No. 736,157. PATENTED AUG. 11, 1903.

W. SAMS.

ATOMIZING AND CARBURETING DEVICE.

APPLICATION FILED NOV. 25, 1902.

NO MODEL.

Fig. 1

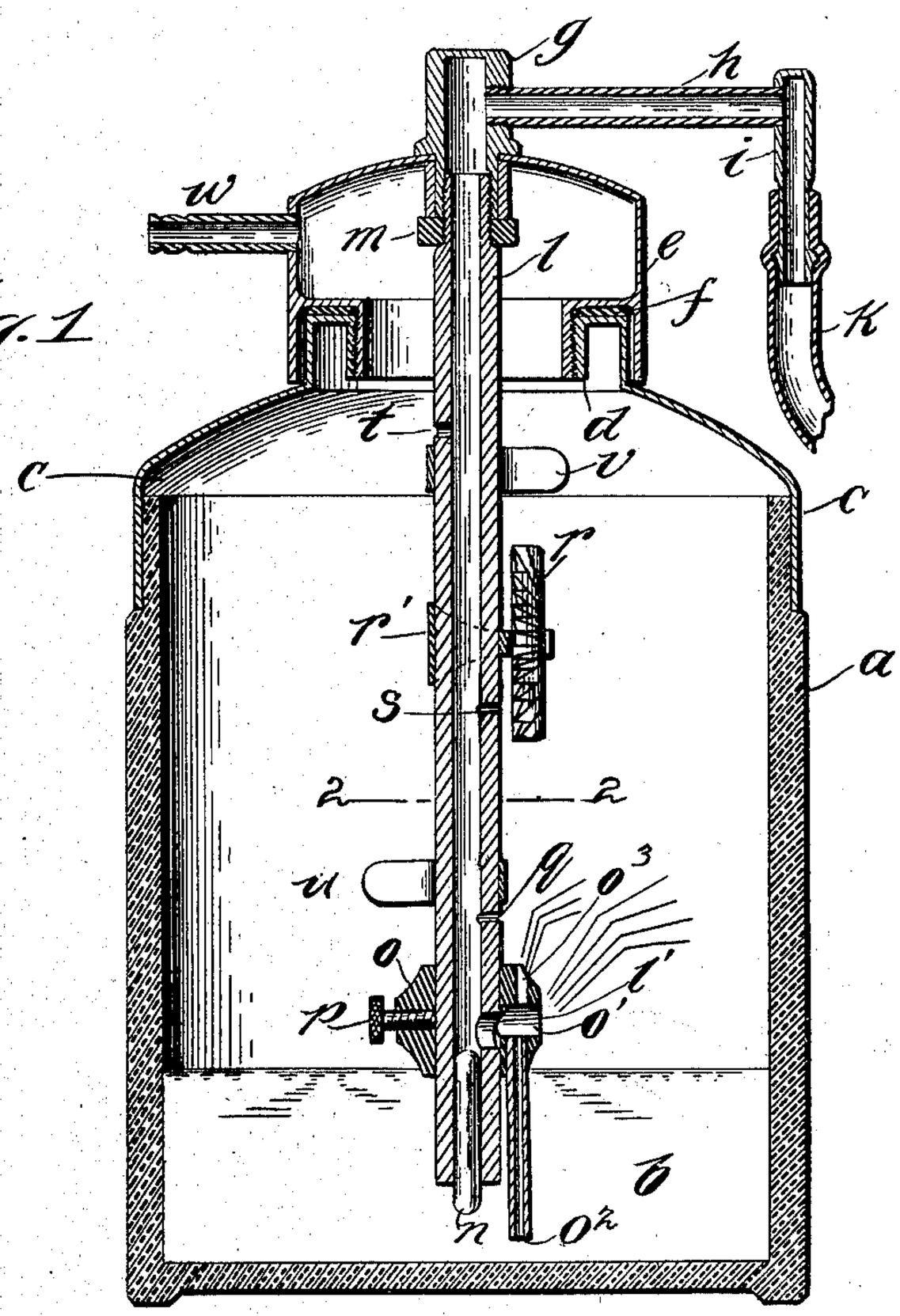
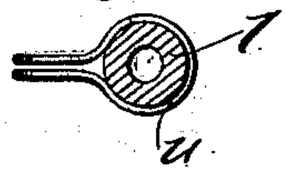


Fig. 2.



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No. 736,157. Patented August 11, 1903.

UNITED STATES PATENT OFFICE.

WALTER SAMS, OF CHICAGO, ILLINOIS.

ATOMIZING AND CARBURETING DEVICE.

SPECIFICATION forming part of Letters Patent No. 736,157, dated August 11, 1903.

Application filed November 25, 1902. Serial No. 132,711. (No model.)

To all whom it may concern:

Be it known that I, WALTER SAMS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Atomizing Devices, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to vaporizing, atomizing, or carbureting devices, and has for its object the provision of an improved device of this character whereby the fluid may be subdivided with extreme fineness, producing in the case of gasolene substantially a vapor or gas that is ready for instantaneous ignition and is capable of perfect combustion.

In apparatus of the character described there was usually an imperfect mixture of air and oil, due to the imperfect commingling of these elements at the point of mixture. In accordance with my invention the imperfectly-mixed stream of air and fluid is after its issuance from the mixing device subjected to another stream of air that thoroughly intermixes with the combined stream of air and fluid to more perfectly complete the vaporization. This feature of my invention is preferably practiced by locating at the lower end of the air-tube a mixing device, causing the initial mixture of air and fluid, above which mixing device there is located an aperture or port through which air is ejected into the initial mixture to more completely intermingle the air with the fluid, so as to vaporize or gasify the same.

I further provide an agitating device in the preferred embodiment of the invention that has a wide range of influence and serves to agitate the mixture of fluid and air throughout a large area or space. This agitating device is preferably in the form of a fan that is operated by means of air ejected through another port-hole in communication with the air-pipe.

I have provided means whereby the degree of vaporization of fluid fuels may be regulated to the work that is to be performed, to which end I preferably provide in the air-pipe ports or apertures of different sizes, the larger port serving to effect a lesser degree of vaporization than the smaller. One or the other of these ports may only be included in service at one time, so that the carbureter may be suited to the selected work. The means that are preferably employed for controlling the operativeness of the ports are valves, which valves are desirably in the form of spring clips or collars, which conform to the air-pipe throughout the greater portion of the air-pipe's periphery, the clips being provided with extensions that may be readily grasped by the user to slide the same away from or over the ports, as desired. The smaller port is preferably that which is located immediately above the initial mixer, while the larger is that which is located at the upper end of the air-pipe. The third port, that which operates the fan, is desirably located between the aforesaid ports. The fan is preferably mounted upon a support that is also slidable and which may be moved to cover the port through which air that is to operate the fan would otherwise be passed.

I will explain my invention in its various aspects by reference to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of the device constructed in accordance with my invention; and Fig. 2 is a sectional plan on line 2 2 of Fig. 1, showing, however, only a part of the apparatus.

Like parts are indicated by similar characters in both views.

The vaporizing device includes as one of its structural parts a glass bottle *a*, in which gasolene or other fluid *b* is contained. The bottle is desirably provided with a metal cap *c*, that is turned inwardly at its central portion *d*, the central portion being threaded, as indicated, so that cap *e* may be removed or secured in place. The top rim of the cover *c* has placed thereon a gasket or packing-ring *f*, formed of suitable substance, as leather, so that the joint between the cap *e* and the cover *c* may be hermetically sealed. The cap *e* is provided with a boss *g*, that extends into the interior thereof, which boss *g* is provided at the exterior with the connecting-pipe *h*, terminating in a coupling-terminal *i*, with which coupling-terminal *i* an air-hose *k* may be engaged. The inner end of the boss *g* is desirably threaded upon its interior to

have thread engagement with the air-pipe *l*, the adjustment of the air-pipe within the boss *g* being fixed by the threaded washer *m*. This air-pipe *l* is closed at its lower end by means of a plug *n* and carries at its lower end a sleeve *o*, that is movable upon the air-pipe and which is adjustably secured upon the air-pipe by means of the set-screw *p*. The sleeve *o* is provided with an aperture *o'*, which is designed to communicate with the aperture *l'* in the pipe *l*, the apertures *o'* and *l'* being desirably of the same diameter, but axially displaced. A second duct or aperture o^2 is provided in the sleeve *o*, this aperture o^2 being desirably provided by a tube that projects through the sleeve *o* into communication with the aperture *o'*. Aperture o^3 desirably forms a continuation of the aperture o^2. When air is supplied under pressure through the pipe *k*, the connection *h*, and the pipe *l*, it is forced through the openings or apertures *l' o'*, causing a suction that effects the passage of the fluid through the apertures o^2 o^3. Commingling of the air and fluid results when the fluid discharges itself from the passage o^2. This mixture, however, of air and fluid is not sufficiently thorough to secure that effectiveness in combustion that is desired in particular kinds of work. In order that a more thorough intermixture of air and fluid may be effected, I provide above the sleeve *o* an aperture *q*, that is preferably of small diameter, through which aperture or port the air is impressed with a suitable degree of pressure, so as to come in forcible contact with the stream of intermixed air and fluid issuing from the sleeve *o* to effect more thorough the mixture of the air with the fluid. To promote the desired result, I may provide upon the pipe *l* a fan *r* or other agitating device that may be arranged in such relation to an aperture or port *s* in the pipe *l* as to be rotated by the air that is forced through said aperture. When the fan is thus rotated, its influence is exerted throughout a wide range of space, creating thereby a more thorough agitation of the air and intermingling thereof with the fluid. This fan is desirably mounted upon a sliding support *r'*, which may be moved to cover the port *s*, so as to throw the fan out of operation. There is also provided in the pipe *l* another aperture or port *t*, that is located near the upper end of the pipe. There are desirably associated with the ports *q* and *t* sleeves *u v*, that are preferably in the form of spring-clips, as illustrated in Fig. 2, and which are designed to cover or close the ports *q* and *t*. When an extremely thorough mixture of air and fluid is desired, the lower port is opened and the top port is closed, so that the air by being forced through the small opening impinges upon the previously-formed stream of fluid and air. Where a mixture not quite so thorough is desired, the lower port is closed and the upper port *t* is opened, and as the upper port *t* is of larger diameter than the port *q* the desired result is secured.

The cap *e* may be provided with an attaching device *w*, whereby the gaseous product may be conveyed to perform the desired work.

It is obvious that many changes may be made in the apparatus without departing from the spirit of the invention, and I therefore do not wish to be limited to the precise construction herein disclosed; but,

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

1. In an atomizing device the combination with a receptacle for the fluid to be atomized of an air-pipe extending within the receptacle and provided with an aperture, an apertured sleeve movable longitudinally upon the pipe to adjust the position of the aperture therein with respect to the aperture in the air-pipe and a duct or passage for extension into or toward the fluid and leading to the said aperture, substantially as described.

2. In an atomizing device the combination with a receptacle for containing the material to be atomized of a pipe leading into the interior of the receptacle for conveying air under pressure, means associated with the said pipe for effecting mixture of the air and fluid the said pipe being apertured above the said means whereby air is forcibly directed against the stream of intermixed fluid and air, to secure increased effectiveness of the mixture of air with the fluid, substantially as described.

3. In an atomizing device the combination with a receptacle for containing the fluid to be atomized, of a pipe extending within the receptacle, means for effecting the mixture of the fluid with the air, the said pipe having apertures separated lengthwise of the pipe, and means whereby one of the said apertures may be closed, the said means being in the form of a longitudinally-movable clip or collar, substantially as described.

4. In an atomizing device the combination with a receptacle for containing the fluid to be atomized of a pipe extending within the receptacle, means for effecting the mixture of the fluid with the air, the said pipe having apertures separated lengthwise of the pipe, and means whereby either of the apertures may be closed, substantially as described.

5. In an atomizing device, the combination with a receptacle for containing the fluid to be atomized of a pipe extending within the receptacle, means for effecting the mixture of the fluid with the air, the said pipe having apertures separated lengthwise of the pipe, and means whereby one of the said apertures may be closed, the latter means being in the form of a longitudinally-movable clip or collar, substantially as described.

6. In an atomizing device the combination with a receptacle for containing the fluid to be atomized of a pipe extending within the receptacle, means for effecting the mixture

of the fluid with the air, the said pipe having apertures separated lengthwise of the pipe, and means whereby either of the apertures may be closed, the latter means being in the form of longitudinally-movable clips or collars.

7. In an atomizing device, the combination with a receptacle for containing the material to be atomized of an air-pipe extending within the receptacle for conveying air under pressure, said pipe having apertures separated lengthwise of the pipe, means whereby either of the apertures may be closed, and an agitator or fan within the receptacle, the said means being in the form of longitudinally-movable clips or collars, substantially as described.

8. In an atomizing device, the combination with a receptacle for containing the material to be atomized of an air-pipe extending within the receptacle for conveying air under pressure and an agitator or fan within the receptacle, mounted upon said air-pipe, the said air-pipe having an aperture communicating with its bore and serving to direct air upon the agitator to operate the same, substantially as described.

9. In an atomizing device, the combination with a receptacle for containing the material to be atomized, of an air-pipe extending within the receptacle for conveying air under pressure, an agitator or fan within the receptacle, the said air-pipe having an aperture adapted to direct operating fluid upon the fan, and a longitudinally-movable collar supporting the fan serving to open and close the said aperture, according to its position, substantially as described.

In witness whereof I hereunto subscribe my name this 21st day of November, A. D. 1902.

WALTER SAMS.

Witnesses:

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