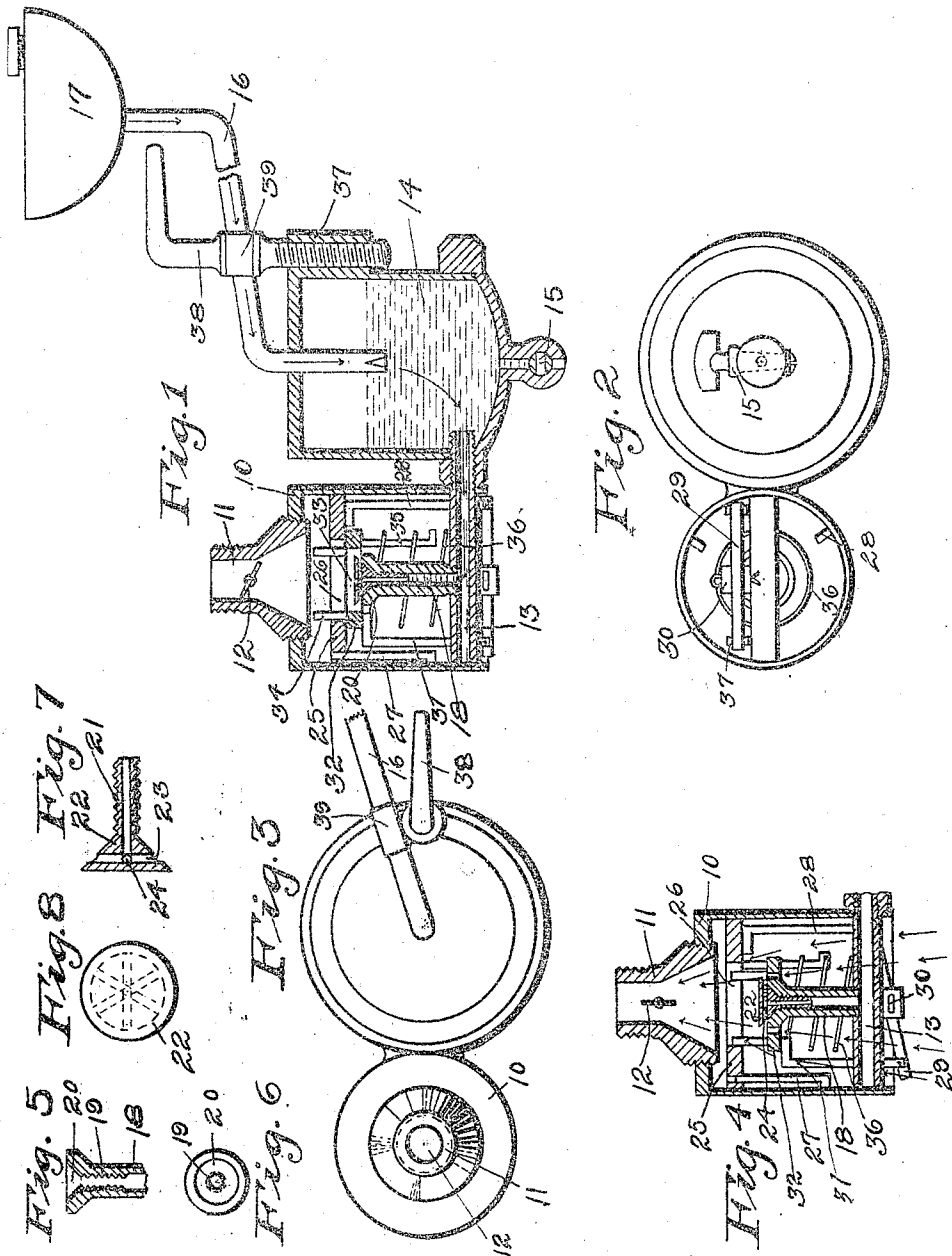


R. S. HILL & O. P. UNDERWOOD.
CARBURETER.

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1,023,470.

Patented Apr. 16, 1912.



Witnesses
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~~BEST AVAILABLE COPY~~
UNITED STATES PATENT OFFICE.

RAYMOND S. HILL AND OLIVER P. UNDERWOOD, OF INDIANOLA, IOWA; SAID UNDERWOOD ASSIGNOR TO HERMAN C. MILLS, OF DES MOINES, IOWA.

CARBURETER.

1,023,470.

Specification of Letters Patent.

Patented Apr. 16, 1912.

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To all whom it may concern:

Be it known that we, RAYMOND S. HILL and OLIVER P. UNDERWOOD, citizens of the United States, residing at Indianola, in the county of Warren and State of Iowa, have invented a certain new and useful Carbureter, of which the following is a specification.

The object of our invention is to provide a carbureter of simple, durable and inexpensive construction in which a substantially uniform mixture of air and gasoline is automatically obtained at all times both when a very slight current of air is passing through the carbureter and also when a large volume of air is passing through the carbureter.

More specifically it is our object to provide automatically actuated deflector plates so arranged that when a slight current of air is passing through the carbureter it will pass close to the gasoline distributor and when a strong current of air is passing through the carbureter only a part of the air will pass close to the gasoline distributor and the major portion of it will pass through the carbureter at points spaced apart from the gasoline distributor. It is to be understood in this connection that a swiftly moving current of air passing over a gasoline distributor will take up much more gasoline than will a slowly moving current of air and hence it is necessary to provide means for having only a portion of the swiftly moving current of air pass close to the gasoline distributor in order that the mixture may be uniform both when large and small quantities of air are passing through the carbureter.

A further object is to provide a gasoline distributor so arranged as to feed uniformly under all conditions without the use of float or needle valves and also to provide a carbureter that cannot be made inoperative on account of flooding by gasoline.

Our invention consists in certain details, in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in our claims and illustrated in the accompanying drawings, in which:

Figure 1 shows a central, vertical, sectional view of a carbureter embodying our invention. Fig. 2 shows an inverted plan

view of same. Fig. 3 shows a top or plan view of same. Fig. 4 shows a sectional view of the carbureting chamber with the air deflecting plates at the opposite limit of their movement from that shown in Fig. 1. Fig. 5 shows a sectional view of the tube to receive the gasoline distributor. Fig. 6 shows a top view of same. Fig. 7 shows a sectional view of the gasoline distributor. Fig. 8 shows a plan view of same.

Referring to the accompanying drawings, we have used the reference numeral 10 to indicate the carbureter cylinder open at its bottom and having a pipe 11 at its top in which is a throttle valve 12 of ordinary construction. Extended horizontally through the body of the cylinder 10 is a gasoline supply pipe 13 which is arranged in communication with a gasoline chamber 14. At the bottom of the chamber 14 is a pet cock 15 and leading into the top of the chamber 14 is a gasoline supply pipe 16 communicating with a gasoline supply tank 17 which must be made air tight. Communicating with the pipe 13 near its center is an upright pipe 18 having its upper portion screw threaded at 19 and also having a tapered opening 20 at its upper end. Screwed into this pipe is a gasoline distributor comprising a hollow stem or body portion 21 screwed into the upper end of the pipe 18 and also having a head 22 flared outwardly and upwardly at its sides and provided with an annular groove 23 which groove communicates by means of the openings 24 and with the hollow central portion of the gasoline distributor as shown by dotted lines in Fig. 8. By the construction just described, we provide for delivering a uniform quantity of gasoline to the gasoline distributor without the use of a float or of needle valves and this is accomplished as follows: The pipe 16 is admitted into the chamber 14 to a certain predetermined distance from the top of the chamber and on account of the gasoline chamber 17 being air tight it is obvious that the gasoline will flow into the chamber 14 only in sufficient quantity to fill said chamber a slight distance above the bottom of the pipe 16 and these parts are so arranged that the gasoline level in the chamber 14 will be substantially in line with the gasoline distributor and as fast as the gasoline is used a fresh quantity will flow into the chamber 14.

but the level of the gasolene in said chamber will be substantially uniform at all times.

We have provided means for automatically controlling the flow of air through the carbureter as follows: Mounted within the carbureter above the gasolene distributor is a plate 25 having a comparatively large opening 26 at its center. This plate is arranged to slide vertically on a guide 27 which passes through an opening in the plate as shown in Fig. 1. Attached to the plate 25 is an arm 28 extended downwardly and pivoted to a lever 29, which lever is fulcrumed to a support 30. Attached to the other end of the lever is an arm 31, which arm extends upwardly and supports a second plate 32. This latter plate is of smaller diameter than the upper one and is provided with an opening 33 of smaller diameter than the opening 26. The plate 32 is preferably provided with guides 34 to extend up through the opening 26 and to hold said plates exactly in line. A guide 35 is provided for the plate 32 which guide is secured to the carbureter cylinder. We have also provided an extensible coil spring 36 designed to press upwardly upon the plate 32 to yieldingly hold it against the plate 25. We have provided means for adjusting the lower end of the pipe 16 relative to the gasolene receptacle so that the level of the gasolene in the chamber 14 may be kept in line with the gasolene distributor within the carbureter as follows: On the side of the receptacle 14 is a screw threaded sleeve 37 and inserted in said sleeve is a screw threaded rod 38 which rod is rotatably mounted in a collar 39 fitted to the pipe 16 so that the rotation of the rod will raise or lower the pipe relative to the receptacle.

In practical operation and assuming that the gasolene is being fed to the gasolene distributor in a uniform manner ready to be taken up by the air passing adjacent to it and assuming further that only a comparatively slight current of air is passing through the carbureter then all of the air will be deflected by the plates 25 and 32 and will be compelled to pass close to the edges of the gasolene distributor. Assuming further that the engine with which the carbureter is being used produces strong suction then an upward pressure will be created upon the large plate 25 which will cause it to move upwardly. The lever 29 will operate to then move the plate 32 downwardly so that the said plates will assume the positions shown in Fig. 4. When in this position the same quantity of air will be made to pass close to the distributor through the opening in the lower plate but the major portion of the air will pass outside of the lower plate and be deflected inwardly toward the opening of the upper plate so that it will not come close to the distributor. In this way the

mixture is made substantially uniform under all conditions for the reason that when the suction of air through the carbureter is comparatively weak it is necessary to bring all of the air close to the gasolene distributor in order to get the proper mixture, but when the suction of air through the carbureter is extremely rapid the gasolene is taken up much more readily by the air and if all of the air were permitted to pass close to the gasolene the proportion of gasolene and air would be varied; that is to say, there would be too much gasolene in proportion to the quantity of air. Hence by means of the moving plates we have provided for automatically regulating the mixture so that it will operate efficiently in connection with the engine with which the carbureter is used both when the engine is running extremely slow and when running extremely fast.

We claim as our invention:

1. In a carbureter, the combination of a gasolene distributor, means for supplying gasolene to it, two plates adjacent to the distributor, each having an opening through its central portion and means for jointly moving said plates toward and from each other, the lower plate being of smaller diameter than the upper one so that air may pass around the sides of it and through the opening in the upper plate when the plates are separated.

2. In a carbureter, the combination of a gasolene distributor, means for supplying gasolene to it, two plates adjacent to the distributor, each having an opening through its central portion, means for jointly moving said plates toward and from each other, the lower plate being of smaller diameter than the upper one so that air may pass around the sides of it and through the opening in the upper plate when the plates are separated, and means for automatically moving said plates upon the pressure of air flowing through the carbureter and engaging the upper plate.

3. In a carbureter, the combination of a gasolene distributor, means for supplying gasolene to it, two plates adjacent to the distributor, each having an opening through its central portion, means for jointly moving said plates toward and from each other, the lower plate being of smaller diameter than the upper one so that air may pass around the sides of it and through the opening in the upper plate when the plates are separated, means for automatically moving said plates upon the pressure of air flowing through the carbureter and engaging the upper plate, and a spring for normally holding the plates in position adjacent to each other.

4. In a carbureter, the combination of a gasolene distributor, means for supplying

gasolene to it, a plate above the gasolene
distributor having an opening in its central
portion and having its sides fitted close to
the interior of the carbureter, a second plate
5 below it of smaller diameter and having an
opening through its center surrounding the
gasolene distributor, guides fixed to the
lower plate and extended upwardly through
the opening in the upper plate, arms fixed
10 to both plates and extended downwardly, a
lever fulcrumed at its central portion, and
pivoted to said arms, said parts being so
arranged that when the plates are adjacent

to each other all of the air passing through
the carbureter will pass through the open- 15
ing in the lower plate and close to the gaso-
lene distributor and when the plates are
separated a portion of the air will flow
through the spaces between the plates:

Des Moines, Iowa, Feb. 22, 1910.

RAYMOND S. HILL.

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Witnesses:

MARY WALLACE,

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