J. B. HYDE.

Carbureter.

No. 107,262. Patented Sept. 13, 1870.

Fig. 1

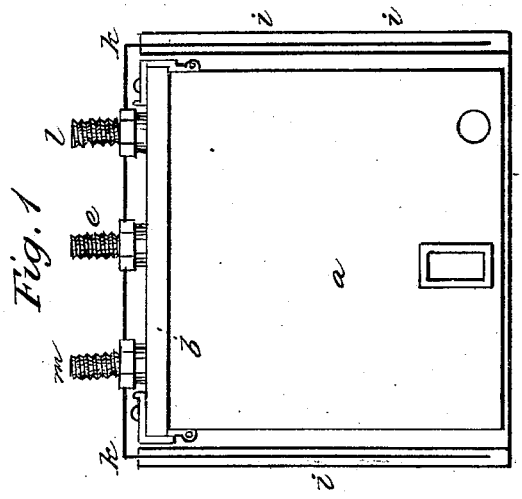


Fig. 2

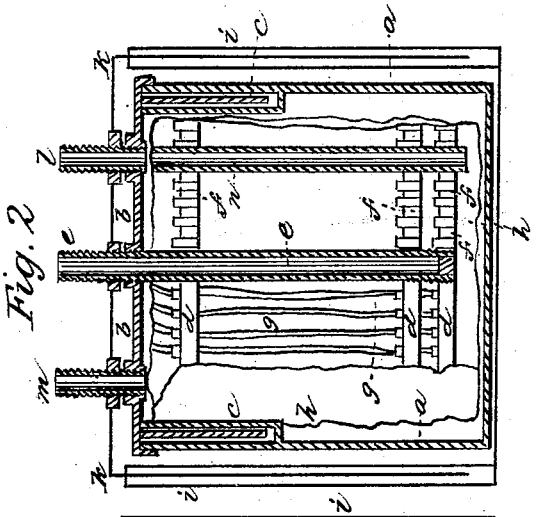
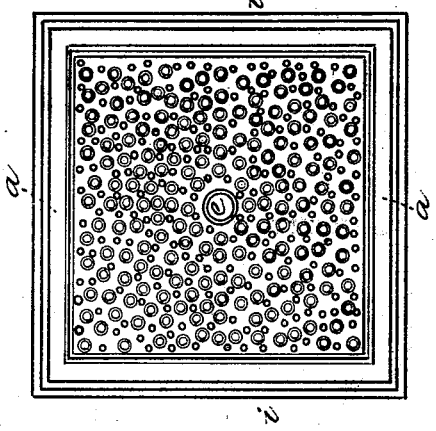


Fig. 3



Witnesses:

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J. BURROWS HYDE, OF NEW YORK, N. Y.

Letters Patent No. 107,262, *dated September* 13, 1870.

IMPROVEMENT IN APPARATUS FOR CARBURETING AIR AND GAS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, J. BURROWS HYDE, of the city, county, and State of New York, have invented a new and useful Apparatus for Carbureting Atmospheric Air and Commercial Gas, by the employment therewith of hydrocarbon fluid; and I declare the following to be a full and exact description of the same, reference being had to the accompanying drawings and the letters of reference thereon.

Figure I shows a side elevation of the apparatus, partly in section;

Figure II, the same, in section; and

Figure III, a horizontal section.

a represents an upright vessel, of tin or other metal, provided with a movable cover, *b*, having proper clamps to hold and secure it in place. The top edge of this vessel has a sealing recess, *c*, in which a sealing flanch or rim, secured to the cover, is suspended.

This vessel *a* contains the carbureting apparatus, consisting of two or more perforated diaphragms, *d*, three being represented in the drawings, and of slightly less diameter than the inside of the sealing recess.

These diaphragms should best have downward flanches or rims on their outer edges, and are secured to a central vertical tube, *e*, extending from near the bottom of the vessel, where it is permanently closed, and thence through the cover at the top.

One of the diaphragms is secured to the lower end of this tube, and a second one is fastened about an inch above it, between which, in the intervening space, the tube is perforated all around with small holes. About an inch below the cover of the vessel, another diaphragm is also secured to the tube, all being so placed that the holes in the diaphragms are vertically coincident, and those holes may be supplied with short tubes, *f f*, as shown in the drawings, or they may be dispensed with. Other and smaller holes are made through the diaphragm plates, in the intervening spaces between tubes or holes, as shown in Fig. III.

Ordinary lamp-wick, or other proper capillary medium, is passed from top to bottom through the larger orifices of the diaphragms, as shown at *g*, and I prefer to envelop the whole from top to bottom with a woven capillary fabric, preferring "cotton, or Canton flannel," as shown at *h*.

A second vessel, *i*, without cover, and having a sealing recess around its outside, receives the vessel *a*, and a third vessel, *k*, open at the bottom, but with a fixed top, is made of such size as to pass freely into the sealing recess of *i*.

The tube *e* passes through the cover of *a*, where it is provided with a sealing-nut and washer. It also passes through the top of the vessel *k*, and is there also similarly provided and sealed. I use washers of soft leather or common blotting-paper, saturated with melted paraffine.

Two short tubes, *l* and *m*, are secured to the cover of *a*, and extend through the top of *k*, under one of which a tube, *n*, is shown coincident therewith, and extending through the diaphragms to near the bottom of the vessel.

The capillary mediums being properly arranged, placed in the vessel *a*, and the sealing recess *c* being filled, and for which I prefer a mixture of paraffine softened with petroleum, or other proper medium, and melted together to form a plastic consistency, the cover is then put on and secured. The recess in the vessel *i* is then similarly filled, or I can employ therefor a mixture of glue, molasses, and water, or other proper medium or mixture, or use water only. I then set therein the vessel *k*, and secure the nuts and washers. I then fill in the carbureting fluid through the tube *l*, over the tube *n*, until the vessel *a* is charged about an inch over the second diaphragm, and close the filling tube with a stopper, or otherwise.

But, as the use of any fluid as a sealing medium for gases is attended with many inconveniences, such as working over, by tipping or otherwise, and mixing with the carbureting fluid by evaporation, by freezing, by impoverishing the action of the capillaries, by adhering to and being lifted with the surface of the sealing vessel when withdrawn, and falling into the apparatus, I, to obviate these and other like difficulties, fill the sealing recess with coarse sand, or its equivalent, and then pour in the fluid until it is thoroughly filled. For this purpose glycerine is best, as it is not affected by the vapors of the hydrocarbon, and has no change from temperature of the air. The sealing vessel is easily worked to its seat into the sand afterward.

The air or gas-tubes, being connected with the tube *e*, passes down and out at the small orifices in the tube. Thence it circulates in the fluid, and, passing upward through the small holes in the diaphragms, escapes by the short tube *m*, loaded with the vapor contributed from the capillaries.

For supplying the fluid I use a closed vessel or reservoir, placed in proper position, and above the carbureter, and from which vessel a small conducting-pipe is led to a second and small vessel, of capacity to hold a charge for the carbureter, and from this charger a second pipe extends to and is attached to the tube *l*.

Proper closing-corks are placed in the pipes, on each side of the charger, to open and shut the connections in filling and discharging it. Small tubes or orifices are made in both those fluid vessels, to be opened, when necessary, to admit air, and permit the fluid to

escape freely, neither of which filling contrivances is shown in the drawings, or other means may be used.

For the carbureting fluid I prefer a mixture of light and heavy hydrocarbons, instead of using the light or heavy separately.

The carbureting of atmospheric air and illuminating gas, by their passage through the fluid or the vapors of liquid hydrocarbons, is well known.

I do not claim generally the carbureting of gas or air, nor the use of capillary mediums therefor, nor a mixture of different hydrocarbons, nor the sealing recess, nor a double sealing or safety vessel; but

I do claim—

1. A carbureter, made by securing two or more disks secured to an upright receiving and conducting-tube, the disks having double perforations, one for receiving and holding a spur capillary medium, which is threaded or woven through the disks from top to bottom, and the other holes for allowing the carbureted mediums to pass upward, when the lower part of the capillaries is immersed in the fluid, and escaping as described.

2. The sealing of a carbureting apparatus with glycerine or compounds of glycerine, with or without a mixture of sand, or its equivalent, as described.

3. Surrounding the whole or major part of a carbureter with a sealed recess for atmospheric air, as a non-conductor, or partial non-conductor, of refrigeration, arising from evaporation of the hydrocarbon.

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Witnesses:

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