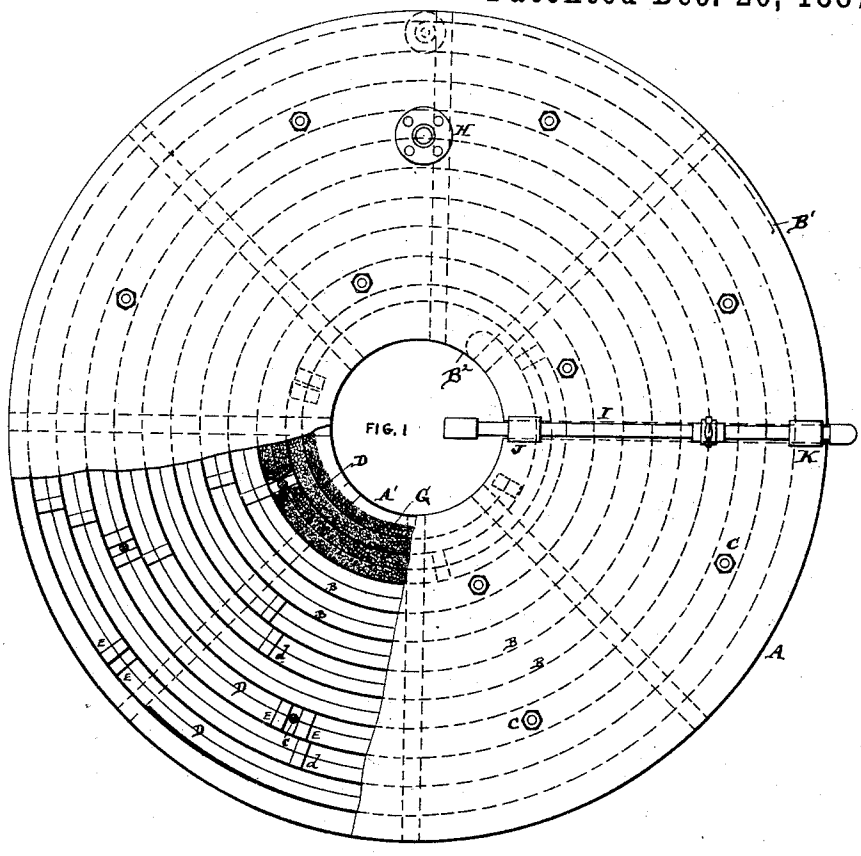
(No Model.)

2 Sheets—Sheet 1.

C. B. DUDLEY.

CARBURETOR.

No. 375,055. Patented Dec. 20, 1887.



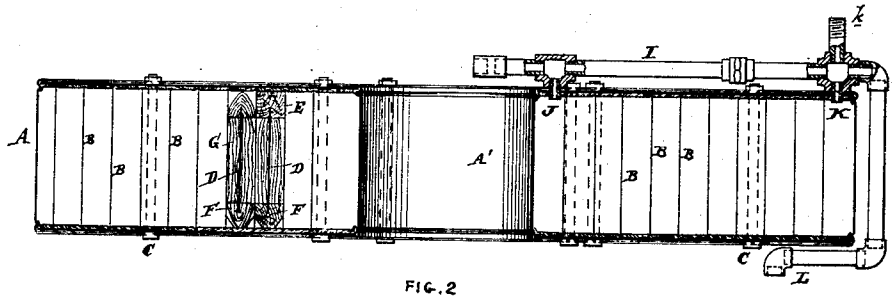


FIG. 2

WITNESSES:

G. F. Harding

H. W. Hanscom

INVENTOR

Charles B. Dudley

BY

Francis T. Chambers

his ATTORNEY.

(No Model.)

2 Sheets—Sheet 2.

C. B. DUDLEY.

CARBURETOR.

No. 375,055. Patented Dec. 20, 1887.

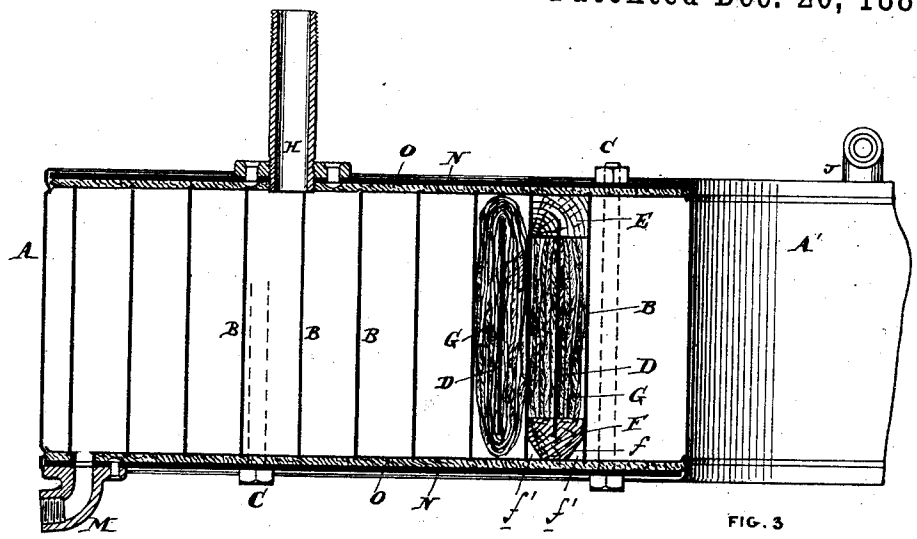


FIG. 3

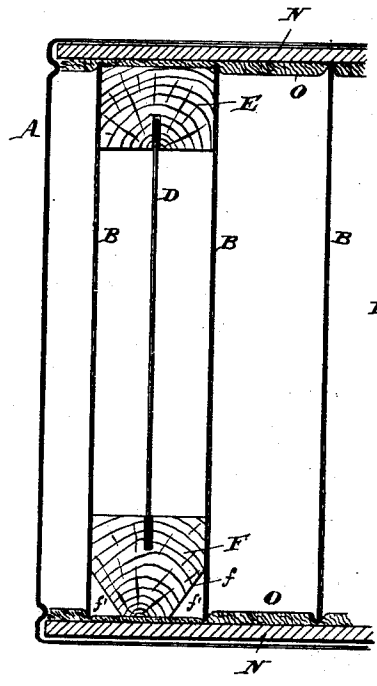


FIG. 4

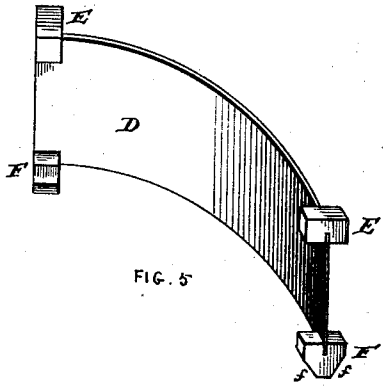


FIG. 5

WITNESSES:

G. P. Dewling

H. C. Van Pourl,

INVENTOR

Charles B. Dudley

BY

Francis T. Chambers

his ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES B. DUDLEY, OF ALTOONA, PENNSYLVANIA.

CARBURETOR.

SPECIFICATION forming part of Letters Patent No. 375,055, dated December 20, 1887.

Application filed May 21, 1887. Serial No. 238,966. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. DUDLEY, of Altoona, county of Blair, State of Pennsylvania, have invented a new and useful Improvement in Carburetors, of which the following is a true and exact description, due reference being had to the drawings which accompany and form part of this specification.

My invention relates to the construction of carburetors used for impregnating air or gas with the vapor of a volatile oil or hydrocarbon preparatory to burning it for illumination; and my object is to at once simplify and improve both the details of the construction and the mode of use of such carburetors, my invention consisting, first, in a device for securing wick or packing in a spiral or volute carburetor; secondly, in devices by means of which I secure a proper circulation of the carbureting material through the carburetor; thirdly, in the means which I have devised for securing the spiral or volute diaphragm which forms the interior of the carburetor into a long volute chamber in place, and in the combination of the various parts of the carburetor hereinafter described, and shown in the accompanying drawings, which illustrate my invention, and in which—

Figure 1 is a plan view of a carburetor embodying my invention and of the general construction which I prefer to use, said view showing a portion of the interior of the carburetor. Fig. 2 is a vertical central cross-section of the carburetor shown in Fig. 1. Fig. 3 is also a vertical section, taken, however, at right angles to the section of Fig. 2 and on an enlarged scale. Fig. 4 is an enlarged vertical section of the outer edge of the carburetor, showing some of the details of my invention; and Fig. 5 is a perspective view of one of the plates on which my wicking or packing is wound, showing, also, the supporting-blocks by which it is held in position.

A is the outer rim or casing of the carburetor, (here shown as of flat annular form, as I prefer to make it,) A′ being the inner rim or wall of the annulus.

B is a diaphragm or plate wound into spiral or volute form and adapted to fit into the annular carburetor A A′. I prefer to bring its inner end, B^2, against the inner rim, A′, so as to make the spiral chamber begin there; but this is not essential. At B′ the outer end of the spiral B is preferably not in contact with the outer rim, A, of the carburetor, and the spiral chamber therefore terminates in a circular channel running around the outside of the carburetor.

N N (see Figs. 3 and 4) are the plates which form the top and bottom of the carburetor.

O O are sheets of felt or of any elastic or compressible material which is unaffected by the carbureting-oil.

C C, &c., are bolts which pass through the carburetor, as shown.

D D are the plates upon which the wicking G is wound. They are preferably made of flexible sheet metal, and are supported upon feet F, which are preferably made to fit against the adjoining coils of the plate B, between which they are inserted; and to prevent their acting as a dam to stop the flow of the oil along the bottom of the spiral chamber they are cut away at *f f*, as shown, or may have channels formed through them by cutting holes or passages at any point at or near their bottom.

E E, &c., are guides secured to the upper part of the plates D, to keep them properly centered in the spiral chamber. I have indicated the feet and guides F and E as being made of wood; but of course metal may be used instead.

f′ f′, Fig. 4, indicate the passages along the bottom of the spiral chamber left by the cutting away of the guide-supports F at *f f*.

H is a nozzle for filling the carburetor.

J, I, K, and L are the conduit-pipes leading to and from the carburetor, which, as they form no part of this invention, need not be here described.

M is a nozzle at the bottom of the carburetor, through which any surplus of oil may be allowed to escape.

My improved carburetor may be put together as follows: The plates D are wound with wicking, as is shown in Fig. 3, and to a thickness sufficient to fill the chamber in which they are to be inserted. They are then placed between the coils of the spiral plate B, which fits or is wound tight against the guide-lugs E and F, which gage the distance apart of the coils. The spiral B is then placed between the plates N, with the felt disks O intervening, and the top and bottom plates are then drawn

together by means of the bolts C, the yielding disks O, of felt or other material, forming a seat for the edges of the coiled plate B, and serving at the same time to secure it in place and to prevent leakage over its edges. The coil thus made up is inclosed between the rims A and A′, and is then ready for use.

In use the air or gas enters the carburetor at J and follows the spiral coil to K, where it escapes fully charged with combustible vapor. This current of air, passing through the carburetor, tends to drive the oil toward the exit, and when freshly filled the exit-passage is sometimes apt to be flooded with it. To prevent this I do not close the end of the last coil formed by the plate B, but let it open into the adjoining one at B′. This, as will be at once seen, prevents the accumulation of oil at the exit, and permits it to flow past it and diffuse itself over so large a space as to be harmless.

The passages *f′* around the bottom of the spiral chamber formed by the plate B permit the oil to run freely around the spiral chamber and come in contact with all the wicking with which it is packed, the wick of course drawing up a full charge of oil by capillarity.

I do not wish to be understood as limiting myself to the above-described process or method of putting my carburetor together, as I have given it simply as illustrating the simplicity of my improved construction and the ease with which it may be put together. Evidently, however, the parts may be assembled in somewhat different order, but with the same result.

My invention is in no wise limited to a carburetor of a circular shape, nor to the use of a spiral diaphragm of any particular curvature, as of course any form of diaphragm which will form the interior of the carburetor into a long winding chamber may be used, and any convenient casing used to envelop it.

While I consider the hereinbefore-described plan of securing the diaphragm in the carburetor as a valuable novelty and of especial adaptability for use with my other improvements, I do not wish to be understood as limiting my invention to its use, as the device for supporting the wicking and the devices for facilitating the flow of oil through the carburetor and for preventing the oil from being carried to the mouth of the exit-pipe may each and all be advantageously employed in carburetors where the diaphragm is secured to the top and bottom plates by solder or any other mode of fastening.

An obvious advantage of my method of construction is, that in case any of the wick becomes clogged or needs removal from other causes it can be easily removed and replaced; but the chief merit of my invention lies in its simplicity and cheapness, for while it is, as I believe, as efficient, if not more so, than any heretofore used, it is very much less costly.

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

1. In a carburetor, the combination of a diaphragm bent so as to form a spiral chamber with substantially vertical sides and horizontal base, a casing forming the outer skin of the carburetor, and the removable wick-holding plates D, made flat, thin, and of less height than the walls of the spiral chamber, so that when wound with wicking they will fit into the same, as and for the purpose specified.

2. In a carburetor, the combination of a diaphragm bent so as to form a spiral chamber with substantially vertical sides and horizontal base, a casing forming the outer skin of the carburetor, the removable wick-holding plates D, made flat, thin, and of less height than the walls of the spiral chamber, so that when wound with wicking they will fit into the same, and supports F, whereby the wick-plates D are maintained at a proper distance above the base of the carburetor.

3. In a carburetor, the combination of a diaphragm bent so as to form a spiral chamber with substantially vertical sides and horizontal base, a casing forming the outer skin of the carburetor, the removable wick-holding plates D, made flat, thin, and of less height than the walls of the spiral chamber, so that when wound with wicking they will fit into the same, supports F, substantially as broad as the spiral chamber, and guides E of similar breadth, whereby the wick-plates D are at the same time supported at a proper distance from the base of the carburetor and properly centered therein.

4. In a carburetor, the combination of a plate, B, wound spirally and clamped between plates N N, (to form a chamber with substantially vertical sides,) with intervening compressible disks O O, forming seats for the edges of the spiral plate, all substantially as and for the purpose specified.

5. In a carburetor, the combination of a plate, B, wound spirally and clamped between plates N N, (to form a chamber with substantially vertical sides,) with intervening compressible disks O O, forming seats for the edges of the spiral plate, and a rim-plate, A, forming the outer wall of the carburetor, but not coming in contact with the spiral plate B, all substantially as and for the purpose specified.

6. In a carburetor, the combination of a plate, B, wound spirally and clamped between plates N N, with intervening compressible disks O O, forming seats for the edges of the spiral plate, removable wick-holding plates D, guide-supports F, having passages cut in their bottoms, as at *f*, to leave a free conduit for oil along the bottom of the carburetor, and the guides E, secured to the tops of the plates D, all substantially as and for the purpose specified.

7. In a carburetor, the combination of a

plate, B, wound spirally and clamped between plates N N, with intervening compressible disks O O, forming seats for the edges of the spiral plate, a rim-plate, A, forming the outer wall of the carburetor, but not coming in contact with the spiral plate B, removable wick-holding plates D, guide-supports F, having their bottom corners cut, as at *f*, to leave a free conduit for oil along the bottom of the carburetor, and the guides E, secured to the tops of the plates D, all substantially as and for the purpose specified.

CHARLES B. DUDLEY.

Witnesses:
E. C. STOCKTON,
ALONZA D. HOUCK.