

No. 706,454.

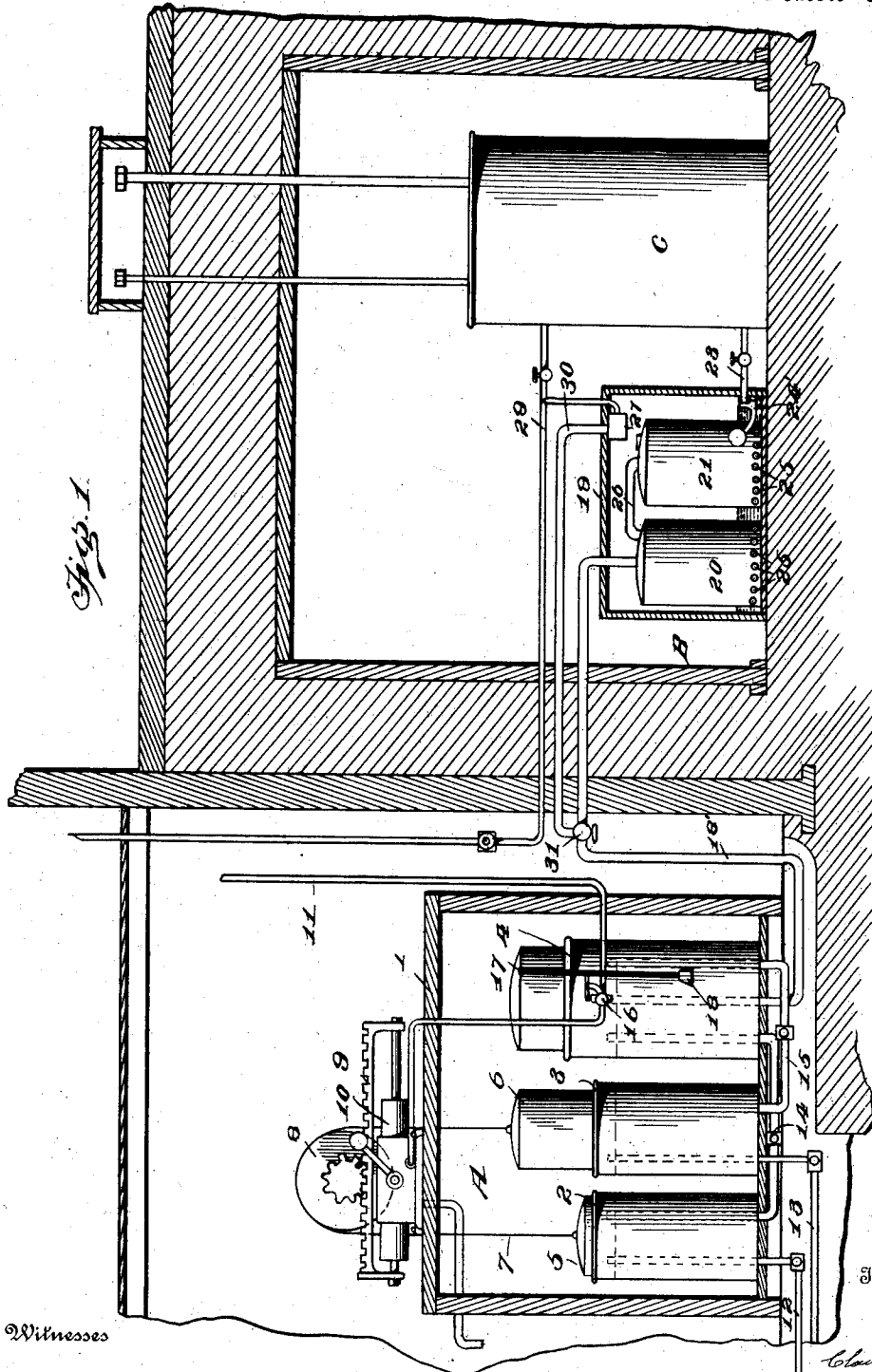
Patented Aug. 5, 1902.

C. ROBINSON.
CARBURETER.

(Application filed Jan. 27, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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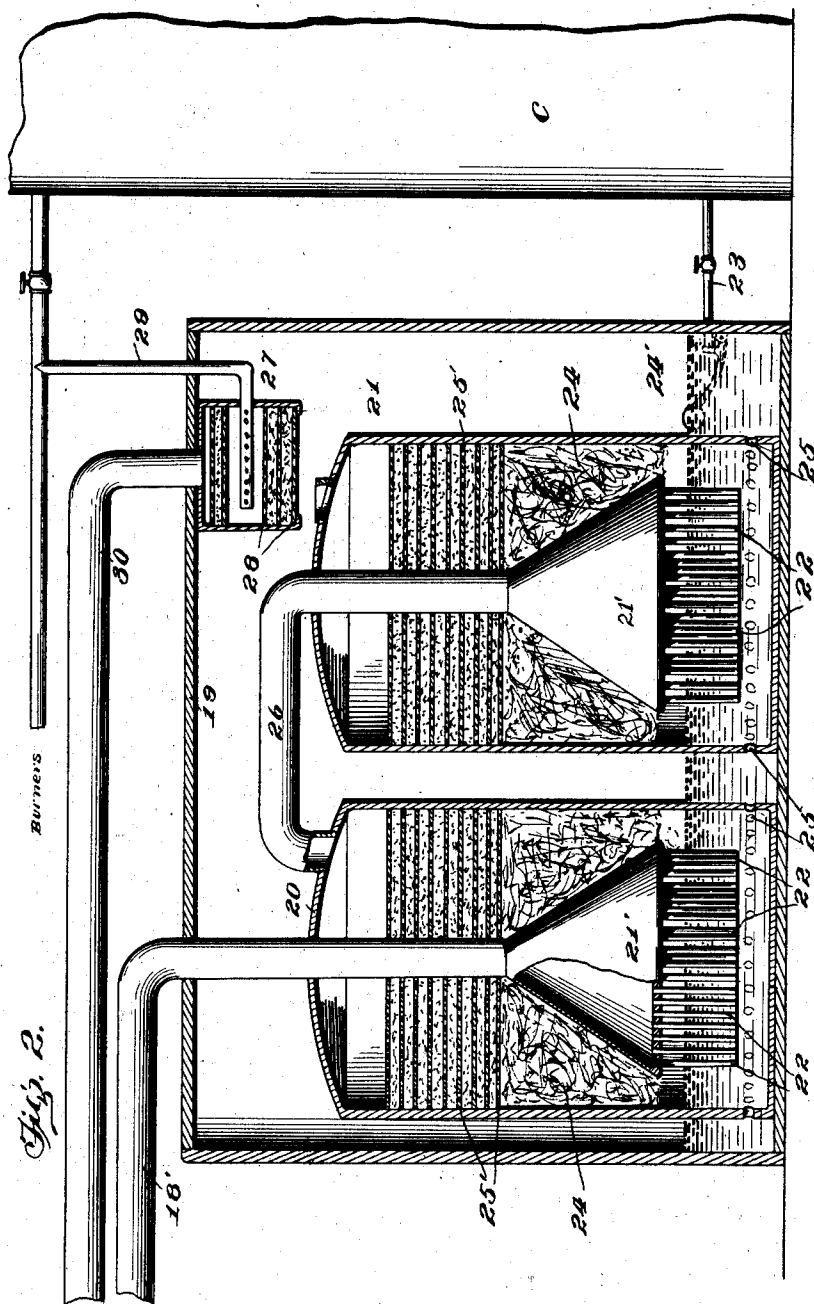


Fig. 2.

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UNITED STATES PATENT OFFICE.

CLARK ROBINSON, OF HARTLEY, IOWA.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 706,454, dated August 5, 1902.

Application filed January 27, 1902. Serial No. 91,436. (No model.)

To all whom it may concern:

Be it known that I, CLARK ROBINSON, a citizen of the United States, residing at Hartley, in the county of O'Brien and State of Iowa, have invented certain new and useful Improvements in Carbureting Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain novel and useful improvements in carbureting apparatus for the manufacture of illuminating-gas of the kind obtained by charging and mixing air under pressure with the vapor of a hydrocarbon liquid.

The object of my invention is to provide a carbureting apparatus which shall be simple in construction, positive in operation, which shall produce an intimate mixture of the atmospheric air and the hydrocarbon vapor, and is capable of supplying an illuminating-gas of any desired "richness."

Broadly and generically speaking, the invention consists in means for supplying atmospheric air and a hydrocarbon liquid to the carbureter, means producing an intimate commingling of the same therein to obtain a gas of any desired richness, and means for conducting the gas from the carbureter to the points of use.

Specifically stated, it consists of automatically-operated mechanism under the impulse of water-pressure for supplying air as needed to a carbureter, (the construction of which carbureter will be hereinafter more fully described,) a reservoir for supplying the hydrocarbon liquid to the carbureter, means in said carbureter for mixing the air and hydrocarbon vapor, straining, refining, and diluting the resultant gas to any desired quality, and means for conducting the gas from the carbureter to the burner or the point of use.

For a full understanding of the merits and advantages of the invention reference is to be had to the accompanying drawings and the following description.

The invention is susceptible to various changes in the form, proportion, and minor details of construction without departing from the principle or sacrificing any of the

advantages thereof, and a disclosure of the invention and adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a side elevation of an apparatus embodying my improvements. Fig. 2 is a detail vertical sectional view of the carbureter-tank or carbureter proper, showing the interior construction thereof.

In referring to the drawings in detail like numerals designate like parts.

The air forcing or blowing mechanism I have designated as a whole by A, as will be seen by examining the drawings. It consists of the framework 1. Mounted on the floor of the framework are bell-tanks or water-seal tanks 2 3 for pumping air into the storage-tank 4. This is accomplished by connecting the inverted or bell portions 5 and 6 of the tanks 2 and 3 with the chain, rope, or similar means 7, which extends up over the sprocket-wheel 8, which is oscillated by means of the rack 9, the rack in turn having a reciprocating movement imparted thereto by the fluid-operated piston mechanism 10, water being supplied under pressure to said mechanism by any suitable means, such as pipe 11. Air is introduced into the pumping-tanks by means of pipes 12 13, extending through the bottom of the same. The pumping-tanks are in turn each connected with the storage-tank 4 by means of the U-shaped pipes 14 15. The operation of this part of the apparatus will thus be apparent. Fluid-pressure being admitted to the piston mechanism 10 for actuating the same the rack 9 will be reciprocated, thus oscillating the sprocket 8, this causing the inverted-bell portions 5 and 6 to be alternately raised and lowered, thus forcing the air which has been admitted through pipes 12 and 13 to the storage-tank 4. When sufficient air has been stored in tank 4, fluid-power is cut off from the engine 10 by the valve 16, which is operated by the chain 17 and weight 18, secured to the inverted portion of the storage-tank. As the latter fills with air the bell portion is forced upward, this operating to pull the chain and close the valve, and as the bell-tank descends and empties the valve is opened.

Air is conveyed from the storage-tank 4 by means of pipe 18' to the carbureter, which I shall designate as a whole by B. The latter

consists of the chamber 19, containing the tanks 20 21. For illustrative purposes I have shown but two tanks, but as many as desired may be employed without departing from the invention. The air-duct 18' passes through the top of the chamber 19 into the tank 20 and at its lower end flares outwardly, thus forming the cone or funnel like chamber or receptacle 21'. The bottom of this chamber 21' is provided with a number of small vertically-arranged pipes 22, which are open and terminate some distance above the bottom of the tank 20. Hydrocarbon liquid is supplied from the reservoir C to the chamber 19 through the pipe 23, the supply being controlled by suitable means, preferably the float-valve 24. Oil being admitted to chamber 19 passes through the apertures or ports, as 25, into the tanks 20 and 21, the same level of liquid being always maintained in the tanks 20 and 21 and chamber 19. Air on being conducted from the storage-tank through the pipe 18 enters the cone-like chamber 21' and from there passes through pipes 22 into the hydrocarbon liquid in the chamber 20. Carrying with it the hydrocarbon vapor, it filters or passes up through a body of suitable material 24, (preferably excelsior,) which acts as a condenser, then passes through a series of strainer-plates, as 25'. These plates are composed of a series of thin perforated sheets of metal, preferably tin, and have a layer of suitable absorbent material, preferably cotton, interposed between the same. The gas passes through the pipe 26 to the chamber 21, where the same operation is repeated, the gaseous mixture passing from funnel-like chamber through vertical pipes to the oil, then through condensing material to and through the strainer-plates to top of chamber. From there it is conducted, as shown, to the strainer 27, where it is again refined. This strainer is composed of a series of perforated metal plates 28, with interposed layers of cotton, similar to the straining-plates of the tanks 20 21. From this strainer the gas is conducted by suitable means, as pipe 29, to the place of consumption. If the gas is too rich, it may be diluted in the strainer 27 by means of air, which is conveyed thereto by a pipe, as 30, which is connected with pipe 18, as shown. A valve 31 controls the admission of the air from pipe 18 to pipe 30.

As the operation of my apparatus will be perfectly apparent from the above description when read in connection with the accompanying drawings, it is unnecessary to further describe the same.

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

1. A carbureting apparatus comprising in its construction a chamber containing carbureting-tanks, means for introducing air into one of said tanks, a hydrocarbon-liquid reservoir, a pipe for conducting a supply of the hydrocarbon liquid to the aforesaid chamber,

devices for controlling the supply, and apertures in the walls of the carbureting-tank for permitting the liquid to flow from the aforesaid chamber into the carbureting-tanks, substantially as and for the purpose set forth.

2. In a carbureting apparatus, the combination of a carbureting-chamber, carbureting-tanks therein, mechanism for supplying atmosphere under pressure into one of said carbureting-tanks, a hydrocarbon-liquid reservoir, a pipe for conducting a supply of the liquid from the reservoir into the aforesaid chamber, devices for controlling such supply, means for permitting the liquid to enter the carbureting-tanks, means in said carbureting-tanks for causing an intimate commingling of the atmosphere and the hydrocarbon liquid, whereby a gas is formed, supplemental apparatus in said carbureting-chamber for straining and refining the gas in said supplemental straining apparatus, means for diluting the gas, and conducting apparatus for conveying the gas to the point of consumption.

3. In a carbureting apparatus the combination of a carbureting-chamber, carbureting-tanks in said chamber, mechanism for supplying atmosphere to one of said carbureting-tanks, means for supplying a hydrocarbon liquid to the carbureting-chamber and the tanks therein, and means in said carbureting-tanks for intimately mixing the atmosphere and hydrocarbon liquid to form a gas, such means comprising devices for introducing atmosphere into the body of hydrocarbon liquid at a point beneath the surface thereof, a body of condensing material placed above the surface of the hydrocarbon liquid, a series of perforated plates situated above said condensing material, the space between such plates being filled with a packing of condensing material, substantially as set forth.

4. In a carbureting apparatus, the combination of a carbureting-chamber, and means therein for forming a hydrocarbon gas, such means comprising carbureting-tanks situated in said chamber, means for supplying a hydrocarbon liquid to the said tanks, a device in one of said tanks for supplying air under pressure to points below the surface of the hydrocarbon liquid, such device comprising a conductor-pipe extending from a suitable source of air-supply to the interior of said tank, a flared chamber formed at the end of said pipe, depending tubes communicating with said chamber and extending below the surface of the liquid, a body of condensing material placed above the surface of the liquid, a series of perforated plates situated above the condensing material, and a packing of absorbent material between the said plates.

5. In a carbureting apparatus, the combination of a carbureting-chamber, and means therein for forming a hydrocarbon gas, such means comprising a series of communicating carbureting-tanks, means for supplying a hydrocarbon liquid to such tanks, devices in

one of said tanks for supplying air under pressure to a point beneath the surface of the hydrocarbon liquid therein, means situated above the level of the hydrocarbon liquid in the tanks for straining and refining the vapor thus formed, means for conveying the charge of gas from one tank of the series to another, an outlet in the last said tank for communicating with the chamber, a strainer 10 situated in the chamber and means for conducting the gas from the chamber to the place of consumption.

6. In a carbureting apparatus, the combination of a carbureting-chamber, a series of 15 tanks therein communicating with each other by suitable conducting-pipes, means in said tanks for causing an intimate commingling of the elements forming the gas, such means comprising a flared chamber at the ends of 20 the communicating pipes, tubes depending therefrom to the hydrocarbon-liquid-condensing material placed above the surface of the liquid, a series of perforated plates above such condensing material, an outlet from the 25 last tank of the series into the chamber, a

strainer in said chamber, conducting means leading from the strainer to the point of consumption of the gas, means for introducing atmosphere to one of said carbureting-tanks, means for supplying hydrocarbon liquid to 30 the tanks, a valve-controlled means for introducing atmosphere into the strainer for diluting the gas therein.

7. In a carbureting apparatus, the combination of a chamber and means for forming a 35 hydrocarbon gas therein, a strainer in said chamber for refining the gas, comprising in its construction a chamber open at its lower end, a series of spaced parallel perforated plates therein, absorbent material between 40 said plates, means for diluting the gas in said straining-chamber and means for conducting the gas to the point of use, substantially as described.

In testimony whereof I hereunto affix my 45 signature in presence of two witnesses.

CLARK ROBINSON.

Witnesses:

J. T. CONN,

A. H. ELBERT.