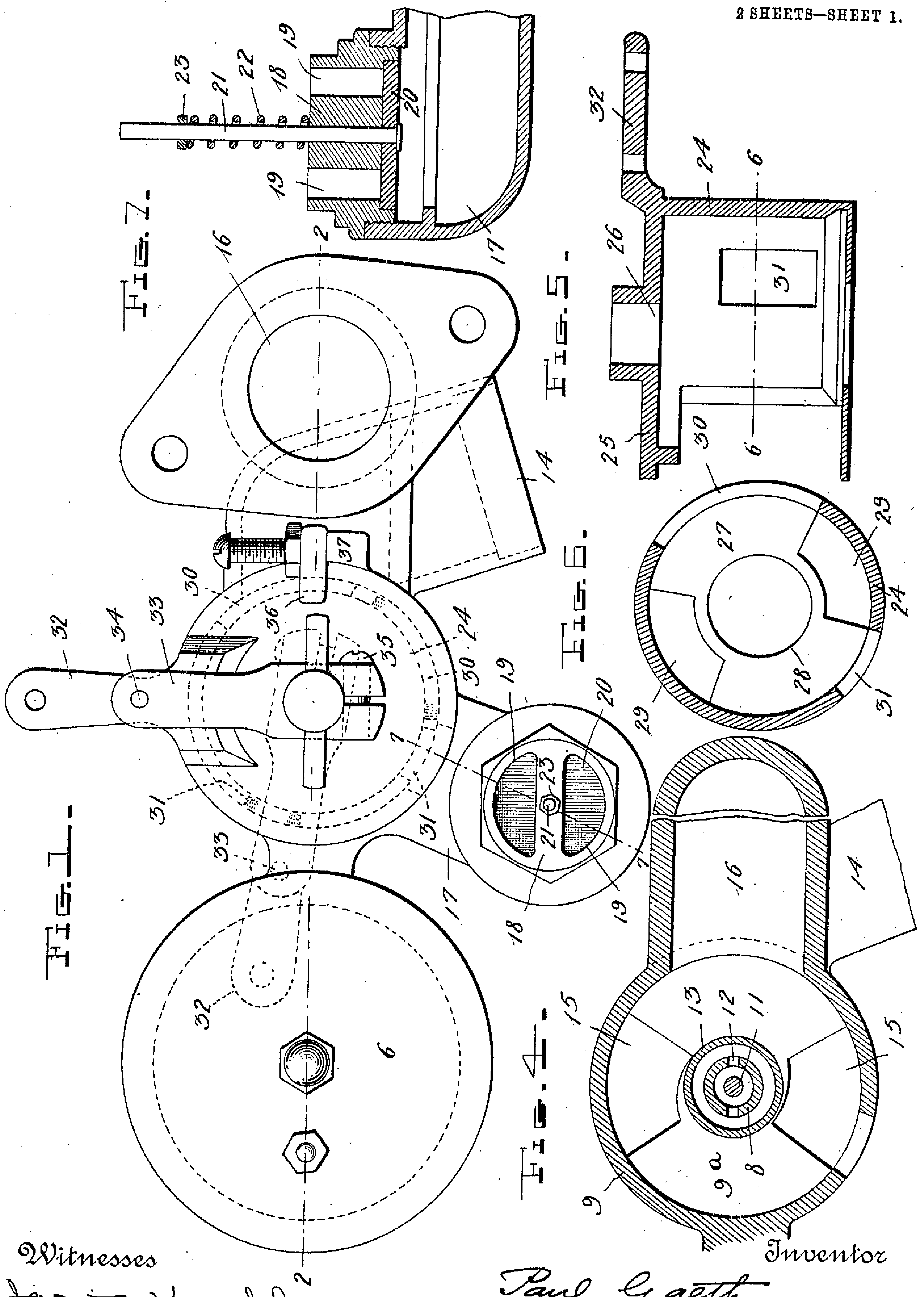
No. 849,538. PATENTED APR. 9, 1907.

P. GAETH.

CARBURETER.

APPLICATION FILED DEC. 29, 1906.

2 SHEETS—SHEET 1.



Witnesses

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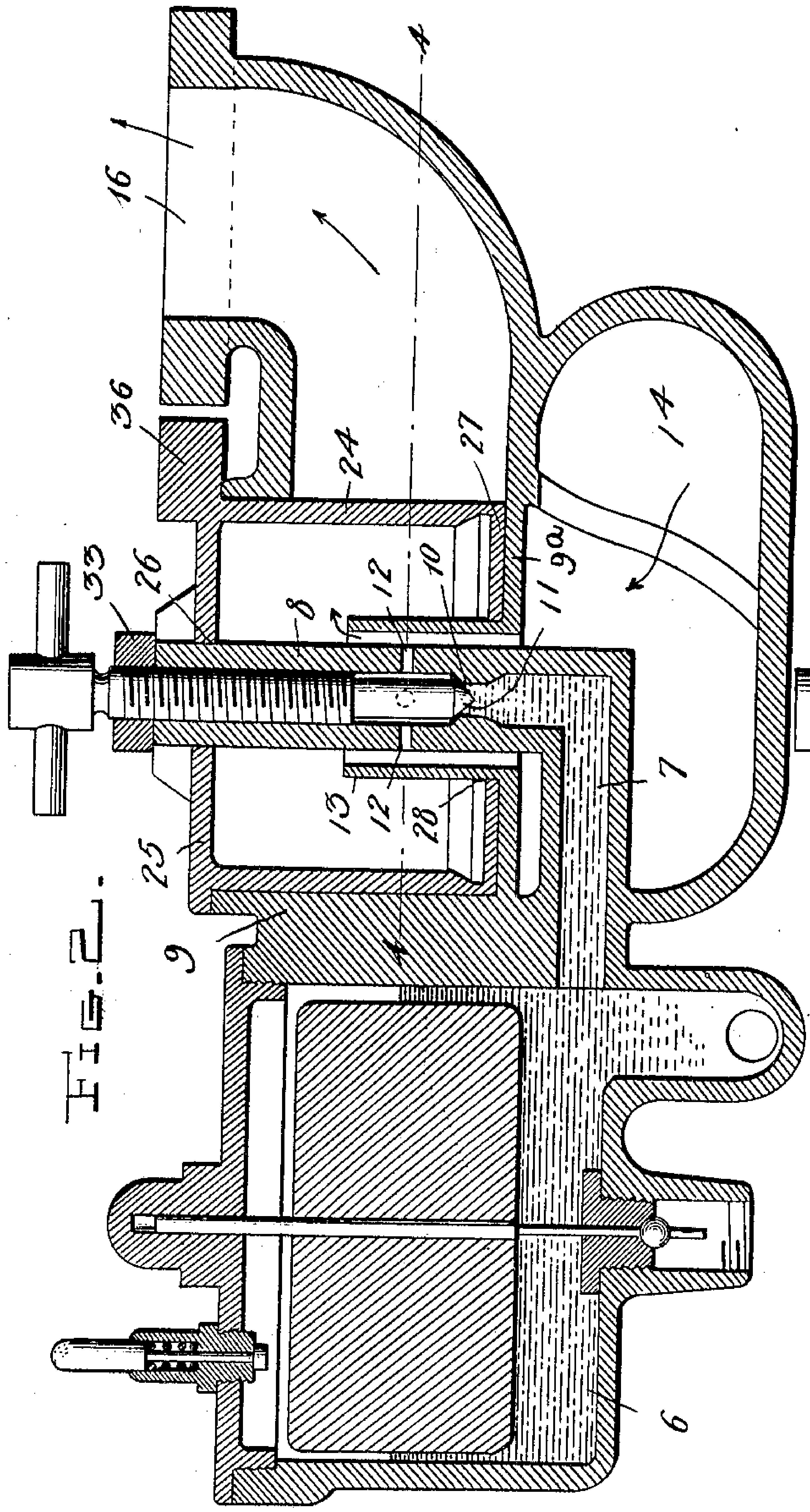

Fig. 2.

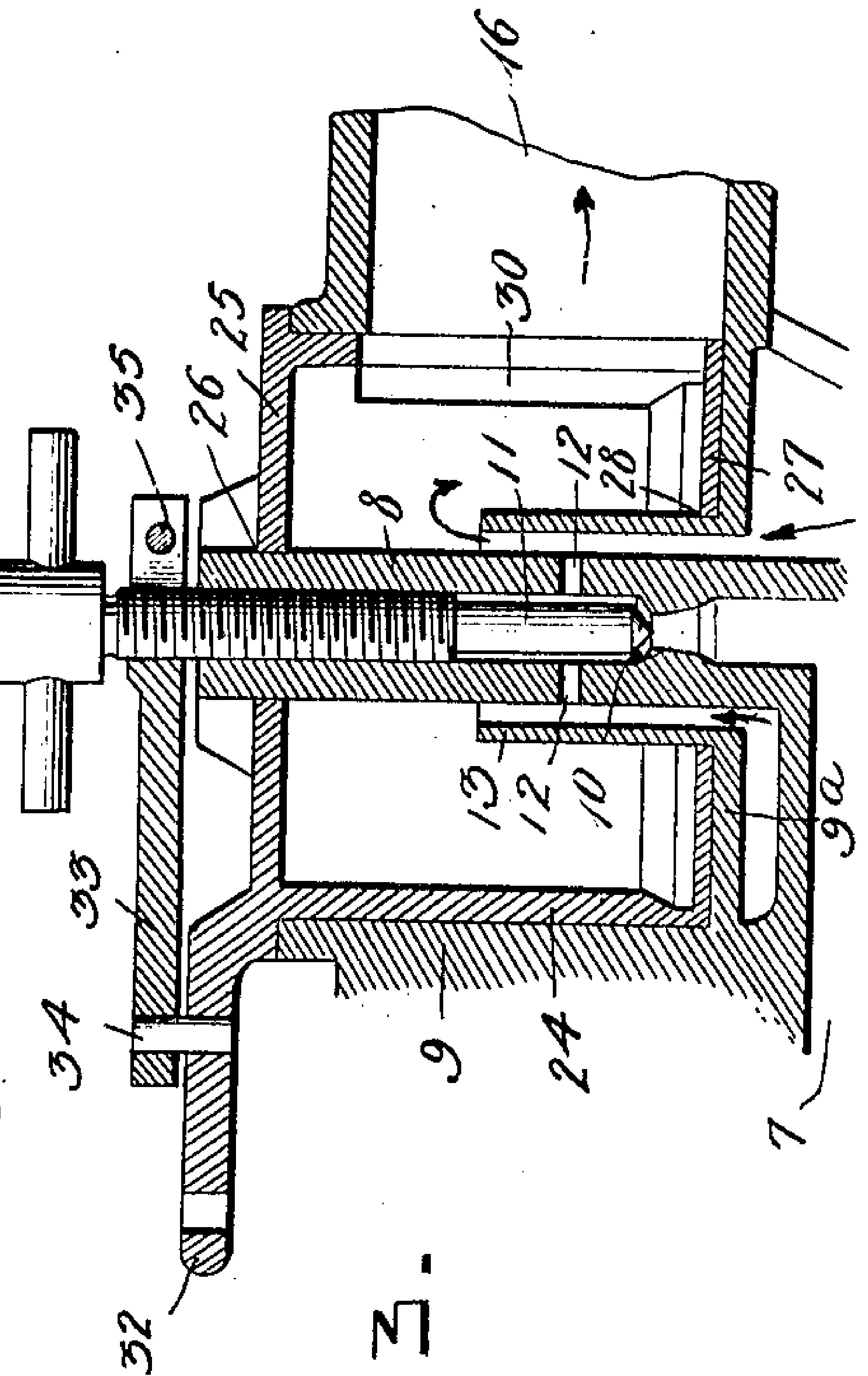

Fig. 3.

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UNITED STATES PATENT OFFICE.

PAUL GAETH, OF CLEVELAND, OHIO.

CARBURETER.

No. 849,538. Specification of Letters Patent. **Patented April 9, 1907.**

Application filed December 29, 1906. Serial No. 349,976.

To all whom it may concern:

Be it known that I, Paul Gaeth, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Carbureters, of which the following is a specification.

This invention relates to carbureters, and particularly to the means for controlling the supply of air and gasolene to the mixing-chamber.

The object of the invention is to provide means for so connecting the gasolene-valve with the throttle-valve that the supply of gasolene will be regulated according to the speed or to the amount of mixture required, so that a perfect mixture is obtained at all speeds and with the throttle partially closed. An auxiliary air-valve is provided which is brought into play for an additional supply of air during high speed. As will be seen, the gasolene needle-valve is connected to the throttle, so that they both open and close together, thereby insuring an automatic regulation of the gasolene-supply according to the speed. A special form of throttle is also shown in which when the throttle is almost closed the inflowing air is confined to a central tube through which it must all enter, the gasolene-ports discharging into said tube, so that a perfect mixture is formed even at a very low speed.

The advantages will be further evident from the following description and the drawings.

In the drawings, Figure 1 is a top plan view of the carbureter. Fig. 2 is a section on the line 2 2 of Fig. 1, the throttle being closed. Fig. 3 is a similar view with the throttle open. Fig. 4 is a section on the line 4 4 of Fig. 2, the throttle-valve being removed. Fig. 5 is a vertical sectional view of the throttle-valve removed, and Fig. 6 is a horizontal section on the line 6 6 of Fig. 5. Fig. 7 is a section on the line 7 7 of Fig. 1.

Referring specifically to the drawings, 6 indicates the gasolene-supply and float-chamber of ordinary construction, from which oil is supplied through a port 7 to a vertical tube 8, which extends centrally through the throttle-valve casing 9. This tube has a reduced valve-seat 10, which may be opened or closed by a needle-valve 11, which is threaded into the tube 8 and may be adjusted up or down, as desired. Above the valve 10 are ports 12, which open through the tube into another concentric tube 13, which is formed integrally with the casing 9 and which projects up within the throttle-valve and around the tube 8, at a slight distance therefrom. The air-inlet pipe is indicated at 14 and communicates with the bottom of the throttle-valve casing and with the tube 13. The bottom or floor 9^a of the throttle-valve casing has segmental openings 15 therein, and these form air-inlets from the passage 14 during certain positions of the throttle. The outlet for the mixture to the engine is indicated at 16, leading laterally from the throttle-valve casing. There is also an auxiliary valve which opens into the side of the throttle-valve casing. This auxiliary valve is located at the end of a pipe or hollow projection 17, extending from the side of the casing and provided at the end with a plug 18, having openings 19, which are normally closed by a disk 20 on the under side of the plug. This disk is held by a stem 21, which extends through the plug and has above the same a coiled spring 22 between the top of the plug and a collar 23. The spring normally holds the valve-disk 20 closed, but under heavy suction at high speed the valve will open and let an auxiliary supply of air into the mixing-chamber.

The mixing-chamber is formed or comprised within the cylindrical throttle-valve 24, which fits within the casing, and the top 25 thereof has a hole 26, through which the tube 8 extends, and the bottom 27 thereof has a central hole 28, in which fits the tube 13. Said bottom is also provided with segmental openings 29, which are adapted to register with the openings 15 when the throttle is open. The wall 24 of the throttle has a large opening 30, which registers with the pipe 16 to the engine when the throttle is open, and it also has a smaller opening 31, which registers with the pipe 17 leading from the auxiliary air-valve 20.

The throttle-valve is provided with an operating-handle 32, whereby it may be turned in its casing, and the needle-valve is held by a clamp 33, which is connected to the handle of the throttle-valve by a pin at 34. By loosening the screw 35 the needle-valve may be adjusted in the clamp to vary its relation to its seat 10, but when the screw is tightened the connection causes the needle to turn and open or close with the throttle. Consequently the wider the throttle is opened the more the needle-valve is opened, so that the supply of gasolene is proportioned to the speed or work.

The top of the throttle carries a stop 36, which strikes a projection 37 on the casing when the throttle is closed.

In operation when the throttle is open the gasoline is supplied from the float-chamber through the passage 7, the valve 10, and ports 12 into the concentric tube 13. Air is drawn in through the passage 14 and up through the tube 13 and thence out through the opening 30 into the pipe 16, the explosive mixture being formed within the mixing-chamber in the valve. When the valve is fairly opened, the openings 29 in the bottom thereof also register with the openings 15 in the bottom of the valve-casing, allowing an additional supply of air to enter into the mixing-chamber. Furthermore, under high speed air enters into the mixing-chamber through the valve 20 and opening 31. When running at low speed, with the throttle almost closed, solid portions of the bottom of the valve lap the openings 15, so that said openings 29 15 are closed, all the air being drawn through the tube 13. This flow of air directly over the gasolene-ports picks up sufficient gasolene to make a perfect mixture, so that a perfect mixture is obtained even at very low speed. As the throttle is opened the openings 29 15 begin to register and supply additional air, which mixes with the vapor. It should be remembered that as the throttle-valve is opened the needle-valve is also gradually opened, so that the gasolene supplied is in proportion to the speed or work. This is a decided advantage over those structures in which the gasolene-valve is not variable, but remains at the same opening for various speeds and which consequently have to depend on increased suction to carry up a proper amount of gasolene, and increased suction is objectionable for various reasons, among which are that it throttles the motor and also tends to cause a vacuum or back pressure which decreases the power. Furthermore, it is impossible for the gasolene-valve to clog, because whenever the throttle is opened the needle-valve is raised and the gasolene-passage is opened and any sediment is drawn from the valve-seat, whereas in carbureters having a fixed gasolene-regulating valve sediment is drawn into the valve-seat and becomes clogged therein, not permitting a proper quantity of gasolene to pass.

I claim—

1. In a carbureter, in combination, a casing, a hollow throttle-valve therein having an inlet-opening for air and an outlet-opening for the mixture, a fuel-supply pipe extending axially through the valve and having lateral outlet-ports, and a controlling-valve screwed into said tube, the casing having an air-inlet passage terminating in a pipe extending into the valve around said fuel-pipe, and also having additional air-inlet openings controlled by the valve.

2. In a carbureter, in combination, a casing, a throttle-valve therein comprising a hollow cylinder having an outlet-opening in the side and air-inlet openings in the bottom, and a fuel-supply pipe extending through the bottom of the casing and into the valve, the casing having an air-passage terminating in a tube surrounding the fuel-pipe in the valve, said passage also communicating with the interior of the casing through openings in the bottom thereof.

3. In a carbureter, in combination, a casing having an air-inlet tube in the bottom thereof, and segmental air-inlet openings in the bottom around said tube, a fuel-supply pipe opening into said tube, and a cylindrical throttle-valve having a central opening in the bottom through which said tube and pipe project and also having segmental openings in the bottom adapted to register with said air-inlet openings.

4. In a carbureter, in combination, a casing having an air-inlet tube projecting upwardly from the bottom thereof and air-inlet openings in the bottom outside said tube, a cylindrical throttle-valve in the casing, surrounding said tube and having openings in the bottom adapted to register with said openings, a fuel-inlet pipe which extends upwardly through said tube and the top of the valve and has ports opening into the tube, and a fuel-regulating valve screwed into the pipe and controlling said ports and connected at the top to the throttle-valve, to operate therewith.

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

PAUL GAETH.

Witnesses:
F. L. Pierce,
John A. Bommhardt.