No. 699,309. Patented May 6, 1902.

# C. A. HAMILTON.

## CARBURETING DEVICE FOR INTERNAL COMBUSTION MOTORS.

(Application filed Mar. 11, 1901.)

(No Model.)

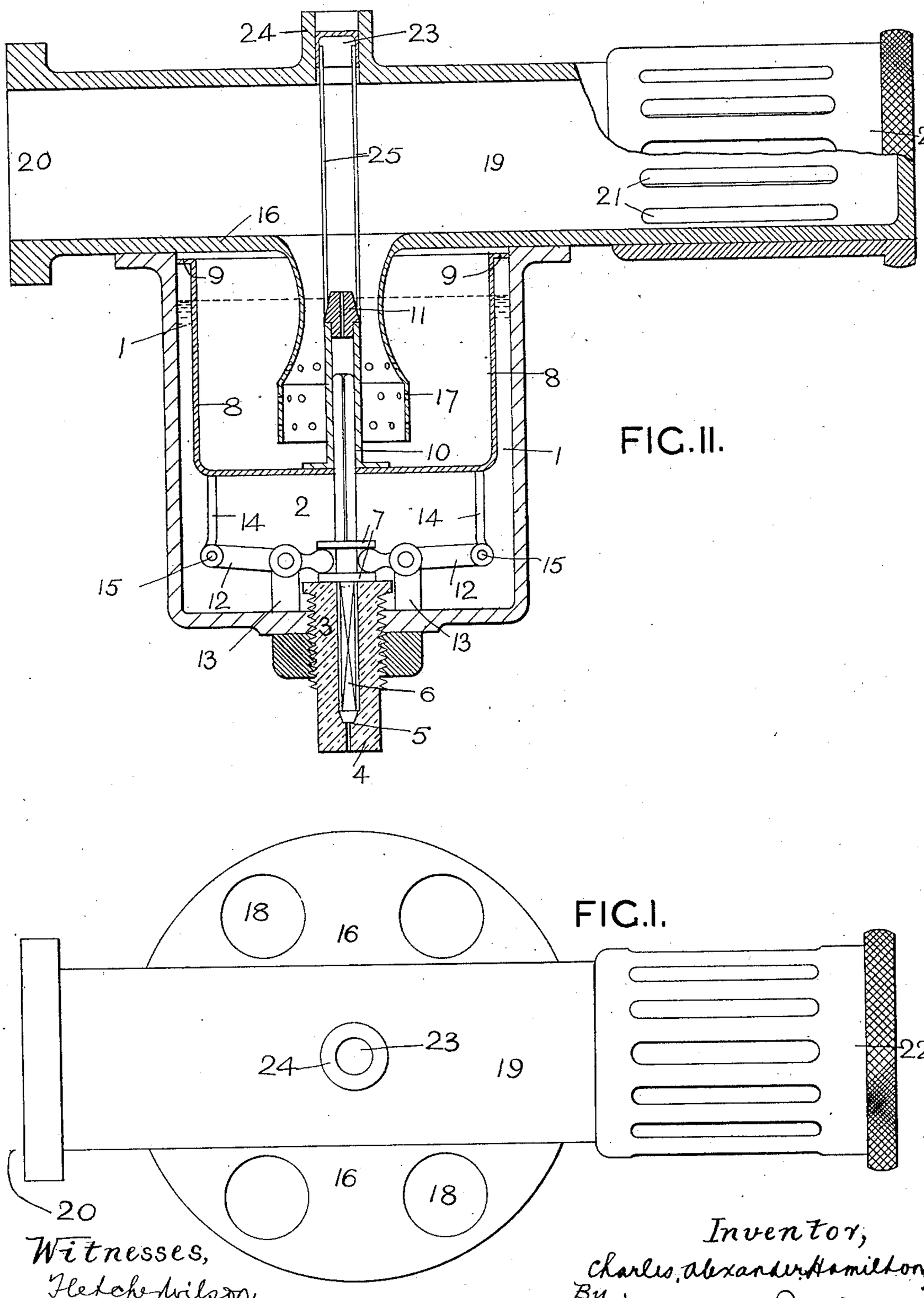


FIG. II.




FIG. I.

Witnesses,
Fletcher Wilson.
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# UNITED STATES PATENT OFFICE.

CHARLES ALEXANDER HAMILTON, OF COVENTRY, ENGLAND.

## CARBURETING DEVICE FOR INTERNAL-COMBUSTION MOTORS.

SPECIFICATION forming part of Letters Patent No. 699,309, dated May 6, 1902.

Application filed March 11, 1901. Serial No. 50,736. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES ALEXANDER HAMILTON, a subject of the King of Great Britain, residing at Coventry, county of Warwick, England, have invented a new and useful Carbureting Device for Internal-Combustion Motors, of which the following is a specification.

My invention relates to carbureting devices for internal-combustion motors, and has for its principal object to provide a carbureter in which a constant pressure shall be exerted on the liquid to be consumed and in which the action shall not be liable to disturbance by the fact that the apparatus is standing or traveling on a moderately-inclined surface; and the invention consists, essentially, in mounting the nozzle on the floating part of the carbureter, and preferably concentrically therewith, the top of the nozzle being located only slightly above the level of the liquid.

In the accompanying drawings, Figure I is a plan, and Fig. II is a vertical section, of a carbureter constructed according to my invention.

The same numerals refer to the same parts in both figures.

I employ a cylindrical vessel 2, adapted to contain petroleum-spirit or the like liquid. At the center of the bottom of this vessel I make a connection 3 with the supply-pipe 4 and provide the said connection with a needle-valve 5. Just above the valve the stem or needle 6, which is of non-circular section, is provided with a pair of collars 7. A cup 8 is adapted to float on the liquid 1 in the vessel. The periphery 9 of the cup, at or near the top, is made nearly as large as the bore of the vessel to prevent splashing. In the bottom of the cup I fix an axial tube 10, and I provide the upper end thereof with a suitable nozzle 11. The upper end of the stem 6 slides in the lower part of the tube 10 and serves as a guide to the cup; but as the stem is non-circular and the bore of the tube is circular space is left for the passage of the liquid between the two to the nozzle 11. A suitable number—say two—of levers 12 are pivoted in brackets 13 near the bottom of the vessel 2, and one end of each lever engages between the two collars 7 on the stem 6, while the outer ends of the levers are connected to the cup 2, as by the rods 14, fixed to the bottom of the cup and jointed to pins 15 in the said outer ends of the levers. The cup floats in the liquid, and as it rises and falls it actuates the levers. When the cup lifts the inner ends of the levers and the stem 6, it opens the needle-supply valve and admits a further supply of liquid to the vessel 2. As the liquid rises in the vessel the floating cup also rises and the valve closes. The height of the nozzle is so arranged that its top normally stands about 1.5 millimeters above the level of the liquid. From the cover 16 of the vessel 2 hangs a sleeve 17, having perforations. The said sleeve surrounds the nozzle 11 and part of the tube 10 at a suitable distance therefrom. A portion of the air to form the explosive mixture is sucked by the piston of the motor through suitable apertures 18 in the said cover 16, passes through and up the sleeve 17, mixes with the liquid sucked through the nozzle 11, and enters the chamber 19, into which the top of the sleeve 17 opens. The end 20 of the chamber 19 is coupled to the inlet-valve of the motor. The remaining portion of the air required to form the said mixture is admitted to the chamber 19 by any suitable means, such as by the slots 21 in the free end of the said chamber. The part of the chamber 19 provided with the slots 21 is surrounded by a correspondingly-perforated cap 22, so that by turning the cap the quality of the mixture can be adjusted.

A constant pressure is exerted by the cup on the liquid, according to the specific gravity of the said cup in the said liquid. As the cup is exposed to the suction of the said piston to avoid any risk of the cup and nozzle rising to the detriment of the issue of the liquid through the nozzle on the suction of the piston, I prefer to provide coaxially with the nozzle a plunger 23, having a sliding fit in an open-ended socket 24 and connected to the nozzle by any suitable means, such as the rods 25. The tendency of the nozzle 11 and cup 8 to rise during the sucking stroke of the piston is accompanied by a tendency to move in the opposite direction on the part of the plunger 23, which is also subject to the sucking action of the piston, and the area of the outer end of the plunger may be so proportioned that the two tendencies balance and

neutralize each other. If desired, the area of the said end of the plunger may be increased, so that the suction of the piston having more effect on the plunger than on the nozzle and cup presses the cup down into the liquid, and the quantity of liquid issuing from the nozzle is increased. The opposite effect may be produced by decreasing the area of the outer end of the plunger.

The action of a carbureting device constructed as above described is not liable to be disturbed by inclines or the like in the surface on which the motor is standing or traveling, owing to the concentricity of the parts preventing material variation of the height of the liquid in the nozzle, and the device is therefore particularly suitable for employment on the motors of automobiles.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. In a carbureting device for internal-combustion motors, the combination of a vessel, a liquid-supply pipe to said vessel, a needle-valve to said supply-pipe, a float, a lever connection between said float and the needle of the said valve, a tube carried by said float, an extension of said needle adapted to work in such tube, a passage between said tube and said extension of the needle, and a nozzle carried by the said tube, substantially as set forth.

2. In a carbureting device for internal-combustion motors, the combination of a float exposed to the suction of the piston, a nozzle carried by said float, an open-ended socket and a plunger connected to the said float and nozzle and free to slide in the said socket, substantially as and for the purpose set forth.

3. In a carbureting device for internal-combustion motors, the combination of a vessel, a liquid-supply pipe to said vessel, a needle-valve to said supply-pipe, a cup adapted to float in said liquid, a lever connection between the said cup and the needle of the said valve, a tube carried by said cup, a nozzle carried by said tube, an extension of said needle adapted to work in said tube, a passage between said tube and said extension of the needle, a cover to the vessel, air-apertures in the said cover, a mixture-chamber, a sleeve communicating with said mixture-chamber and surrounding said tube and said nozzle, perforations in said mixture-chamber, and a perforated cap rotatable on the perforated part of said mixture-chamber, substantially as and for the purpose set forth.

4. In a carbureting device for internal-combustion motors, the combination of a vessel, a liquid-supply pipe to said vessel, a needle-valve to said supply-pipe, a cup adapted to float in said liquid and exposed to the suction of the piston, a lever connection between the said cup and the needle of the said valve, a tube carried by said cup, a nozzle carried by said tube, an extension of said needle adapted to work in said tube, a passage between said tube and said extension of the needle, a cover to the vessel, air-apertures in the said cover, a mixture-chamber, a sleeve communicating with said mixture-chamber and surrounding said tube and said nozzle, perforations in said mixture-chamber, a perforated cap rotatable on the perforated part of said mixture-chamber, an open-ended socket, and a plunger connected to the said cup and nozzle and free to slide in the said socket, substantially as and for the purpose set forth.

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

CHARLES ALEXANDER HAMILTON.

Witnesses:
JOHN T. FAZAKARLEY,
THOS. F. WILSON.