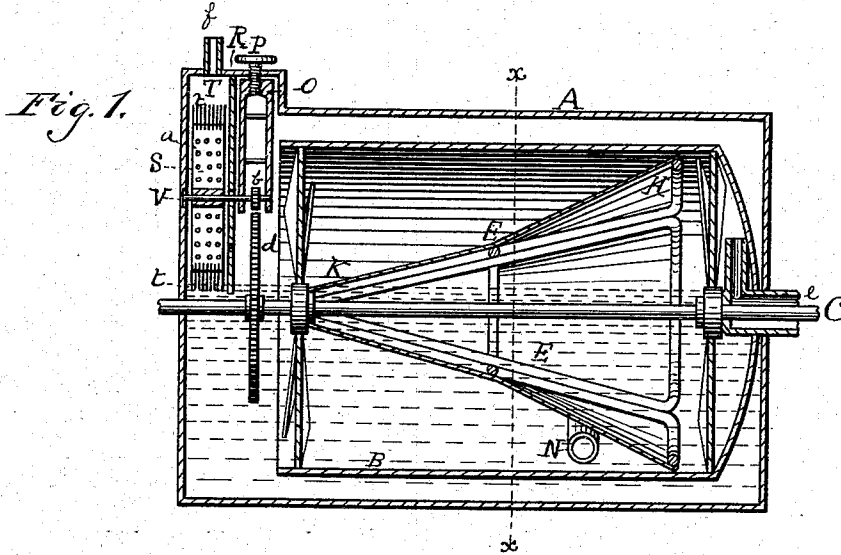
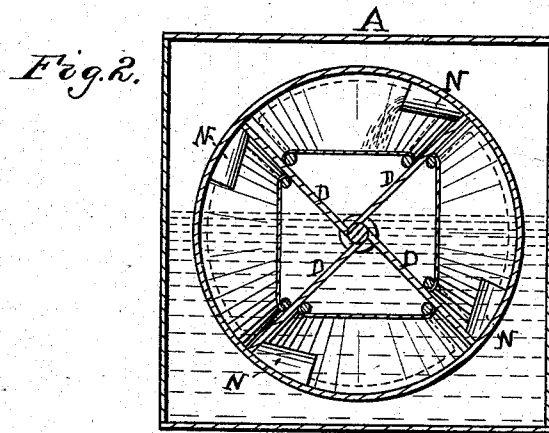
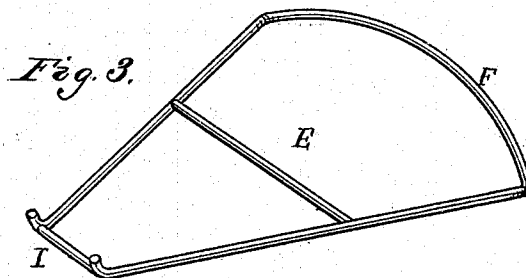


(No Model.)

H. C. DE WITT.
ROTARY CARBURETOR.

No. 249,163.

Patented Nov. 8, 1881.



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UNITED STATES PATENT OFFICE.

HENRY C. DE WITT, OF CHICAGO, ILLINOIS.

ROTARY CARBURETOR.

SPECIFICATION forming part of Letters Patent No. 249,163, dated November 8, 1881.

Application filed May 25, 1881. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. DE WITT, of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Rotary Carburetors, of which the following is the specification, reference being had to the accompanying drawings, and to the figures and letters of reference thereon.

The hydrocarbon used in manufacturing illuminating-gas gives off gas according to the condition of the liquid. At first the gas will freely escape from it at any temperature. The first that escapes gives a satisfactory light. In a short time the character of the flame changes from a clear bright light to a thin blue one. This arises from the different degrees of density of the liquid or temperature of the atmosphere. As the lighter portions of the liquid volatilize, the remainder is of a greater density, and consequently the volatilization is slower; hence the changed character of the flame. In case of low temperature of the atmosphere, the liquid is chilled, stiffened, and more compact, and the volatilization is checked.

Hitherto, in order to maintain a uniform supply of gas, a new quantity of the hydrocarbon liquid of a lighter character had to be supplied, or heat would have to be applied. In case a new supply was furnished, that portion of the heavy liquid remaining would have to be thrown away, which is very rich in carbon. If this heavy portion of the liquid were brought in contact with the atmosphere under such circumstances as to bring the molecules of the hydrocarbon into contact with the atoms of air, then carbonizing takes place, producing good gas. To thoroughly compound this heavy hydrocarbon fluid with the atmosphere is the object of this invention, which is done by mixing and combining the two elements together and then passing the mixture over and through a disseminator, as hereinafter shown.

Figure 1 is a longitudinal vertical section. Fig. 2 is a cross-section of Fig. 1 through line xx of my improvement. Fig. 3 is a view of the frame of the disseminator.

Similar letters of reference refer to similar parts in the different drawings.

A is the tank holding the hydrocarbon liquid, and within which is placed the pump-cylinder B. This pump-cylinder is constructed in the well-known form, revolving upon its axis C.

The interior of this pump-cylinder is divided into four equal compartments by the partitions D D. These partitions are slightly winding, as is the case in all machines of this character. Each end of the pump-cylinder is made with an opening into each compartment.

E, Fig. 3, is a frame fitting into one compartment. The end F is placed against the inner surface of casing of the pump-cylinder, as at H, Fig. 1. The other end, I, is placed at the opposite end of the same compartment, at the axis, as at K, Fig. 1. The end F is made sufficiently wide and oval to fit against the casing of the pump-cylinder, on the inner side thereof, and the end I is made narrow, so as to fit at the other end of the same compartment, at the axis, and at the same time the sides fit snugly against the partitions D D. Upon this frame is clutched and attached canvas or any suitable textile fabric, the whole forming and constituting the disseminator E. In each compartment of the pump-cylinder is placed, in precisely similar position, a similarly-constructed disseminator.

N is a cup, placed on inside of pump-cylinder, near the partition D, and at the larger end of the disseminator. A similar cup is similarly situated in each compartment.

O is a stirrup located at one end of pump-cylinder, and suspended from the tank by means of the thumb-screw P.

R is a partition outside of stirrup P, attached fixedly to the inside of tank A and extending downward to very near the axis C and below the surface of the liquid, thus forming a chamber, T, at end of pump-cylinder B and within the tank A.

S is a mixer, located in chamber T. It is made of four fans or blades at equal distances apart on the journal V. In each fan are a series of small perforations, a , and each fan has at its extreme end needles t . The journal V works in bearings in stirrup O, and on the journal between the arms of the stirrup is a small pinion, b . This pinion b meshes into a large cog-wheel, d , which is attached to the shaft of pump-cylinder. The journal V passes through an elongated hole in partition R. By turning the screw P to the right or left the stirrup O is raised or lowered at pleasure. Consequently the mixer S is also raised or lowered correspondingly. f is an open aperture to admit the air into chamber T. e is the escape-

pipe for the gas into the distributing-pipes. The end of the needles *t t* extend into the hydrocarbon liquid a short distance. The speed of the mixer *S* will be greater or less, according to the gearing.

The operation of my invention is as follows: The tank *A* is filled with hydrocarbon liquid to a short distance above the axle *C*, a rotary motion is given to the pump-cylinder *B*, the cups *N N* in turn lift their full of liquid, and as they turn with the pump-cylinder the contained liquid is poured over the surface of the disseminator *E*, through which it percolates. The action of the pump-cylinder forces the air and vapor arising from the hydrocarbon through the disseminator, which causes a thorough intermingling of the atoms of each, and thence is forced out through escape-pipe *e*. Air is constantly being supplied through the aperture *f*.

The last above is the working of the works when light hydrocarbon liquid is used. In case the hydrocarbon is heavy or the temperature is low, the mixer *S* is brought into use, which is done as follows: The thumb screw *P* is turned, which drops the pinion *b* into mesh with cog-wheel *d*. This causes the mixer *S* to revolve. In its revolving the needles *t t* disturb and lift portions of the hydrocarbon liquid, scattering it throughout the chamber, which causes it to mix and blend with the air. This mixing and blending is assisted by the holes *a* in the fans *S*. This compound of air and vapor by the action of the pump-cylinder is drawn into the pump-cylinder, where it is submitted to a second mixing and blending, as shown in first above, describing operation. This process or mode of operation last described enables me to use hydrocarbon liquid of a very low gravity, which, in machines hitherto in use, has been entirely worthless, because of their inability to cause sufficient evaporation of the hydrocarbon to take place. The same is the case in cold weather. Vaporizing of the liquid is retarded by the influence of low temperature. By using the mixer *S* this cold stiff liquid is vaporized the same as above described.

It will be observed that I am able by this process to produce a good quality of gas for

illuminating purposes from either light or heavy hydrocarbon and in cold or warm weather.

In using light hydrocarbon and in warm weather the mixer need not be used.

The speed of the mixer is regulated by the amount of gas consumed—when a large amount is used the speed will be greater, when a small amount is used the speed will be less.

The mixer *S* can be worked independently of the pump-shaft *C* of the pump-cylinder *B*. By extending the journal *V* of the mixer beyond the casing, and attaching thereto a gearing worked by a coiled spring similar to the gearing and spring of a clock, it will be observed that all the facilities for working the mixer are secured independent of the shaft *C*.

The mixer *S* is described as having its fans terminate in needle-fingers, and as being perforated. It is obvious that this mixer can be varied in the form and nature of its construction, as the mixing, combining, and blending the atmosphere with the hydrocarbon by a rapid motion of the two elements without passing the atmosphere over or through the body of carbon can be accomplished with a modified form of the mixer *S*.

It is believed that this method of producing gas by blending and mixing the two elements—viz., atmosphere and hydrocarbon—by rapidly and violently agitating them together is new.

What I claim is—

1. The combination of the stirrup *O*, thumb-screw *P*, and mixer *S*, all arranged and constructed substantially as shown, and for the purpose described.

2. The combination of the pump-cylinder *B* and disseminator *E*, said disseminator being located obliquely to the axis of the pump-cylinder *B* and between the partitions *D D*, with the wider end at the periphery of one end of cylinder and the narrow end at its axis, substantially as and for the purpose described.

3. The combination of the mixer *S*, having needle-fingers *t t*, with the pump-cylinder *B* and disseminator *E*, all constructed and arranged substantially as shown.

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Witnesses:

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