E. N. BRODERICK.

CARBURETER.

APPLICATION FILED MAR. 25, 1908.

961,284.

Patented June 14, 1910.

2 SHEETS—SHEET 1.

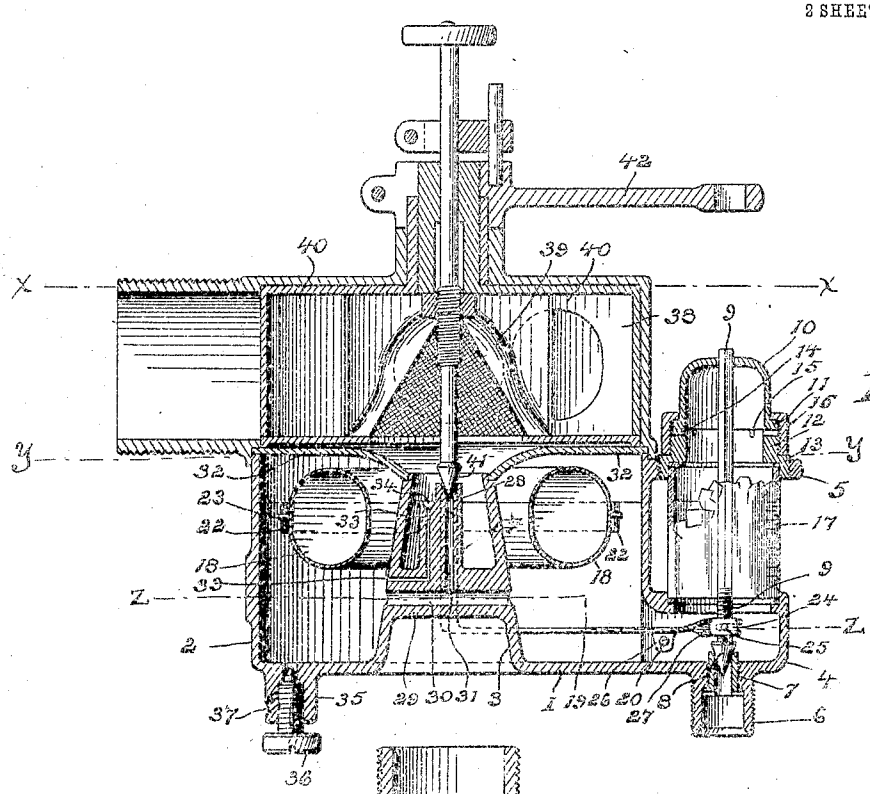

Fig. 1.

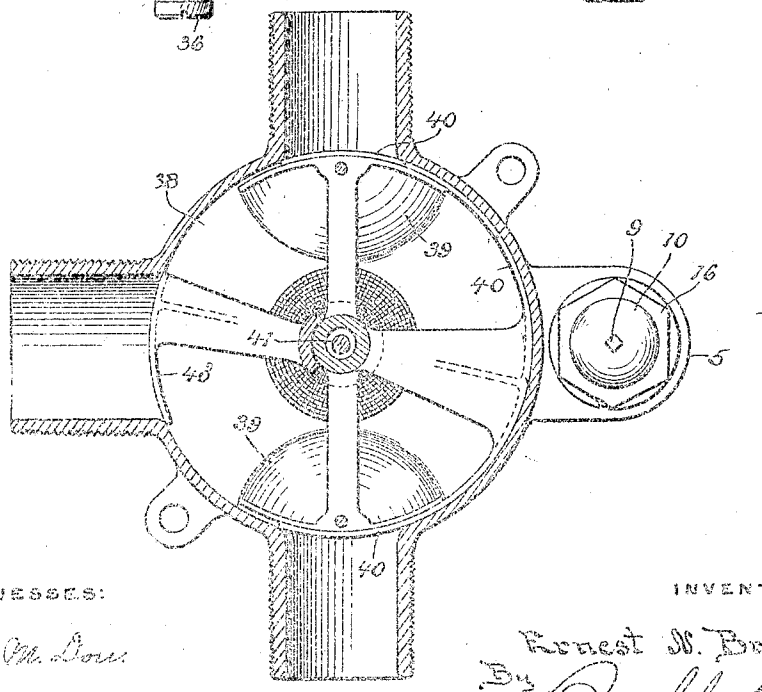

Fig. 2.

WITNESSES:

Anna M. Dorr

Anna M. Magee

INVENTOR:

Ernest N. Broderick

By Cartter & Cartter

Attorneys

E. N. BRODERICK.

CARBURETER.

APPLICATION FILED MAR. 25, 1908.

961,284. Patented June 14, 1910.

2 SHEETS—SHEET 2.

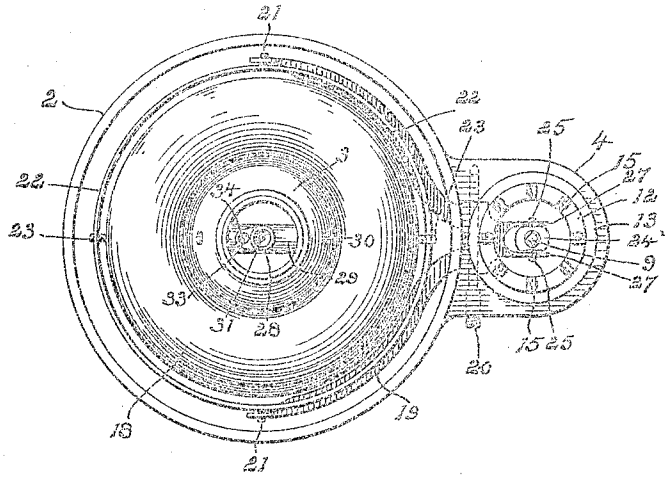

Fig. 3.

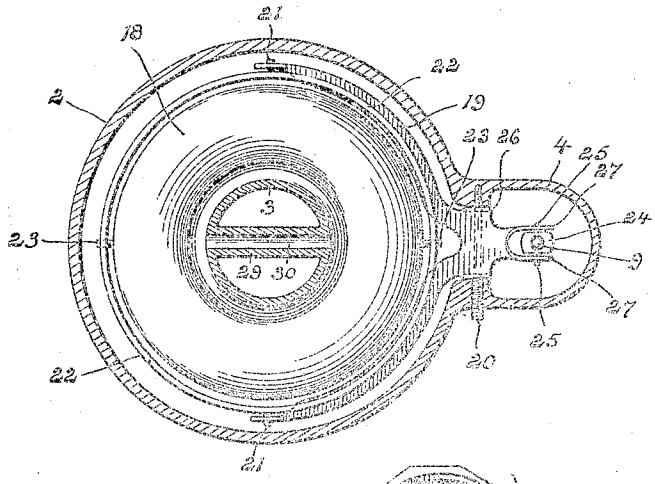

Fig. 4

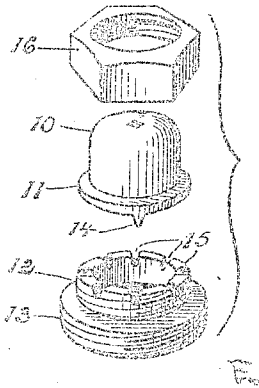

Fig. 5.

WITNESSES:

Anna M. Dorr

Anna M. Mayer.

INVENTOR

Ernest N. Broderick.

By Cartlidge & Mayer

Attorneys.

UNITED STATES PATENT OFFICE.

ERNEST N. BRODERICK, OF DETROIT, MICHIGAN.

CARBURETER.

961,284. Specification of Letters Patent. Patented June 14, 1910.

Application filed March 25, 1908. Serial No. 423,103.

To all whom it may concern:

Be it known that I, ERNEST N. BRODERICK, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Carbureters, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to carbureters for internal combustion engines, and especially to certain features of construction of the fuel supply valve and float chamber by which simplicity, readiness of adjustment, and certainty of action in different positions are obtained.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

Referring to the drawings, Figure 1 is a view in longitudinal section through a carbureter which embodies features of the invention, Fig. 2 is a view in section on line *x*—*x* of Fig. 1. Fig. 3 is a view on line *y*—*y* of Fig. 1. Fig. 4 is a view in section substantially on line *z*—*z* of Fig. 1. Fig. 5 is a perspective view in detail of an adjusting shield cap and nut for the feed valve.

In the drawings, the base of the carbureter is a vertically disposed metal cylinder, whose bottom 1 is preferably integral with its side wall 2; an axial hollow, conical core 3, likewise preferably integral with the bottom, extends up through the cylinder and the annular space between the core and side wall comprises a float chamber. A pair of radial lugs 4 and 5 are formed on the wall of the cylinder in vertical alinement. The lower lug 4 is hollow, communicating with the interior of the cylinder, and a nipple 6 depending therefrom is exteriorly screw-threaded or otherwise suitably fitted for a fuel pipe connection. The nipple is counterbored and screw-threaded to receive a screw-plug 7, that extends through the bottom of the lug, and extends above the float chamber bottom and acts as a trap to prevent sediment from settling thereon. The screw plug is axially apertured and counterbored at its upper end as a valve seat for a conical, needle-valve closure 8, which is secured on a vertical, longitudinally reciprocable stem 9. The upper squared or flattened end of the stem non-rotatively engages a squared or slotted aperture in the crown of a dome-shaped shield 10, whose lower rim 11 is seated on an annular bushing 12 having an elongated flange 13 screw-threaded into the upper lug 5, a spur 14 on the shield engaging any one of a series of notches 15 in the bushing. An interiorly flanged nut 16 over the shield engages the upper screw-threaded end of the bushing and clamps the shield in place.

The adjacent faces of the lug 4 and bushing 12 are counterbored to hold a gage glass 17, gaskets being interposed between the ends of the glass and the metal to make tight connection, and suitable index marks being placed on the glass, so that it acts as a sight gage for the float chamber, while it houses the needle valve stem and permits view of the latter so that its action can be readily observed.

An annular hollow metal float 18 in the float chamber is operatively connected to the needle-valve stem 9 by a lever 19, fulcrumed on a pivot pin 20 passing through the aperture of the lower lug. The outer end of this lever is bifurcated and its vertically disposed extremities are apertured for pintles 21 at diametrically opposite points of a gimbal ring 22, which encircles the float and in turn is pivoted thereto by pins 23 on the float at right angles to the pintles 21.

The other end of the lever 19 is forked to embrace a collar 24, its arms being horizontally slotted to rock on pivots 25 in the collar which is adjustably screw-threaded on the valve stem 9.

In its preferred form of construction, the float lever is stamped or formed out of a single sheet metal blank having a broad shank with downturned apertured ears 26 engaged by the pivot pin 20, and the fork arms 27 embracing the collar are given a half turn to present vertical sides bearing against the collar, the construction being thus light, easily adjusted and inexpensive.

An upright stem 28 is supported by a horizontal cross-arm 29 in the core 3, the parts being preferably formed integrally with the core. A horizontal duct 30 extends quite through the lower cross-arm opening at each end into the float chamber about midway between the chamber bottom and the normal level and connects with a vertical central duct 31 in the upright stem 28, the conical wall of the core and the apertured stem forming in effect an annular mouth through a cover 32 over the float.

An auxiliary duct 33 is formed in the core

stem 28, its upper end opening into a cup-shaped mouth 34 close to the main duct valve seat and at about the upper level to be maintained in the float chamber contents. Its lower end opens horizontally into the float chamber.

A drain is provided for the float chamber, which consists of a depending nipple 35 on the chamber bottom interiorly screw-threaded to receive a screw-plug 36 which normally closes an oblique duct 37 in the nipple wall.

A vaporizing chamber 38 with deflectors 39, air inlet valve 40, outlet valve 43, gasolene valve 41 and throttle handle 42, is secured over the float chamber, the mechanism and design being of any approved type, and not *per se* forming a part of this invention.

In operation, the float always acts upon the gasolene inlet valve to maintain a constant mean level in the chamber regardless of any tilting or agitation of the carbureter, owing to the universal connection between the ring and lever. The level is readily determined by inspection of the gage glass, and if not correct, may be quickly varied by slacking the shield nut, raising the latter clear of the notched bushing, and rotating the shield and the stem, so as to work the lever nut up and down and thus change the vertical position of the float in the chamber, and thereby shift the level.

The gage glass serves as housing for the fuel valve stem and allows the operator to instantly detect any lodgment or sticking of the valve from impurities on the valve seat which is visible.

The position of the cross duct in the float chamber prevents the entrance of water into the vaporizing chamber, as it is trapped in the float chamber below the duct and may be drawn off through the drain cock. Likewise any lighter grade stays at the top, the valve receiving a supply of substantially average and constant density.

The design and construction may be varied without departing from the spirit of the invention and I do not care to limit myself to any particular form or arrangement of parts.

What I claim as my invention is:—

1. In a carbureter, an annular float chamber provided with a lateral hollow lug, a valve seat in the lug, a closure therefor, an upright stem secured to the closure longitudinally reciprocable in the lug, a lever pivoted in the lug and adjustably secured at one end to the stem, a float in the chamber, gimbal ring connections between the other end of the lever and the float, and adjusting means secured on the outside of the chamber adapted to vary the relation of the stem and lever.

2. In a carbureter, an annular float chamber provided with lugs, a gage glass therefor secured in said lugs, an apertured valve seat in one of said lugs at the lower end of the glass, a closure for the seat, a longitudinally reciprocable stem secured to said closure extending through the upper end of the glass and other lug, an annular float in the chamber, a lever articulated to the float and adapted to operate the stem and adjusting means on said last named lug exteriorly of the glass adapted to vary the relation of the stem and lever.

3. In a carbureter, an annular float chamber, a gage glass therefor secured on the outer wall, an apertured valve seat removably secured at the lower end of the glass, a closure for the seat, a longitudinally reciprocable stem on the closure extending through the glass, an annular float in the chamber, a lever articulated to the float at one end and adjustably connected at the other to the stem, and a shield having sliding engagement with the stem and non-rotatable engagement with the casing.

4. In a carbureter, an annular float chamber, a hollow lug extending radially from the chamber, an apertured valve seat removably secured in the bottom of the lug, a closure for the seat, an apertured bushing secured on the casing in vertical alinement with the hollow lug, a screw-threaded stem for the closure extending upwardly through the bushing, a gage glass housing the stem, an annular float in the chamber, a lever articulated at one end to the float, a nut longitudinally adjustable on the stem pivoted to the other end of the lever, a dome-shield having non-rotating sliding engagement with the stem non-rotatively and removably secured on the bushing.

5. In a carbureter, an annular float chamber, an annular float therein, a hollow apertured lug extending radially from the base of the chamber, an apertured radial lug extending from the top of the chamber in vertical alinement with the hollow lug, an apertured bushing adjustably screw-threaded into the upper lug, an apertured valve seat in the base of the lower lug, a closure for the seat having a stem extending through the bushing, a hollow shield rotatably adjustable in relation to the bushing and in non-rotative sliding engagement with the upper portion of the stem, a nut adjustably screw-threaded on the lower portion of the stem, a lever pivoted in the casing having one end bifurcated with its arms curved concentric with the float axis, a gimbal ring pivoted by one pair of pintles to the float and by another pair to the arms, the other end of the lever being forked with its extremities slotted, and radial pivot pins on the nut engaging the slotted ends.

6. In a carbureter, an annular float chamber, an annular float therein, a hollow apertured lug extending radially from the base of the chamber, an apertured radial lug ex-

tending from the top of the chamber in vertical alinement with the hollow lug, an apertured bushing adjustably screw-threaded into the upper lug, an apertured valve seat in the base of the lower lug, a closure for the seat having a stem extending through the bushing, a hollow shield rotatably adjustable in relation to the bushing and in non-rotative sliding engagement with the upper portion of the stem, a nut adjustably screw-threaded on the lower portion of the stem, a lever pivoted in the casing having one end bifurcated with its arms curved concentric with the float axis, a gimbal ring pivoted by one pair of pintles to the float and by another pair to the arms, the other end of the lever being forked with its extremities slotted, and radial pivot pins on the nut engaging the slotted ends, and a gage glass tube clamped between the lower lug and upper bushing around the stem.

7. In a carbureter, an annular float-chamber, an annular float within the chamber spaced from the inner and outer walls thereof to tilt freely therein, an inlet valve to the chamber, means for controlling the valve adapted to be operated by the float, and a gimbal ring connection between the float and controlling means.

8. In a carbureter, an annular float-chamber, an annular float within the chamber spaced from the inner and outer walls thereof to tilt freely therein, an inlet valve in a lateral extension of the chamber, a lever controlling the valve adapted to be operated by the float, and a gimbal ring connection between the float and lever.

9. In a carbureter, an annular float chamber, an annular float within the chamber spaced from the inner and outer walls thereof so as to tilt freely therein, a hollow lateral lug extending from the chamber, an apertured valve seat therein, a closure for the seat, a member controlling the closure adapted to be operated by the float, and a gimbal ring connection between the float and member.

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

ERNEST N. BRODERICK.

Witnesses:
OTTO F. BARTHEL,
A. M. DORR.