No. 758,790. PATENTED MAY 3, 1904.

L. C. SNELL.

CARBURETER.

APPLICATION FILED APR. 1, 1902.

NO MODEL.

Fig. 1.

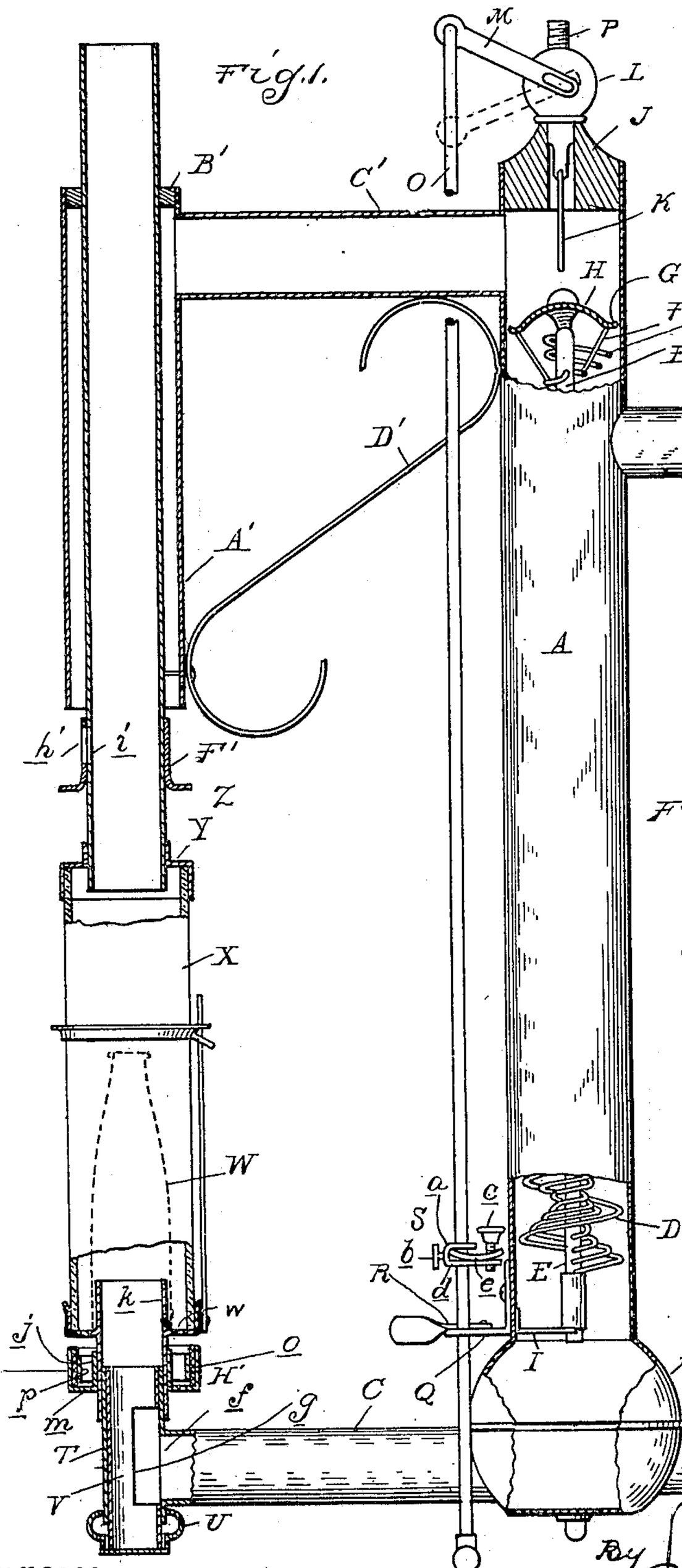


Fig. 4.

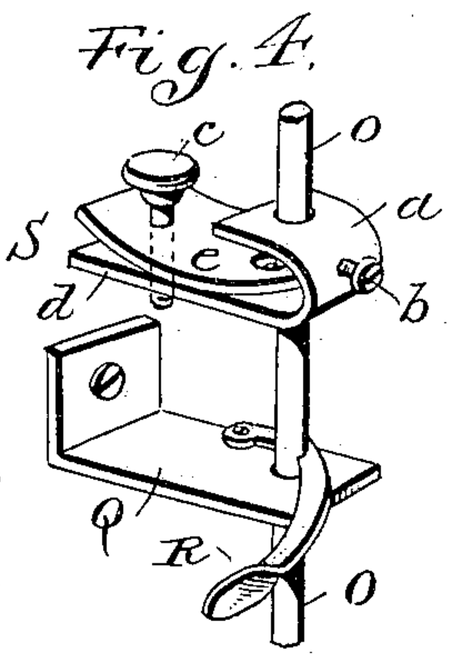


Fig. 3.

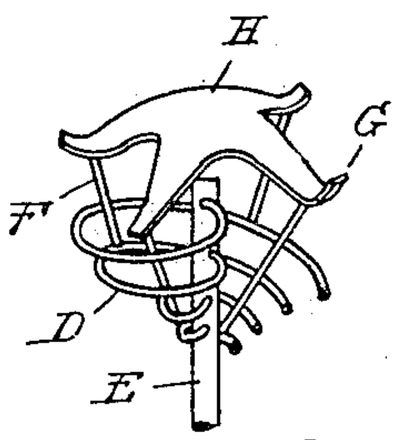


Fig. 2.

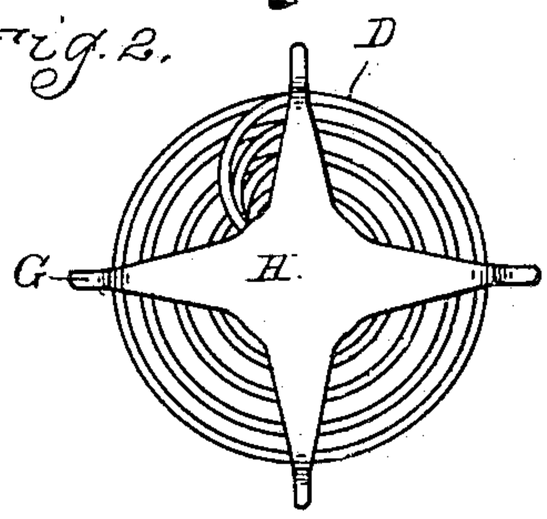
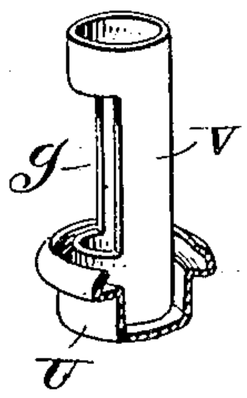


Fig. 5.



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UNITED STATES PATENT OFFICE.

LUTHER C. SNELL, OF DETROIT, MICHIGAN.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 758,790, dated May 3, 1904.

Application filed April 1, 1902. Serial No. 100,941. (No model.)

To all whom it may concern:

Be it known that I, LUTHER C. SNELL, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Carbureters, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to carbureters particularly designed for carbureting air for illuminating purposes; and it consists in the novel formation of the carbureter and in the peculiar construction, arrangement, and combination of its various parts, as will be more fully hereinafter set forth, and shown in the drawings.

Figure 1 is a vertical central section through the carbureter, some of the parts being shown partially in elevation. Fig. 2 is a plan view of the carbureting-tube. Fig. 3 is a perspective view of the upper end portion of the disseminator, and Figs. 4 and 5 are detail views.

In the drawings thus briefly referred to the reference-letter A designates the usual carbureting-tube or other suitable conduit terminating at its lower end in an enlargement B, which forms a receptacle for the products of condensation.

C is a lateral discharge-conduit leading from the enlarged portion of the tube through which the carbureted air from the latter passes.

Arranged longitudinally within the tube described is an oil-disseminator adapted to break up the drops of the hydrocarbon liquid and bring the latter in contact with the air which is admitted within the tube at its upper end. In construction the disseminator is preferably composed of a plurality of helical wires or conductor-rods, such as D, concentrically arranged, as shown, and connected at their upper and lower ends to an upright or standard E. Vertically-extending wires F connect the helical wires at their upper ends with arms G, depending from the splash-plate H, the plate being arranged, as shown, above and in proximity to the helical conductors and secured to the tube in any suitable manner. The lower end of the standard is held in place by the lateral support I, which is connected to the tube in the manner indicated in Fig. 1. By thus forming the conductor for the hydrocarbon liquid the air is enabled to pass freely through the various turns and convolutions, and thus become thoroughly carbureted before it is discharged from the tube.

Inserted within the upper end of the carbureting-tube is an apertured block J of non-conducting material, one of the functions of which will be hereinafter set forth. Through this block or plug a discharge-nozzle K extends in adjacence to the splash-plate.

L is a suitable valve-casing supported upon the block, and M is an operating-arm for the valve. (Not shown.) This arm is adapted to be actuated by a rod O, which is pivoted to the arm, as shown, and extends below the carbureting-tube, as illustrated in Fig. 1.

An apertured bracket Q is connected to the lower end of the carbureting-tube and forms a guide for the rod O.

R is a lock in the form of a hook pivoted upon the bracket Q and adapted to engage a notch within the rod to hold the valve in its closed position.

In order that the valve may be opened the desired amount for the proper feed, I have provided a stop S, which is adjustably secured to the rod and is adapted when the latter is unlocked to strike against the bracket. The stop preferably consists of an apertured U-shaped plate *a*, sleeved upon the rod, and a set-screw *b*, which holds the plate in its different positions of adjustment. To obtain a finer adjustment than is possible by merely adjusting the plate, I employ a screw *c*, which extends through the lower arm *d* of the stop, and provide a locking-plate *e* for maintaining the screw in its adjusted positions. The plate, as shown, is sleeved upon the rod at one end and has a threaded aperture formed within its free end, through which the screw passes.

The reference-letter T designates a vertical open-ended burner-tube communicating through a port *f* in its side with the discharge-tube C. A drip-cup U for the products of condensation is sleeved over and closes the lower end of the tube T and carries a plug-valve V, which controls the supply of carbureted air to the burner, hereinafter described. The valve referred to is preferably in the

form of a tube having an inlet-port *g* formed in its side and is secured at its lower end to the bottom of the drip-cup, the latter serving as an operating device or handle for the valve.

Sleeved upon the upper end portion of the tube T is a Welsbach burner W, which may be of usual construction and is provided with a perforated base *w*. The chimney X of the burner, as shown in Fig. 1, is preferably provided with an apertured cap Y at its upper end, the cap carrying a tube Z, through which the products of combustion pass from the burner.

A′ is an air-tube inclosing the greater portion of the discharge-tube Z, open at its lower end and closed by a plug B′ at its upper end.

C′ is a feed-pipe leading from the air-tube to the upper end of the carbureting-tube and rigidly connected to it.

For the purpose of bracing the parts I may and preferably do employ a brace member D′, extending diagonally, as shown, and connected to the carbureting-tube and feed-tube at one end and at its opposite end to the lower portion of the air-tube.

By the use of the air-tube described I am enabled to supply heated air to the carbureting-tube, which assists materially in evaporating the hydrocarbon liquid.

In order to obtain the best results from the burner, it is desirable that means be employed whereby the supply of air may be regulated as may be found necessary. I have shown as the regulating means a valve H′ for this purpose, comprising a sleeve *j*, engaging the tube *k* of the burner, and an annular flange *l*, spaced from and connected to the sleeve, as plainly shown in Fig. 1.

When it is desired to increase the air-supply, the valve is moved downwardly upon the tube, and the air passes over the valve and upwardly through the apertures in the base *w* of the burner W.

To prevent the overheating of the valve described, a ring of asbestos *o* is placed within the valve in contact with the inner face of the flange *l* and is retained in position by means of a ring *p*.

In the operation of the burner hydrocarbon liquid is supplied to the valve-casing through a suitable supply-pipe P, and upon opening the valve within the casing the desired amount the liquid is caused to drop upon the conductor within the carbureting-tube. The valve controlling the discharge of the carbureted air within the burner being open, the operator inserts a lighted match within a port *i*, formed within the tube Z immediately above the burner, and thus ignites the carbureted air. After the burner is in operation air is drawn within the tube A′, heated, and fed within the carbureting-tube at its upper end, the heated air, as before set forth, assisting materially in the vaporization of the hydrocarbon liquid.

I preferably provide a valve F′ in the form of a sleeve to close the port *i* in the tube Z, an aperture *h* being formed within the sleeve to register with the port.

In applying air-heating mechanism to the carbureter there is a tendency of the heated air vaporizing the hydrocarbon liquid before it is deposited upon the conductor. The objectionable feature of the vaporizing is that it would interfere materially with the uniform feed of the liquid. I provide means for preventing any such vaporization, which consists in this case of the block or plug within the upper tube end, which has heretofore been described. This plug in addition to the function of forming a support for the discharge-nozzle serves as a guard or shield for the valve-casing, and thus prevents any possibility of the vaporizing of the liquid and maintains the drop-feed.

What I claim as my invention is—

1. The combination with a carbureting-tube provided with a discharge-conduit for the carbureted air, of a series of conical-shaped conductors, the smaller end of each adjacent pair adjoining each other, and means for feeding a hydrocarbon liquid to said conductors.

2. The combination with a carbureting-tube provided with a discharge-conduit, of a plurality of coaxially-arranged helical conductors extending longitudinally within the tube, and means for feeding a hydrocarbon liquid to the several conductors.

3. The combination with a carbureting-tube provided with a discharge-conduit, of a plurality of independent and coaxially-arranged helical conductors extending longitudinally within the tube, a splash-plate above said conductors and connected thereto, and a drip-nozzle in operative relation to said splash-plate.

4. The combination with a carbureting-tube, of a burner, a conduit for the carbureted air leading from the tube to the burner, a valve controlling the supply of carbureted air to the burner, and an oil-cup, beneath the burner, connected to the valve and serving as an operating device for the latter.

5. The combination with a carbureting-tube, of a plurality of coaxially-arranged independent conductors extending longitudinally within the tube, each consisting of a single wire, helical in form, and means for feeding a hydrocarbon liquid to the several conductors.

6. In a carbureter, the combination with a carbureting-tube, of a liquid-conductor therein, means communicating with the tube for conducting heated air thereinto, mechanism for feeding a hydrocarbon liquid to the conductor, and means within the tube for preventing the heating of the feed mechanism.

7. In a carbureter, the combination with the carbureting-tube, of a liquid-conductor extending longitudinally therein, means for supplying the tube with heated air, an apertured plug of non-conducting material ar-

ranged within the carbureting-tube above the conductor, and a valve-controlled feed-pipe extending through the plug into operative relation to the conductor.

8. In a carbureter, the combination with a carbureting-tube, of a liquid-conductor extending longitudinally therein, means communicating with the tube for conducting heated air thereinto, mechanism for feeding a hydrocarbon liquid to the conductor, and means within the tube for protecting the feed mechanism from the heated air.

9. In a carbureter, the combination with a carbureting-tube, of a liquid-conductor extending longitudinally therein, means for supplying the tube with heated air, mechanism for feeding a hydrocarbon liquid to the conductor, and non-conducting material arranged about the feed mechanism and serving to protect the latter from the heated air fed within the carbureting-tube.

10. In a carbureter, the combination with a carbureting-tube, of a liquid-conductor therein, a conduit communicating with the tube for supplying air thereto, means within the conduit for heating the air, mechanism for feeding hydrocarbon liquid to the conductor, and means within the tube for preventing the heating of the feed mechanism.

11. In a carbureter, the combination with a carbureting-tube, of a burner, a discharge-tube for the products of combustion, an air-tube surrounding the same, and having a conduit leading to the carbureting-tube for supplying heated air thereto, mechanism for feeding hydrocarbon liquid to the carbureting-tube, and non-conducting material arranged about the feed mechanism to protect the same from the heated air.

12. In a carbureter, the combination with a carbureting-tube, of a liquid-conductor therein, mechanism for feeding hydrocarbon liquid to the conductor, a burner, a discharge-tube for the products of combustion, an air-tube surrounding the same, and having a conduit leading to the carbureting-tube to supply heated air thereto, and means within the carbureting-tube for preventing the heating of the feed mechanism.

13. In a carbureter, the combination with a carbureting-tube, of a liquid-conductor therein, mechanism for feeding hydrocarbon liquid to the conductor, a burner, a discharge-tube for the products of combustion, an air-tube surrounding the same and having a conduit leading to the carbureting-tube for supplying heated air thereto, a non-conducting material arranged about the feed mechanism and serving to protect the latter from the heated air fed within the carbureting-tube.

14. In a carbureter, the combination with a carbureting-tube, of a burner, a discharge-tube for the products of combustion from the burner, an air-tube surrounding the same and secured thereto at its upper end, a conduit leading from the air-tube to the carbureting-tube for supplying heated air thereto, a brace member secured at one end to the free end of the air-tube and at its opposite end to the carbureting-tube, means for feeding hydrocarbon liquid to the carbureting-tube, and non-conducting material arranged about the feed mechanism to protect the same from the heated air.

15. In a carbureter, the combination with a carbureting-tube provided with a discharge-conduit, of a plurality of coaxially-arranged helical conductors extending longitudinally within the tube, means for feeding hydrocarbon liquid to the several conductors, and means for regulating the said feed.

16. In a carbureter, the combination with a carbureting-tube provided with a discharge-conduit, of a plurality of coaxially-arranged helical conductors extending longitudinally within the tube, means for feeding a hydrocarbon liquid to the conductors, a valve for regulating the supply of liquid, means for adjusting the valve, and means for retaining the valve in its adjusted position.

17. In a carbureter, the combination with a carbureting-tube, provided with a discharge-conduit, of a plurality of helical conductors extending longitudinally within the tube, means for feeding a hydrocarbon liquid to the several conductors, a valve for regulating the supply of liquid, an operating-rod for adjusting the valve, and means on the tube for retaining the rod in its adjusted position.

18. The combination with a carbureting-tube provided with a discharge-conduit for the carbureted air, of a series of wire conical-shaped conductors, the smaller ends of each adjacent pair adjoining each other and means for feeding a hydrocarbon liquid to said conductors.

19. The combination with a carbureting-tube provided with a discharge-conduit, of a standard extending longitudinally within the tube, a plurality of coaxially-arranged helical conductors mounted upon the standard, and means for feeding hydrocarbon liquid to the several conductors.

20. The combination with a carbureting-tube provided with a discharge-conduit, of a standard extending longitudinally within the tube, a plurality of coaxially-arranged helical conductors mounted upon the standard, a splash-plate above said conductors and connected thereto, and a drip-nozzle in operative relation to said splash-plate.

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

LUTHER C. SNELL.

Witnesses:
L. J. WHITTEMORE,
H. C. SMITH.