No. 844,900. PATENTED FEB. 19, 1907.

C. SMITH.

CARBURETER.

APPLICATION FILED OCT. 15, 1906.

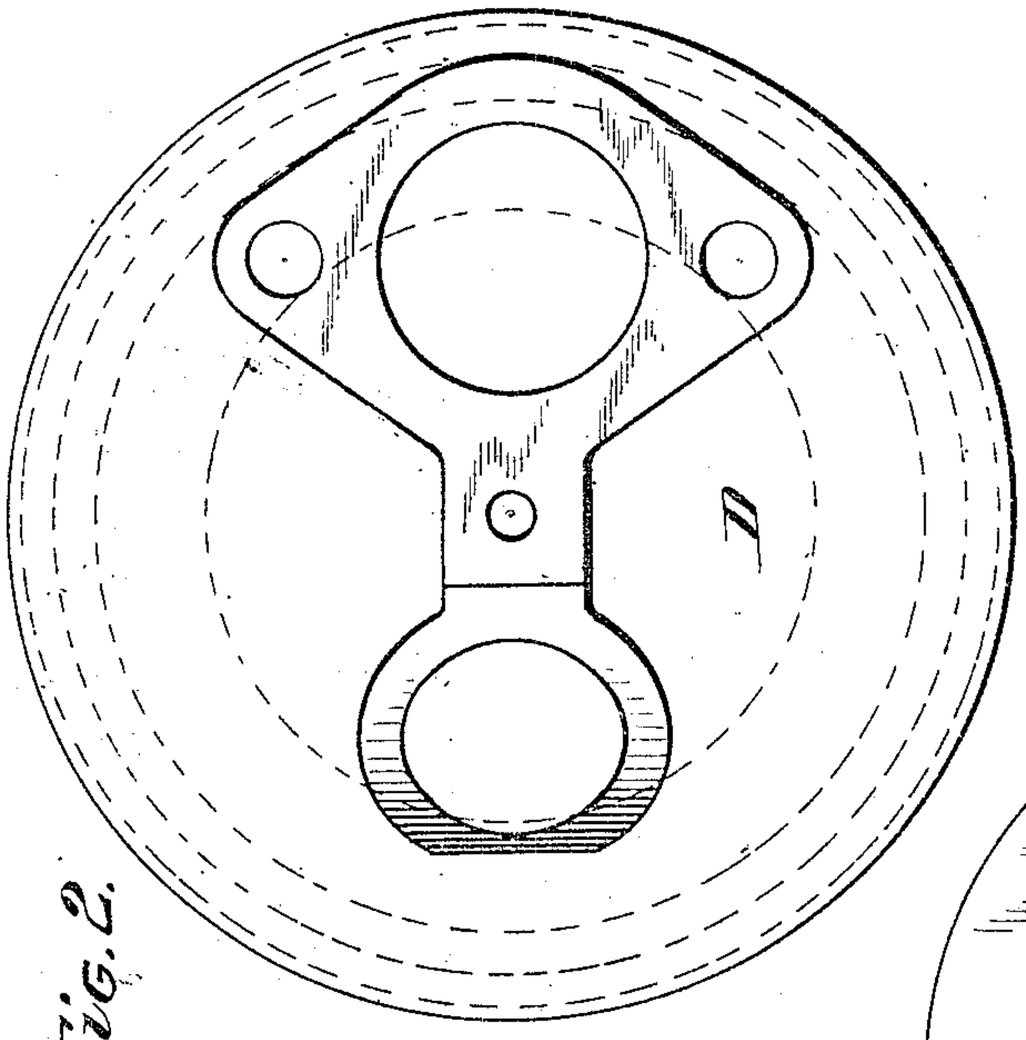

Fig. 2.

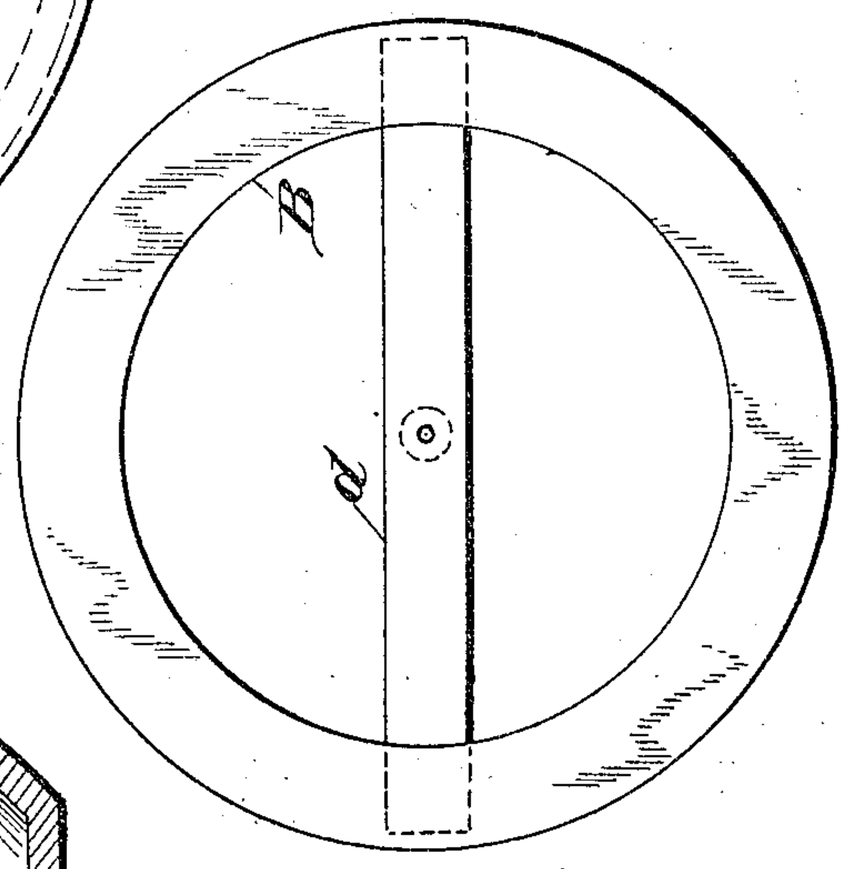

Fig. 3.

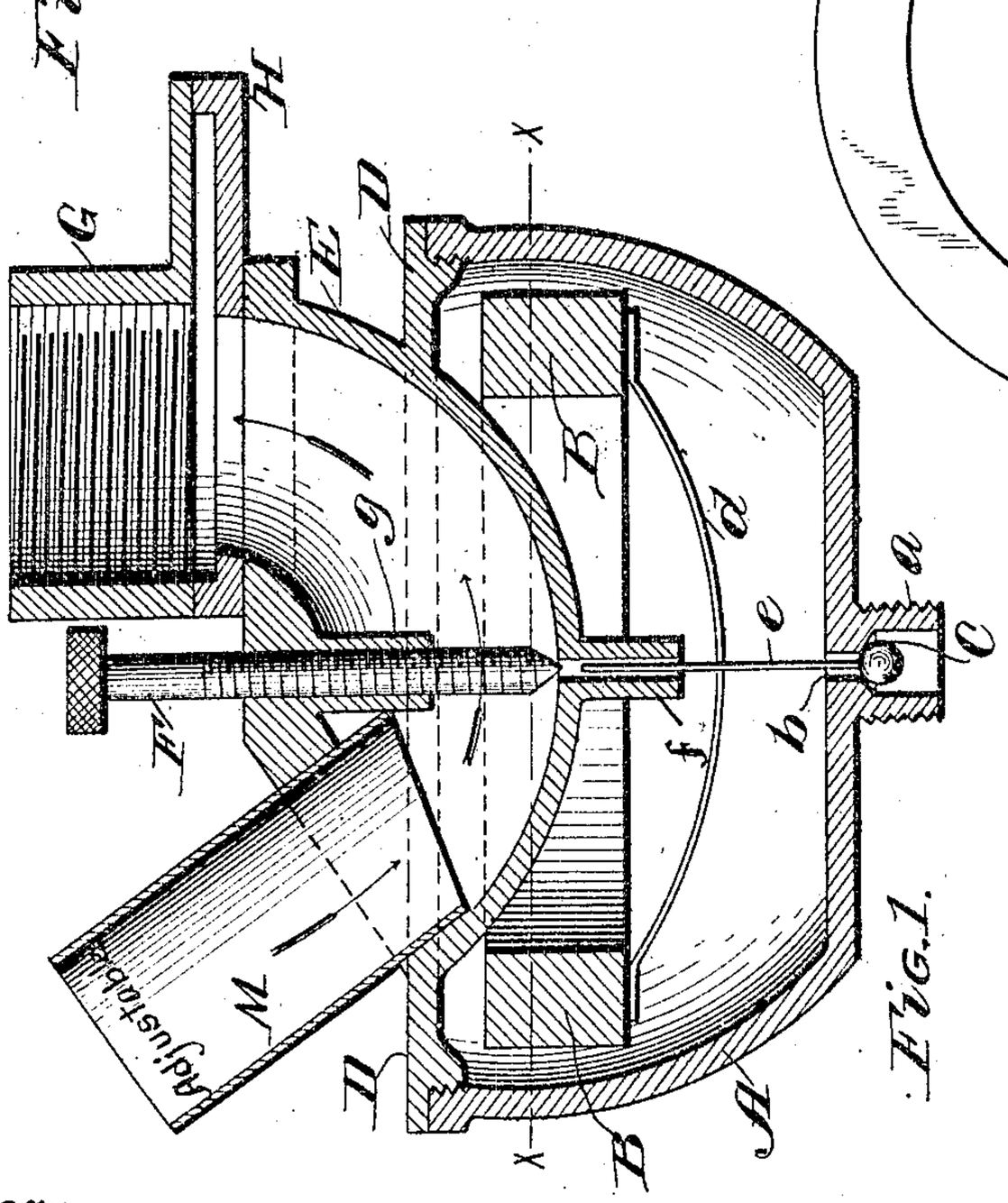

Fig. 1.

Witnesses

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UNITED STATES PATENT OFFICE.

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CARBURETER.

No. 844,900. Specification of Letters Patent. Patented Feb. 19, 1907.

Application filed October 15, 1906. Serial No. 338,987.

To all whom it may concern:

Be it known that I, CLEMENT SMITH, a citizen of the United States, residing at Topeka, in the county of Shawnee and State of Kansas, have invented new and useful Improvements in Carbureters, of which the following is a specification.

My invention pertains to carbureters for internal-combustion engines; and it has for its chief object to provide a carbureter calculated to present to a passing volume of air a small pond of gasolene, which by automatically getting smaller as the velocity of the volume of air passing through the carbureter increases will charge the air with a uniform mixture of vapor until when the engine attains high speed the air will take the direct spray of gasolene from the duct through which the pond is supplied with gasolene.

The foregoing and other advantageous features of my invention will be fully understood from the following description and claims when the same are read in connection with the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical sectional view of the carbureter constituting the preferrad embodiment of my invention. Fig. 2 is a plan view of the carbureter as the same appears with some of the parts removed. Fig. 3 is a plan view of the float which I prefer to employ in the gasolene-reservoir of the carbureter.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which—

A is the gasolene-reservoir of the carbureter, which is preferably of circular form, as illustrated. This reservoir is provided on its bottom with a threaded pipe *a*, designed to be connected with a source of gasolene-supply, and it is also provided with a contracted passage *b*, which communicates with and extends upward from the pipe *a*, as shown.

B is a float arranged in the reservoir A and designed, in combination with a valve C, to maintain under normal conditions a certain predetermined quantity of gasolene in the pond, hereinafter described in detail. Said floats B and valve C may be of any construction compatible with my invention without involving departure from the scope thereof, although I prefer to have the float comprise an annular buoyant body and a diametrical bar *d*, connected to and depending therefrom, and to provide the valve C with a stem *e*, which is connected to and extends above the float-bar *d*, as shown, for a purpose which will presently appear.

D is the cover of the gasolene-reservoir A, and E is a conduit, preferably, though not necessarily, U-shaped, carried by the cover D and designed to contain in its lower portion or elbow the hereinbefore-referred-to pond of gasolene. This conduit E has depending from its lowermost portion a duct *f*, which receives and guides the upper portion of the valve-stem *e* and also serves to take gasolene from the reservoir A at a point considerably below the normal level of gasolene, which is advantageous, because it obviates the necessity of maintaining an accurate level of gasolene in the reservoir. In its upper portion the conduit E is provided with a vertically-disposed threaded bore *g*, in which bears a screw F, through the medium of which communication between the duct *f* and the interior of the conduit may be regulated.

G is a pipe connected with the eduction end of the conduit E and designed to lead explosive mixture to an internal-combustion engine. Between this pipe G and the said eduction end of conduit E is located a throttle H; but as said throttle may be of the ordinary swinging-shutter type well known in the art or of any other construction compatible with my invention I have deemed it unnecessary to illustrate the same in detail.

M is an air-tube connected to the induction end of the U-shaped conduit E. This air-tube M is preferably straight and is preferably, though not necessarily, connected to the conduit E by a slip-joint, as shown, or by any other joint that will permit of the tube being adjusted with respect to conduit E, as the distance of the tube from the gasolene-jet is material to the action of the carbureter.

In the operation of my novel carbureter the float B and valve C will under normal conditions maintain the level of gasolene (indicated by line X X) in the reservoir A and

the lower portion of the conduit E, and the duct *f* will conduct gasolene from the reservoir at a point considerably below the said level to the lower portion of the conduit E. It will also be apparent that all necessary adjustments may be made through the medium of the screw F, which by reason of its location is easy to get at. The chief feature of my invention, however, is the pond of gasolene held in the lower portion or elbow of the U-shaped conduit E, for in virtue of said pond it will be apparent that when the throttle is but partly open and there is a small rush of air in the direction indicated by arrows in Fig. 1, but a small portion of gasolene will be taken up and the area of the pond will remain at the maximum, so as to present a large surface of gasolene to the slow-moving air for carburation. When the throttle is opened to a greater extent and the velocity of the volume of air is increased, the air will take up more gasolene and the area of the pond will be reduced until finally at the highest speed of the internal-combustion engine connected with the carbureter the air is commingled with a direct spray from the mouth of the duct *f*. In other words, the action of the pond of gasolene in the lower portion or elbow of the conduit E is to automatically compensate for change in speed from low to high, and vice versa. Experience has demonstrated that this mode of commingling the air and hydrocarbon fuel produces a remarkably uniform explosive mixture, obviates the necessity of employing the usual spring tension upon the air-inlet, and hence allows the cylinders of the engine to take a full charge, thereby materially increasing the power of the engine.

In addition to the practical advantages hereinbefore pointed out my novel carbureter is obviously simple and well adapted to withstand the usage to which carbureters are ordinarily subjected.

The construction herein shown and described constitutes the preferred embodiment of my invention; but I desire it understood that in practice various changes in the form, construction, and relative arrangement of parts may be made without involving departure from the scope of my invention as claimed.

While I prefer to employ a U-shaped air-conduit, as stated, it will be understood that the carbureter will operate to advantage with any shape of conduit that will assure the air blowing down upon and impinging against the pond of gasolene. Again, it will be noticed that the constant level of the gasolene being higher than the bottom of the pond in the conduit the gasolene naturally runs in when the pond is absorbed incident to high engine speed, or, in other words, when the pond of gasolene has been consumed it is refurnished, because of the level of the bottom of the pond being below the level of the gasolene in the reservoir.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A carbureter comprising a reservoir, means for maintaining a constant level of gasolene in the reservoir, and a U-shaped conduit for air having its lower portion arranged in the reservoir, below said constant level of gasolene, and having an aperture in its bottom for enabling the gasolene to seek its level in the conduit.

2. A carbureter comprising a reservoir, means for maintaining a constant level of gasolene in the reservoir, a U-shaped conduit for air having its lower portion arranged in the reservoir below said constant level of gasolene, and having an aperture in its bottom for enabling the gasolene to seek its level in the conduit, and a screw extending through the upper portion of the conduit, and controlling and regulating communication between said aperture and the interior of the conduit.

3. A carbureter comprising a reservoir having an inlet for gasolene in its bottom, a valve disposed below said inlet and having an upwardly-extending stem, an annular float having a bar connected to said valve-stem at an intermediate point in the length of the latter and adapted in combination with the valve to maintain a constant level of gasolene in the reservoir, and a U-shaped conduit for air having its lower portion arranged in the reservoir below the constant level of gasolene and within the annular float and having a duct depending from its bottom and receiving the upper portion of the valve-stem.

4. A carbureter comprising a reservoir having an inlet for gasolene in its bottom, a valve disposed below said inlet and having an upwardly-extending stem, an annular float having a bar connected to said valve-stem at an intermediate point in the length of the latter and adapted in combination with the valve to maintain a constant level of gasolene in the reservoir, a U-shaped conduit for air having its lower portion arranged in the reservoir below the constant level of gasolene and within the annular float and having a duct depending from its bottom and receiving the upper portion of the valve-stem, and a screw extending through the upper portion of the conduit, for controlling and regulating communication between said duct and the interior of the conduit.

5. A carbureter comprising a reservoir, means for maintaining a constant level of

gasolene in the reservoir, a U-shaped conduit for air having its lower portion arranged in the reservoir, below said constant level of gasolene, and having an aperture in its bottom for enabling the gasolene to seek its level in the conduit, and an air-tube adjustably connected with the induction end of the air-conduit.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CLEMENT SMITH.

Witnesses:
J. F. SWITZER,
BENNETT A. WHEELER.