No. 746,449. PATENTED DEC. 8, 1903.

P. H. BRENNAN.

CARBURETER FOR GAS ENGINES.

APPLICATION FILED JUNE 26, 1903.

NO MODEL.

Fig. I.

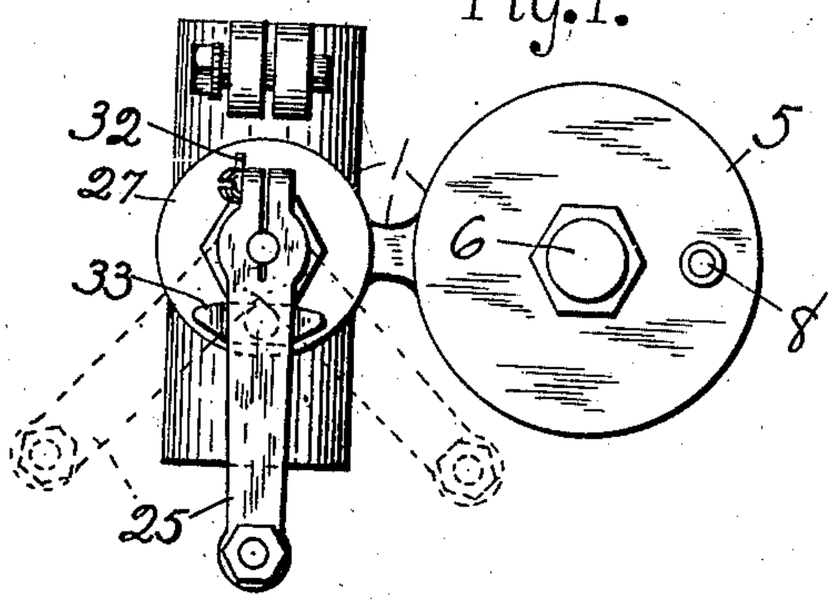


Fig. II.

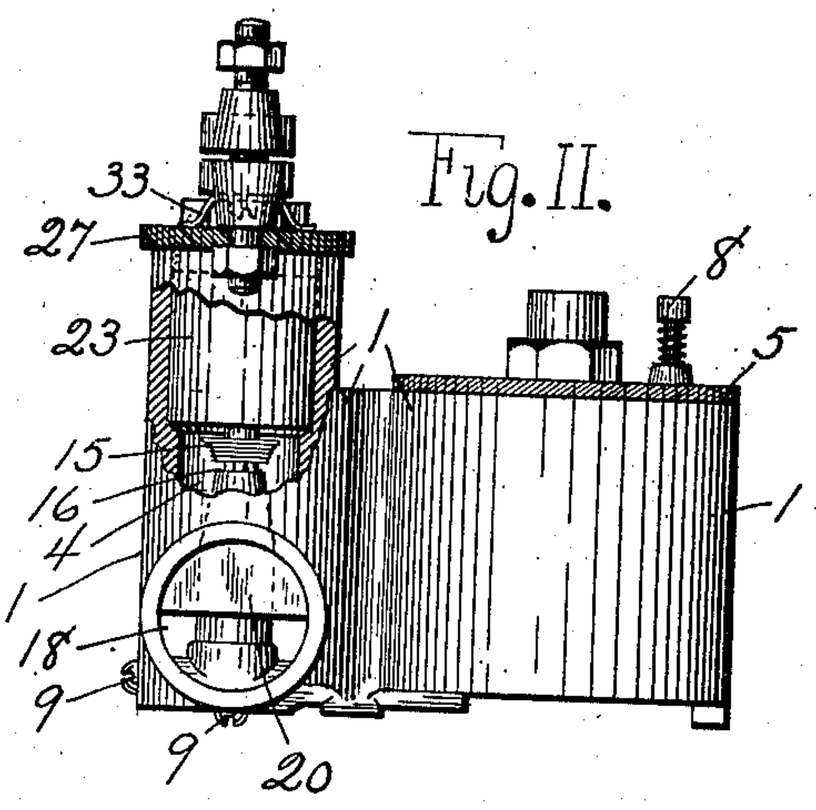


Fig. III.

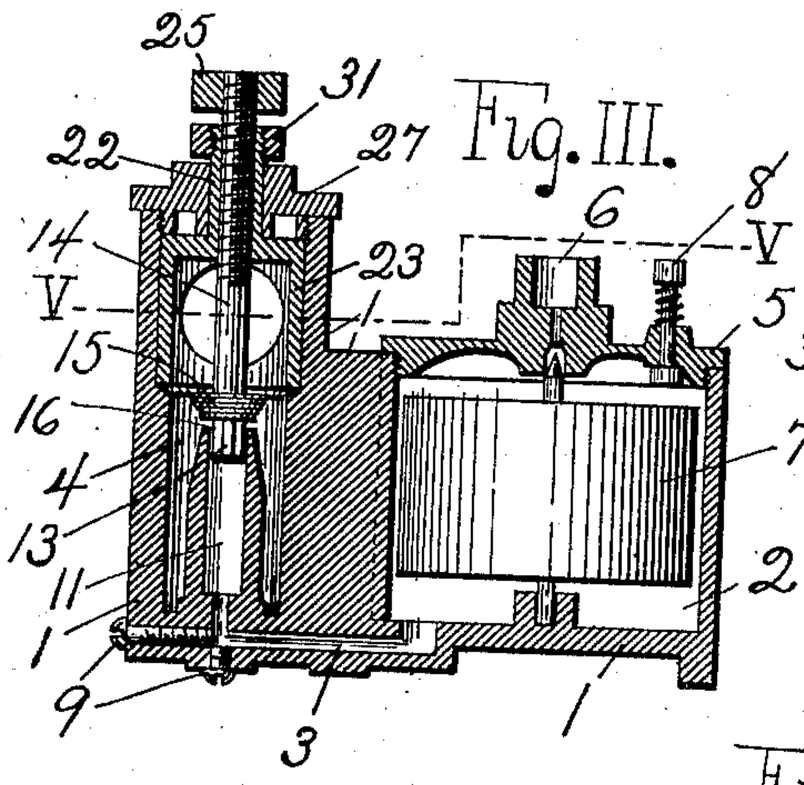


Fig. IV.

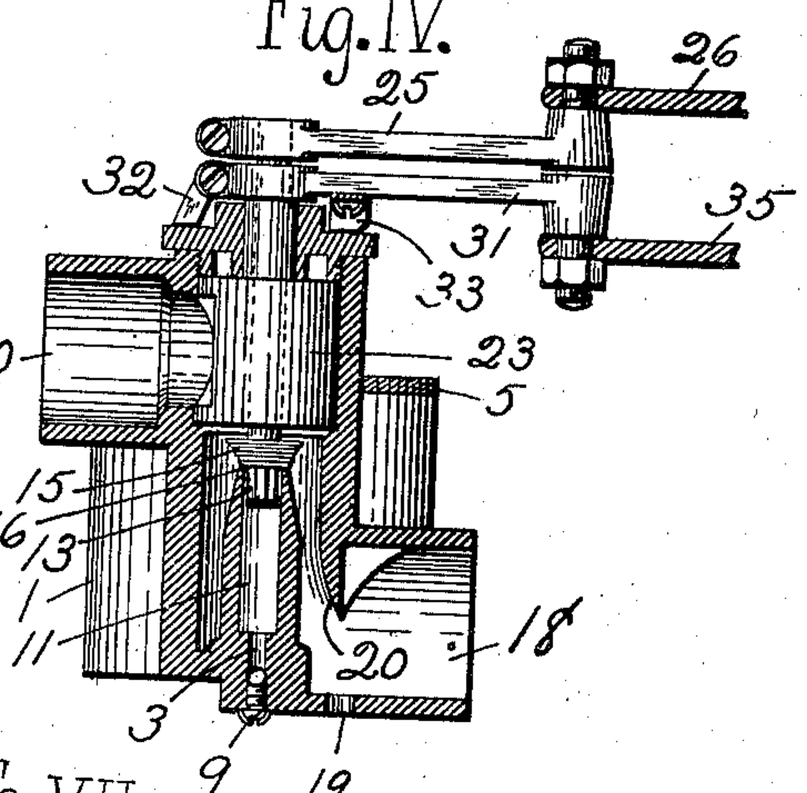


Fig. V.

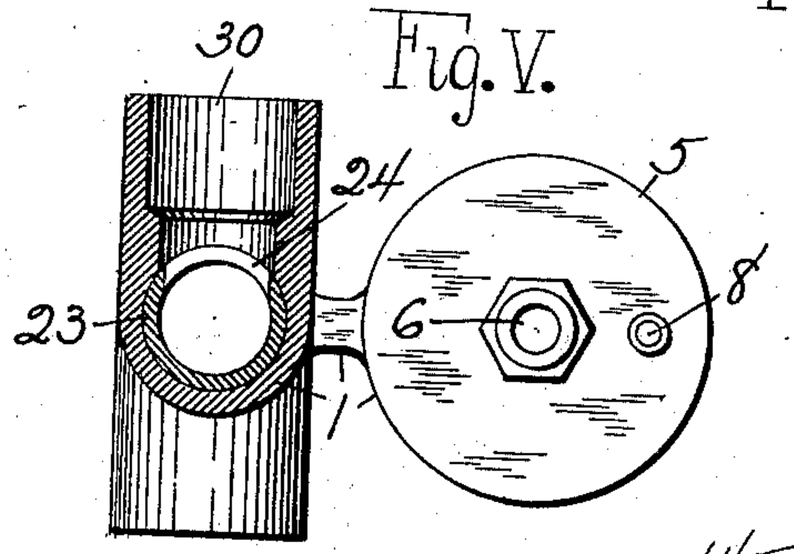


Fig. VII.

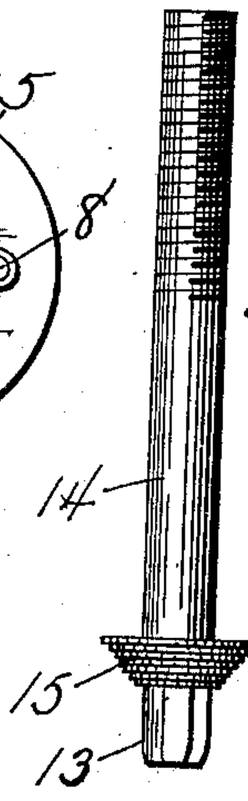
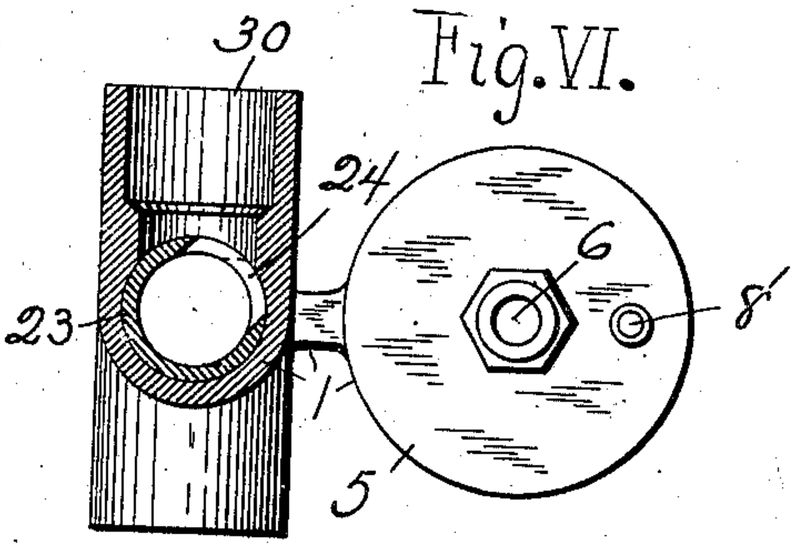


Fig. VI.



WITNESSES:

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No. 746,449. Patented December 8, 1903.

UNITED STATES PATENT OFFICE.

PATRICK H. BRENNAN, OF SYRACUSE, NEW YORK.

CARBURETER FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 746,449, dated December 8, 1903.

Application filed June 26, 1903. Serial No. 163,201. (No model.)

To all whom it may concern:

Be it known that I, PATRICK H. BRENNAN, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Carbureters for Gas-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same

My invention relates to the carbureter of a gas-engine, and has for its object to produce a compact and simple device which is cheap to construct and when assembled easily controlled by the operator.

My invention consists, essentially, of an integral shell formed with an oil-reservoir, a mixing-chamber, a suitable channel therebetween, and an air-inlet to the mixing-chamber, of a valve to control the inflow of the gasolene into the chamber, a second valve to control the supply of vapor from the carbureter to the engine, and suitable connections and levers connected to the respective valves, whereby they are easily controlled by the operator.

My invention will be understood by reference to the drawings herewith, in which the reference-numerals of the specification indicate the same parts in all the figures.

Figure I is a top plan of the carbureter. Fig. II is a side elevation with a portion broken away. Fig. III is a vertical cross-section parallel to Fig. II. Fig. IV is a vertical section at right angles to Fig. III. Fig. V is a cross-section on line V V, Fig. III. Fig. VI is a similar view showing the vapor-valve partly closed. Fig. VII is an enlarged elevation of the inlet-valve.

In the figures, 1 indicates the integral shell compactly formed with the reservoir 2, the channel 3 therefrom, and the mixing-chamber 4. The top of the reservoir is formed by the plate 5, suitably threaded to be secured in position and provided with the passage 6 to admit the oil from any suitable source of supply to the reservoir, controlled by suitable float-valve 7.

8 is a vent for forcing down the float for priming, &c.

The shell may be made of any suitable metal, but preferably of brass, which is easily cast and finished, and the channel 3 is easily drilled therein from the outside, the openings being closed by screws 9 9. From the channel the gasolene enters the bore 11 in the extension in the mixing-chamber to receive the lower end 13 or tip of the inlet-valve 14, having one or more flattened surfaces, so as not to close the bore, but to permit the gasolene to pass into the mixing-chamber when the valve is slightly raised. This valve is formed with a ribbed conical portion 15, fitting seat 16 at the upper end of the bore and adapted to break up and distribute the gasolene throughout the mixing-chamber, so as to be thoroughly mixed with the air admitted through the air-port 18, provided at its lower side with the hole 19 to permit the outflow of an accidental excess of gasolene and partially choked by bridge 20 to increase the velocity of the air. The threaded end of the valve-stem 21 engages with the tubular stem 22 of the cylindrical outlet or throttle valve 23, fitted to the upper portion of the mixing-chamber and resting on a shoulder therein, and is connected at its upper end to the controlling-arm 25, connected to the lever 26, arranged conveniently to the hand of the operator, preferably on steering-post when in an automobile, by which the inlet-valve is regulated entirely to cut off the gasolene, as shown in Fig. IV, or opened more or less to permit a greater or less quantity to pass, as shown in Fig. III. In Fig. I are indicated in dotted lines the opened and closed positions of this arm, showing how the valve may be easily adjusted by a very short movement.

The throttle-valve 23 is provided with port 24, through which the vapor passes into the channel 30 and thence to the cylinder of the gas-engine. The tubular stem 22 of this throttle-valve fits a bearing in cap 27, threaded to fit the upper end of the shell and forming the top of the mixing-chamber. To the threaded upper end of this tubular stem is connected its controlling-arm 31, having an integral finger 32 and a spring 33 to engage with the cap to hold the throttle-valve in position and to compensate for slight wear or play of the parts. To the outer end of this controlling-arm is connected the lever 35, arranged convenient to the hand of the

operator, also on the steering-post when in an automobile. As the proportions of the air and the gasolene vary according to the gravity of the latter and the dryness or the dampness of the former, I have arranged the two valves so as to be independently operated to regulate the proportion of gasolene to be admitted and mixed with the air and the amount of vapor to be supplied to the engine in order to obtain the most powerful explosive mixture. It will be noticed that the air-inlet port is partially closed by means of a downwardly-projecting partition or bridge, so as to choke the opening, giving more pressure and velocity to the air, so that at the inward stroke of the pistons of the engine a vacuum is created, the charge is drawn into the cylinders alternately, and the air is forced into the mixing-chamber through its port by the atmospheric pressure.

It will be noticed that the inlet-valve stem is threaded to fit the tubular stem of the throttle-valve, and the inlet-valve may be regulated independently by its lever. When this lever is free, the inlet-valve turns with the throttle-valve without being raised or lowered; but when this lever is locked the turning of the throttle-valve operates to raise or lower the inlet-valve. The parts are so arranged that as the throttle-valve closes it opens the inlet-valve, and vice versa, because as the throttle-valve opens more air can flow through with a greater velocity, drawing in the gasolene faster. Consequently the gasolene-inlet should be decreased to cut down the supply; but the reverse occurs when the throttle-valve is closed more or less. Therefore the inlet-valve should be proportionately opened, compensating therefor and permitting more gasolene to enter the mixing-chamber.

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

1. In the carbureter of a gas-engine, the combination with an integral brass shell formed with a reservoir, an inlet thereto, a mixing-chamber, an inlet-channel from the reservoir to the mixing-chamber, an air-inlet to the mixing-chamber, and a vapor-outlet therefrom, of a throttle-valve having a tubular stem to control the vapor-outlet, an inlet-valve to control the inlet-channel having a threaded stem engaging with said tubular stem, and operating arms and levers connected respectively to said stem, substantially as described and shown.

2. In the carbureter of a gas-engine, the combination with a shell formed with a gasolene-reservoir, a mixing-chamber, an inlet-channel from the reservoir to the chamber, a vapor-outlet from the mixing-chamber and an air-inlet port thereto, of an integral upward extension in the bottom of the mixing-chamber, inclosing a bore connected to the inlet-channel, a cap threaded to fit the shell and to close the mixing-chamber, a cylindrical throttle-valve provided with a port, and fitted to the upper portion of the mixing-chamber, an integral tubular stem on the throttle-valve outwardly extending through the cap, an inlet-valve having a lower tip provided with one or more flattened surfaces fitting within the upper end of the bore, a ribbed conical portion fitting a seat at the upper end of the extension and bore and a threaded stem upwardly and outwardly extending through said tubular stem and engaging therewith, controlling-arms and controlling-levers connected to the upper ends of said respective valves.

3. In the carbureter of a gas-engine, the combination with an integral shell formed with a gasolene-reservoir, a mixing-chamber, an inlet-channel from the reservoir to the chamber, a vapor-outlet from the mixing-chamber and an air-inlet port thereto having a contracted throat and an overflow oil-hole; of a float-valve arranged in the reservoir to control the oil-inlet; an integral bridge or partition across the top of the air-inlet, an integral upward extension in the bottom of the mixing-chamber forming a bore connected to the inlet-channel, a cap threaded to fit the shell and to cover the mixing-chamber; of a cylindrical throttle-valve provided with a port and fitted to the upper portion of the mixing-chamber, an integral tubular stem on the throttle-valve outwardly extending through the cap; an inlet-valve having a lower tip provided with one or more flattened surfaces fitting within the upper end of the bore, a ribbed conical portion fitting a seat at the upper end of the extension and bore and a threaded stem upwardly and outwardly extending through said tubular stem and engaging therewith; controlling-arms and controlling-levers connected to the upper ends of said respective valves, substantially as described and shown.

In testimony whereof I affix my signature in presence of two witnesses.

PATRICK H. BRENNAN.

Witnesses:

C. C. SCHOENECK,

M. E. GAGON.