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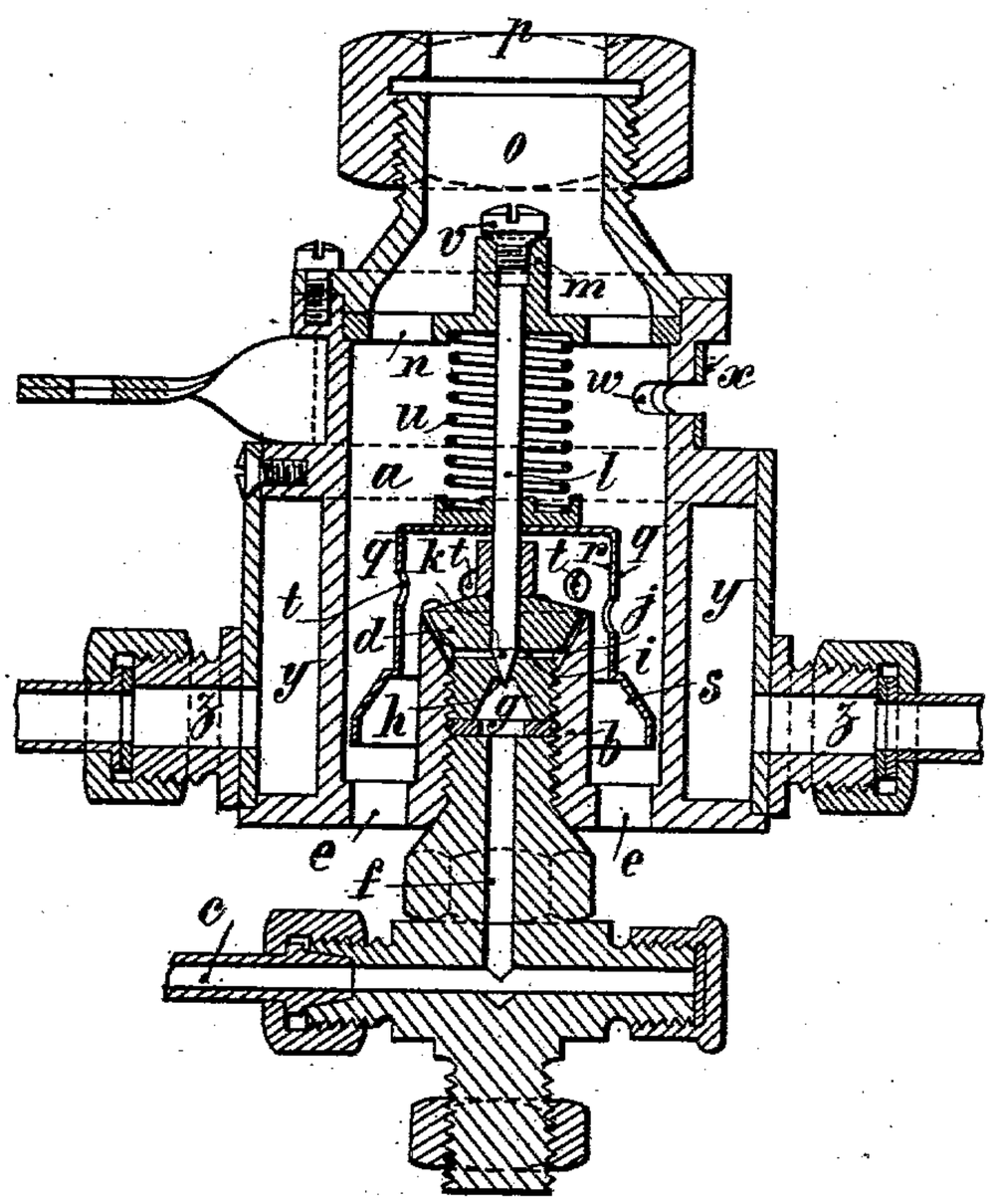
A. A. LONGUEMORE.

CARBURETER FOR EXPLOSIVE ENGINES.

(Application filed Mar. 20, 1902.)

(No Model.)



Witnesses.

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AMELIE ADÈLE LONGUEMARE, OF PARIS, FRANCE.

CARBURETER FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 715,398, dated December 9, 1902.

Application filed March 20, 1902. Serial No. 99,119. (No model.)

To all whom it may concern:

Be it known that I, AMELIE ADÈLE LONGUEMARE, widow of Léon Longuemare, a citizen of the Republic of France, residing at Paris, in the Republic of France, have invented new and useful Improvements in and Relating to Carbureters, of which the following is a specification.

My invention relates to carbureters designed more especially for use in connection with internal-combustion motors, and has for its principal object to so construct a carbureter that it will operate without a constant-feed level, the supply to the atomizing and pulverizing parts being effected under convenient pressure, either natural or artificial.

The accompanying drawing illustrates a carbureter in vertical section.

The carbureter consists, essentially, of a cylindrical or like casing or body with an interior chamber *a*, the base of which carries at its center a tubular extension *b*. This tubular extension *b* is connected at its lower part exterior to the body *a* to the union containing the conduit *c* of the feed-reservoir, (not shown in the drawing,) situated in every respect as desired, and the contents of which are maintained either naturally or artificially under the necessary pressure for the feed. Located at the upper part of the said extension *b*, inside the chamber *a* and arranged at a convenient height therein, is screwed a pulverizing stopper or nozzle *d*.

e e are air-inlet orifices.

The base of the stopper *d* is hollowed in such a manner as to form a feed-chamber *g*, and abutting on this chamber is the upper part of the aforesaid union containing the supply-channel *f*. At the top of the chamber *g* is an orifice *h*, through which the hydrocarbon is distributed to radiating openings *i*, leading to an annular space *j*, formed between the grooved edge of the base of the said stopper *d* and the corresponding wall of the tubular extension *b*. A needle-point *k*, formed at the lower extremity of a spindle *l*, is retained loosely within the orifice *h*. The spindle *l* extends vertically through the upper part of the stopper *d* and is maintained and guided in the socket *m* of a cross-bar *n*, arranged at the upper part of the chamber *a*. The movement of the spindle *l* is limited by an adjustment-screw *v*. At the top of the chamber *a* is secured a hood *o*, connected to the tubular extension *p* of the suction of the engine. The spindle *l* of the needle-point *k* is arranged and maintained so as to slide freely in the parts which it traverses and to be actuated by the suction of the engine, as will be hereinafter explained, to open and close the supply-orifice *h*, the area of this opening consequently varying according to the speed of the engine. The said spindle *l* carries a cap or covering *q*, which surrounds for a certain distance the stopper *d* and the tubular extension *b*. The upper part *r* of the cap *q* is cylindrical, and its base *s* is widened to nearly the interior diameter of the chamber *a*. The vertical movement of the said cap or covering *q* in the chamber *a* is sufficiently free to enable it to be operated by the suction of the engine, and owing to the enlargement of its base the air admitted through the orifices *e* is directed into this cap or covering *q* in such a manner as to come into contact with the hydrocarbon distributed through the stopper *d* in a pulverized state by reason of its passage through the grooves of the said stopper *d* in the well-known manner and to thus form the explosive mixture. The passage into the chamber *a* of the explosive mixture thus formed is effected through a ring of orifices *t*, pierced at different heights on the periphery of the cap *q*, this difference of height having for its object to effect a division and in consequence a more complete mixing of the combustible vapor before its admission to the engine. The orifice *h* is normally closed by the needle-point *k*, the spindle *l* of which is through the intermediary of the cap or covering *q* forced downward under the action of a spring *u*. This spring *u* is interposed between the upper wall of the said cap, arranged on a recessed set-ring carried by the cap, and the central part of the lower face of the cross-bar *n* in a recessed part therein provided for the purpose. The tension of the spring *u* is calculated in such a manner that the resistance to compression may be less than the effort resulting from the normal suction of the engine through the tubular extensions *o p*, but greater than the pressure under which the liquid is placed in the supply-reservoir, in such a manner that the said supply-pressure

cannot in any case by itself produce the lifting of the needle-point *k* and in consequence the opening of the orifice *h*.

At the upper part of the chamber *a* is arranged above the cap *q* a supplementary air-inlet *w*, adjustable by a ring *x*, forming a register the actuating-handle of which may be operated by hand or automatically and by which I regulate at will the rate of progress or speed of the engine by the adjustment of the richness of the explosive mixture formed and distributed in the said chamber *a*. Exterior to the mixing-chamber *a* is an outer covering forming an annular chamber *y*, in which through the tubular extensions *z z*, provided for this purpose, is effected the circulation of the exhaust-gases for the purpose of maintaining this part of the carbureter at a sufficiently-high temperature to facilitate volatilization. From these arrangements it results that on each suction of the engine, the effect of which is transmitted through the tubular extensions *o p* into the chamber *a*, the cap *q* is raised an amount limited by the screw *v* or by the engine itself determining a less effort of suction or by the admission of supplementary air adjustable by the register *x*, which admission is made above the cap or covering *q* and will necessarily influence the raising of this latter, which will be so much diminished that this supplementary admission of air will be larger. To the raising of the cap *q* correspond the simultaneous actions of, first, the lifting of the spindle *l* and in consequence the opening through the needle-point *k* of the orifice *h* to an amount corresponding to the movement of the said cap *q;* secondly, the passage through the radiating openings *i* and the grooves of the stopper *d* of a quantity of hydrocarbon corresponding to this area, which quantity of hydrocarbon will be divided and pulverized and will enter in this state inside the cap *q* into contact with the air admitted simultaneously into said cap through the orifices *e* of the base of the chamber *a* in order to constitute the explosive mixture which, always under the effect of suction, will be drawn through the orifices *t*, mixed by its passage through the said orifices, and admitted into the chamber *a* to be conducted to the engine through the tubular extensions *o p*. The suction ceasing, the spring *u* acts on the cap *q*, repelling this latter, thus closing the orifice *h*.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a carbureter, the combination of a mixing-chamber having suitable air-inlets, a hydrocarbon-duct extending into said chamber, a peripherally-grooved stopper arranged within said hydrocarbon-duct and having a series of radial passages extending from a central aperture to the periphery, and a reciprocating needle-valve adapted to close said central aperture and all of the passages radiating therefrom.

2. In a carbureter, the combination of a mixing-chamber having suitable air-inlets formed at its lower end, a hydrocarbon-duct extending upwardly into said chamber, a peripherally-grooved stopper fitted within the upper end of the hydrocarbon-duct, a feed-chamber being formed within the lower end of said stopper and communicating with a series of radial passages that extend to the periphery of the stopper, a needle-valve extending loosely through said stopper and, when in its lowest position, adapted to close the inner ends of the aforesaid radial passages therein, a cap secured to said valve and surrounding the stopper, said cap and valve being raised by suction of the engine, and a spring for returning the valve to its lowest position.

3. In a carbureter, the combination of a mixing-chamber having suitable air-inlets in its lower end, a hydrocarbon-duct extending upwardly into said chamber, a pulverizing-stopper arranged within the upper end of the hydrocarbon-duct, a valve for controlling the passage of hydrocarbon through said stopper, a cap surrounding said stopper and connected with said valve, said cap having its lower end flared and extending over the air-inlets at the lower end of the mixing-chamber, and having apertures formed at different heights in its side wall, the cap and valve being raised by suction of the engine, and a spring for returning said parts to their normal positions.

In testimony whereof I have hereunto subscribed my name.

AMELIE ADÈLE LONGUEMARE.

Witnesses:

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