No. 750,433. PATENTED JAN. 26, 1904.

H. B. CORNISH.

CARBURETER.

APPLICATION FILED OCT. 19, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

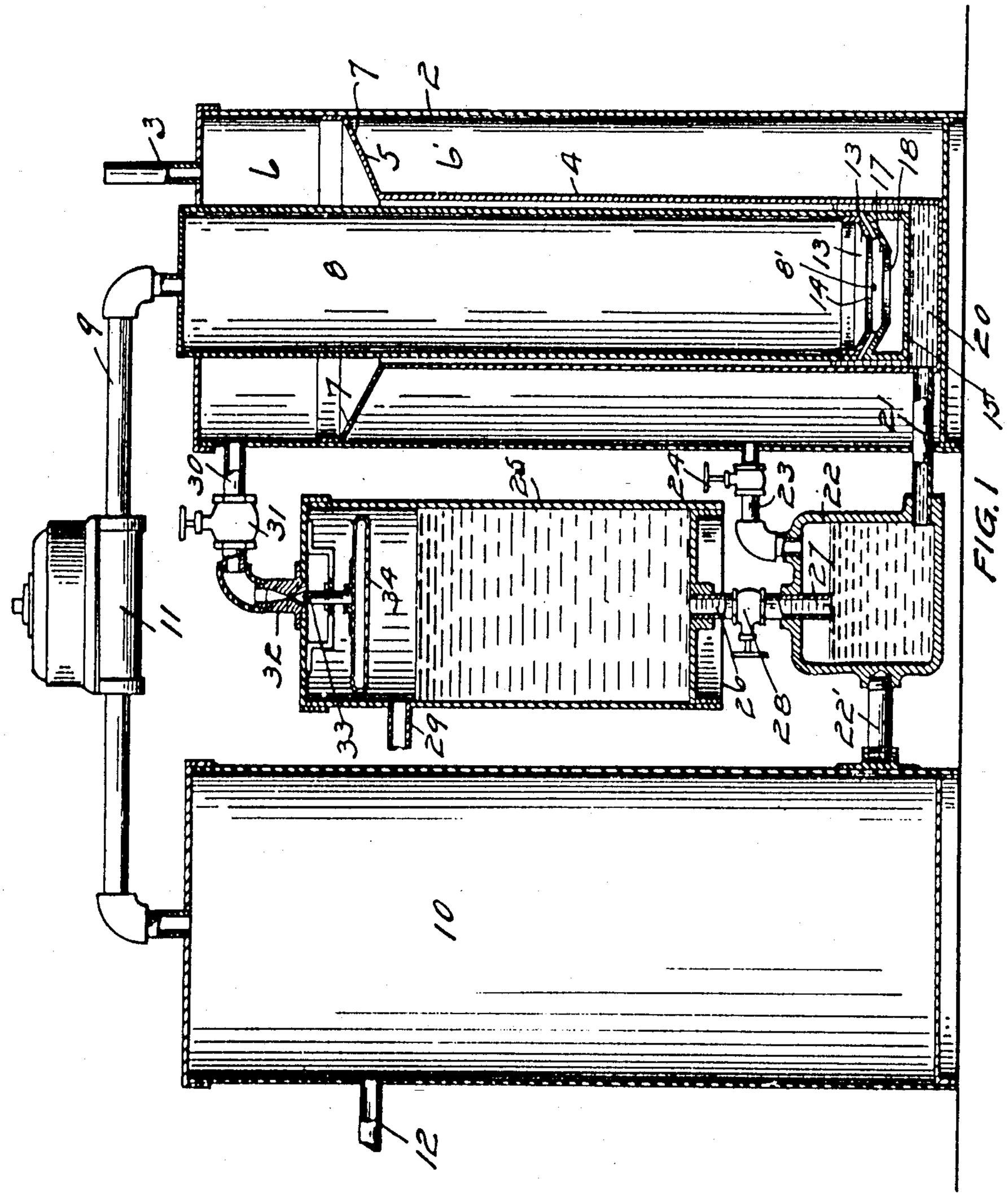

FIG. 1

WITNESSES

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NO MODEL. 2 SHEETS—SHEET 2.

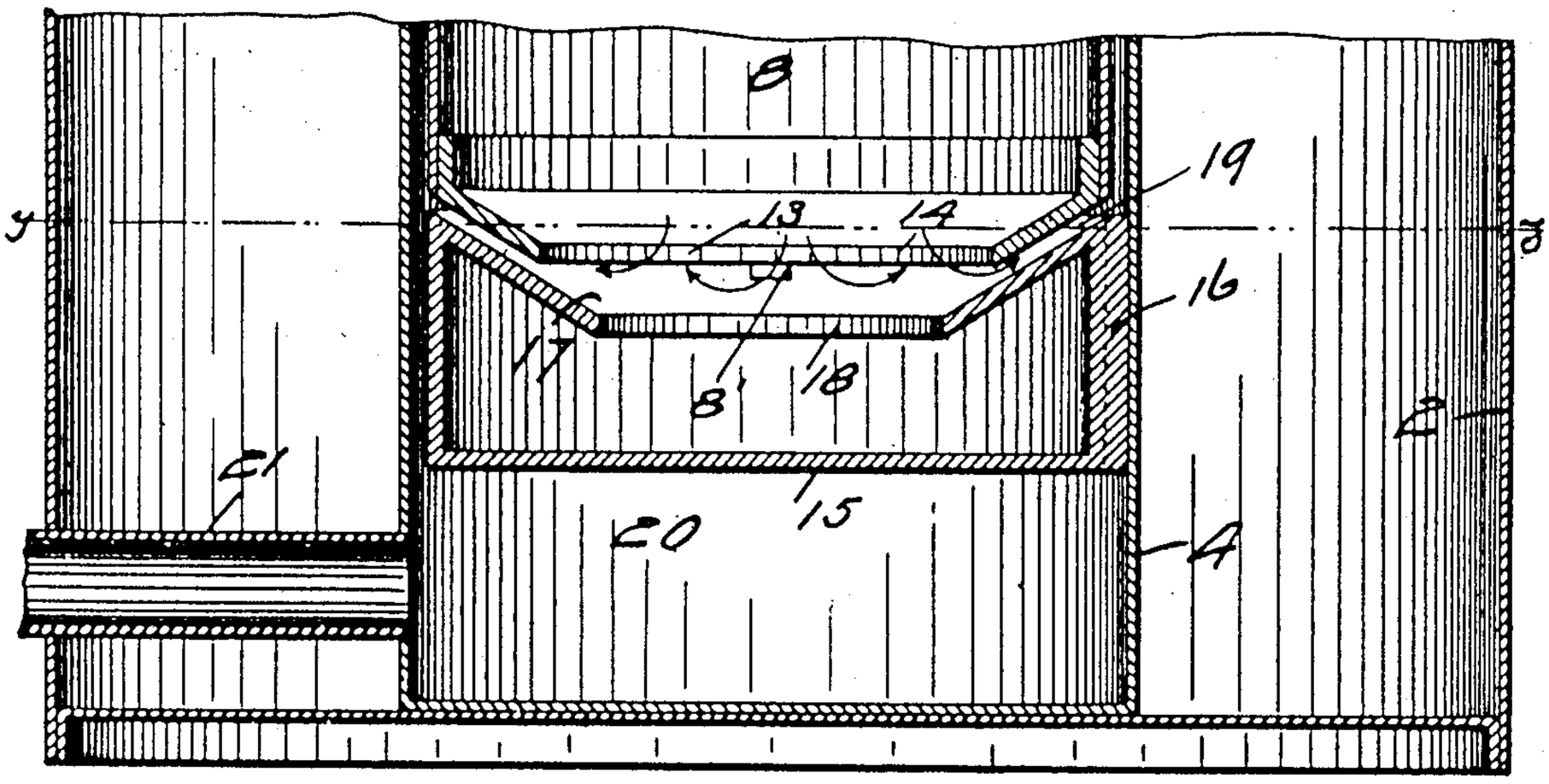

FIG. 2

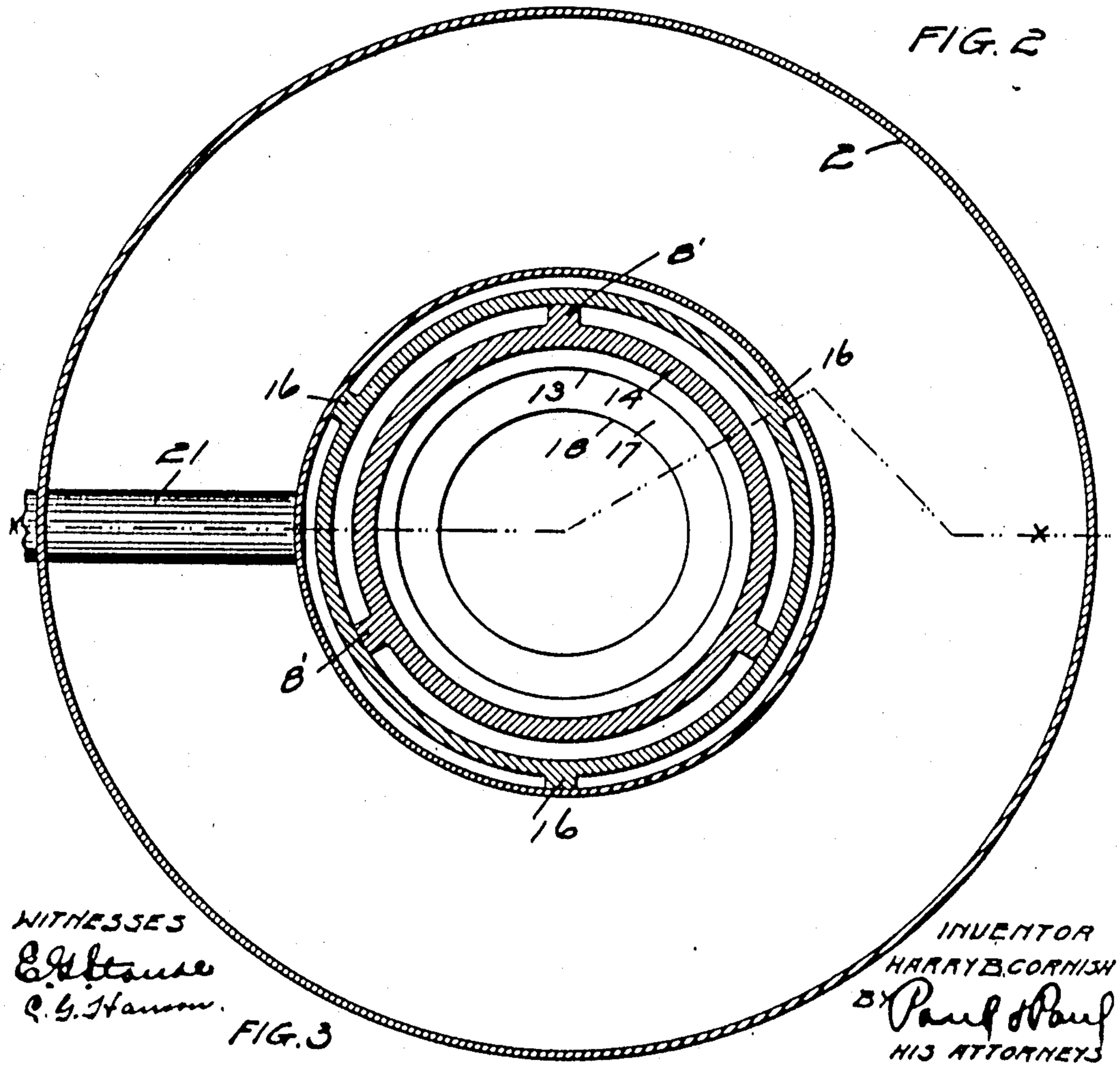

FIG. 3

WITNESSES
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No. 750,433. Patented January 26, 1904.

UNITED STATES PATENT OFFICE.

HARRY B. CORNISH, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF TWO-THIRDS TO I. D. COOPER, R. G. FORD, AND W. E. FORD, OF MINNEAPOLIS, MINNESOTA.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 750,433, dated January 26, 1904.

Application filed October 19, 1903. Serial No. 177,512. (No model.)

To all whom it may concern:

Be it known that I, HARRY B. CORNISH, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

My invention relates to an apparatus for charging or carbureting air with gasolene or other volatile liquid to form a fixed gas.

The object of my invention is to provide an apparatus that is extremely simple in construction and inexpensive to manufacture.

A further object is to provide an apparatus in which all small tubes are dispensed with and danger of the machine becoming inoperative through clogging of such tubes avoided.

A further object is to provide a machine in which the commingling of the gasolene and air is positive and there is no danger of the air flowing back or backing up into the gasolene-reservoir.

A further object is to provide a gasolene-reservoir in connection with the carbureter apparatus which shall be entirely closed and of limited capacity, and hence is within insurance requirements and can be placed in the building to be lighted.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in a carbureter comprising an outer member, an inner member inclosed thereby and spaced therefrom, a passage being provided leading from the interior of said inner member to said space, means for feeding gasolene or other volatile fluid into said space and past the discharge end of said passage, and means for supplying air under pressure to said inner member and said passage.

Further, the invention consists in means for maintaining the supply of gasolene at a certain predetermined level within the space between said members.

Further, the invention consists in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a vertical section of a carbureting apparatus embodying my invention. Fig. 2 is an enlarged detail section on the line *x x* of Fig. 3. Fig. 3 is a horizontal section on the line *y y* of Fig. 2.

In the drawings, 2 represents a closed gas-tank, connected by a pipe 3 with a suitable lighting system. Within the tank 2 and concentric therewith is a cylinder 4, closed at its lower end and resting, preferably, on the bottom of the tank and having an open upper end below the top of the tank and terminating in a flaring ring 5, that is secured to the inside of said tank. The space between the ring 5 and the top of the tank forms a gas-supply chamber 6, that is connected with a chamber 6′, surrounding the cylinder 4, through a series of perforations 7 in the ring 5. Within the cylinder 4 and concentric therewith and the tank 2 is a second cylinder 8, whose walls are spaced from the walls of the cylinder 4 and are held in central relation therewith by means of vertically-arranged ribs 8′. The upper end of the cylinder 8 projects above the cylinder 4 through the gas-chamber 6 and the top of the tank 2 and is connected to an air-supply pipe 9, that leads to an air-reservoir 10 and is provided with a suitable reducing-valve 11. The reservoir 10 is connected by a pipe 12 with an air-pump. (Not shown.) The cylinder 8 is supported by the top of the tank 2 above the lower end of the cylinder 4 and is provided with a convex cap 13, having a central opening 14. Below the cylinder, near the bottom of the cylinder 4, is a cup 15, that is spaced from the walls of the cylinder 4 and secured thereto by a series of short vertically-arranged ribs 16. A concave top 17 is provided on the cup 15, having a central opening 18 and conforming substantially to the convex surface of the cap 13 and separated therefrom by the depending ends of the ribs 8′, which, as shown in Fig. 2, are extended below the cap 13 to prevent the said cap from contacting with the top of the cup 15.

The separation of the cup 15 from the cap 13 in the lower end of the cylinder 7 causes the formation of an upwardly-inclined annular discharge-passage 19, leading from the interior of the cylinder 8 to the space between said cylinders 7 and 4, and through this pas-

sage air is discharged under pressure to mingle with the supply of gasolene or other volatile fluid and become carbureted.

The interior of the cup 15 is adapted to receive any dirt or foreign material that may be brought by the air into the cylinder 8 and is raised a sufficient distance above the bottom of the cylinder 4 to allow the formation of a gasolene-receiving chamber 20, with which a pipe 21 connects and extends out through the wall of the tank 2 into a receptacle 22, provided outside said tank. A supporting-pipe section 22′ connects the receptacle 22 with the air-tank 10. A pipe 23 leads from the chamber 6′ to the upper part of the receptacle 22 for the purpose of allowing the admission of gas thereto, equalizing the pressure within said receptacle and the cylinder 4 to maintain a uniform level of gasolene therein. A valve 24 is provided in the pipe 23, by means of which the flow of gas from the tank into said receptacle is controlled. A gravity-feed gasolene-reservoir 25 is provided above the receptacle 22, communicating therewith by means of nipples 26 and 27 and a valve 28. The nipple 27 extends down into the receptacle 22 and regulates the level of the gasolene therein and in the cylinder 4. The gasolene is fed into said receptacle from the reservoir 25 by gravity and from thence flowing into the cylinder 4 will of course seek its level therein, the gas-pressure being equalized, as above described, and it is evident by raising or lowering the nipple 27 the level of the gasolene in the receptacle 22 and cylinder 4 will be correspondingly increased or diminished.

When the nipple 27 has been adjusted to the desired height in the receptacle 22, the gasolene flowing from the reservoir 25 will rise in the receptacle, forming a seal to prevent the gas from passing up into said reservoir.

A pipe 29 is connected with the reservoir 25, leading to a suitable gasolene-pump, (not shown,) by means of which the reservoir is kept filled with gasolene. A pipe 30, having a valve 31, leads from the top of the reservoir 25 into the chamber 6, and a valve 32 is provided in said pipe adapted to be closed by a tapered plug 33, carried by a float 34. I prefer to provide this float device so that when the gasolene in the reservoir 25 rises to a certain predetermined point the passage leading from the reservoir 25 to the chamber 6 will be automatically closed and there will be no danger of flooding the tank with gasolene should the pumping operation be continued after the reservoir 25 is filled.

The operation of my improved carbureter is as follows: The reservoir 25 having been filled with gasolene through the operation of the pump, the liquid will flow by gravity down through the receptacle 22 and into the chamber 20 in the bottom of the cylinder 4. The gasolene will rise in the chamber 20, around the cup 15, above the discharge end of the annular passage 19 until it reaches the level of the gasolene in the receptacle 22, the height of the liquid therein having been previously determined by the adjustment of the nipple 27. As soon as the gasolene has risen above the passage 19 the air-pressure is admitted to the cylinder 8 and allowed to pass through the opening 14 in the bottom thereof into the passage 19 and from thence is discharged into the space between the cylinders to mingle with the gasolene therein. The carbureting process will take place immediately during the time the air and gasolene are confined in the space between the cylinders, and when the air enters the chamber 6 in the top of the tank 2 it will be thoroughly carbureted and ready for delivery to the lighting system.

I prefer to provide the gas-chambers 6 and 6′, so that a considerable volume of gas can be maintained to prevent any fluctuation of the lights while the apparatus is in use. It will be understood that the degree of richness of the gas can be varied according to the level of the gasolene in the space between the cylinders with respect to the air-discharge opening. If the gasolene-level is considerably above the air-discharge opening, the air will be charged to a much higher degree than it would if the level of the gasolene is near the opening.

In an apparatus of this kind the gasolene feed is positive and there are no small tubes or orifices to become plugged, and the employment of an annular passage through which the air under pressure is discharged to meet a supply of gasolene insures the thorough carbureting of the air and the formation of a large volume of fixed gas in a comparatively short space of time.

During the operation of carbureting and while the gasolene is contained in the reservoir 25 the valve 31 will be closed, preventing the passage of gas from the chamber 6 into said reservoir. As soon, however, as the level of the gasolene in the reservoir falls below a certain predetermined point the float-valve will drop, opening the passage to the pipe 30, and when the gasolene has passed out of the reservoir it will be filled with gas from the receptacle 22, and the valve 31 is then opened to allow the escape of the gas back into the carbureting-tank, the valve 24 of course being closed to prevent further passage of gas into the receptacle 22 when the gasolene has passed out of the reservoir.

I claim as my invention—

1. A carbureter comprising an outer member, an inner member inclosed by said outer member and spaced therefrom and having an air-passage communicating with said space and the interior of said inner member, means for feeding gasolene or other volatile fluid into the space between said members and past the discharge end of said passage, and means for supplying air under pressure to said inner member and said passage.

2. A carbureter, comprising a tank, two cylinders concentrically arranged therein with a space between them, the outer cylinder having an open upper end to receive the lower end of said inner cylinder, a radial air-passage being provided near the lower end of said inner cylinder leading to the space between said cylinders, means for delivering gasolene to the space between said cylinders below said air-passage, and means for supplying air under pressure to said inner cylinder.

3. A carbureter comprising two concentric cylinders with an annular space between them, the outer cylinder having a closed lower end and the inner cylinder having an opening in its lower end and raised above the lower end of said outer cylinder, a cup provided in the space between the lower ends of said cylinders and separated from the wall of said outer cylinder and the lower end of said inner cylinder forming an air-discharge passage between said cup and said inner cylinder, means for feeding gasolene into the space between said cylinders and past said air-discharge passage, and means for supplying air under pressure to said inner cylinder and said passage.

4. A carbureter comprising two concentric cylinders with a space between them, the outside cylinder having a closed lower end and the inner cylinder having a closed upper end and raised above the top of said outer cylinder, a convex cap having an orifice provided in the lower end of said inner cylinder, a cup arranged in said outer cylinder and spaced from the walls thereof and having a concave top that is spaced from the convex surface of said cap forming therewith an annular air-passage, means for feeding gasolene into the space between said cylinders and past said air-passage and means for delivering air under pressure to said inner cylinder and air-passage.

5. The combination, with a tank, of a cylinder arranged therein and having an open top and closed bottom, a second cylinder concentric with said first-named cylinder and spaced from the walls thereof, said second cylinder having a closed top and an open bottom and the lower end of said second cylinder being elevated above the closed bottom of said first-named cylinder, a cap having a discharge-orifice in the lower end of said second cylinder, a cup provided in said first-named cylinder between its closed lower end and said cap and spaced from the latter to form an annular air-passage, and also separated from the walls of said outer cylinder, means for delivering gasolene into the space between said cylinders and past said air-passage, and means for supplying air under pressure to said inner cylinder.

6. The combination, with a tank and two concentric cylinders provided therein, the walls of said cylinders being spaced from each other forming an annular passage between them, said inner cylinder provided with an air-passage leading from its interior to the space between said cylinders, means for delivering air under pressure to said inner cylinder, a gasolene-receptacle provided outside said tank and communicating with the space between said cylinders below said air-passage, and means for maintaining the gasolene in said receptacle and between said cylinders at a certain predetermined level, for the purpose specified.

7. The combination, with a tank, of two concentric cylinders therein, ribs provided on said inner cylinder separating it from said outer cylinder, an air-passage being provided radiating outwardly from the lower end of said inner cylinder and communicating with the space between said cylinders, a gasolene-receptacle arranged opposite said air-passage and communicating with the space between said cylinders below said passage, a gravity feed-reservoir provided above said receptacle and a nipple connected with said reservoir and projecting into said receptacle, for the purpose specified.

8. The combination, with a carbureting-tank, of a closed gasolene-reservoir located near said tank, a gravity feed apparatus connecting said reservoir with the lower part of said carbureting-tank, a pipe connecting the top of said reservoir with the upper part of said tank and a float-valve arranged within said reservoir and arranged to shut off the passage to said pipe when the gasolene in said reservoir rises above a certain predetermined level.

9. The combination, with a tank, of two concentric cylinders having a space between them arranged therein, an air-passage being provided radiating outwardly from the lower end of said inner cylinder and communicating with the space between said cylinders, a gasolene-receptacle communicating with the space between said cylinders below said passage, a gravity feed-reservoir and a nipple leading from said reservoir and projecting into said receptacle, for the purpose specified.

10. The combination, with a tank, of two concentric cylinders having a space between them arranged therein, an air-passage being provided radiating outwardly from the lower end of said inner cylinder and communicating with the space between said cylinders, a gasolene-receptacle provided outside said tank, a pipe leading from the upper part of said receptacle into said tank, a feed-pipe leading from the bottom of said receptacle into the space between said cylinders below said passage, and a gravity feed-reservoir connected with said receptacle, for the purpose specified.

In witness whereof I have hereunto set my hand this 13th day of October, 1903.

HARRY B. CORNISH.

In presence of—
RICHARD PAUL,
C. G. HANSON.