

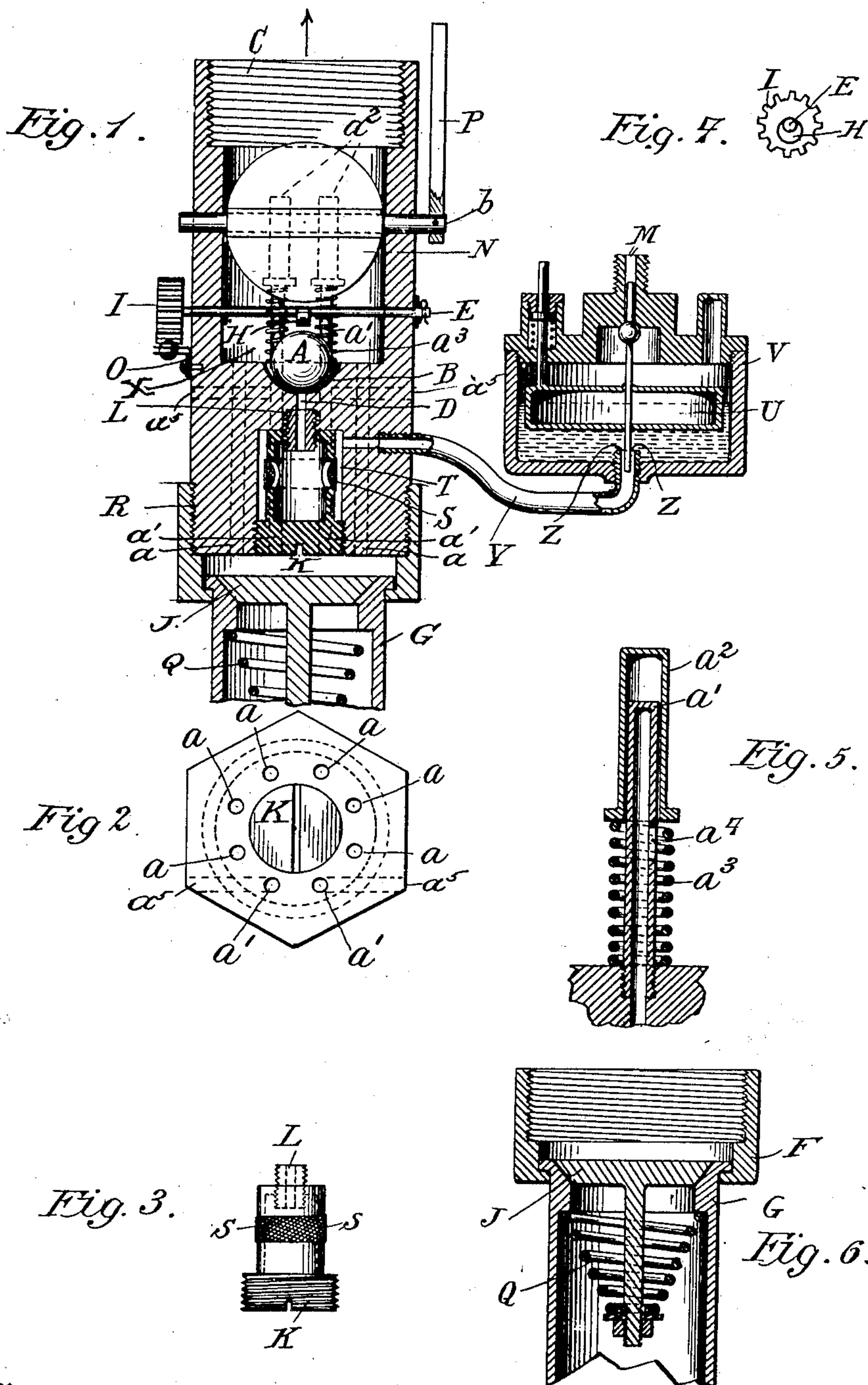
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C. D. SHAIN.

VAPORIZER OR CARBURETER FOR GAS ENGINES.

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Witnesses
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UNITED STATES PATENT OFFICE.

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VAPORIZER OR CARBURETER FOR GAS-ENGINES.

No. 882,023.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed June 22, 1907. Serial No. 380,348.

To all whom it may concern:

Be it known that I, CHARLES D. SHAIN, a citizen of the United States, and a resident of Rockaway Park, in the county of Queens and State of New York, have invented a certain new and useful Vaporizer or Carbureter for Gas-Engines.

My invention relates to improvements in vaporizers or carbureters in which a butterfly valve, commonly used as a throttle for controlling the quantity of gas passing to the engine; is also used for regulating the quantity of auxiliary air taken into the carbureter; and the objects of my invention are, first, to provide auxiliary air ports, which may be supplied with either heated or cold air, so constructed that in opening or partly opening the butterfly valve throttle, the air ports will be opened or partly opened and in closing or partly closing the butterfly valve throttle, the air ports will be closed or partly closed. I attain these objects by the mechanism illustrated in the accompanying drawings, in which:—

Figure 1, is a vertical section of the vaporizer or carbureter with the coupling and suction air valve removed; Fig. 2, is a bottom view of the carbureter; Fig. 3, is a vertical view of a partly hollow plug containing a screen and bushing; Fig. 4, is a sectional view of a shaft, cam and milled nut looking from right to left; Fig. 5, is a section of the upper part of one of the auxiliary air tubes; Fig. 6, is a sectional view showing a coupling and suction air valve. The arrows at the bottom show the air-inlets and the arrow at the top the gas-outlet to engine.

Similar letters refer to similar parts throughout the drawing.

In Fig. 1, V is a float cup for gasoline or liquid fuel, containing a float U, with ball valve near the top, of the usual construction. The gasoline or liquid fuel enters the cup at M and leaves at Z Z and passes through the pipe Y and flows into the chamber T. In this chamber T, is inserted a partly hollow plug K, with a screw thread at the bottom of it and around a part of the plug K is placed a screen S for screening the gasoline or liquid fuel. In the top of the plug K is a bushing L, (see Fig. 3). The bushing L, has a hole in the center of it, the size of which is determined by the maximum flow of gasoline or liquid fuel required for a specific size of engine. The gasoline or liquid fuel after entering the chamber T, passes

through the screen S, into the hollow part of the plug K and from there it is sucked by the engine or forced by the pressure behind it, through the bushing L, into the tube D, where its flow is in a measure arrested by the ball valve or sprayer A. The lift of the ball valve or sprayer A, is caused by suction from the engine and the pressure of the gasoline or liquid fuel under it and is regulated by the eccentric cam H in the center of the shaft E (Fig. 4). The shaft E and the cam H, are turned by the milled nut I, which is held in any fixed position desired, by the ball spring O:

a a are a number of air ports extending from the bottom of the vaporizer or carbureter, (see Fig. 2) up to the mixing chamber X. These ports are for the purposes of furnishing the fixed air supply while others a' a' and a⁵ a⁵ are used for the auxiliary air supply and a' a' are tapped and threaded where they enter the mixing chamber X and into them are inserted small tubes threaded at the bottom a' a', (see Fig. 5). These tubes, a' a' have slots in their sides a⁴, from which the auxiliary air issues. These tubes a' are covered by caps a², (see Fig. 5). Between the caps a² and the bottom of the mixing chamber X, are springs a³, coiled around the tubes a' and when the butterfly valve N is open or partly open, the springs a³ and the suction from the engine through C, raise the caps a², so that the slots a⁴, are open or partly open; and when the butterfly valve N, is closed or partly closed, it pushes down the caps a² over the slots a⁴ in the tubes a', thereby closing or partly closing them. The springs a³ are fastened to the caps a² and also to the bottom of the mixing chamber X, to prevent the caps from leaving the tubes a' by the suction of the engine. The caps a² may also have pins on the inside, fitting into the slots a⁴, for the same purpose. The butterfly valve N, is operated by the shaft b and the lever P (Fig. 1). The gasoline or liquid fuel after being mixed with air in the mixing chamber X, passes out of the vaporizer or carbureter at C.

The bottom of the vaporizer or carbureter is threaded at R, to receive a union F G (Figs. 1 and 6) with a commonly used suction air valve J Q; and these may be connected to heated air and both the fixed air ports a and the auxiliary air tubes a', thus be supplied with heated air; or the openings leading to the auxiliary air tubes a' may be plugged at

the bottom of the vaporizer or carbureter and tubes run through the side of the vaporizer or carbureter $a^5 a^5$ Fig. 1, connecting with the tubes a' and the vaporizer or carbureter thus be supplied with cold auxiliary air, while the ports a , are supplied with heated air; or vice versa.

This vaporizer or carbureter can be made in several ways; but, I prefer to carry out this feature of my invention as shown in the drawings.

The arrangement of a float cup V, with a float U, in connection with a vaporizer or carbureter, forms no part of my invention.

What I do claim as my invention, and desire to secure by Letters Patent is:—

The combination in a vaporizer or carbureter of a butterfly valve, a casing forming a mixing chamber, provided with main and auxiliary air passages, extending vertically through the lower wall of the casing; additional auxiliary air passages extending horizontally from the first mentioned auxiliary air passages through the casing of the carbureter, the first mentioned auxiliary air passages directly opened partly or fully, or closed partly or fully, by the butterfly valve and arranged so their air supply from the bottom of the carbureter or vaporizer, can be cut off and these auxiliary passages supplied with air separately if desired, by means of the air passages extending from these vertical air passages, horizontally, to the outside of

the vaporizer or carbureter; with a plain union containing a suction air valve at the bottom of the vaporizer or carbureter, for supplying either heated or cold air; and a ball valve or sprayer located in the mixing chamber and seated in a support, and a passage through the support for the delivery of gasolene or liquid fuel under the ball, into the mixing chamber, the ball valve controlling this delivery; an eccentric cam on a shaft, a milled nut on one end of the shaft, and a ball spring, extending from the carbureter casing and contacting with the milled nut, the cam and shaft being located above the ball and operated by the milled nut, which is held in any desired position by the ball spring; and a partly hollow screened plug and bushing for the passage of gasolene or liquid fuel, through the said support into the mixing chamber; the partly hollow plug having in its top a bushing with a hole through its center, the proper size for supplying the maximum flow of gasolene or liquid fuel required for any specific size of engine, all substantially as set forth.

Witness my hand this twenty-first day of June, 1907, at the city of New York, in the county and State of New York.

CHAS. D. SHAIN.

Witnesses:

EMMA BECHTEL,
CHAS. D. SHAIN, Jr.