No. 633,320. Patented Sept. 19, 1899.

E. R. INMAN.

CARBURETER.

(Application filed Oct. 31, 1898.)

(No Model.) 2 Sheets—Sheet 1.

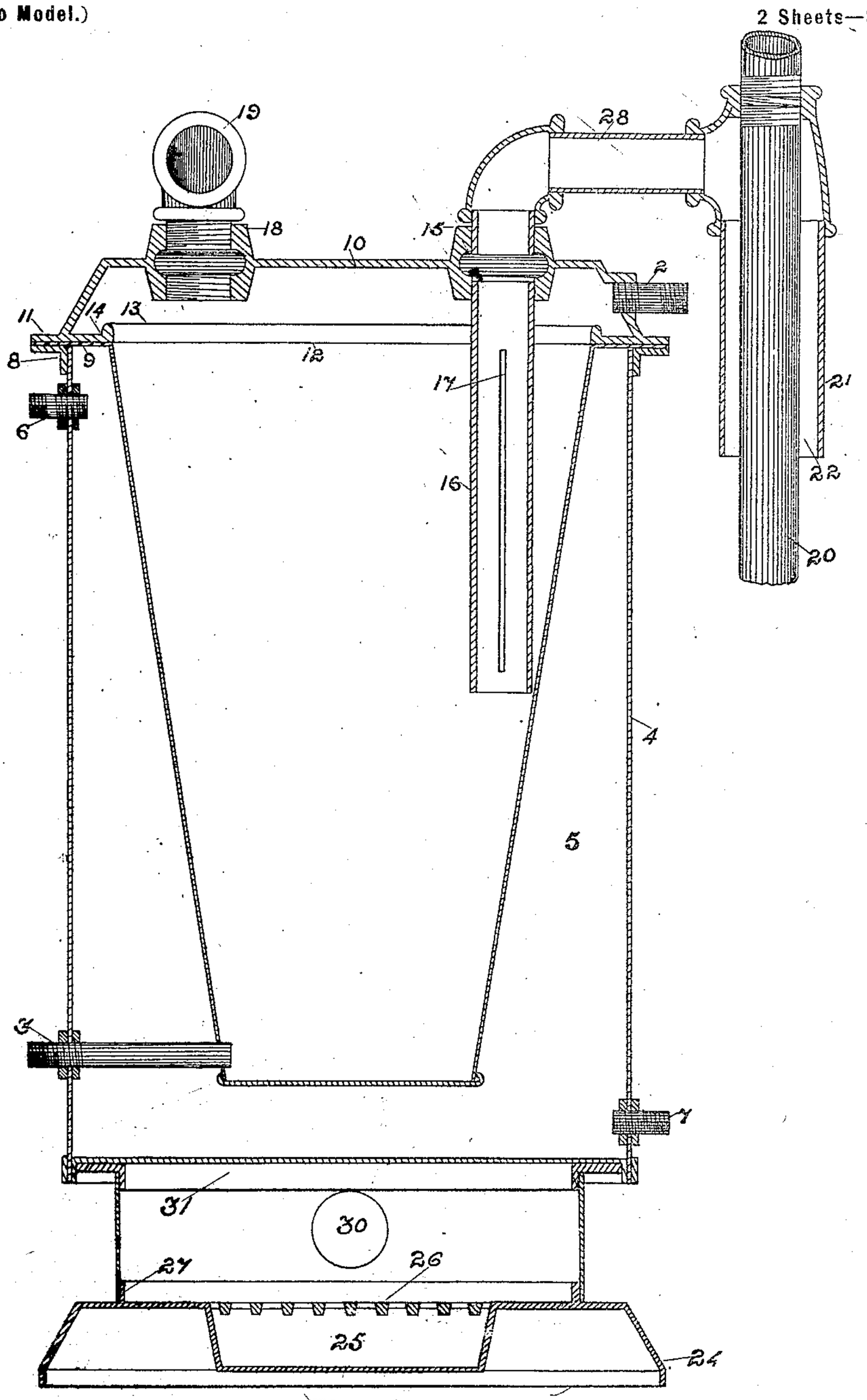

Fig. 1.

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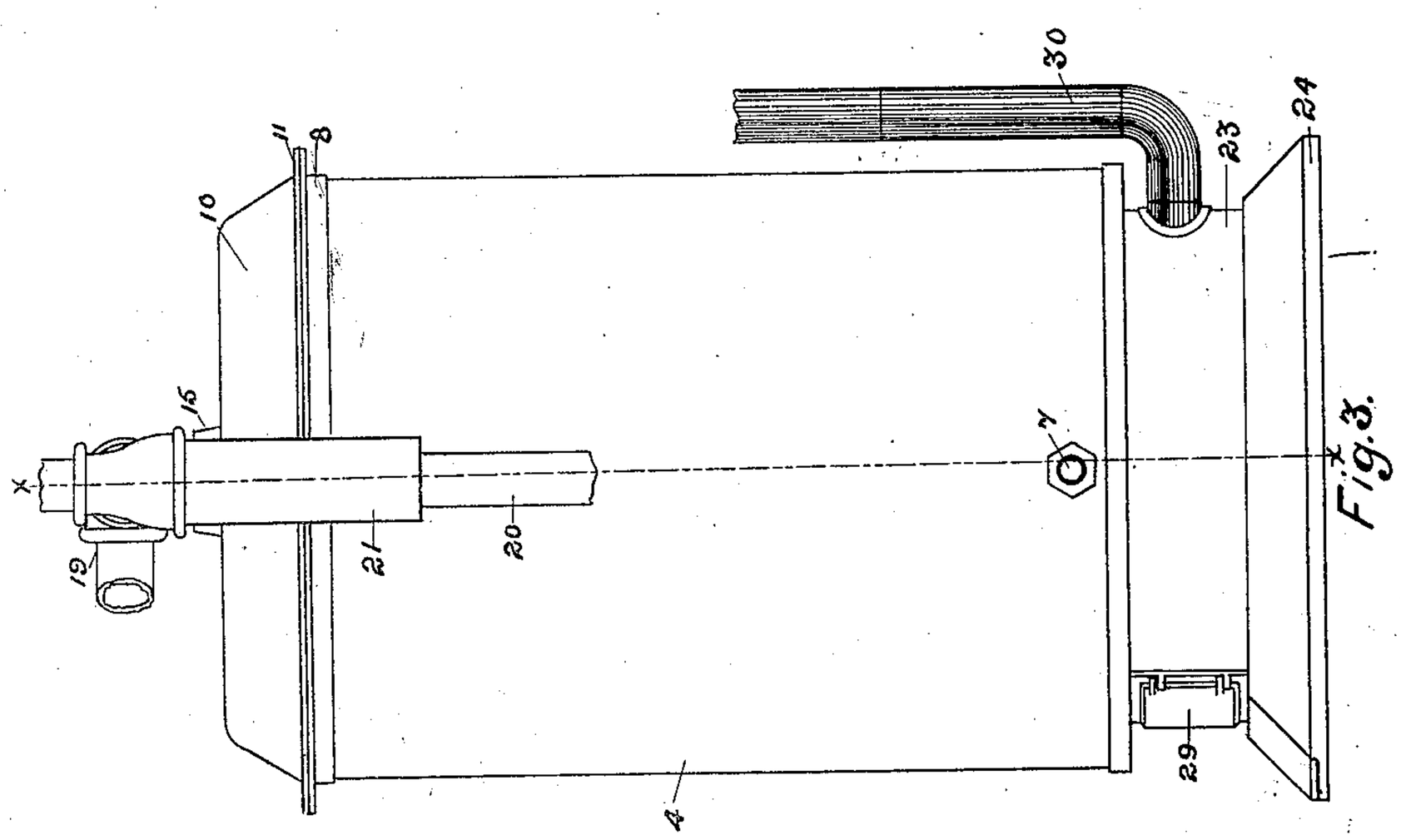

Fig. 3.

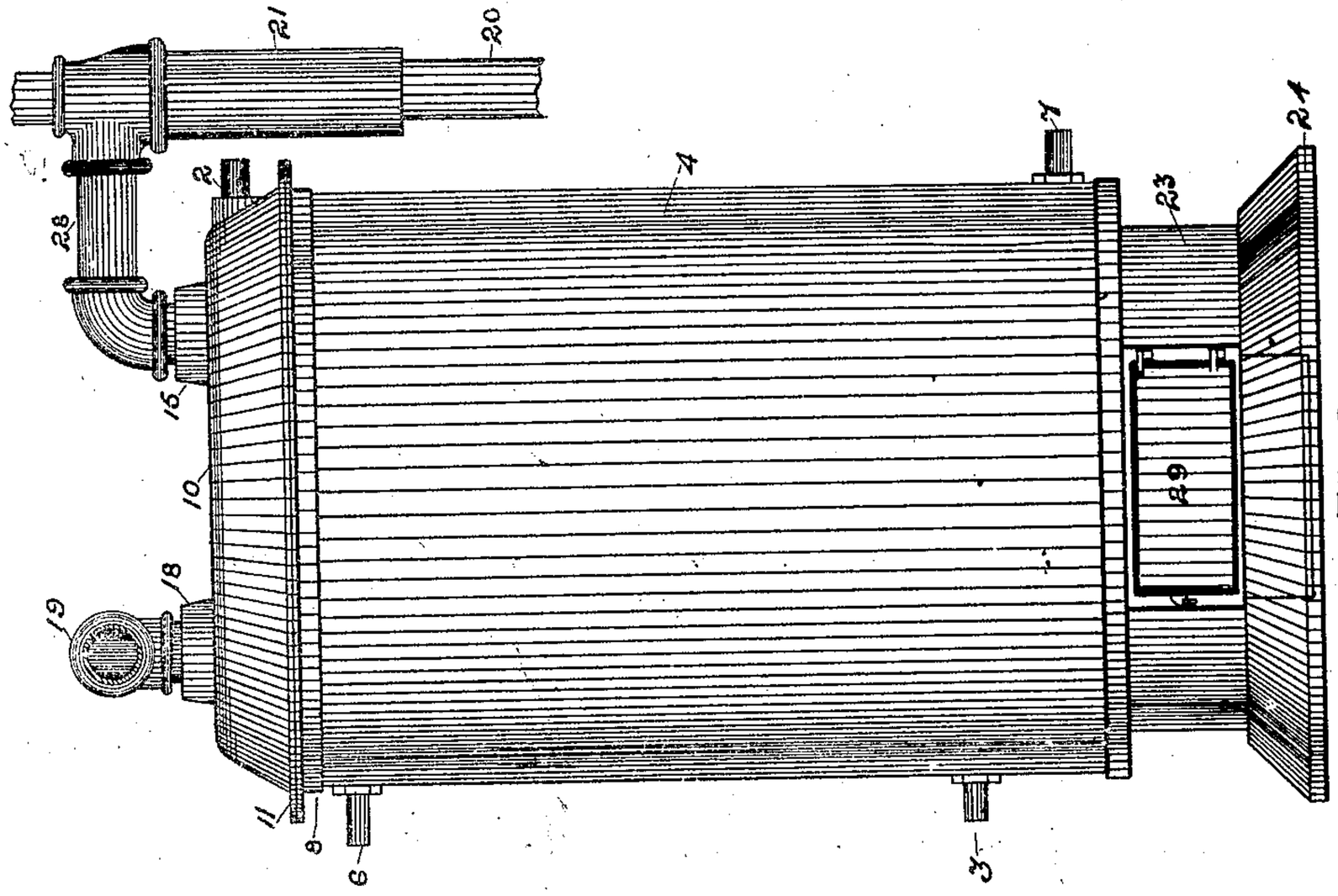

Fig. 2.

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UNITED STATES PATENT OFFICE.

EDWARD R. INMAN, OF INDIANAPOLIS, INDIANA.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 633,320, dated September 19, 1899.

Application filed October 31, 1898. Serial No. 694,998. (No model.)

To all whom it may concern:

Be it known that I, EDWARD R. INMAN, of Indianapolis, in the county of Marion and State of Indiana, have invented new and useful Improvements in Carbureters; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in carbureters to be used in connection with gas-engines and will be fully understood from the following specification, reference being had to the accompanying drawings through the figures of reference marked thereon, which form a part of said specification.

In the drawings, Figure 1 is a central vertical section on line $x\,x$ of Fig. 3. Fig. 2 is a front elevation. Fig. 3 is a side elevation.

The same reference-figures indicate identical parts throughout the several views.

My device consists of a carbureting-chamber 1, into which crude petroleum is introduced, preferably by gravity, through a suitable pipe 2, provided therefor, the oil flowing out of said chamber by way of pipe 3, located near the bottom of chamber 1. Said carbureting-chamber is located within a receiver or reservoir 4, which reservoir 4 is of considerably larger diameter than said chamber 1, and a space 5 is thus formed for the reception of water between the outer surface of the carbureting-chamber 1 and the inside of the reservoir 4, in which space 5 water is introduced after it has passed through the water-jacket of a gas-engine. A pipe 6 is provided for this purpose, and said water is withdrawn from said reservoir by means of pipe 7. The water aforesaid having become considerably heated in its passage through the jacket of the gas-engine a certain amount of heat is transmitted to the walls of the carbureting-chamber and radiated therein, which heat is sufficient to expel gas from the oil in such quantities as to constitute a supply sufficient to operate the gas-engine.

The carbureting-chamber 1 and the reservoir 4 are constructed, preferably, of sheet-iron. To the top edge of the sheet-iron forming the reservoir 4 is attached a ring 8, formed of angle-iron, and the flange of said ring projects outwardly from the top thereof, the upper edge of said reservoir and the upper face of said ring being flush or even and are attached together by any method commonly employed in such cases. The upper edge of the metal forming the carbureting-chamber 1 is carried outward and is formed into a horizontal flange 9, the outer diameter of which flange 9 is equal to the outer diameter of ring 8. Said flange rests upon ring 8 and is supported thereby. A cover 10 also rests upon said ring 8. The cover 10 aforesaid is constructed, preferably, of cast-iron with an outward horizontally-projecting flange 11, formed upon its lower face, the width of which flange 11 is about equal in width to the flange upon ring 8 and coincides therewith in diameter. At the inner edge of flange 11 the cover 10 projects upwardly for a slight distance, which gives to said cover 10 a pan-like appearance and shape. In the same horizontal plane with the outwardly-projecting flange 11 is formed an inwardly-projecting flange 12, said flange ending in an upwardly-projecting bead 13. Said bead 13, juxtaposed to the upwardly-projecting inside of the cover 10, forms a trough 14, in which is deposited the oil as it enters through pipe 2. Cover 10, flange 9, and ring 8 are all secured together by bolts or machine-screws passing through the several flanges, and the joints formed by the meeting of said flanges may be made tight by packing, if so desired, though not necessarily so.

The whole device in operation should be set as nearly level as possible, and being so set the oil will rise in equal depth in the trough and overflow in a thin sheet down the inner walls of the carbureting-chamber, thereby becoming heated, whereby gas is liberated from the oil. As is well established and recognized in the industry of gas engineering, it is necessary that the explosive agent by which a gas-engine is operated should consist of a large percentage of air mingled with a smaller percentage of gas. Therefore I provide for passing air through the carbureting-chamber 1, and the air absorbs in its passage through said chamber a sufficient amount of gas to make it a suitable explosive mixture for the purpose aforesaid.

Provision for the passage of air through the carbureting-chamber 1 is made as follows: In the top of cover 10 is formed a tapping-boss 15, suitably drilled and tapped for the reception of proper pipe. Into said tapping-boss 15 and projecting downwardly into the carbureting-chamber 1 is screwed a pipe 16, with slots 17 formed therein for the distribution of air throughout the length of said pipe. As an outlet to said carbureting-chamber another boss 18, similar in form and construction, is provided in cover 10, which boss 18 is also suitably drilled and tapped for the reception of pipe and other desirable fittings. Into boss 18 is fitted a pipe 19, and a suitable pipe connection is made from thence to the inlet-valve of a gas-engine. The carbureter being so connected with a gas-engine, the suction of the engine caused by an outward stroke of the piston draws a charge of air through the carbureting-chamber, where it is suitably carbureted to serve as the motive agent of the engine.

Water may be made to stand at any desired height in the reservoir 4 by attaching a pipe to outlet-pipe 7 and extending said attached pipe upwardly to such height as appears necessary and desirable; but experience has demonstrated that said pipe should extend nearly to the top of the reservoir 4, so that said reservoir shall be nearly full of water when the overflow takes place at pipe 7.

As a means of preventing the undue cooling of the interior of the carbureting-chamber 1 by a passage of cold air therethrough I provide a heater for the purpose of heating the air before it passes into said chamber 1. Said heater is constructed as follows: About the exhaust-pipe 20 of the engine I place a sleeve 21, of larger diameter than said pipe 20, so that between the periphery of pipe 20 and the interior of sleeve 21 is formed a space 22. By means of this device air is taken into the carbureting-chamber through the passage 22, and as said air comes in contact with the exhaust-pipe 20, which is very hot, the temperature of said air is raised to such a degree as to not lower the temperature of the carbureting-chamber as it passes therethrough. Furthermore, the heating of the air, as aforesaid, facilitates the absorption of gas as it passes through the carbureting-chamber, a twofold object being thus accomplished by heating the air. I do not limit myself, however, to the continual employment of said heater, as it is not necessary in warm weather.

It being desirable to provide separate and independent means of heating water in reservoir 4 for the purpose of generating gas to start the engine I construct a base for said reservoir which is properly equipped for the reception and maintenance of fire. The construction in detail of said base-heater is substantially as follows: I construct a bottom 24, preferably of cast-iron, several inches in height, in which bottom is formed an ash-pit 25, and above said pit is placed a grate 26. Upon the upper surface of bottom 24 is formed a perpendicular flange 27, about which a sheet-iron body 23 is placed. In the front of said body 23 is provided a door 29 for the introduction of fuel. A pipe 30 leads from said body to conduct away smoke and induce the required draft. Above the body 23 is placed a cap 31, which is an open annular ring having a perpendicular flange projecting downwardly and fitting closely inside of body 23. The bottom of the reservoir 4 sits upon the cap 31, forming the top of the base-heater, and when fire is kindled in the base the water in the reservoir is heated to such a degree as to generate gas from the oil introduced in the carbureting-chamber, which gas may be used for the purpose of starting the engine and operating it until the water becomes sufficiently hot in the jacket of the gas-engine to supply the necessary heat. Should it be desired at any time to use my generator for generating gas for any other purpose than that of operating a gas-engine, the heater-base shown and described provides an ample means for obtaining heat to heat the water in space 5 independent of any other source, and should the temperature of the water from the jacket of the gas-engine become or be found to be too low for the purpose specified supplementary heat may be generated by the heater at the base.

The device herein shown and described is designed especially for use in the "oil regions," where oil may be passed through the carbureter in such quantities as not to impair its quality as a commercial product, and for this purpose I claim especial value for my device, as the temperature of the water in space 5 may be so regulated (by passing larger or smaller quantities through the jacket of the engine) as to produce only the necessary "shrinkage" of the oil. Furthermore, the shrinkage may also be regulated by the amount of oil passed through the carbureter.

From the foregoing description it may be understood that my device when used for or in connection with a gas-engine as motive power in oil-well pumping is designed to generate from crude petroleum a sufficient amount of gas to operate such engine without impairing the quality of oil so used, and consequently the cost of fuel for power purposes is reduced to the minimum.

Having thus described my device, what I claim as new, and desire to secure by Letters Patent, is—

1. In a carbureter for gas-engines, the combination of a water-reservoir; a carbureting-chamber located within said water-reservoir; an air-inlet leading to said carbureting-chamber; an air-heater consisting of a sleeve formed around the exhaust-pipe of a gas-engine, said exhaust-pipe being adapted to heat the air as it passes into the carbureting-chamber; an oil-inlet pipe leading into said carbu-

reting-chamber; an oil-outlet pipe leading from said carbureting-chamber to the exterior, through said water-chamber; an outlet air-pipe leading from said carbureting-chamber; an outlet water-pipe leading from the lower part of said water-reservoir; an inlet-pipe leading into the upper part of said water-reservoir, whereby said water-space is adapted to be placed in communication with the water-jacket of a gas-engine, and to receive the heated water therefrom, substantially as shown and described.

2. In a carbureter for gas-engines, the combination of a water-chamber; a carbureting-chamber, located in said water-chamber; an oil-distributing trough located at the upper end of said carbureting-chamber; an oil-pipe leading from the supply to said distributing-trough; and a second oil-pipe leading from said carbureting-chamber; an air-inlet passage leading to said carbureting-chamber; an outlet-passage for conducting carbureted air from said chamber; means for introducing water to said water-chamber; and a base or combustion-chamber supporting said reservoir, substantially as and for the purpose specified.

3. In a carbureter for gas-engines, the combination of a water-chamber; a carbureting-chamber located in said water-chamber, leaving a water-space between said chambers; means for introducing to and withdrawing oil from said carbureting-chamber; means for distributing the oil uniformly as it passes into said carbureting-chamber; means for passing air through said carbureting-chamber; a heater adapted to heat said air-space before it enters the carbureting-chamber; means for communication between the water-jacket of a gas-engine and the water-space in said reservoir; an outlet from said water-space; and a supporting combustion-chamber, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD R. INMAN.

Witnesses:

LEWIS M. HOWE,

P. G. HOWE.