L. PLEIN.

CARBURETER.

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1,018,776. Patented Feb. 27, 1912

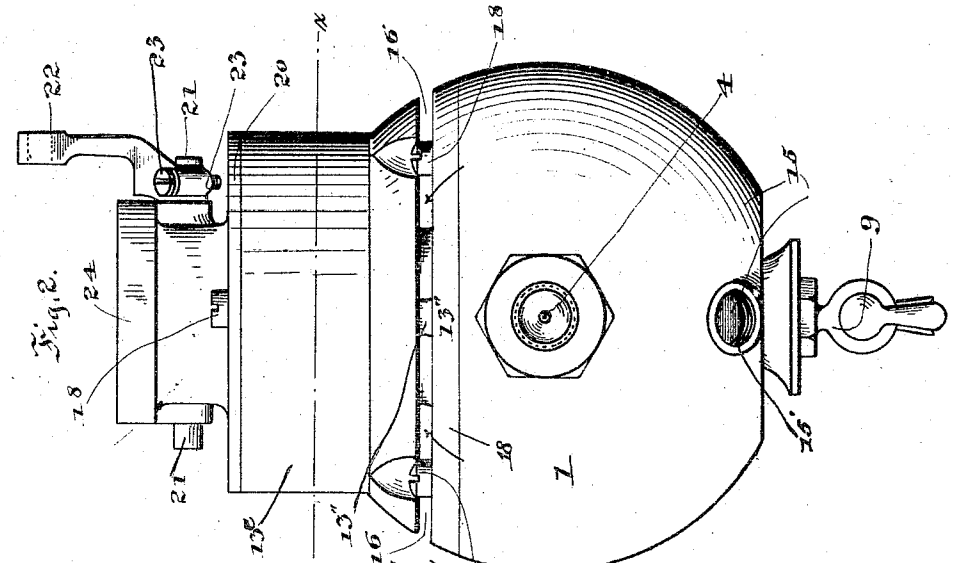

Fig. 2.

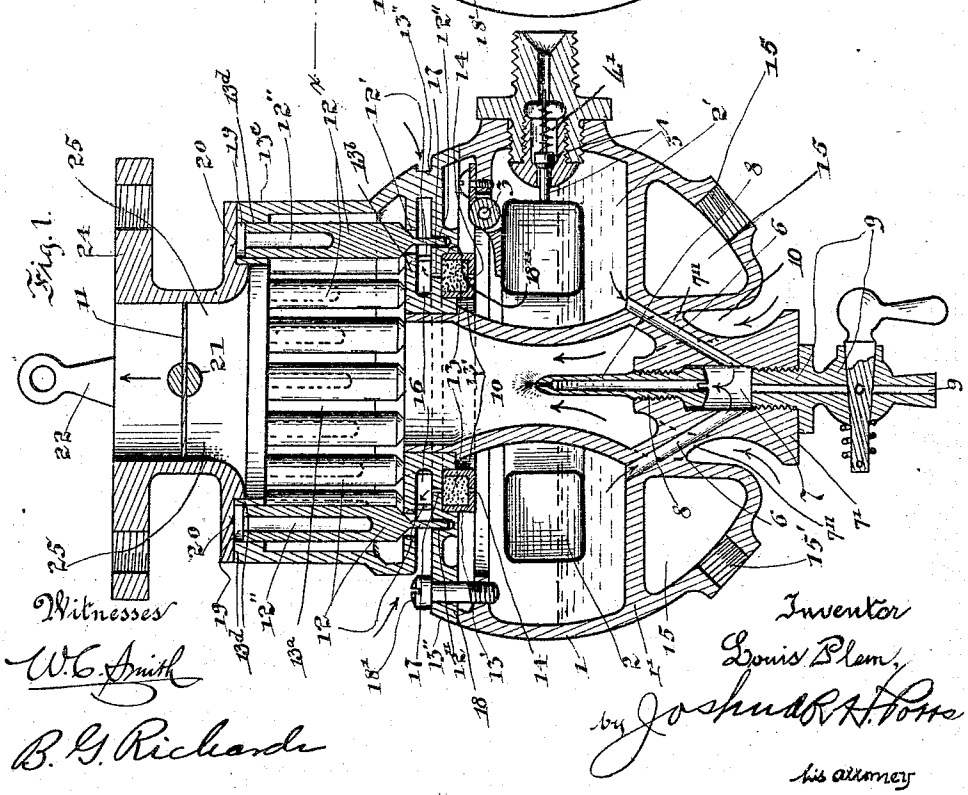

Fig. 1.

Witnesses

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CARBURETER.

1,018,776. Specification of Letters Patent. Patented Feb. 27, 1912.

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To all whom it may concern:

Be it known that I, LOUIS PLEIN, a subject of the Grand Duke of Luxemburg, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

My invention relates to improvements in carbureters and has for its object the provision of an improved carbureting device for internal-combustion engines which shall be so constructed as to be capable of supplying a correct homogeneous explosive mixture of air and gas to the engine cylinders at any speed of the engine and under all and varying conditions of atmosphere.

A further object of my invention is to provide a carbureter which shall be symmetrical in design, economical to manufacture, and efficient in operation.

Other objects will appear hereinafter.

With these objects in view my invention consists in the novel construction and arrangement of parts all as will be hereinafter fully described and more particularly pointed out in the appended claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which,

Figure 1 is a central vertical section of a carbureter embodying my invention, and Fig. 2 is a side elevation thereof.

Referring now to the drawings 1 indicates a float chamber and 2 a float therein. The float is of annular form and is hingedly mounted on a horizontal pin 3 so as to move upwardly and downwardly according to the level of the gasolene or other liquid hydrocarbon 2′ in the chamber 1. 4 indicates the fuel intake valve which is provided with a stem 5 projecting into the chamber 1 and abutting the side of the float beneath the hinge pin 3. A spring 4′ tends to keep the valve normally seated, but when the fuel in the float chamber falls below a predetermined level, the float by engaging the stem 5 forces the valve from its seat and admits fuel to the chamber 1 until the fuel reaches its proper level. By this construction the proper level of fuel is accurately maintained in the chamber 1. The upper end of the chamber 1 is open and provided with a closure 13″ which will be fully described hereinafter.

1′ indicates the bottom of the float chamber and below said bottom is a heating chamber 15, the walls of which are provided with threaded apertures 15′ to receive pipes for supplying the heating medium which may be either hot water, hot air or the products of combustion of the engine.

The closure 13″ comprises a plate 18 secured in position by screws 18′, and a superimposed mixing chamber 13ª defined by a bottom wall 13ᵇ and annular walls 13ᶜ. The bottom wall 13ᵇ lies parallel with the plate 18 and a short distance above the same, the intervening space constituting a recess the function of which will appear hereinafter. The mixing chamber is open at the top except for an annular flange 13ᵈ extending inwardly from the upper edge of the walls 13ᶜ, and is provided with a cover plate 20, having an eduction passage way 25 leading to the engine supply pipe and a coupling 24 for securing the device to said supply pipe. 11 indicates the throttle valve for said passage way mounted upon a stem or shaft 21 upon the end of which is secured a throttle lever 22. The throw of said lever, and consequently the valve, is limited by a pair of screws 23 threaded through lugs 23′ on the lever and adapted to engage the cover plate 20.

Extending centrally through the heating chamber 15 and the float chamber 1 is a vertical primary air passage way 10 leading into the bottom of the mixing chamber 13ª. Formed centrally within the lower portion of the passage 10 is a member 7′ which is preferably cast integrally with the shell of the float chamber and connected thereto by arms 7″. The member 7′ is provided with a chamber 7 which may be formed therein by drilling, and the lower end of said chamber is closed by the nipple of a drain cock capped into the same.

6 indicates inclined passage ways for the hydrocarbon leading from the bottom of the float chamber through the arms 7″ to the chamber 7. A spray nozzle 8 extends from the chamber 7 through the upper end of the member 7′ into the passage way 10 and terminates at a point slightly above the level of the fuel in the float chamber. The nozzle 8 is removable and may be interchanged with those of different sizes to adapt the carbureter for use with engines of different styles and sizes. The passage way 10 is contracted in diameter at the upper end of the nozzle for obvious reasons.

The air passage way 10 and the nozzle 8 are sufficient to supply the necessary fuel to the engine under normal conditions or unless the engine is running at high speed, in which case a greater amount of explosive mixture must be supplied. To this end I provide the device with means for supplying an additional amount of air to the mixing chamber according to the demands of the engine and further provide means for supplying the additional air with vaporized hydrocarbon before it enters said chamber. To admit additional air to the mixing chamber the bottom 13^b thereof is provided with a plurality of apertures 12′ arranged in an annular series surrounding the upper end of the passage way 10. Each aperture is provided with a gravity operated valve 12, each of a different weight. The valves 12 are cylindrical in form and have conical lower ends to rest on the valve seats of the apertures 12′, terminating in stems 12″ which extend into guides in the top plate 18 of the chamber 1. The upper ends of the valve 12 have guide bearings 19 formed in the flange 13^d. The difference in weight of the several valves is obtained by boring the valves to different depths. In operation, as soon as the demand of the motor or engine increases beyond the maximum supply of the passage way 10, the valves 12 open, the lightest valve opening first and the others in regular succession according to the increased demand of the engine for gas.

Extending through the top plate 18 of the chamber 1 is a series of perforations 17 through which vapor is supplied to the additional air admitted through the apertures 12′. The perforations 17 are arranged in an annular series and their inner ends are covered by a ring of felt or other similar absorbent material 13. The ring 13 is held in position by a hollow annular member 13′, U-shaped in cross section and secured to the under face of the closure plate 18, preferably extending into an annular groove 18″ formed therein. The member 13′ is provided with a plurality of openings 14. Vapor rising from the fuel in the float chamber passes through the perforations 14 and permeates the absorbent ring from which it is given off through the perforations 17 to the air when drawn in through the openings 12′. Under some conditions sufficient vapor may not be given off to properly impregnate the ring and it is to meet these conditions that the heating chamber 15 is provided. When the carbureter is used upon an automobile the continual motion will cause splashing of the fuel in the chamber in which case the felt ring will be saturated with the liquid hydrocarbon, and under these conditions the heating chamber need seldom be used.

Due to the carburetion of the supplementary air as well as the primary or initial air superior results are obtained with this carbureter, and it may be stated that when any of the lighter hydrocarbons are used the same are mixed with air in the right proportions at any engine speed and under varying conditions of atmosphere.

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

1. In a carbureter, an air and gas passage-way and an annular float chamber surrounding the same, means for supplying a liquid hydrocarbon to said float chamber, means for conducting said hydrocarbon in the form of spray to said passage-way thus carbureting air passing therethrough, a series of supplementary valves surrounding said passage-way, and means for carbureting the air drawn through said supplementary valves, substantially as described.

2. In a carbureter, a main air and gas passage, a nozzle therein, a series of supplemental air and gas valves surrounding said main passage, said valves being gravity operated, and means for supplying gas to the air prior to the passage thereof through said main passage and said valves, substantially as described.

3. In a carbureter, an annular float chamber, a nozzle therein, a hinged float pivoted to swing vertically in said chamber, a spring-pressed gasolene intake valve adapted to be opened by the falling of said float, an initial air and gas passage inclosed by said float chamber and in communication therewith, a series of gravity operated supplemental valves arranged in a circle concentric with said initial air and gas passage and in communication therewith, and means for supplying carbureted air to said valves, substantially as described.

4. In a carbureter, an annular float chamber, a float pivoted in said chamber and adapted to regulate the admission of a liquid hydrocarbon thereto, a cover for said float chamber, an annular holder U-shaped in cross section and secured on said cover, an absorbent filling in said holder, an annular recess in said cover, there being perforations in said holder and said cover so located that said filling is in communication with said float chamber and said recess, a series of gravity operated supplemental valves arranged in a circle concentric with said float chamber and in communication with said recess, said valves varying in weight whereby the same operate successively, and a central air and gas passage in open communication with said supplemental valves, the former being adapted to supply primary carbureted air and the latter secondary carbureted air for high engine speeds, substantially as described.

5. In a carbureter, an annular float cham-

ber, a float pivoted in said float chamber and adapted to control the admission of a liquid hydrocarbon thereto, a cover for said float chamber, an annular holder U-shaped in cross section provided in said cover, a felt filling in said holder, an annular recess in said cover, there being perforations in said holder and said cover in communication with said float chamber and said recess respectively, a series of supplemental air passage ways arranged in a circle concentric with said float chamber and in communication with said recess, a plurality of gravity operated supplemental valves controlling said passage ways, said valves being cylindrical and provided with axial bores of varying length, and a central air and gas passage in open communication with said supplemental valves, the central passage being adapted to supply primary carbureted air and the supplemental passage ways secondary carbureted air, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LOUIS PLEIN.

Witnesses:
W. C. SMITH,
JOSHUA R. H. POTTS.