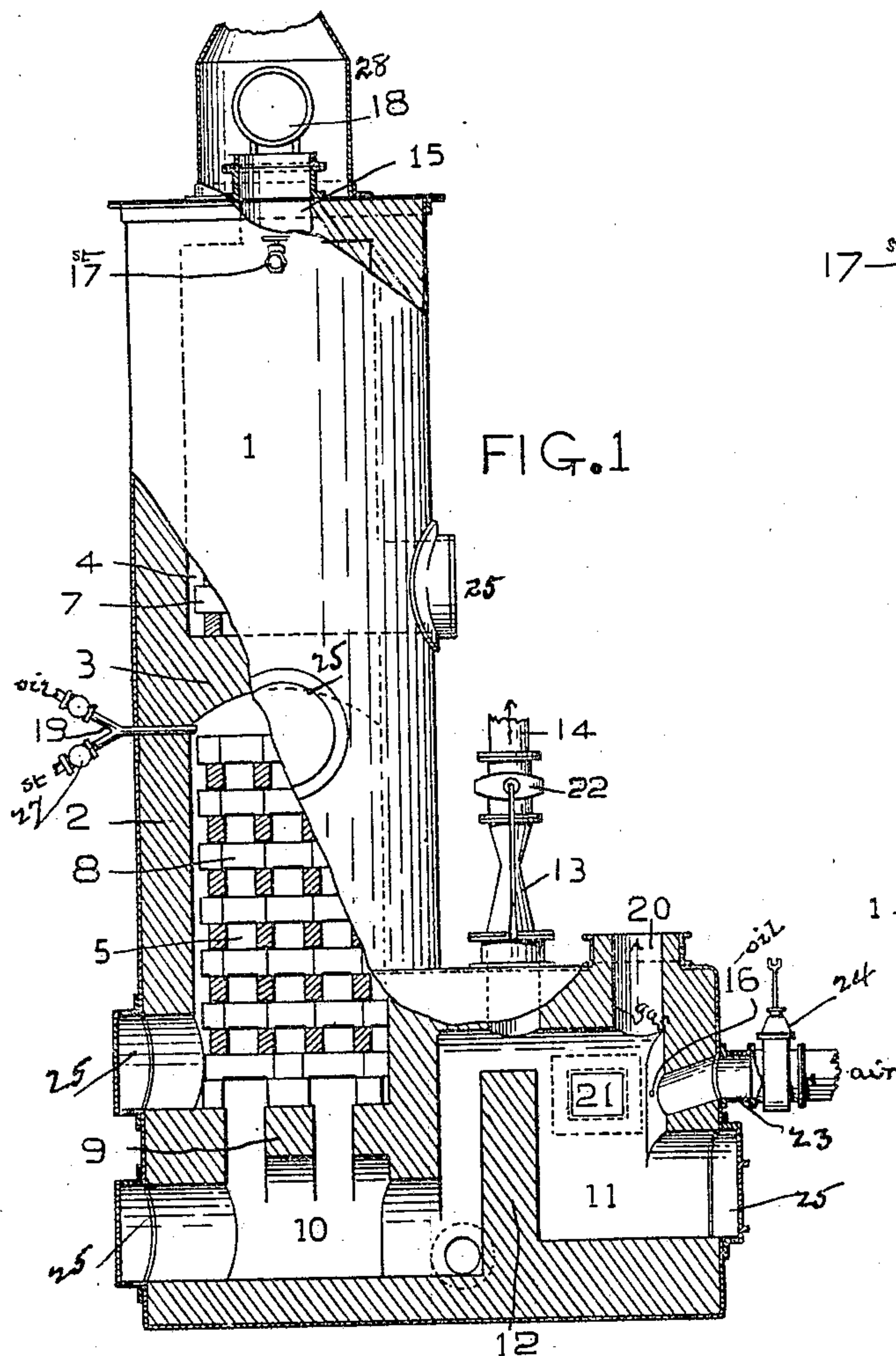


No. 819,662.

PATENTED MAY 1, 1906

L. P. LOWE.
GAS MAKING APPARATUS.
APPLICATION FILED APR. 7, 1904.



2. Witnesses

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UNITED STATES PATENT OFFICE

LEON P. LOWE, OF SAN FRANCISCO, CALIFORNIA.

GAS-MAKING APPARATUS.

No. 819,662.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed April 7, 1904. Serial No. 201,971.

To all whom it may concern:

Be it known that I, LEON P. LOWE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Gas-Making Apparatus, of which the following is a specification.

My invention relates to an improved apparatus for manufacturing gas, and especially from oil, the object of the invention being to provide an apparatus which shall be more economical than those heretofore used for this purpose.

My invention, therefore, resides in the novel construction, combination, and arrangement of parts for the above ends hereinafter fully specified, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a broken side elevation of the apparatus. Fig. 2 is a broken front view of the same. Fig. 3 is a broken plan view.

Referring to the drawings, 1 represents an L-shaped casing lined with refractory material 2. The upright member is divided by arches 3 into upper and lower chambers 4 and 5, said arches being spaced from each other, as shown in dotted lines at 6 in Fig. 2, to permit the gases to pass between the two chambers. In said chambers 4 and 5 are piles of refractory material 7 8. The lower pile 8 of refractory material is supported by arches 9 above a chamber 10, which communicates with a combustion and coking chamber 11 over a wall 12, extending transversely near the end of said chamber 11 next to said chamber 10, the top of said wall being arched, as shown, and approaching closely to the arched roof of said combustion and coking chamber.

13 is a jet-exhauster located upon the top of the combustion-chamber over the arched wall, leading to the auxiliary flue 14.

15 is the main flue, leading to the stack 28 and controlled by a valve 18.

16 is an oil-inlet for supplying oil for combustion to be burned at the top of said combustion and coking chamber.

17 is a steam-pipe at the top of the chamber 4; 19, an oil-inlet at the top of the chamber 5, 27 being a steam-supply pipe for injecting said oil, and 20 a gas-outlet.

21 is the door for the coking-chamber.

22 is a valve on the top of the jet-exhauster 13.

23 is an air-supply pipe conducting to the chamber 11, and 24 is a valve therefor.

25 represents manholes for admission to the various chambers of the apparatus.

The operation of the apparatus is as follows: Oil is admitted into the combustion-chamber through the oil-supply 16 and is burned therein, the products of combustion passing through the chambers 5 4 and thoroughly heating the refractory material therein and escaping up the flue 15. Aftersaid refractory material has been sufficiently heated the oil-supply and the air therefor, which has been admitted by the pipe 23, are cut off, the valve 18 is also closed, and steam is admitted through the steam-pipe 17 at the top of the chamber 4, and at the same time oil is admitted through the pipe 19 at the top of the chamber 5. The steam is thus thoroughly superheated, and the oil and superheated steam passing through the piles of refractory material in the chamber 5 are disassociated and recombine as carbon monoxid, hydrogen, and hydrocarbon gases, escaping by the gas-outlet 20 to an ordinary seal. The process thus far described, however, is not new; but in practicing the above method of gas-making, when this alternate process of heating the refractory material and gas-making has been completed a deposit of carbon is formed upon the refractory material in the chamber 5. It has heretofore been the practice to burn off this carbon in the first part of the operation of reheating. This gives rise to a disagreeable smoke, which is objectionable to persons living in the neighborhood. Moreover, it is a waste of heat values. I therefore adopt the following method of disposing of this carbon deposit. After the operation of gas-making has been concluded the steam and oil supply are shut off, the valves 22 and 18 are opened, the jet-exhauster 13 is put in operation, and a current of air is caused to pass down through the upper pile of fire-brick. This air becomes intensely heated, and the result is that upon reaching the lower pile of fire-brick upon which is deposited the carbon the carbon is ignited by the air and is burned off, the combustion being perfect and the products of the combustion escaping through the auxiliary flue 14. By this means not only are the above objections avoided, but I retain the heat of combustion of the carbonaceous deposit for subsequent recovery in the opposite direction in which it was generated.

Instead of a jet-exhauster any other preferred means may be used for creating the current of air to burn up the carbon.

The apparatus is also used for the following purposes: The tarry and carbonaceous residues from gas-making have heretofore been used for feeding furnaces; but the following is a more economical way of utilizing the same. Said residues are collected and placed in the lower portion of the coking-chamber 11, through the door 21, and when the oil is burned in the upper portion of said chamber for heating the piles of refractory material the residues are coked by the radiant heat from the arch of the coking-chamber and also by the gases arising during the heating of said residues, as in the beehive process of making coke from bituminous coal. The gas thus formed is burned to assist in the heating of the refractory material during the heating part of the operation, and during the gas-making part thereof it is recovered and added to the other manufactured gases. Evidently this utilization of these residues is more economical than that heretofore made.

The arched wall 12 is of great value in protecting the arches 9 in the lower part of the stack from erosion due to the action of the burning gases.

I claim—

1. In a gas-making apparatus, the combination of a gas-generating chamber furnished with loosely-piled refractory material, a coking and combustion chamber at one end and a gas-outlet at said end leading from the top of said coking and combustion chamber, means for admitting oil to said combustion-chamber and for admitting air to burn said oil therein, a flue at the opposite end of the generating-chamber, steam and oil inlets arranged to pass steam and oil through the loosely-piled refractory material to said gas-outlet, means for excluding the steam, oil and an auxiliary flue at the opposite end to said steam and oil, means for drawing air through the loosely-

piled refractory material in the same direction as the steam and oil to burn the carbon deposits before reheating, and a door to the combustion-chamber independent of the oil-inlet therein for introducing carbonaceous material into the lower portion of the combustion-chamber, substantially as described.

2. In a gas-making apparatus, the combination of a gas-generating chamber furnished with loosely-piled refractory material, a coking and combustion chamber at one end and a gas-outlet at said end leading from the top of said coking and combustion chamber, means for admitting oil to said combustion-chamber and for admitting air to burn said oil therein, a flue at the opposite end of the generating-chamber, steam and oil inlets arranged to pass steam and oil through the loosely-piled refractory material to said gas-outlet, means for excluding the steam, oil and an auxiliary flue at the opposite end to said steam, oil and means for drawing air through the loosely-piled refractory material in the same direction as the steam and oil to burn the carbon deposits before reheating, and a door to the combustion-chamber independent of the oil-inlet therein for introducing carbonaceous material into the lower portion of the combustion-chamber, the combustion-chamber having a transverse wall against which the flames from the combustion of the oil impinge, said wall being spaced from the wall of the generating-chamber to form a passage for the products of combustion while protecting said wall of the generating-chamber from the direct impact of said flames, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

L. P. LOWE.

Witnesses:

FRANCIS M. WRIGHT,
BESSIE GORFINKEL.