

No. 877,162.

PATENTED JAN. 21, 1908.

F. W. BEARDSLEY.  
APPARATUS FOR CONSUMING GAS.  
APPLICATION FILED NOV. 7, 1902.

2 SHEETS—SHEET 1.

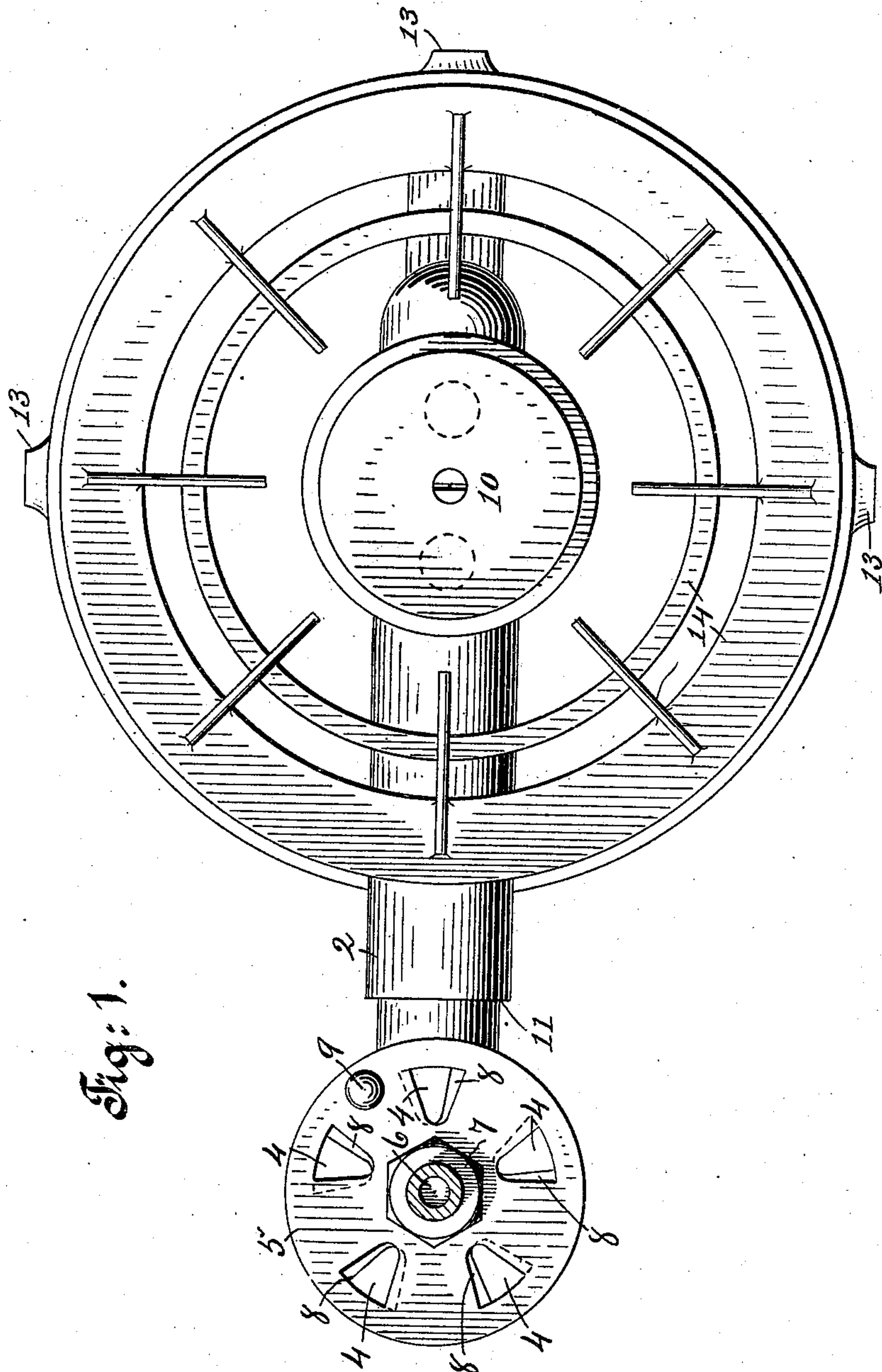


Fig. 1.

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By his Attorney  
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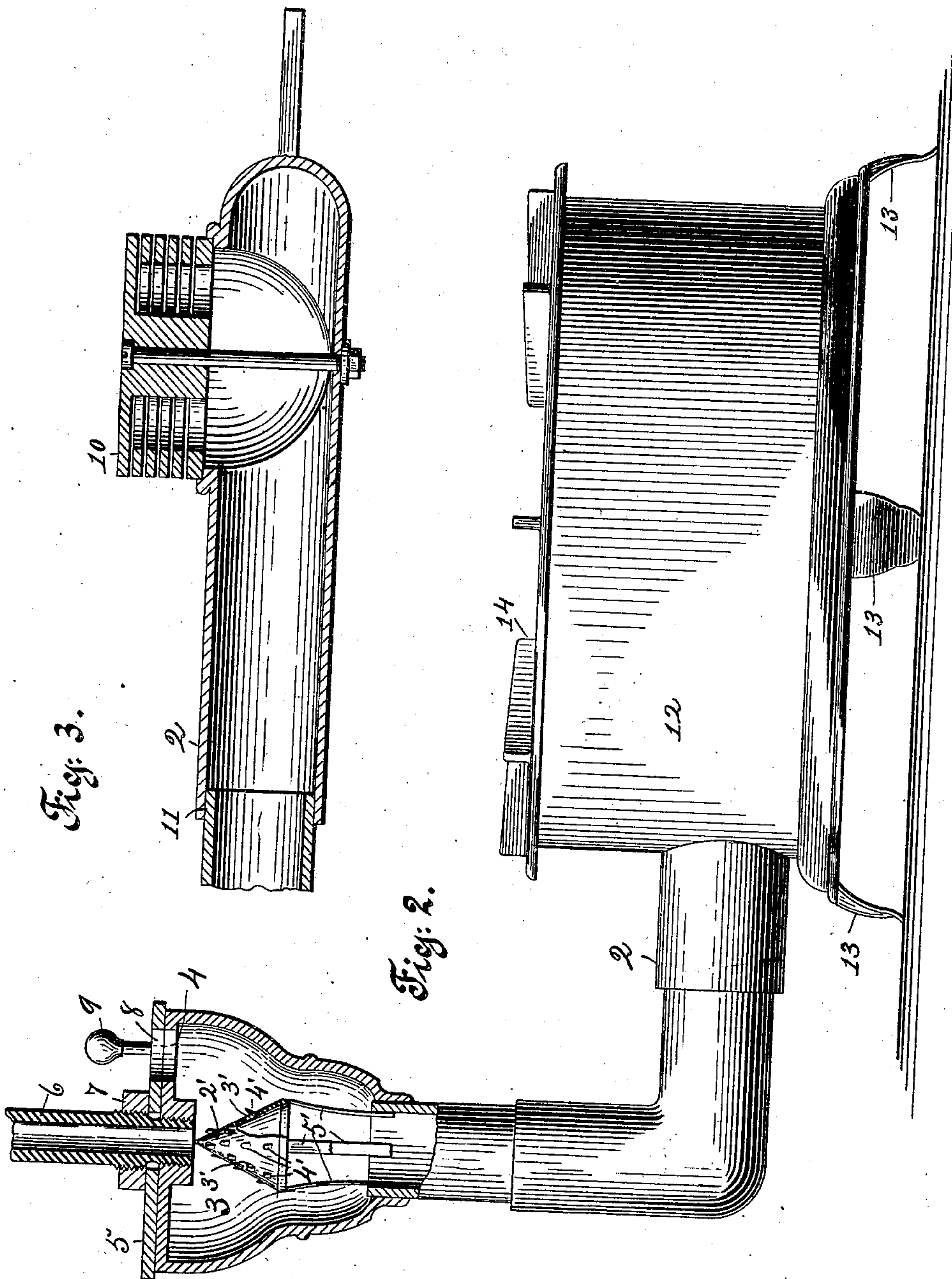
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Witnesses  
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# UNITED STATES PATENT OFFICE.

FRANK W. BEARDSLEY, OF NEW YORK, N. Y.

## APPARATUS FOR CONSUMING GAS.

No. 877,162.

Specification of Letters Patent.

Patented Jan. 21, 1908.

Application filed November 7, 1902. Serial No. 130,380.

*To all whom it may concern:*

Be it known that I, FRANK W. BEARDSLEY, a citizen of the United States, and a resident of New York, Richmond borough, in the county of Richmond and State of New York, have invented certain new and useful Improvements in Apparatus for Consuming Gas, which improvements are fully set forth in the following specification.

10 This invention relates to improvements in structures of that class employed in the consumption of dense gaseous products, such structures being commonly known as "apparatus for consuming gas."

15 The object of this invention is to provide an apparatus of the character indicated, which shall be simple, inexpensive and novel as regards construction; which shall embody a mixing chamber specifically situated with respect to the point at which the gas is consumed in the practical operation of the apparatus; which shall be durable, efficient, and reliable in service; and which shall possess certain well-defined advantages over  
25 prior analogous constructions.

The invention consists in the employment of parts whereby in the operation of the device a carbureting or gas-modifying process may be had at a point elevated above the point at which the gaseous product is consumed; in certain combinations; and in certain details of construction, all of which will be specifically referred to hereinafter and set forth in the appended claims.

35 The invention is clearly illustrated in the accompanying drawings, wherein similar reference-numerals denote corresponding parts throughout the several views, and as to said drawings: Figure 1 is a plan view of an apparatus for consuming gas embodying my said improvements. Fig. 2 is a side elevation of same, partly in section. Fig. 3 is a detail, central, longitudinal section of certain minor elements of the general construction.  
45 tion.

My invention is particularly adapted to the consuming of hydro-carbon gas, or other gaseous products of a specific gravity greater than air; and in a general sense, it comprises  
50 a mixing chamber, a burner, and an intact supply-pipe connecting said chamber and burner, the said chamber being located above said burner.

While I have illustrated my improvements

in the accompanying drawings, as applied to 55 a structure such as commercially known as a "gas stove", it will be understood that said improvements are equally applicable to other forms of gas-consuming apparatus.

Having reference to the accompanying 60 drawings, 2 denotes a supply-pipe, here shown as angular in general contour and formed in sections. This supply-pipe however, may comprise a single piece of tubing and may vary somewhat from the general 65 form thereof illustrated in the drawings.

There is securely attached to the intake end of the supply pipe 2 an enlarged, hollow member forming a mixing chamber 3, said member being of any desired cross-sectional 70 contour, preferably formed from metal, and produced by the process of casting. The top portion of the hollow member just referred to is provided with an air-opening 4, and there is movably conjoined with said member at 75 its upper extremity a controller 5, whose axis of movement registers substantially with the vertical axis of said member.

6 denotes an intake pipe communicating with the chamber 3 centrally of the top portion of the hollow member aforementioned, and 80 rotarily with respect to which pipe the controller 5 moves in service. The controller 5 is held snugly to engagement with the upper face of the top portion of the hollow-member 85 aforementioned, by means of a keeper 7, here shown as approximating the form of a nut, and having a threaded engagement with the intake pipe 6, at the upper side of the controller 5. The controller 5 is provided with 90 an air-opening 8 adapted to be brought variably into registry with the opening 4 upon said controller being duly manipulated or moved, to facilitate which operation of the controller, the latter may be provided with 95 a handle as 9.

It will be understood that the top portion of the hollow-member forming the chamber 3, may be provided with a plurality of air-openings 4 and that the controller 5 may 100 have a like number of air-openings 8 for co-operation, each of the openings 4 with one of the openings 8.

The intake pipe 6 leads from a suitable source of generated gas under control as to 105 volume, and accordingly may be connected with the depending valve-controlled nozzle which forms an element of my improved gas-



generator, shown and described in my application for patent therefor, filed November 4th, 1902, and serially numbered 130013.

The supply-pipe 2 is provided with a burner 10 which may be of any suitable and approved construction; and it will be observed that the chamber 3 is elevated above said burner.

In prior devices, the gas conducted to the burner for ignition and consumption is modified as to gravity by the mixture of air therewith, in some instances immediately beneath the point of consumption, and in other instances at the connecting point of two sections of the supply pipe, as indicated by the numeral 11. It has been found in practice however, that where such constructions are employed for consuming hydro-carbon gas, or a gas of substantial density or specific gravity, a back-flow of said gas will take place at the point 11, or at such other point where admission of air for commingling with the gas is permitted, the said back-flow resulting in a material waste of gas, and taking place when the supply to the burner 10 is at any time greater than the amount of gas consumed at said burner.

I overcome the foregoing objection by locating the chamber within which the air-carbureting or gas-modifying process shall take place, above the burner 10, and conduct the modified gas from the chamber 3 to the burner 10 by means of an intact supply-pipe.

To facilitate the commingling of the gas and air admitted to the mixing-chamber 3, I introduce into the latter a gas deflector, here shown as comprising a conical body 2', provided with a plurality of perforations 3', and with a plurality of spurs 4', one at each of said perforations by preference. The said deflector is adjusted within the mixing-chamber 3 so that its apex will project upwardly and in alinement with the inflow of gas entering said chamber 3; and any approved means may be employed for holding said deflector in position for service within said mixing-chamber. To this end, however, I purpose providing the said conical body with depending, somewhat resilient arms, 5', adapted to enter the intake-end of the supply-pipe 2, and engage the same interiorly thereof with a binding effect.

In assembling the parts now under consideration, the deflector is first adjusted to the supply-pipe, as above indicated, and thereafter the hollow-member forming the chamber 3 is conjoined with said supply-pipe, said deflector accordingly entering the chamber 3, when the hollow-member forming the same takes its position with respect to the said supply-pipe; and said adjustment of the parts is permitted by reason of the conical body 2' being somewhat less in diameter than the outlet of the chamber 3.

In practice, the gas which enters the cham-

ber 3 by way of the inlet-pipe 6 falls onto the conical body 2', engages the spurs 4', and is thereby deflected from its course and separated into various minor volumes, moving in various directions, and some of which pass through the perforations 3', at one side of the conical body 2', to the interior thereof, where they meet like volumes coming to the interior of said conical body 2', by way of the perforations 3' located at other points circumferentially along said conical body. Other minor volumes of the gas created by the original inflow of gas coming in contact with said deflector, are deflected laterally from the conical body 2', and thus a thorough agitation of the original inflow of gas and reduction thereof to minor volumes, is effected, and the commingling therewith of the air admitted to the chamber 3, is accordingly facilitated and enhanced.

Where it is desired that the construction shall take the form of a so-called gas stove, there may be conjoined with the supply-pipe 2 a casing 12 supported by legs 13 and having a suitable top-member, here denoted as a whole by the numeral 14.

In operation, the generated gas and air are simultaneously admitted to the chamber 3 and each varied as to volume and controlled, the latter by means of the controller 5 which may be shifted so as to vary the volume of air admitted to the chamber 3 proportionately to the volume of gas admitted to such chamber, and as may be found requisite for properly modifying the gaseous product prior to its being conducted to the burner 10 for consumption.

It will be seen that my improved apparatus for consuming gas, is particularly well adapted for the purposes for which it is intended, and further that the same may be modified to some extent, particularly as regards the means employed for controlling and varying the volume of air admitted to the chamber 3, in practice, without materially departing from the spirit and principle of my invention.

Having fully described my invention what I claim and desire to secure by Letters-Patent, is:

1. An apparatus of the class herein described comprising a device at which commingled air and gas may be consumed; a chamber within which the air and gas are commingled, said chamber having a gas-inlet at its top, and being situated above the plane of said device; a perforated, upwardly-tapering deflector, removably disposed within said chamber in alinement with the gas-inlet thereof; and means for conducting the commingled gaseous product from said chamber to said device for consumption, substantially as herein specified.

2. An apparatus of the class herein described comprising a chamber for the recep-



tion of air and gas, said chamber having a gas-inlet at its top; a deflector within said chamber, below the gas-inlet thereof, said deflector comprising a perforated, conical body having its tapered end projected towards the gas-inlet of said chamber; and means for varying the volume of air admitted to said chamber, substantially as herein specified.

3. An apparatus of the class herein described comprising a chamber for the reception of air and gas; a deflector within said chamber, and below the point of entrance of said gas into said chamber, said deflector comprising a perforated, conical body provided with a plurality of spurs, the latter adapted to be engaged by the gas entering said chamber; and means for varying the volume of air admitted to said chamber, substantially as herein specified.

4. An apparatus of the class herein described comprising a chamber for the reception of air and gas; a deflector within said chamber, and below the point of entrance of said gas into said chamber, said deflector comprising a perforated, conical body provided with a plurality of spurs, one at each of said perforations, and adapted to be engaged by the gas entering said chamber; and means for varying the volume of air admitted to said chamber, substantially as herein specified.

5. An apparatus of the class herein described comprising a device at which commingled air and gas may be consumed; a chamber within which the gas and air are commingled, said chamber having a gas-inlet at its top; a hollow, perforated, conical deflector, having a spur at each of its perforations, removably disposed within said chamber, and whereby due commingling of the air and gas is insured; means for admitting air into said chamber in variable volumes; and means for conducting the com-

mingled gaseous product from said chamber to said device, substantially as herein specified.

6. An apparatus of the class herein described comprising a mixing-chamber for the reception of air and gas, said chamber having a gas-inlet arranged centrally at its top, one or more air-inlets also at its top, and a discharge opening at its bottom; a movable controller for said air-inlet or air-inlets, said controller being arranged so that its axis of movement coincides with the axis of said gas-inlet; and a deflector, the latter arranged within said chamber, and provided with resilient arms which enter said discharge opening and exert an elastic binding force at the sides thereof, for holding said deflector in position for service, substantially as herein specified.

7. An apparatus of the class described comprising a chamber for the reception of air and gas, said chamber having a gas outlet at its bottom, a perforated conical deflector axially in line with the inflowing column of gas and provided with exterior spurs to deflect a portion of said gas through the perforations in the deflector.

8. An apparatus of the class described comprising a chamber for the reception of air and gas, said chamber having a gas outlet at its bottom, a perforated conical deflector axially in line with the inflowing column of gas and provided with exterior spurs to deflect a portion of said gas through the perforations in the deflector, a burner below the air and gas chamber and connected to the bottom of said chamber, whereby the air and gas will flow downward through said chamber to the burner.

FRANK W. BEARDSLEY.

Witnesses:

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