J. NAMUR.

CARBURETER.

APPLICATION FILED AUG. 28, 1911.

1,022,326.

Patented Apr. 2, 1912.

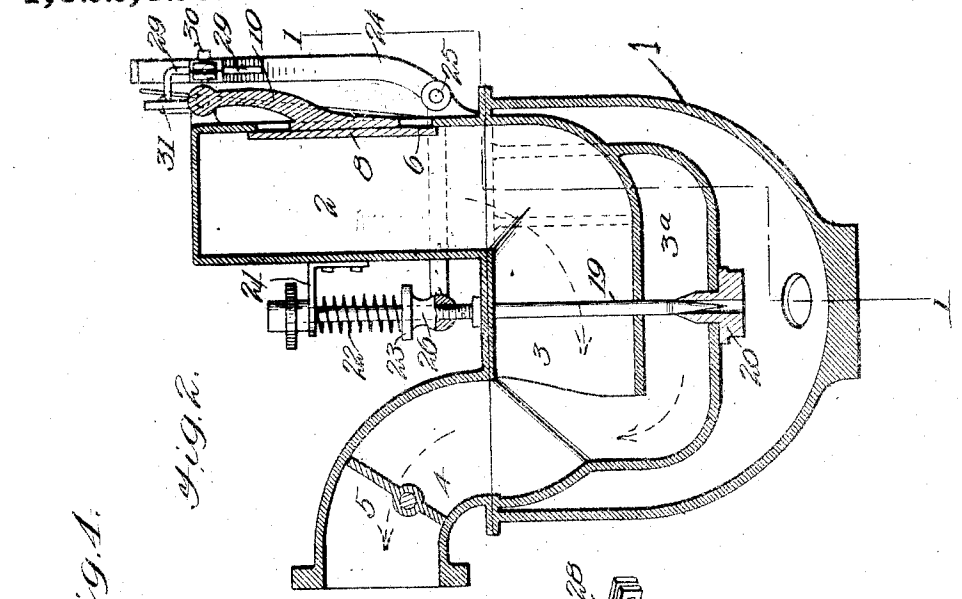

Fig. 2.

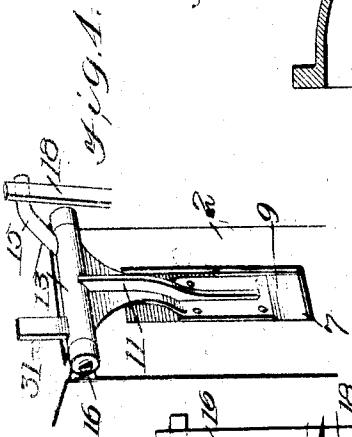

Fig. 4.

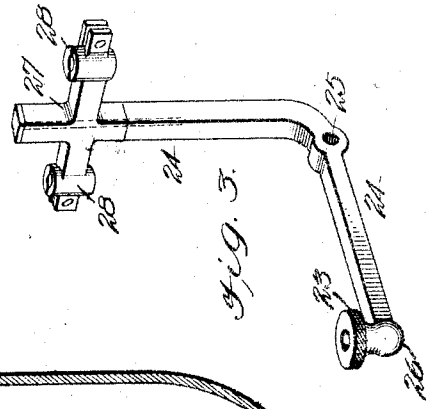

Fig. 3.

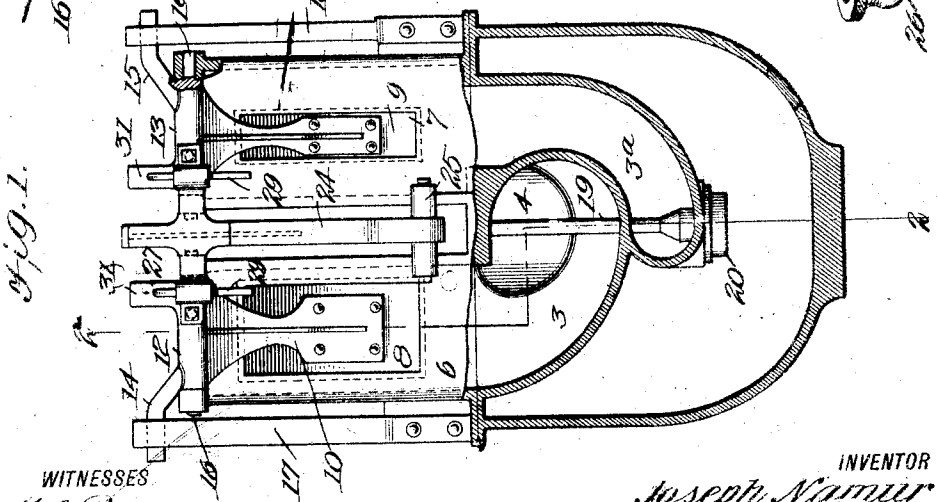

Fig. 1.

WITNESSES

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CARBURETER.

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To all whom it may concern:

Be it known that I, JOSEPH NAMUR, a citizen of the United States, and a resident of Kinsley, in the county of Edwards and State of Kansas, have invented certain Improvements in Carbureters, of which the following is a specification.

My invention is an improvement in the class of air carbureters having an air-inlet valve adapted to open automatically, more or less, according to the variation of pressure in the mixing chamber corresponding uniformly to the work required of the engine.

The invention is embodied in a new and improved construction and arrangement of parts for controlling admission of air and the ignitible vapor, so that the proportions of the two always bear a certain ratio.

My invention consists, further, in certain details of construction and combination and arrangement of parts as will be hereinafter described, and illustrated in the accompanying drawing in which—

Figure 1 is in part a rear view, and in part a vertical section of the carbureter on the line 1—1 of Fig. 2. Fig. 2 is a vertical section on the line 2—2 of Fig. 1. Fig. 3 is a perspective view of the bell crank which operatively connects the air inlet valves with the needle valve controlling admission of the combustible liquid. Fig. 4 is a perspective view of a rear upper portion of the carbureter.

The hollow body of the carbureter has a lower chamber 1 for receiving and holding gasolene, or other equivalent hydrocarbon liquid, which is kept at a constant level. The upper part of the carbureter body has two vertical air chambers 2 arranged side by side which are provided, respectively, with large and small ducts 3 and 3^a—see Fig. 1—that in turn communicate with the outlet passage 4 in which a butterfly throttle valve 5 is arranged.

As shown in Fig. 1, the two air chambers are provided, respectively, with large and small inlets or openings 6 and 7 which are normally closed by valves 8 and 9 corresponding in size. The valves are applied and seat outwardly, as shown in Fig. 2. To the backs of the valves are riveted rigid arms 10 and 11 having at their upper ends hollow bearings 12 and 13 which are provided respectively with laterally projecting arms 14 and 15. These bearings are mounted upon axes 16 and are thus adapted to rock as the valves open and close. The valves are held normally closed by plate springs 17 and 18 that are attached at their lower ends to the body of the carbureter and arranged vertically with their free ends bearing against the lateral arms 14 and 15 of the respective valves. It will be noted that the springs differ in size and strength corresponding to the difference of size between the respective air inlets and valves.

A needle valve 19 is seated in a nozzle 20 and thus controls admission of the ignitible liquid from chamber 1 into the air duct 3^a from which it passes into the outlet passage 4 which practically constitutes a mixing chamber. The needle valve 19 passes through the top of the carbureter body and also through a bracket 21 that is fixed to the side of one of the air chambers. A spiral spring 22 encircles the upper portion of the needle valve and is arranged between the bracket 21 and a nut 23 applied to the screw-threaded portion of the rod. It is apparent that, by adjusting, that is to say, rotating, the nut, the tension of the spring may be regulated as required. Its function is obviously to hold the valve normally seated.

The means whereby the needle valve and the air-inlet valves 8 and 9 are operatively connected will now be described. An L-shaped or elbow lever 24 is pivoted to the carbureter at 25, its horizontal arm having an enlarged head 26 through which the needle valve passes and upon which the nut 23 bears, as will be readily understood. To the upper or vertical arm of the lever 24 there is pivoted a cruciform piece 27 whose horizontal arms are provided with split bosses 28 through which rods 29, bent at a right angle as shown in Fig. 2, are inserted. Screws 30 serve to clamp the bosses and thus to hold the rods 29 adjustably. The bent ends of the rods bear against short extensions 31 of the air inlet valve shanks 10 and 11. In view of the function of these rods they may be conveniently termed fingers. It is apparent that the spring 22 on the needle valve 19 exerts a constant downward pressure on the valve and on the horizontal arm of the lever 24 so that the fingers 29 are held pressed against the lever extensions 31 of the valves 10 and 11.

It is apparent that when the engine is at rest and the throttle 5 closed, both air valves

8 and 9 and also the needle valve 19 will be also closed; but upon opening the throttle slightly and thus starting the engine, the smaller air valve 9 having the weaker spring 18 will open first or correspondingly and thereby the needle valve will be also raised or opened in a corresponding degree. In other words, the two valves 19 and 9 will open simultaneously and correspondingly. Then, upon opening the throttle still further, the valve 9 will open and the needle valve also still further until a certain limit is reached, when, the throttle being still further opened, the auxiliary or large valve 8 will begin to open also and at the same time the needle valve will be opened further and in the same proportion, thus admitting more of the ignitible liquid and more of the air up to the full capacity of the engine. It will be seen that by the relative adjustment of the fingers 29, it is possible to make any desired variation in the proportions of air and gas or vapor. In other words, by moving the fingers downward, less gas or vapor will be admitted and therefore a weak mixture of air and vapor will result; but by adjusting the fingers 29 upward, the needle valve is left free to open wider and consequently more gas or vapor is admitted and a richer mixture is formed. The springs 17 and 18 bearing on the lateral arms 14 and 15 of the air valves have a tension just sufficient to produce the vacuum required to raise the gasolene through the nozzle 20 and thus the carbureter does not depend upon an excessive or strong vacuum to make a correct mixture of gas and air, since the needle valve automatically regulates the admission of the ga according to the power it is desired to attain from the engine.

It is to be understood that in practice a float and connected mechanism will be employed for maintaining the practically constant level of the hydrocarbon liquid in the chamber of the carbureter. Since this is a common feature in carbureters of this class, it is not deemed necessary to illustrate nor to describe it in detail.

What I claim is:—

1. The improved carbureter having two air chambers provided with air inlets and valves differing in size, a needle valve controlling the admission of ignitible fluid to the mixing chamber, and means connecting the air valves and needle valve, whereby both are adapted to open simultaneously and correspondingly, substantially as described.

2. The improved carbureter having two air chambers provided with air inlets differing in size, differential valves for such inlets and differential springs holding the valves normally closed, a needle valve controlling the admission of the ignitible fluid, a pivoted lever, one end of which is connected with the needle valve, a spring applied to said valve and pressing upon the lever, and means for operatively connecting the upper end of the lever with the air valves, whereby when the latter are opened, the needle valve is simultaneously opened, substantially as described.

3. The improved carbureter comprising a hollow body having two air chambers provided with differential openings for admission of air, differential valves applied to such openings and having their fulcrums provided with lateral arms, differential springs bearing upon said arms and holding the valves normally closed, a needle valve and a spring applied thereto, a pivoted elbow lever upon which the spring is adapted to bear, and means connected with the upper arm of the lever for bearing on the extended shank of the air inlet valves, substantially as described.

4. The improved carbureter comprising a hollow body and two air chambers having differential air openings, differential valves normally closing such openings and springs tending to hold the same normally closed, a needle valve controlling admission of the ignitible fluid to the mixing chamber, a spring applied to such valve, and a pivoted lever upon one end of which the spring bears, its upper portion being provided with vertically adjustable fingers bearing against extensions of the shanks of the inlet valves, substantially as described.

5. The improved carbureter comprising a hollow body provided with air chambers having differential openings and corresponding valves for closing the same, differential springs for holding such valves normally closed, a needle valve controlling admission of the ignitible fluid, a spiral spring applied to the same, an elbow lever with whose horizontal arm the needle valve is operatively connected, its upper arm having a pivoted cruciform piece provided with lateral extensions, and fingers which are vertically adjustable in said piece and adapted to bear upon lever extensions of the air inlet valve shanks, all operating substantially as described.

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