W. P. HUGUELET.

CARBURETER.

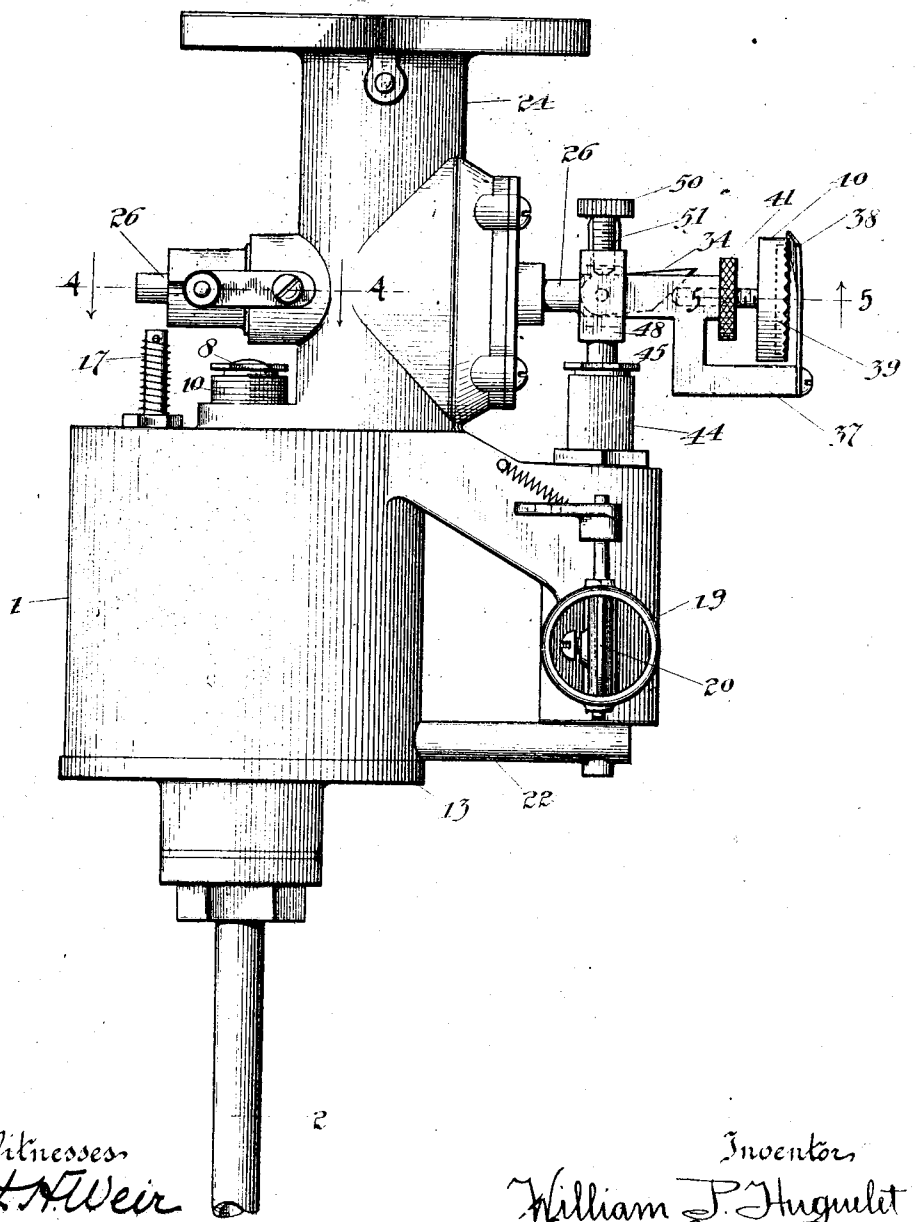
APPLICATION FILED SEPT. 27, 1912.

1,080,696.

Patented Dec. 9, 1913.

3 SHEETS—SHEET 1.

Fig. 1.



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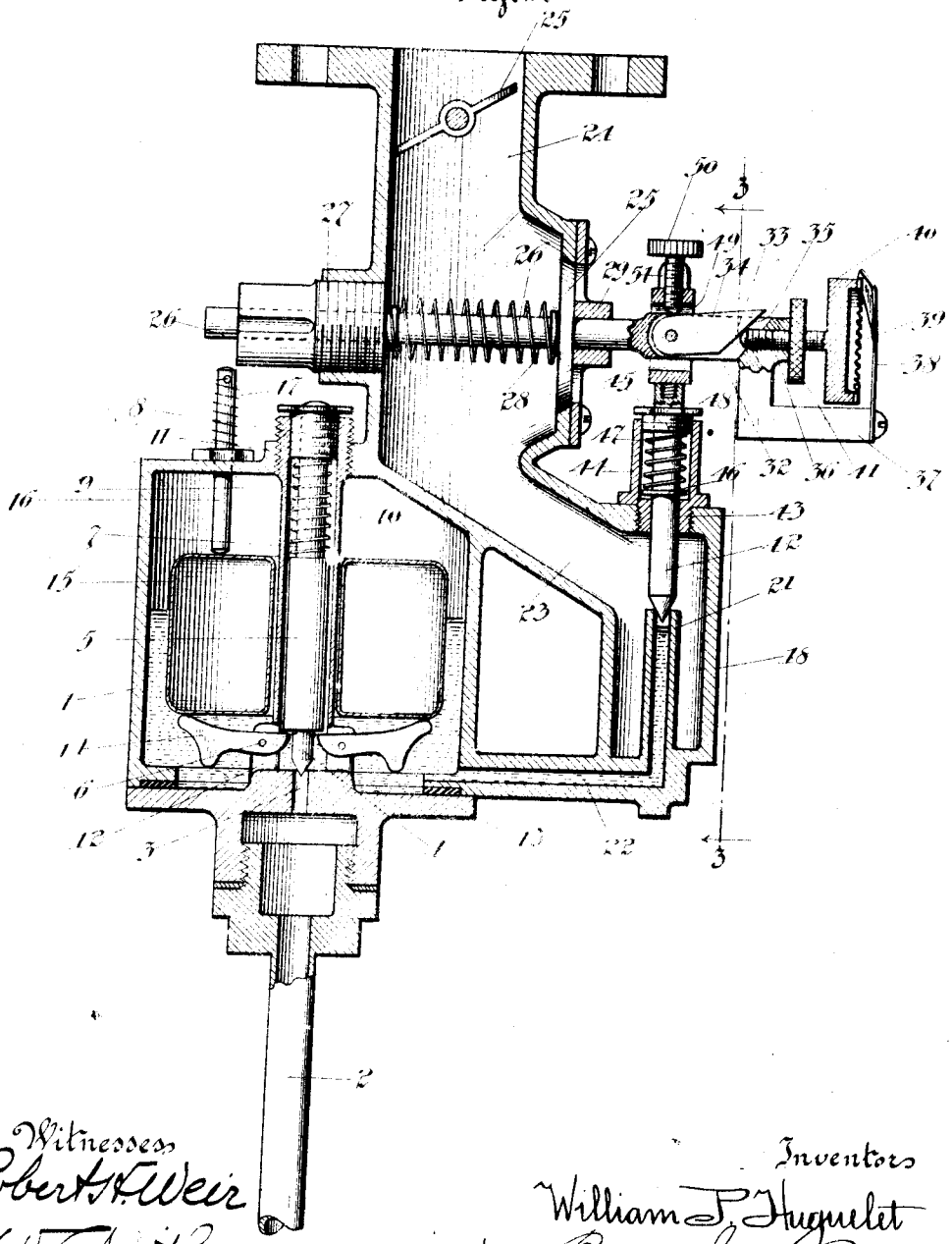
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

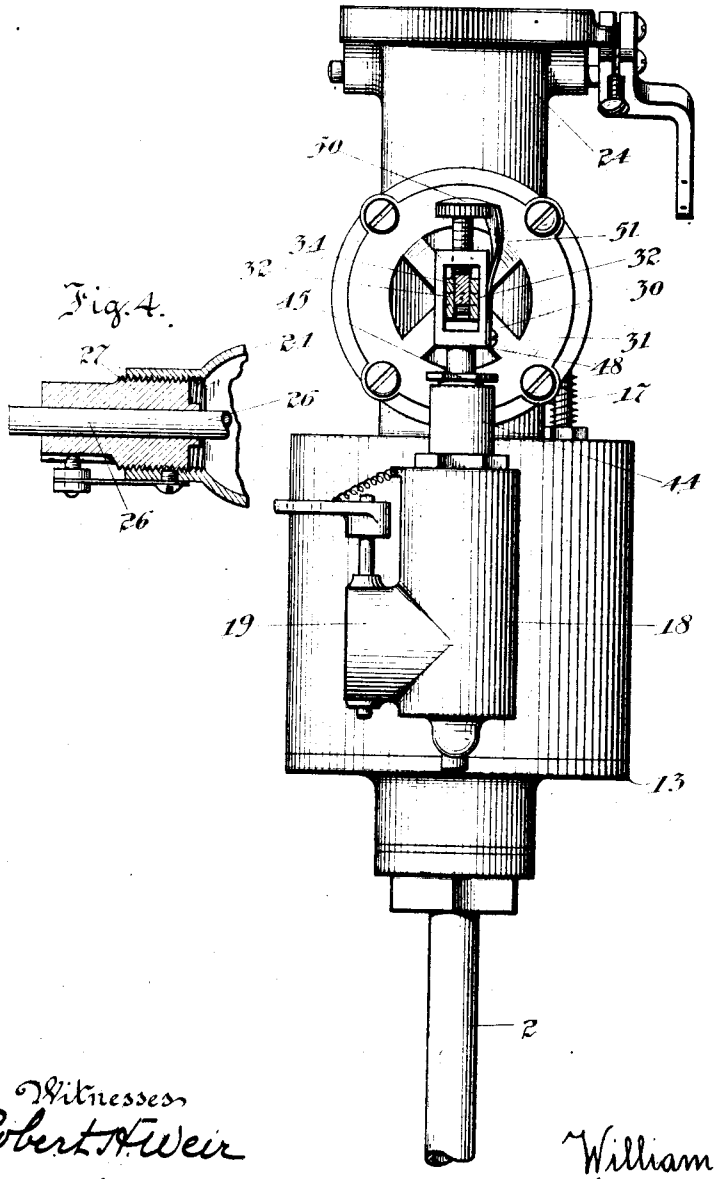
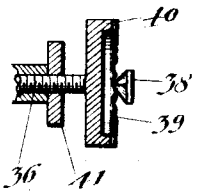


Fig. 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM P. HUGUELET, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS TO MUIR COMPANY, INCORPORATED, OF BALTIMORE, MARYLAND, A CORPORATION OF DELAWARE.

CARBURETER.

1,080,696. Specification of Letters Patent. Patented Dec. 9, 1913.

Application filed September 27, 1912. Serial No. 722,580.

To all whom it may concern:

Be it known that I, WILLIAM P. HUGUELET, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Carbureters for Internal-Combustion Engines; and I 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.

This invention has for its object to provide an improved carbureter for internal combustion engines, and consists in the features of construction and combinations of parts hereinafter fully described and particularly claimed.

In the accompanying drawings illustrating the invention: Figure —1— is a view in side elevation of a carbureter embodying my invention. Fig. —2— is a central vertical longitudinal section of the same. Fig. —3— is a fragmentary detail section partly in elevation on the line 3—3 of Fig. —2—. Fig. —4— is a fragmentary detail horizontal section on the line 4—4 of Fig. —1—. Fig. —5— is a fragmentary detail horizontal section on the line 5—5 of Fig. —1—.

The invention relates particularly to that class of carbureters for internal combustion motors in which the supply of hydro-carbon liquid is controlled by a valve and wherein means are provided for automatically mechanically actuating said valve so that the supply of liquid may at all times be substantially properly proportioned to the volume of air passing through the carbureter.

The proportions of air and hydro-carbon at which the greatest motor efficiency is attained varies with the atmospheric conditions such as humidity and temperature and is also dependent upon the specific gravity of the liquid and its freedom from water. It is desirable that these variations in conditions affecting motor efficiency may be readily met, and the object of my invention is to provide means whereby this may be accomplished with the utmost ease and despatch.

The carbureter comprises the usual reservoir 1, sometimes also termed float chamber, which is connected by means of the pipe 2 with a source of supply of hydro-carbon liquid, the latter being admitted to said chamber 1 through the opening 3 in the bottom thereof which is controlled by the valve 4. The latter is provided with a stem 5 enlarged between its ends to provide annular shoulders 6 and 7 respectively on said stem. Between the shoulder 7 and the lower end of a hollow plug 8 through which the upper end portion of the valve stem 5 passes, a helical compression spring 9 is disposed which normally holds said valve 4 on its seat. The said plug 8 is disposed in the upper end of a tube 10 having an externally threaded upper end portion which enters the flanged threaded opening 11 in the upper wall of said reservoir 1 and which at its lower end is integral with the pairs of lugs 12 which are also integral with the removable bottom 13 of said reservoir in which the opening 3 is provided. Pivotally mounted between said respective pairs of lugs 12 are levers 14 extending in diametrically opposite directions, and the inner ends of which are adapted to engage the annular shoulder 6 at the lower end of the enlarged portion of said valve stem 5. The other and longer ends of said levers 14 are disposed in the path of the float 15 which is ring shaped, and which, when it rests upon the outer ends of the levers 14, causes the latter to turn on their pivots to raise the valve stem 5 and thus open said valve 4 to admit hydro-carbon liquid to said reservoir 1. A plunger 16 which is normally supported at the upper limit of its movement by means of the spring 17 passes through an opening in the upper wall of the reservoir 1 and may be depressed against action of said spring 17 to forcibly depress the said float 15 when it is desired to admit more than the normal quantity of hydro-carbon liquid to said reservoir 1.

At one side of the reservoir 1 is a vertical cylindrical passage 18 which connects with a lateral inlet 19 for air which is controlled by the throttle valve 20 in the usual manner. Projecting upwardly from the bottom of said chamber 18 is a discharge pipe 21 for the hydro-carbon liquid, the latter being connected by means of the horizontal passage 22 with the lower portion of the reservoir 1. The said discharge pipe 21 extends to a point slightly higher than the normal liquid level in the reservoir 1 and, upon the formation of a partial vacuum in the vicinity of the outlet end thereof, is adapted to

discharge hydro-carbon liquid into said passage 18. The latter connects by means of the inclined passage 23 with the passage 24 leading to the manifold or other connection with the suction end of the engine cylinder or cylinders, and which is controlled by the throttle valve 25 in the usual manner. At one side of said passage 24 is an opening through which air is adapted to be admitted thereto, said opening being controlled by the mushroom valve 25, the stem 26 of which is horizontally disposed and passes at one end through a plug 27 disposed in the diametrically opposite wall of said passage 24. The said plug 27 is threaded in said opening and between the same and the valve 25 there is interposed a helical compression spring 28 which serves to maintain the valve 25 normally closed. The said plug 27 may be turned to regulate the pressure exerted by said spring 28 on said valve in a well-known manner. The said valve stem 26 also projects beyond the other or front face of said valve 25 and passes through a guide sleeve or flange 29 carried upon the spokes 30 of the plate 31 secured around the opening controlled by said valve 25. The outer end portion 32 of said valve stem 26 is preferably rectangular in cross-section and is provided with a longitudinal slot 33 in which a cam member 34 is pivotally mounted. The said member 34 is provided at its outer end, that is, the end farthest removed from its pivot, with an inclined face or edge 35 which is adapted to be engaged by the inner end of a set screw 36 mounted in a threaded central opening in the outer end of the rectangular portion 32 of said valve stem 26. The said inclined face 35 of said cam member 34 is adapted to be supported at different elevations upon the inner end portion of said set screw 36 thus causing the upper edge or face of said cam member to project varying distances above and at various inclinations relatively to the upper face of said portion 32 of said valve stem. On the outer end of the latter there is provided an L-shaped projection 37 to the outer end of which a flat spring 38 is secured, the said spring being adapted at its free end to engage in the notches 39 of the head 40 of said set screw 36 and thus to prevent accidental rotation of the latter. Such accidental rotation is further prevented by means of the lock nut 41 in the usual and well-known manner. The discharge end of said discharge pipe 21 is controlled by a valve 42, the stem of which extends upwardly through the opening in a plug 43 mounted in a threaded opening in the upper wall of the passage 18. The said plug carries an annular flange 44 in the upper end of which a plug 45 is mounted and through which the stem of said valve 42 also passes. On the latter there is mounted a collar 46 between which and the plug 45 a helical compression spring 47 is disposed which serves to maintain the valve 42 normally at the lower limit of its movement. Mounted upon the upper end of the stem of said valve 42 is a head 48 which is rectangular and is provided with a vertically disposed rectangular slot 49 through which the rectangular outer end portion 32 of the valve stem 26 passes. In the upper end of said head 48 there is mounted a set screw 50, the inner end of which bears upon the upper edge or face of the cam member 34 in vertical alinement with the pivot thereof or upon the contiguous part of the upper face of the part 32 of the valve stem, said set screw being held against rotation by means of the flat spring 51 in the usual manner. By means of said set screw 50 the normal position of the valve 42 relatively to its seat is adjusted preferably to maintain said valve raised slightly off its seat so that in starting the motor and while the latter is running at low speed a sufficient quantity of hyro-carbon liquid may be fed thereto to permit operation thereof.

It is well-known that as the throttle valve 25 is opened the engine or motor gains in speed and as it gains speed the partial vacuum formed in the passage 24 will cause the valve 25 to open, particularly if the valve 20 is partly closed. The degree or extent to which the said valve 25 opens, depends, of course, upon the degree of vacuum formed in said passage 24. The opening movement of the valve will, of course, cause the inclined upper face or edge of the cam member 34 to raise the set screw 50 and thereby the head 49 and the stem of the valve 42 thereby opening said valve 42 to an extent proportioned to the movement of the valve 25 and admitting more or less hydro-carbon liquid into the passage 18 in an obvious manner. In operation it is customary to fix the position of the valve 42 so as to accommodate the same to the needs of the motor in starting and running at its lowest speed so that after the said set screw 50 has been once adjusted it is not afterward required to be again manipulated except to the extent necessary to take up wear. The only other adjustment required is to regulate the feed of the hydro-carbon liquid as the motor runs at higher speeds. This is accomplished by turning the set screw 36 more or less in either direction to adjust the inclination of the cam member 34 whereby the valve stem 42 will be given a longer or shorter stroke, as may be desired.

I claim as my invention:

1. In a carbureter, a carbureting passage having a primary air-inlet port, a mixing passage off-set relatively to said carbureting passage and communicating therewith, a fuel supply nozzle in said carbureting passage, an auxiliary air-valve in the mixing pas-

sage, a valve-controlling the fuel supply nozzle, the stems of said valves intersecting one another, and co-acting interengaging means on said respective valve-stems for transmitting movement from the air-valve to the nozzle valve.

2. In a carbureter, a carbureting passage having a primary air-inlet port, a mixing passage off-set relatively to said carbureting passage and communicating therewith, a fuel supply nozzle in said carbureting passage, an auxiliary air-valve in the mixing passage, a valve controlling the fuel supply nozzle, the stems of said valves intersecting one another, and a cam-member carried by the air-valve stem and engaging the fuel valve-stem for transmitting movement of the air-valve to the fuel valve.

3. In a carbureter, a carbureting passage having a primary air-inlet port, a mixing passage off-set relatively to said carbureting passage and communicating therewith, a fuel supply nozzle in said carbureting passage, an auxiliary air-valve in the mixing passage, a valve controlling the fuel supply nozzle, the stems of said valves intersecting one another, a cam-member carried by the air-valve stem and engaging the fuel valve-stem for transmitting movement of the air-valve to the fuel valve, and means on said air-valve stem for adjusting said cam-member for varying the throw of the said fuel valve.

4. In a carbureter, a normally automatically closed fluid-pressure actuated reciprocable valve controlling an air-inlet port and having a stem, a projection on said stem externally of the carbureter housing having an inclined face, means for adjusting said projection for varying the cant of its inclined face, a reciprocable valve controlling the supply of hydro-carbon liquid and having a stem provided with a longitudinal slot through which the stem of the air-inlet valve passes and through which said projection travels, a part of said stem of said valve controlling the liquid supply disposed in the path of the inclined face of said projection for transmitting movement of the first-named to the last-named valve.

In testimony whereof I have signed my name in presence of two subscribing witnesses.

WILLIAM P. HUGUELET.

Witnesses:
R. W. Lotz,
Eugene H. Huguelet.