(No Model.)

N. FINCK

CARBURETOR.

No. 486,224. Patented Nov. 15, 1892.

Fig. 1.

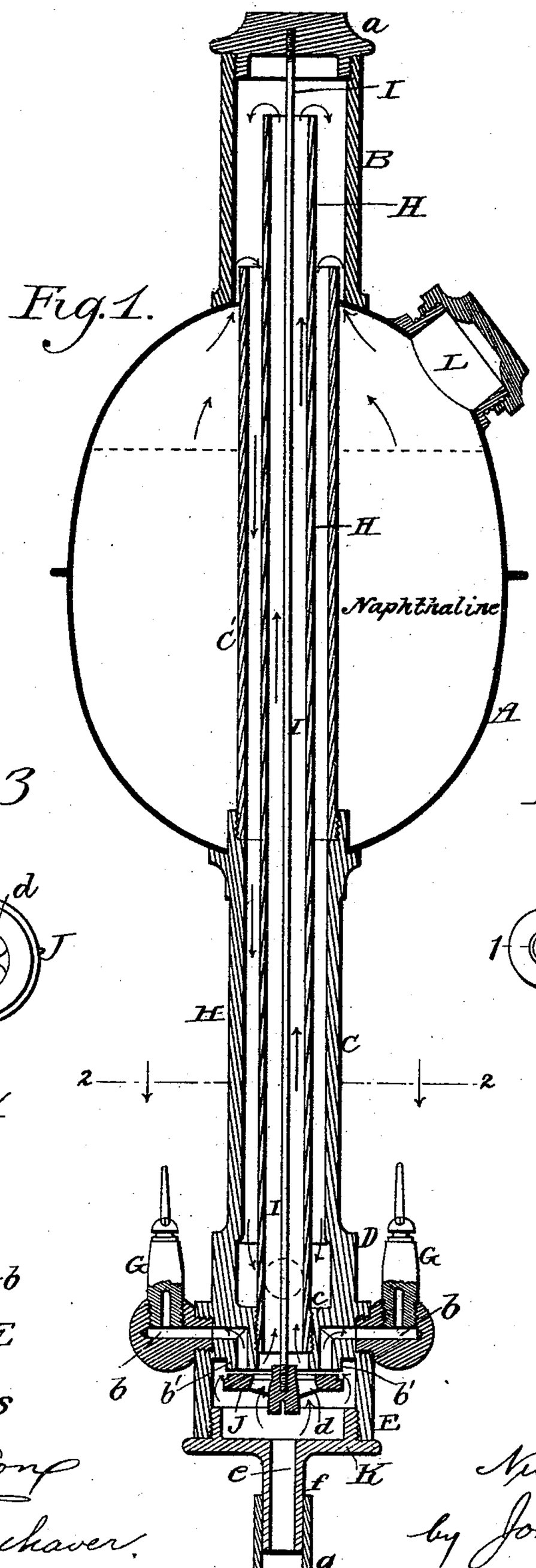


Fig. 2.

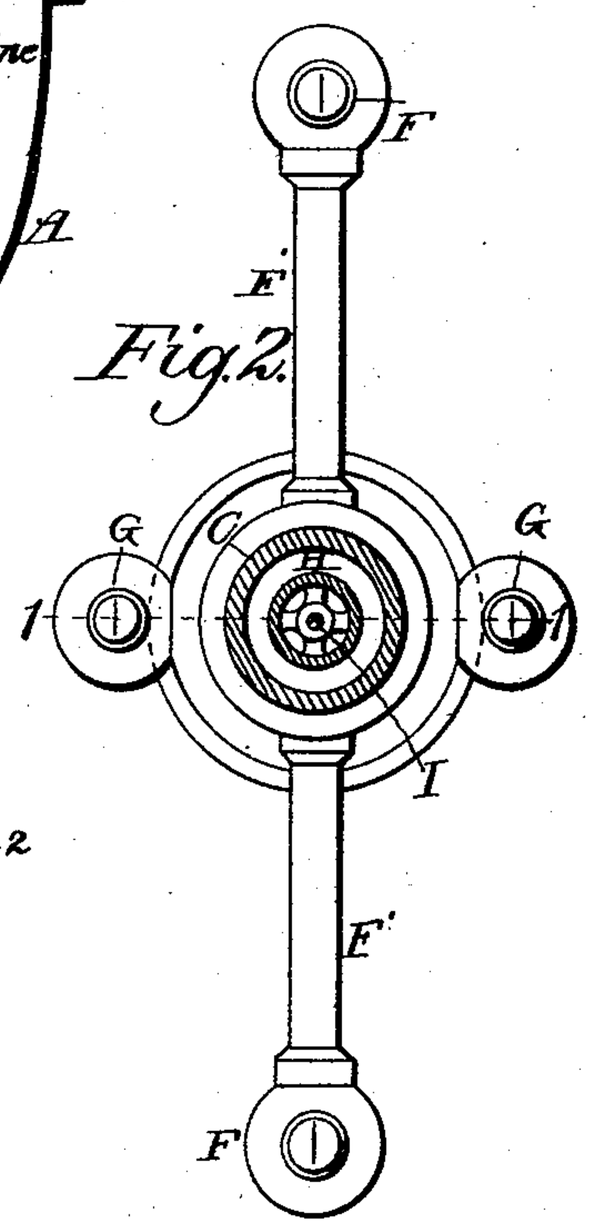


Fig. 3

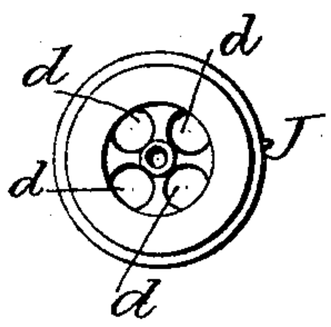
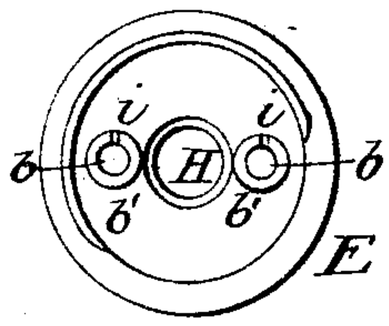


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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CARBURETOR.

SPECIFICATION forming part of Letters Patent No. 486,224, dated November 15, 1892.

Application filed March 8, 1890. Serial No. 343,172. (No model.)

To all whom it may concern:

Be it known that I, NICHOLAS FINCK, a citizen of the United States, and a resident of Elizabeth, Union county, New Jersey, have invented certain Improvements in Carburetors for Enriching Gas, of which the following is a specification.

My invention relates to that class of carburetors wherein a hydrocarbon-reservoir is heated by gas-jets and the vaporized hydrocarbon enriches the gas by mixing therewith while the gas is on its way to the illuminating-burners. This class of carburetors has also been provided with a thermo-regulator and valve for controlling the supply of gas to the heating-jets, in order to prevent smoking at the illuminating-burners, due to excess of carbon.

My present invention, which will be hereinafter fully described, has for its object the construction of the carburetor in such a manner that the gas is introduced at the bottom of the apparatus and passes up through the hydrocarbon-reservoir to the mixing-chamber, is enriched, and then passes back by another channel to the illuminating-burners. The gas to supply the heating-jets is not enriched, but passes directly from the inlet to said jets, being regulated in quantity by a valve controlled by a thermo-regulator.

The novel features of the invention will be carefully defined in the claims.

In the drawings which serve to illustrate my invention, Figure 1 is a vertical axial mid-section of my carburetor, the plane of the section being indicated by line 1 1 in Fig. 2. Fig. 2 is a horizontal section of the same, taken on line 2 2 in Fig. 1, looking down. This view shows the burners in plan. Fig. 3 is a plan of the valve controlled by the thermo-regulator. Fig. 4 is a plan of the valve-seat detached.

A represents the hydrocarbon-reservoir, which may have any desired form.

B is the mixing-chamber, open to chamber A and closed, by preference, with a screw-cap *a* at its top.

C is the tubular stem, usually formed integrally with the outlet-chamber D and the inlet-chamber E, which will be more minutely described hereinafter.

F F are illuminating-burners connected by tubular stems F′ F′ to the outlet-chamber D, and G G are one or more heating burners connected by angular passages *b b* with the inlet-chamber E.

The inlet and outlet chambers are separated by a partition *c*, in which is screwed or set a central tube H, which rises through stem C and its prolongation C′ nearly to the top of the mixing-chamber B. The prolongation C′ of the stem C rises through the hydrocarbon-reservoir, as shown. I prefer to allow it to extend up a little way into the mixing-chamber, but do not wish to limit myself to this. It may extend a little higher or not quite so high.

I is a metal stem or rod—a piece of stiff wire will serve—attached at its upper end to some part of the mixing-chamber B, usually the cap *a*, and to a valve J (seen detached in Fig. 3) at its lower end. I usually screw the valve onto the end of the stem I, in order that said valve may be the more readily adjusted toward or from its seat. Around the passages *b*, where they open into the gas-inlet chamber, are formed faced valve-seats *b′ b′*, and the upper side of valve J is faced off to fit these. Normally the valve stands quite close to its seat, as the movement will be slight. The valve has an aperture or apertures *d d* in it for the passage of the gas from the inlet-chamber E to the tube H. The inlet-chamber is closed by a screw-cap K, through which is the gas-inlet passage *e*. The nipple *f* on the cap K is adapted to fit in a socket *g* on the service-pipe or a branch therefrom.

The stem C and its prolongation C′ might be integral; but I usually construct them as shown. L is the usual aperture in the hydrocarbon-reservoir whereat the solid hydrocarbon (usually naphthalene) is inserted.

The operation is as follows: When the gas is admitted to chamber E, a part of it flows around valve J and through passages *b* to the heating-burners G, and a part passes through the apertures *d* in the valve and up through pipe H, whence it overflows into the mixing-chamber B and passes thence down through the annular space in the stem C C′ to the outlet-chamber D. From this chamber it flows through the branches F′ to the illuminating-burners F; but in the meantime the heating-burners heat the reservoir A and vaporize to

some extent the hydrocarbon contained therein, and the vapor rising therefrom into the mixing-chamber B commingles with the gas therein and increases its illuminating power. Hence the gas flowing down to the illuminating-burners is enriched. The reservoir A being heated, it communicates its heat to stem C and chamber B, and this causes them, as well as said reservoir, to expand in length to an extent greater than that of valve-stem I, and consequently, by reason of this unequal expansion, the valve J is drawn nearer to the valve-seat b' in proportion to the increase of temperature, and the valve limits the supply of gas to the heating-burners in proportion to the vaporization required.

As the valve stands quite close to its seat under certain conditions, the sudden heating of the reservoir above the predetermined temperature might cause the valve J to close tight for an instant, and thus extinguish the heating-jet. To guard against this, I provide a means whereby the valve is prevented from entirely cutting off the flow of gas to burner G. This may be done in various ways. In the drawing Fig. 4 I have shown a slight notch or groove i in the lip of the raised valve-seat b', which will allow a little gas to pass under the valve to the burner G, even if the valve be seated tightly and this will preserve the flame against being extinguished.

In apparatus belonging to the same class as my invention the following-described construction has been employed: The heating-burners are arranged below the reservoir and the illuminating burners above it. The gas enters at the top or upper part. The apparatus being suspended, the gas passes down to the heating-burners through an inner pipe, the admission of the gas to said pipe being controlled by a thermo-valve in the gas-inlet pipe. The gas on its way to the illuminating-burner passes down into the main reservoir and then after being enriched passes through an exterior pipe up to the said illuminating burners.

My construction provides an apparatus that is not suspended but mounted on the top of an upright service-pipe, thus adapting it to street-lamps and similar gas-burners. The gas and hydrocarbon vapor are mixed in a mixing-chamber above the reservoir and not in the reservoir itself. The burners are all below the reservoir, and the gas on its way to the illuminating-burners is heated somewhat in its circuitous passage twice through the hydrocarbon-reservoir. This heating is deemed advantageous for "fixing" and more intimately combining the vapor and gas, thus producing a whiter light and one less liable to smoke. My valve is peculiarly constructed and is more accessible also than when arranged above and constructed in the ordinary way.

Having thus described my invention, I claim—

1. In a carburetor for enriching gas, the combination of the hydrocarbon-reservoir, the mixing-chamber above said reservoir and open to the same, a tubular stem of said reservoir, having a prolongation which extends up through said reservoir, the outlet-chamber connected with the lower part of said stem, the illuminating-burner connected with said outlet-chamber, the inlet-chamber arranged below said outlet-chamber and reservoir and provided with a gas-inlet from below, the tube H, extending from the inlet-chamber up to the mixing-chamber, the heating-burner connected directly with the inlet-chamber, and a valve arranged in the inlet-chamber to control the passage of gas to the heating-burner and its stem, connected at its upper end to some part of the mixing-chamber, substantially as set forth.

2. In a carbureting-lamp, the combination of the reservoir A and the mixing-chamber arranged above the same, the inlet-chamber E, arranged below said reservoir, the tube connecting the inlet and mixing chambers, the outlet-chamber D, arranged below said reservoir, the tube connecting said outlet and mixing chambers, the heating and illuminating burners connected, respectively, with said chambers E and D, and means for automatically controlling the supply of gas to the heating-burners, whereby the gas is led twice through the pipes, passing through the reservoir on its way to the illuminating burners, substantially as set forth.

3. In a carburetor for enriching gas, constructed to receive gas at its bottom or lower part and having its illuminating and heating burners arranged below the hydrocarbon-reservoir, the combination of the hydrocarbon-reservoir and the mixing-chamber above and mounted on same, the inlet-chamber E, provided with a valve-seat b' and a passage therefrom leading to the heating-burner, the tube H, leading from the inlet-chamber to the mixing-chamber, the valve J in the inlet-chamber controlling the flow of gas to the heating burner and provided with an aperture d to allow the free passage of gas to the mixing-chamber, the valve-stem arranged as set forth, the outlet-chamber, and the tube connecting same with the mixing-chamber and the heating and illuminating burners, all arranged substantially as set forth.

4. In a carburetor for enriching gas, the combination of the hydrocarbon-reservoir, an inlet-chamber and pipe for admitting gas to the reservoir, a heating-burner therefor, and a thermo-regulator valve provided with a slight notch or groove and secured to the carburetor for controlling the flow of gas to the burner, and whereby when such valve is tightly seated such groove shall still afford an open passage for gas and whereby the flame may not be extinguished.

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

NICHOLAS FINCK.

Witnesses:
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