J. C. SIMONSEN.

CARBURETER.

APPLICATION FILED DEC. 28, 1908.

942,977. Patented Dec. 14, 1909.

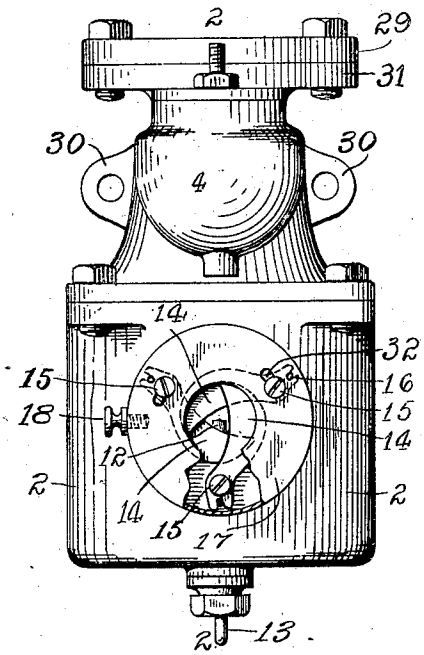

Fig. 1.

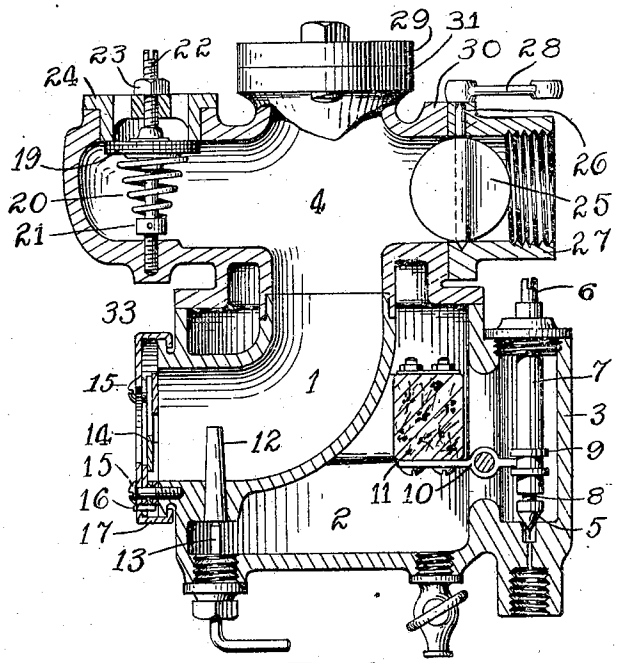

Fig. 2.

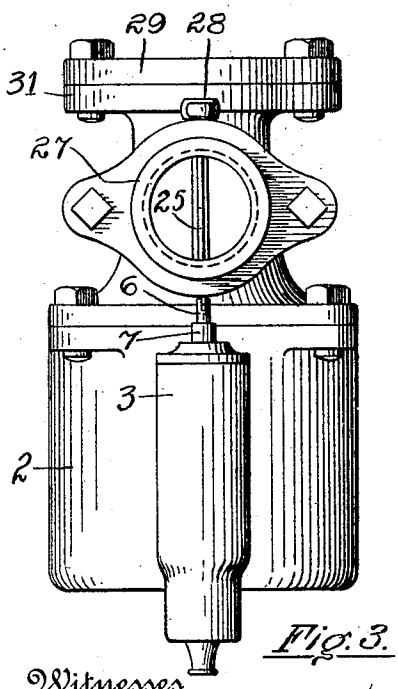

Fig. 3.

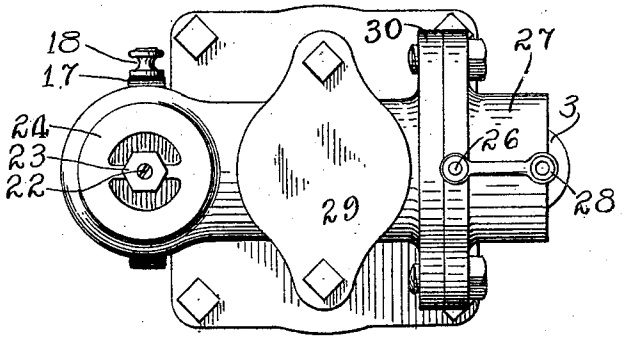

Fig. 4.

Witnesses

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JOHAN CHARLES SIMONSEN, OF ELKHART, INDIANA.

CARBURETER.

942,977. Specification of Letters Patent. Patented Dec. 14, 1909.

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To all whom it may concern:

Be it known that I, JOHAN CHARLES SIMONSEN, a citizen of the Kingdom of Norway, residing at Elkhart, in the county of Elkhart and State of Indiana, have invented certain new and useful Improvements in Carbureters, and 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 improvements in carbureters and more particularly carbureters for internal combustion engines, and its object is to provide the same with various new and useful features hereinafter more fully described and particularly pointed out in the claims, reference being had to the accompanying drawings in which:

Figure 1 is a front elevation of a device embodying my invention. Fig. 2 a vertical section of the same on the line 2—2 of Fig. 1. Fig. 3 an elevation taken from the opposite side of that shown in Fig. 1. Fig. 4 a plan view of the same.

Like numbers refer to like parts in all of the figures.

1 represents the carbureting chamber preferably having a form of an elbow as shown. 2 a chamber inclosing the same to receive liquid hydro-carbon. 3 a valve chamber at one side of the chamber 2. 4 an auxiliary chamber for diluting the mixture with air.

5 is a valve for controlling the inlet of hydro-carbon fluid and having a stem 6 longitudinally adjustable in the sleeve 7 by means of a screw thread 8 thereon, the sleeve and stem projecting through a removable cap on the chamber 3, whereby it is accessible for vertically adjusting the valve 5 to determine the level of the fluid in the chamber 2.

9 is a grooved collar on the sleeve 7 engaged by a forked end of a lever 10 pivoted between the chambers 2 and 3 and provided with a float 11 adapted to close the valve 5 whenever the fluid in the chamber 2 is at the desired level.

12 is a nozzle extending vertically into the carbureting chamber; located close to the open end thereof, and provided with a needle valve 13 to regulate the flow of the hydro-carbon fluid therethrough.

The open end of the carbureting chamber, where it receives the air, is provided with an iris diaphragm consisting of any convenient number of segments 14(three being shown), each segment being pivoted to the face of the open end of the chamber 1 on a screw 15, and having a recessed end extending outward from the screw and engaged by a pin 16 mounted in a ring 17, rotative on the flange 33 surrounding the opening of the chamber 1 and provided with slots 32 in which are inserted the screws 15 to permit and limit rotary movement of the ring 17 and to retain said ring in place. As the ring is rotated the pins 16 turn the segments 14 on the screws 15 and swing the same toward and from the axis of the inlet opening to the chamber 1, thus adjusting the area of said opening as occasion requires, and at the same time maintaining the axis of the opening in fixed relation to the nozzle 12. This ring is held in adjustment by means of a thumb screw 18 extending through the ring and engaging the flange 33.

The clearance between the face of the flange and the ring 17 is sufficient to equal the thickness of all of the segments 14 and each screw 15 is surrounded by washers, each of the same thickness as one of the segments, which together with the segment on the screw equal in thickness the full number of segments, and each segment is adjusted in a separate plane by the adjustment of these washers at the respective sides of each respective segment before the respective screws are inserted therein.

4 is an auxiliary chamber in which the mixture is diluted by air taken into the same through a valve 19, which valve is supported upon a spring 20 which spring in turn rests upon a collar 21 fixed on a bolt 22, which extends through the axis of the valve and the axis of the bushing 24 engaged by the valve. This bushing is open in the top to permit the air to enter and is held down by a lock nut 23 on the bolt 22. This bolt is screw threaded at the lower end and slidable in the valve and bushing. By raising and lowering the bolt, the tension of the spring 20 may be adjusted.

25 is a throttle valve mounted in a detachable boss 27 in which boss is inserted any convenient pipe to convey the mixture to an engine. This valve is mounted on a pin 26 provided with a lever 28 to adjust the valve by means of any convenient mechanism, (not shown). The chamber 4 is provided with a top flange 31 surrounding a vertical opening and a side flange 30 surrounding a

side open whereby the boss 27 may be shifted to connect to a pipe either vertically or horizontally, the other opening being closed by a cap 29.

In operation, by turning the ring 17 the segments 14 will be adjusted to enlarge or diminish the opening to admit air to the carbureting chamber without in any wise shifting or modifying the relation of the axis of this opening to the end of the nozzle, and the stream of air will thus always impinge upon the jet of fluid from the nozzle in the proper relation. While the engine is running slowly, the inspiration stroke will make less vacuum in the carbureter and thus induce a less quantity of air to be taken in, and at the same time this reduced vacuum will tend to draw less hydrocarbon through the nozzle, the air inlet is first adjusted to properly operate the engine at slow speeds and as the speed increases there will be a tendency to increase the proportion of hydro-carbon relative to the air due to increased vacuum. This increased vacuum will also tend to open the air valve 19, which by proper adjustment of the spring 20, will open just enough to dilute the mixture to the proper proportions in the chamber 4, and thus under all working conditions from slow speeds to the highest speed that the engine may have occasion to run, there will be a practical automatic adjustment and proportionment of the air and hydro-carbon to obtain the best results with no further adjustment of the device required, except such adjustment of the throttle as may be necessary to maintain the desired speed of the engine.

What I claim is:—

1. A carbureter including an L-shaped carbureting chamber, a diluting chamber above the carbureting chamber and communicating therewith, a hydro-carbon chamber surrounding the carbureting chamber, a valve chamber at one side of the last named chamber, a float controlled valve in the valve chamber, an iris diaphragm to adjust the intake opening to the carbureting chamber, a nozzle communicating with the hydro-carbon chamber and terminating near the axis of the diaphragm and also having its axis substantially at right angles to the axis of the diaphragm, a needle valve to the nozzle, a spring controlled valve to admit air to the diluting chamber, and a throttle valve to regulate the flow from the diluting chamber to the engine.

2. A carbureter including, a carbureting chamber, an iris diaphragm to adjust the air inlet to said chamber, a hydro-carbon chamber, a nozzle arranged with its axis at substantially right angles to the axis of the diaphragm communicating with the hydro-carbon chamber and located near the diaphragm and also terminating near the axis thereof, a float valve to control the supply of fluid to the hydro-carbon chamber, a diluting chamber, a spring controlled valve to admit air to the diluting chamber, and means for adjusting said spring.

3. A carbureter including, a diluting chamber, a bushing inserted in the chamber and having an open top to admit air, a valve engaging said bushing to close the same, a bolt extending through said bushing and valve and freely slidable therein and also longitudinally adjustable in a screw threaded opening in the bottom of the chamber, a spring surrounding the bolt and supporting the valve, a collar fixed on the bolt and supporting the spring, and a nut on the bolt engaging and holding the housing in place.

4. A carbureter including an L-shaped carbureting chamber having an air inlet opening, a hydro-carbon chamber communicating with the carbureting chamber by a nozzle located near the air inlet opening and at right angles to the axis thereof, a diluting chamber above the carbureting chamber, and into which the carbureting chamber discharges, a spring-controlled valve to admit air to the diluting chamber, a throttle to control the flow from the diluting chamber to the engine, and an iris diaphragm to adjust the air inlet to the carbureting chamber and having its axis near the end of the nozzle and at right angles thereto.

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

JOHAN CHARLES SIMONSEN.

Witnesses:
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PALMER A. JONES.