H. W. FALK & W. K. ANDREW.

CARBURETER DEVICE.

APPLICATION FILED NOV. 6, 1911.

1,146,316.

Patented July 13, 1915.

2 SHEETS—SHEET 1.

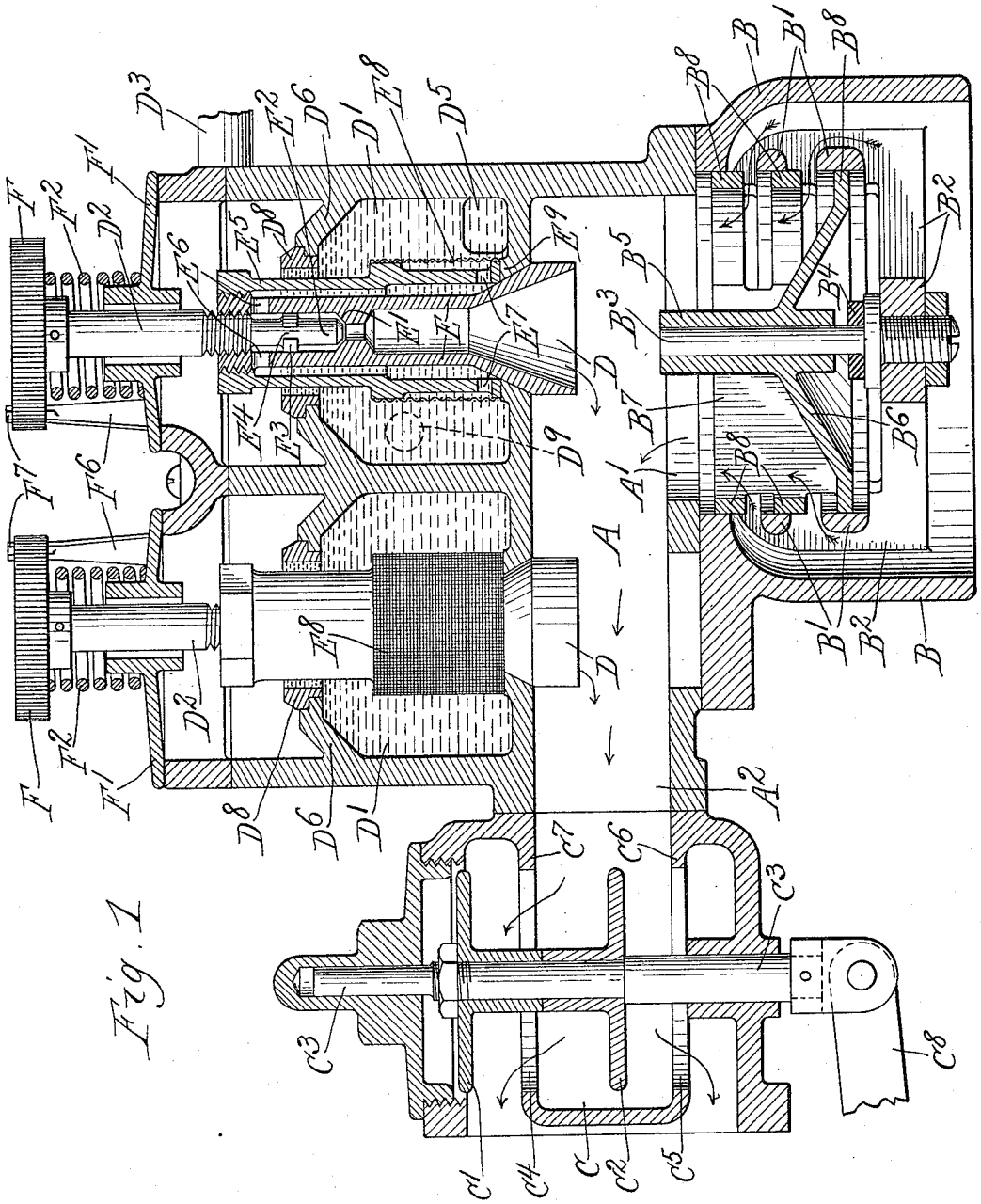


Fig. 1

Witnesses.
Edward T. Wray.
Minnie M. Lindemann.

Inventors.
Herman W. Falk.
William K. Andrew.
by Dyer & Co.
Attorneys.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

H. W. FALK & W. K. ANDREW.

CARBURETER DEVICE.

APPLICATION FILED NOV. 6, 1911.

1,146,316.

Patented July 13, 1915.

2 SHEETS—SHEET 2.

Fig. 3.

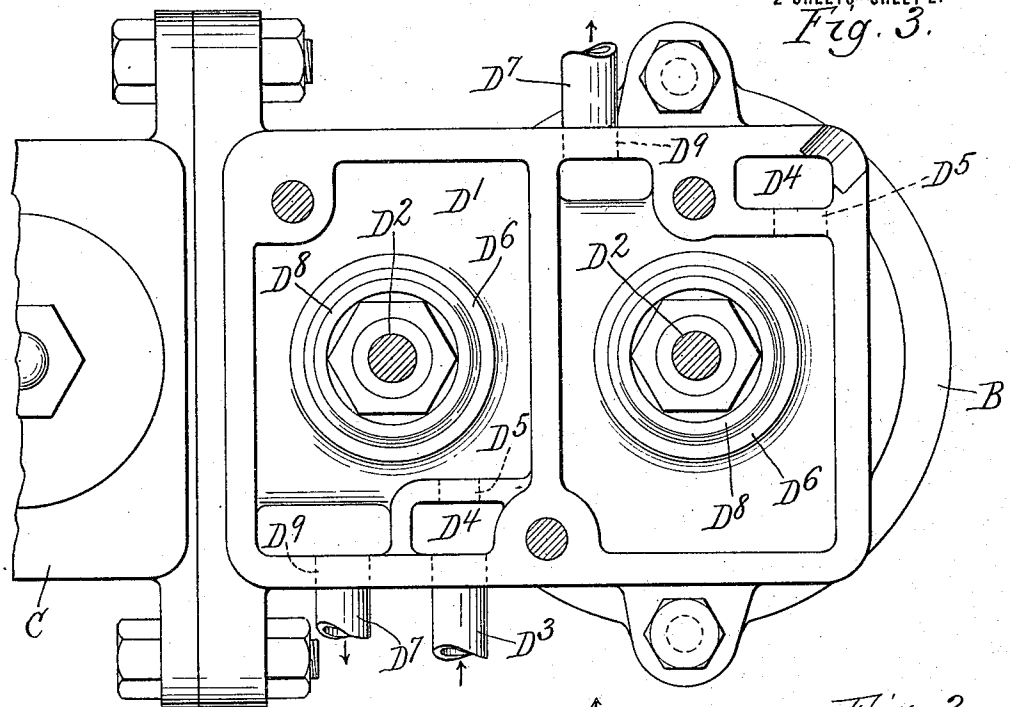
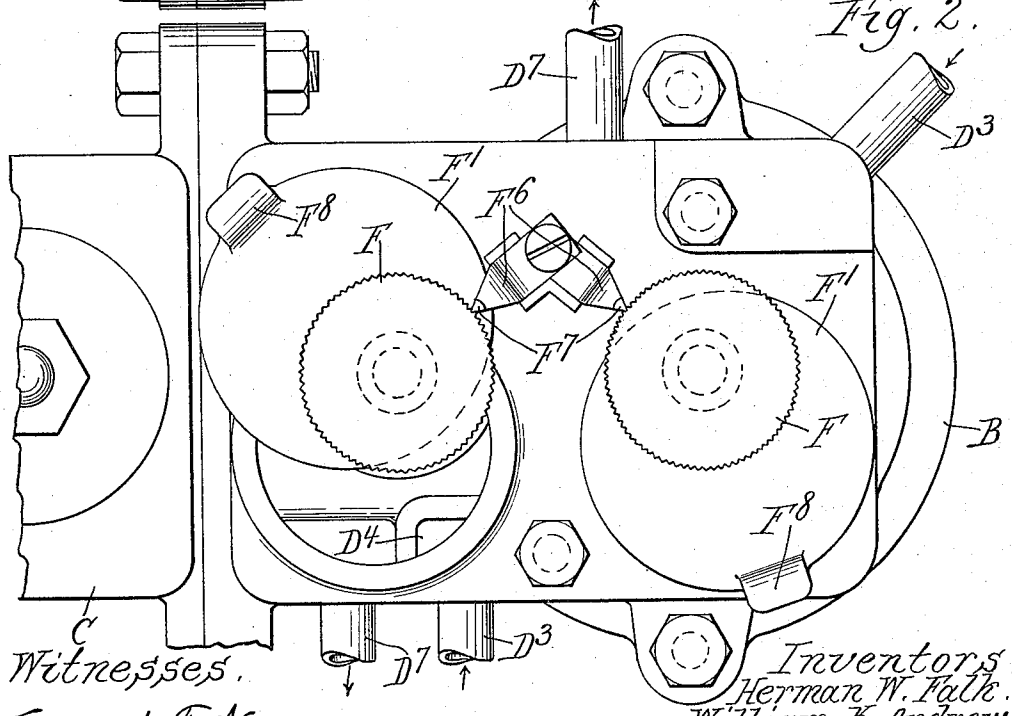


Fig. 2.



Witnesses.

Edward T. Wray.

Minnie M. Lindeman.

Inventors.

Herman W. Falk.

William K. Andrew.

by Parker & Co.

Attorneys.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HERMAN W. FALK AND WILLIAM K. ANDREW, OF MILWAUKEE, WISCONSIN, ASSIGNORS TO M. RUMELY COMPANY, OF LAPORTE, INDIANA, A CORPORATION OF INDIANA.

CARBURETER DEVICE.

1,146,316. Specification of Letters Patent. Patented July 13, 1915.

Application filed November 6, 1911. Serial No. 658,674.

To all whom it may concern:

Be it known that we, HERMAN W. FALK and WILLIAM K. ANDREW, citizens of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a certain new and useful Improvement in Carbureter Devices, of which the following is a specification.

Our invention relates to improvements in carbureters and is illustrated diagrammatically in one form in the accompanying drawings, wherein—

Figure 1 is a section through the carbureter; Fig. 2 is a plan view; Fig. 3 is a plan view with the cover removed.

Like parts are indicated by like letters in all the figures.

The vacuum, mixing or carbureting chamber A is provided at one end with the air intake port A^1 and at the other end with the mixture discharge port A^2. The cage B made up of the annular ring members B^1 held in position and spaced one from the other by the spider arm frame B^2, is concentric with the port A^1. The pin B^3 projects upwardly from the center of the spider arm frame and is surrounded at its base adjacent the spider arm frame by the fiber washer B^4. The sleeve B^5 is slidably mounted upon the pin B^3 and carries the diaphragm B^6 from which projects upwardly the cage B^7 slightly lesser in diameter than the cage B and made up of the spaced annular members B^8. The mixture discharge port A^2 communicates with the valve chamber C in which are located the two balanced puppet valves C^1, C^2 carried by the slidable valve stem C^3 and located in opposition to the valve seats C^4, C^5 in the walls C^6, C^7. The valve stem C^3 is reciprocated by any suitable controlling means operating through the connecting rod C^8. The oil and water is fed to the carbureting chamber through the conical valve nozzles D, the supply to which from the chambers D^1 is controlled by the adjustable valves D^2. The pipes D^3 discharge into the tops of the supply wells D^4 in the walls of the chambers D^1, which wells communicate by means of the ports D^5 at their bottoms with the chamber D^1 below the conical partition walls D^6. The pipes D^7 lead from the discharge openings D^9, which openings are located in the walls of the chambers D^1 above the partition walls D^6. The conical partition walls D^6 are centrally perforate, the perforations containing the removable annular sleeves or rings D^8 which may be made any suitable height to adjust or control the liquid level. The needle valves D^2 are made up of the inner sleeve E which terminates in the conical nozzle D and is provided with the conical seat E^1 in opposition to the plunger E^2, which plunger is guided in the sleeve E by the collar E^3 having the slots E^4 therethrough. The sleeve E is screw threaded at its top into the sleeve E^5 and is provided with the perforations E^6 adjacent its top communicating with the space between it and the sleeve E^5. The sleeve E^5 which has around its bottom the perforations E^7 inclosed by the screen E^8 rests upon the boss E^9, being held in position when it is screwed down upon the sleeve E since the sleeve E is thus drawn up, drawing the conical nozzle up against the conical wall of the perforation in the bottom of the reservoir. The spindle of the needle valve D^2 is provided at its top with the milled thumb screw F, and between it and the removable cover F^1 of the reservoir D^1 is located the spiral spring F^2. The spring F^6 is rigidly attached to the wall of the reservoir D^1 and provided with the wedge shaped member F^7 adapted to engage the corrugations on the thumb screw F to hold it in position. The cover F^1 is provided with the handle F^8 and may be lifted up and rotated to expose the interior of the reservoir as indicated in Fig. 2.

It will be evident that while we have shown in our drawings an operative device, still many changes might be made in the size, shape and arrangement of parts without departing materially from the spirit of our invention, and we wish, therefore, that our drawings be regarded as in a sense diagrammatic.

The use and operation of our invention is

as follows: When the engine operates air enters the carbureting chamber through the intake valve and passes out through the discharge valve into the engine, being controlled in its passage by the balanced puppet valve as indicated. In order that a proper mixture may be had it is necessary that the level of the liquid both hydrocarbon and water be accurately adjusted and this is done by means of the liquid supply pipe, which feeds liquid to the bottom of the liquid reservoir, where it discharges from the well and passes up through the reservoir and out over the top of the conical partition, running down this partition to reach the overflow pipe. It will be observed that unless too great a quantity of liquid is supplied the liquid will bubble up slowly and pass in a thin sheet across the edge of the collar in the perforation in the partition and the liquid level will be substantially the level of the top of the collar. The vacuum in the carbureting chamber caused by the suction of the engine will draw fuel out of the conical nozzle and the fuel in its passage from the reservoir will enter the outer sleeve near its base, passing through the straining screen, and will pass up through the outer and inner sleeve to the perforations in the top of the inner sleeve and thence pass down past the needle valve to the conical nozzle, when it enters the carbureting or vacuum chamber. The needle valve is guided in the inner sleeve by the collar as indicated, which collar is provided with slots or grooves to permit the ready passage of the liquid. The thumb screw on the end of the needle valve spindle may be adjusted in position to suitably control the flow of liquid and when so adjusted the spring actuated holding member will engage the corrugations on the thumb screw to hold it in position and prevent its being rotated or jarred out of adjustment by the vibration of the engine or the careless hand of the operator. The cover over the liquid reservoir it will be observed is removable and held in position by the spiral spring which contacts at its other end the thumb screw and this cover may be lifted up and moved to one side to enable the operator to inspect the interior of the liquid reservoir and see whether or not sufficient liquid is coming through or too much is being supplied as the case may be.

It will be observed that the liquid discharge nozzle is a cone having comparatively steep sides opening out into a wide bell mouth and fed from a very large passage terminated at the top by the needle valve seat, which seat of course surrounds and permits the needle valve to control a passage of comparatively small cross sectional area. It will be observed that this passage, which is the only one of small cross sectional area is far removed from the vacuum chamber and it has been found that the liquid as it leaves the needle valve tends to trickle down the sides of this passage and flow down the sides of the bell mouth or conical nozzle to the vacuum chamber where it is picked up by the air in the chamber. By this arrangement we are enabled to effectively provide against the possibility of any of the liquid being fed owing to an induced vacuum such as might be set up if for any cause there should happen to be in the carbureting chamber a rapidly moving current of air since any such induced vacuum would of course operate to render the carbureter inaccurate since it is designed to operate merely by the mass vacuum in the entire chamber. It will be observed that a rapidly moving current of air passing across the mouth of the nozzle would owing to the very large cross sectional area of the nozzle be unable to exert any sucking power by an induced vacuum.

It will be observed that the needle valves are located each approximately at the center of the reservoir, and in view of this location any tipping or displacing of the carbureter will not materially change the effective liquid level at the valve because although as the carbureter tips, the angularity or position of the over-flow collar will be changed, still this collar is so near to the center of the chamber and the valve that change in the level will be practically negligible. Thus the height of the liquid will always be constant and no bad results produced by any change of position of the engine or carbureter. It will be evident that this must result since when the carbureter is tipped the liquid will rise on one side and fall on the other but the liquid level at the center of the chamber will of course be constant.

It will be noted that under certain circumstances it might be desirable to vary or change the liquid level and for this reason we provide a removable ring or sleeve in the perforation through the separating conical partition and a sleeve of greater or less height as the case may be may be substituted when changes are desired.

We claim:

1. In a carbureter a liquid reservoir comprising a conical horizontally disposed perforate partition separating said reservoir into two parts and an adjustable sleeve held within said perforation.

2. A liquid reservoir for carbureters comprising a two-part chamber, a horizontally disposed conical wall separating said parts, a supply passage discharging to said chamber beneath said wall, a discharge passage discharging therefrom above said wall, sup-

ply and discharge wells in the walls of said chamber and communicating with said passages.

3. In a carbureter having a liquid reservoir comprising a two-part chamber, a conical horizontally disposed perforate partition separating the parts of the reservoir, means for varying the height of the highest points of said partition, said means comprising a removable sleeve within the perforation.

HERMAN W. FALK.
WILLIAM K. ANDREW.

Witnesses:
E. A. WHEELER,
C. F. HARRISON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."