No. 855,179. PATENTED MAY 28, 1907.

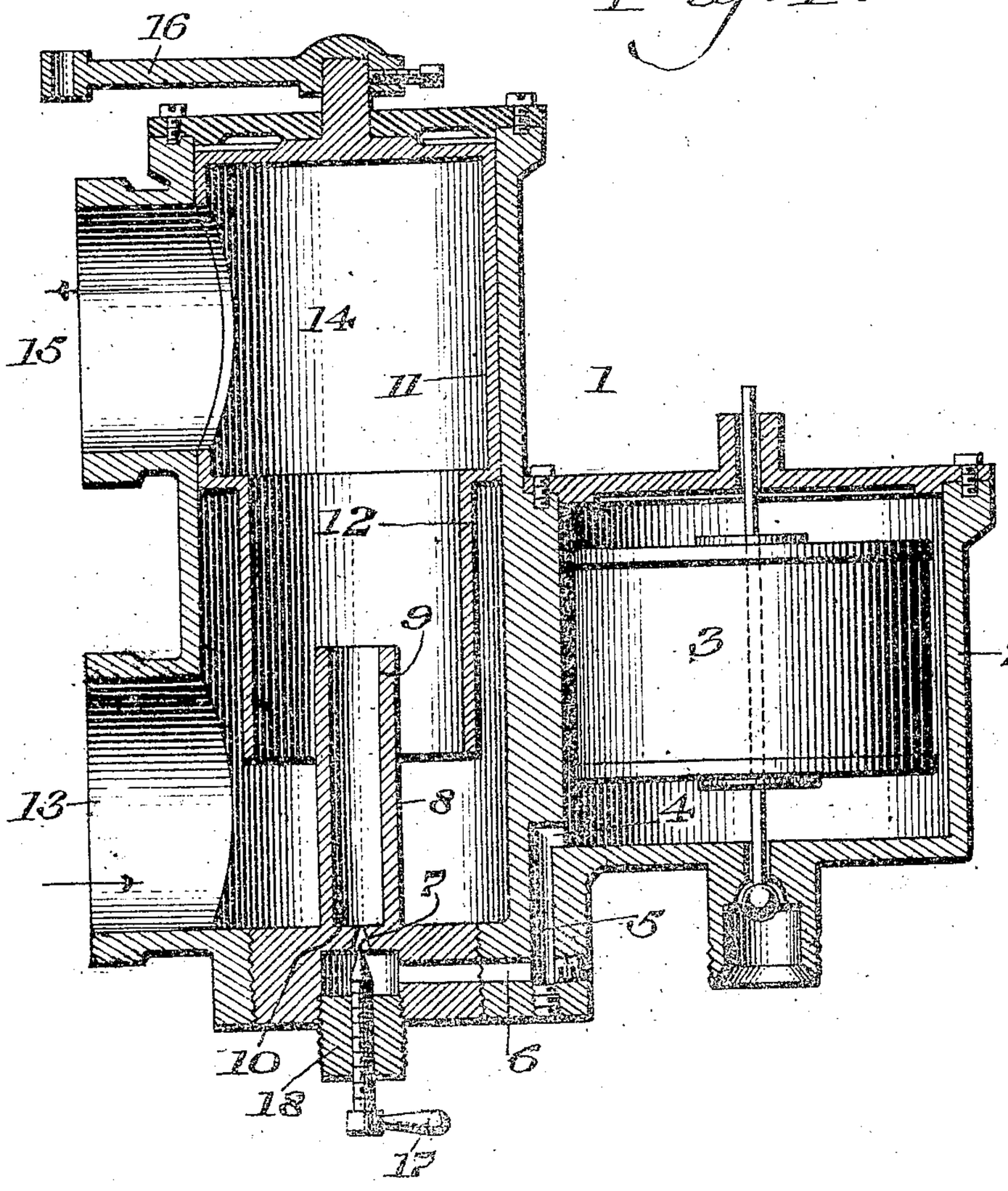
P. JENNESS.

CARBURETER.

APPLICATION FILED JAN. 17, 1907.

2 SHEETS—SHEET 1.

Fig. 1.



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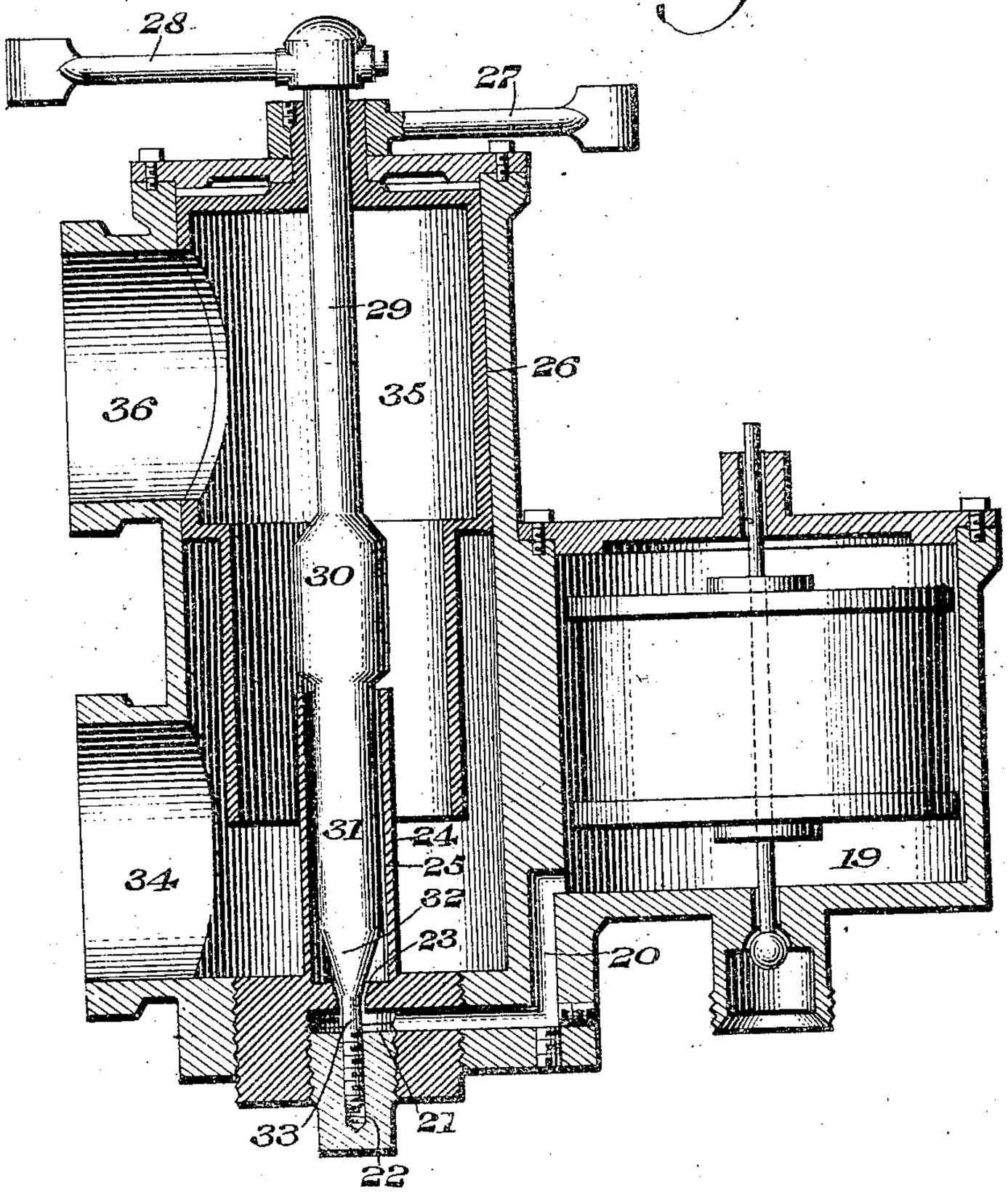
2 SHEETS—SHEET 2.

Fig. 2.



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CARBURETER.

No. 855,179. Specification of Letters Patent. Patented May 28, 1907.

Application filed January 17, 1907. Serial No. 352,714.

To all whom it may concern:

Be it known that I, PETER JENNESS, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Carbureter, of which the following is a specification.

My present invention consists of a novel construction of a carbureter, by the employment of which I am enabled to control the admission of the liquid hydrocarbon to the commingling chamber in the requisite proportion for varying speeds of the motor to insure a substantially perfect and constant mixture at all speeds.

To the above ends my invention consists in its broad scope of a novel construction and arrangement of admission ports and passages for the liquid, whereby I attain a decreasing co-efficient of discharge from the nozzle as the velocity of the air in the strangle tube increases and vice versa.

As will be apparent to those skilled in this art, it is essential in devices of this character that there exist an intimate association between the hydrocarbon, and the air, at varying speeds of the engine, and my invention consists of a novel correlation of devices whereby the number of parts is reduced to a minimum, and whereby after once permanently determining or establishing the relative area of the fuel inlet with respect to the area of the discharge opening of the fuel nozzle, no further adjustment or regulation is required for either the inlet or discharge openings for the fuel under every and all variations of speed of the engine. To the above ends my invention consists broadly of a fuel nozzle, having its discharge opening of greater area than its inlet opening, which receives the fuel, in conjunction with an air inlet preferably of constant area, a fuel supply and a commingling chamber.

It further consists of novel features of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating my invention I have shown in the accompanying drawings, embodiments thereof which give satisfactory and reliable results in practice, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that it is not limited to the precise arrangement and organization of these instrumentalities, as herein shown.

Figure 1 represents a sectional elevation of a carbureter embodying my invention. Fig. 2 represents a sectional elevation of another embodiment thereof.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings:—1 designates a carbureter, the same consisting of the float chamber 2 having the float 3 therein, said float and float valve, rod and its adjuncts being of the usual construction.

4 designates a port in the lower portion of the float chamber through which liquid hydrocarbon flows through the passages 5 and 6 to the port 7 and thence into the nozzle 8, the internal diameter 9 of which depends upon the size of the admission port 7. In the present instance I have preferred to show the lower end of the bore 9 as terminating in a plane preferably extending at an angle to the longitudinal axis of the nozzle 8, as is clearly indicated at 10, since such a construction gives in practice the desired reduction in pressure at the lower end of the nozzle 8 in proximity to the port 7 to effect the desired result.

11 designates the throttle drum having a reduced end 12 into which the nozzle 8 extends, said reduced end forming the strangle tube.

13 designates the air inlet, preferably of constant area and 14 the commingling chamber for the air and liquid hydrocarbon, which latter in their commingled state, pass through the outlet 15 to the desired point of utilization.

16 designates the throttling lever which may be of any usual or conventional type.

If the port 7 and the bore 9 of the nozzle 8 have the desired ratio to each other the needle valve 17 carried by the closure 18 may be dispensed with and under such conditions any suitable size and contour of aperture, such as 7, may be employed.

In the embodiment seen in Fig. 2 the float chamber 19 has a passage 20 leading therefrom and opening into the chamber 21, the lower end of which is closed by a plug or nut having an internally threaded aperture 22. 23 designates an admission port communicating with a nozzle 24, the internal bore 25 of which is larger than the port 23. 26 designates the throttle drum and strangle tube having an actuating lever 27, it being noted that the nozzle 24 terminates within the lower end of said tube. 28 designates a

valve lever detachably secured to a valve stem 29 which extends through the upper end of the drum 26. The stem 29 is provided with an enlargement 30 having substantially the same diameter as the nozzle 24, so that the passage through the strangle tube will be substantially uniform throughout its length. 31 designates a reduced diameter extending from the enlarged portion 30, which is smaller than the internal chamber of the nozzle 24. 32 designates a preferably conical valve head from which extends the threaded extension 33, which engages the aperture 22. 34 designates the air inlet and 35 the commingling chamber, which latter communicates with the outlet 36. In this embodiment when the parts are assembled, the effective area of the passage around the reduced portion 31 of the valve stem is larger than the port 23.

It will be seen that in both the embodiments of my invention, I have shown preferably an elongated nozzle, having at or near its lower portion an inlet for the fuel of a relatively much less area than the area at the upper or discharge end of said nozzle, whereby a chamber for the entering hydrocarbon is created, wherein said hydrocarbon is initially received, said chamber being in cross-sectional area always of greater relative diameter than the area of the inlet ports as 7 or 23 and the discharge area of such nozzle consequently is also of considerably greater area than the inlet port. It will further be seen, that in my device I employ an air inlet, the area of which is preferably always constant or fixed, whereby the use of any separate air inlet controlling device is dispensed with, and I also dispense with the by pass connection communicating with the commingling chamber of the character heretofore employed. It will thus be seen that by my novel construction of nozzle having the area of the inlet port less than the area of the discharge opening, combined with an air inlet preferably of a constant area, and the other adjuncts, I am enabled to obtain a constant mixture irrespective of the speed at which the engine may be run, and thus obtain a very wide range of engine speeds between the maximum and minimum, wherein the mixture will be substantially constant and unvarying under all conditions.

It will thus be understood that by my novel device when used in connection with an automobile engine, the latter when running at a low speed say three or four miles an hour, or when running at a very high speed as thirty or forty miles an hour, will have an explosive mixture of always constant proportions of air and fuel, without requiring any adjustment of fuel inlet or air inlet, or any attention whatever from the operator.

The loss of head due to the impact of the liquid passing at high velocity through port 7 against the liquid in the nozzle 8 the velocity in which is always less than in port 7, increases as the velocity increases thus lowering the coefficient of discharge, as will be clearly understood by those skilled in this art and the amount of liquid hydrocarbon has the same relative proportion to the air for all speeds of the engine, thus producing a substantially constant explosive mixture at varying speeds. I have found as the result of numerous experiments that by employing a construction such as is illustrated in the drawings, the desired results may be attained. It is, however, essential that in all cases the admission port be smaller than the discharge end of the nozzle.

It will now be apparent from the foregoing that I have produced a novel and useful construction of carbureter which embodies the features of advantage enumerated as desirable in the statement of invention and the above description, and while I have in the present instance preferred to show an embodiment thereof which has been found in practice to give satisfactory and reliable results it is to be understood that it is susceptible of modification in various particulars without departing from the spirit and scope of the invention or sacrificing any of its advantages.

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

1. In a carbureter, means for feeding a fuel, means for feeding air, and a nozzle located to receive said fuel, the discharge opening of said nozzle being of greater area than the opening which receives said fuel.

2. In a carbureter, an air inlet of constant area, means for feeding a fuel, means for feeding air, and a nozzle located to receive said fuel, the discharge opening of said nozzle being of greater area than the inlet opening which receives said fuel.

3. In a carbureter, means for feeding a fuel, an air inlet of constant area, and a nozzle having a bore of uniform diameter and located to receive said fuel, the discharge opening of said nozzle being of greater area than the inlet opening which receives said fuel, said inlet opening being in alinement with said bore.

4. In a carbureter, a fuel nozzle having a fuel inlet of small area, the discharge opening of said nozzle being of greater area than said fuel inlet, an air inlet, and a commingling chamber into which said nozzle discharges.

5. In a carbureter, a fuel nozzle having a fuel inlet of small area, the discharge opening of said nozzle being of greater area than said fuel inlet, an air inlet of constant area, a strangle tube into which said nozzle projects, and a commingling chamber above said strangle tube.

6. In a carbureter, the combination with the communicating float and commingling chambers thereof, of a nozzle intermediate said chambers and discharging into the latter, said nozzle having a restricted inlet for the liquid hydrocarbon, a throttle drum carried by said casing, a strangle tube carried by said throttle drum, a valve spindle journaled in said throttle drum and passing through said nozzle, a valve carried by said spindle for controlling the inlet port, and actuating means for said spindle.

7. In a carbureter, a casing having communicating float and commingling chambers therein, a nozzle detachably carried by said casing, located intermediate said chambers and discharging into the commingling chamber, said nozzle having a restricted inlet for the liquid hydrocarbon, a throttle drum movably mounted within said casing, a strangle tube carried thereby and surrounding the outer end of said nozzle, and means passing through said nozzle for varying the size of said inlet.

8. In a carbureter, a casing having communicating float and commingling chambers therein, a nozzle detachably carried by said casing, located intermediate said chambers and discharging into said commingling chamber, said nozzle having a restricted inlet, a valve stem passing into said nozzle and having a conical valve head controlling said inlet, means for actuating said stem, a strangle tube within said casing surrounding the outer end of said nozzle, and said valve stem above said nozzle having the same diameter as the diameter of said nozzle to form a substantially uniform opening through said strangle tube.

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