F. J. ROTH.
Carbureter.

No. 213,351 Patented Mar. 18, 1879.

FIG. 1.

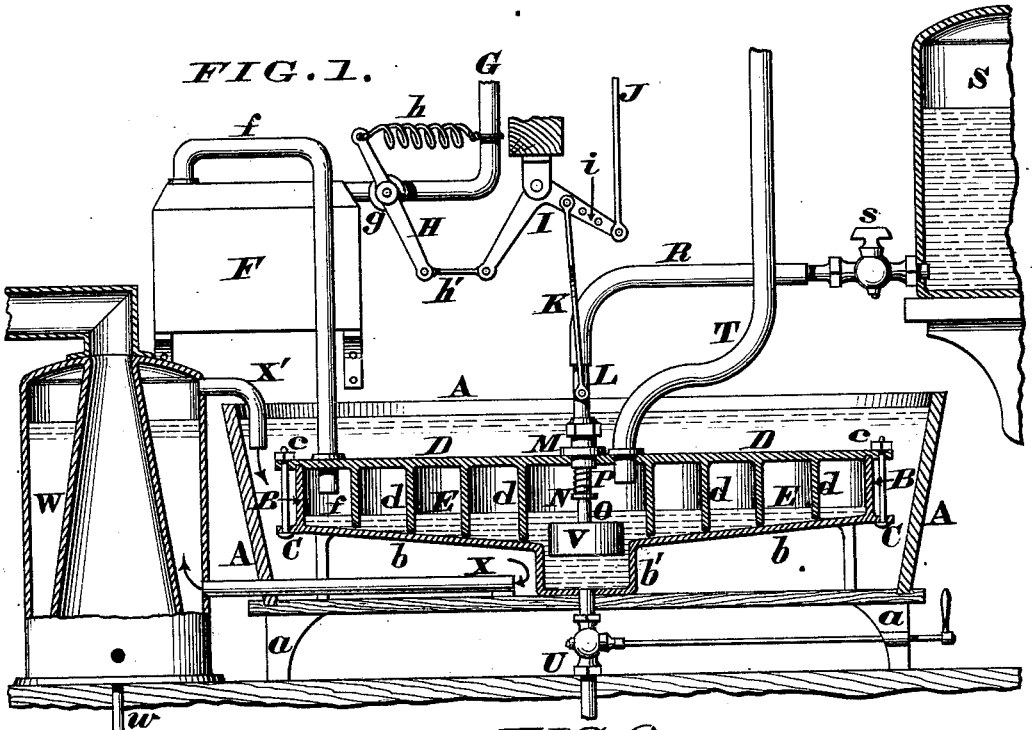


FIG. 3.

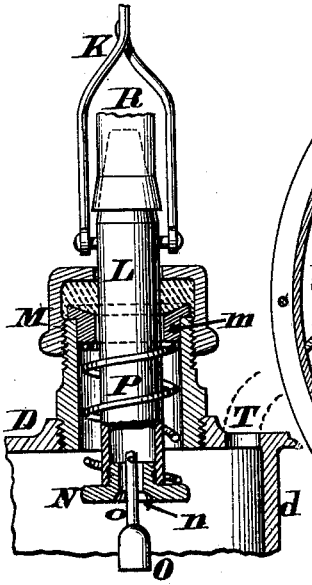


FIG. 2.

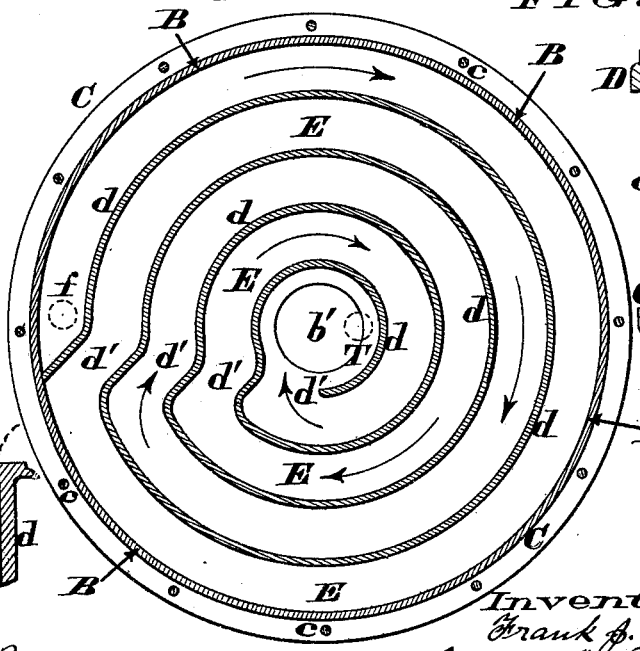
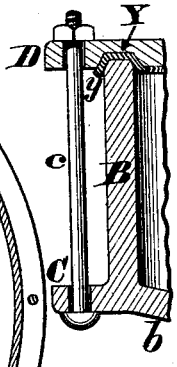


FIG. 4.



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UNITED STATES PATENT OFFICE.

FRANK J. ROTH, OF CINCINNATI, OHIO.

IMPROVEMENT IN CARBURETERS.

Specification forming part of Letters Patent No. **213,351**, dated March 18, 1879; application filed June 15, 1878.

To all whom it may concern:

Be it known that I, FRANK J. ROTH, of Cincinnati, Hamilton county, Ohio, have invented certain new and useful Improvements in Carbureters, of which the following is a specification:

The first part of my invention comprises a novel construction of those carbureters whose gasoline-chambers are provided with partitions or divisions arranged as volutes or scrolls, in order that the gas may be compelled to traverse a circuitous route before escaping from such chambers; and my improvement consists in making the partitions concentric and connecting them with channels, so as to afford a continuous passage from the center or inlet of the carbureter proper to the periphery or outlet of the same, as hereinafter fully described, and pointed out in the claims.

The second part of my invention comprises a novel combination of devices for regulating simultaneously the flow of gas and gasoline, as hereinafter fully described, and pointed out in the claims.

In the annexed drawings, Figure 1 is a vertical section through my improved carbureting apparatus; and Fig. 2 is a horizontal section of the carbureter proper detached from its tank. Fig. 3 is an enlarged axial section of the gasoline-valve and its accessories. Fig. 4 is an enlarged section, showing the method of securing the cap to the carbureter.

A represents a water-tight tank, of any suitable size and shape, and *a* are the legs or feet of the same. Located within this tank is the carbureter proper, which device consists of a shallow vessel or cylinder, B, having a floor, *b*, that slopes inwardly to a central pit, *b'*, whose office will presently appear. This cylinder has a series of lugs or an annular flange, C, to receive bolts *c*, wherewith cap D is secured to the upper end of said vessel B.

Cap D consists of a stout plate, having cast with it a downwardly-depending flange or partition, *d*, that just clears the sloping floor *b*. This partition is arranged in the concentric manner seen in Fig. 2, passages *d'* being provided to afford a continuous chamber, E, which chamber is traversed by the gas in the direction indicated by arrows in the aforesaid illustration.

This arrangement of concentric partitions *d* and connecting-passages *d'* renders the construction of the gasoline-chamber much more simple than would be the case if said partitions were made in the shape of a volute or scroll.

Gas is conducted into the receiving end of said circuitous chamber by a pipe, *f*, that communicates with any approved form of meter, F.

G is the service-pipe that connects said gas-meter with the street-mains, and *g* is the ordinary cock of said pipe. This cock has attached to it a lever, H, to one end of which is applied a weight or spring, *h*, for the purpose of maintaining said cock in its closed condition. Attached to the other end of said lever is a rod, or wire rope, or chain, *h'*, that communicates with one arm of a bell-crank, I, which latter is pivoted to a suitable hanger or other support. The other arm of this bell-crank I has secured to it a rod or wire, J, that may be conducted into any room in the house where it will be the most convenient for use.

Furthermore, this arm of the bell crank is provided with a series of perforations, *i*, to receive a lifter, K, whose lower end is secured to a tube, L, that slides within the stuffing-box M of cap D, as more clearly shown in Fig. 3. Screwed to the inner end of this tube is a head, N, having a seat, *n*, for the gasoline-valve O, whose stem *o* has a cross-bar or other stop at its upper end to prevent said valve falling into the pit *b'*. Interposed between said head N and gland *m* of stuffing-box M is a coiled spring, P, whose stress tends to depress tube L. The upper end of this tube is made conical, so as to fit into the pipe R, attached to the cock *s* of the gasoline-reservoir S.

T is a pipe for discharging the enriched gas from the central or exit portion of the carbureting-chamber E.

U is a pipe and cock for drawing off the exhausted gasoline and any sediment that may accumulate within the pit *b'*. Adapted to play within this pit is a customary float-valve, V.

W is a small boiler that may be heated in any manner; but I prefer using a gas-jet, *w*, in order that the temperature of the water in said boiler may be regulated with the utmost precision and maintained at any suitable de-

gree. This boiler has an inlet-pipe, X, that communicates with the bottom of tank A, and an exit or steam pipe, X′, that discharges into the upper portion of said tank, as indicated by arrows in Fig. 1.

Y is an annular groove in the under side of cap D to receive a leaden gasket, *y*, which gasket is expanded by the wedge-shaped termination of cylinder B, so as insure a tight joint between these two members, B and D, of the carbureter proper. (See Fig. 4.)

The manner of using my apparatus is as follows: Tank A is first filled so as to bring the water-level from three to six inches above the cap D, and lifter K is then properly adjusted to the bell-crank I, said lifter being connected to one of the outer apertures, *i*, in case it should be desired to use a large amount of gasoline in proportion to the gas. Valve *s* is then opened, and the gasoline is allowed to flow into the cylinder B until it reaches a proper level, when float V ascends by its buoyancy, thereby forcing valve O against its seat *n* and automatically stopping the current of hydrocarbon. The gas-jet on pipe *w* is ignited, so as to create a circulation of water between tank A and heater W, as previously described.

As cock *g* is opened simultaneously with the elevation of tube L by lifter K, it is evident the gas flows in through pipe *f* and sweeps around within the continuous chamber E, thereby taking up all the volatile vapors that emanate from the extensive surface of the gasoline. After accomplishing this circuitous but unimpeded passage through chamber E, the now enriched gas escapes from the carbureter at the exit T, and is then consumed in the usual manner. If it should be desired to light a greater number of burners, tube L is lifted higher, and cock *g* is, consequently, opened farther, thereby obtaining the additional supply, the coupling H *h′* I insuring a a quantity of hydrocarbon exactly proportioned to the inflow of gas.

As all hydrocarbons vaporize more readily in warm weather than in cold, it is apparent that by heating the water or other fluid in tank A the temperature of the carbureter will be raised to any desired degree, and consequently my apparatus can be used in the coldest climates.

By sloping the floor *b* of the carbureter proper I can expose a more or less extensive surface of hydrocarbon for the gas to act on, which exposure of surface will depend on the number of burners to be lit. If but a limited number of lights are needed, the hydrocarbon may fill only the central or lower portion of chamber E, and the gasoline can be allowed to ascend and occupy the other portions of said chamber as more lights are required. By thus adapting the surface of gasoline to the light required I not only economize in the use of such fluid, but I also prevent the generation of smoke, which always occurs when the quantity of hydrocarbon is not exactly proportioned to the passage of gas through the apparatus.

For hotels and other public places using a great number of burners the apparatus may consist of a series of tanks and carbureters, which latter may be arranged to discharge into a common exit-pipe.

An inferior form of the apparatus may have the flange *d* riveted or soldered to cap D. The gas-regulating cock *g* may be attached to pipe *f*; but I prefer to apply it to service-pipe G, as I thereby save the expense of a separate cock and am enabled to control the flow with greater accuracy.

When the apparatus is used where steam-power is employed the boiler W may be dispensed with, and the water in tank A can then be heated with the waste-steam, or otherwise; or the apparatus may be employed for carbureting air instead of gas. Swivel-couplings may be applied to the rod *h′* and lifter K, so as to afford a more delicate adjustment of cock *g* and lifting-tube L.

Finally, the above-described operation of the apparatus may be exactly reversed—that is to say, the gas may enter near the center of the carbureter, and may have its exit near the periphery of the same.

I am aware it is not new to arrange the partitions in a gasoline-chamber in the shape of a regular volute or scroll; and, therefore, my claim to this portion of the carbureter is expressly limited to the concentric partitions or rings with communicating channels, as seen in Fig. 2.

I claim as my invention—

1. The combination of gas-cock *g*, lever H, spring *h*, connection *h′*, bell-crank I, lifter K, and sliding inlet-tube L, the latter being provided with the gasoline-valve O, as herein described.

2. The combination of sliding inlet-tube L, stuffing-box M *m*, head N, seat *n*, gasoline-valve O, spring P, and float V, substantially as herein described.

3. In a carbureter, the continuous gasoline-chamber E, formed by the concentric partitions or rings *d* and communicating-passages *d′*, as herein combined, and for the purpose set forth.

In testimony of which invention I hereunto set my hand.

FRANK J. ROTH.

Witnesses:

JAMES H. LAYMAN,

IGNAZ FANZ.