F. H. HEITGER.

CARBURETER.

APPLICATION FILED SEPT. 29, 1910.

1,052,917.

Patented Feb. 11, 1913.

2 SHEETS—SHEET 1.

Fig. 2.

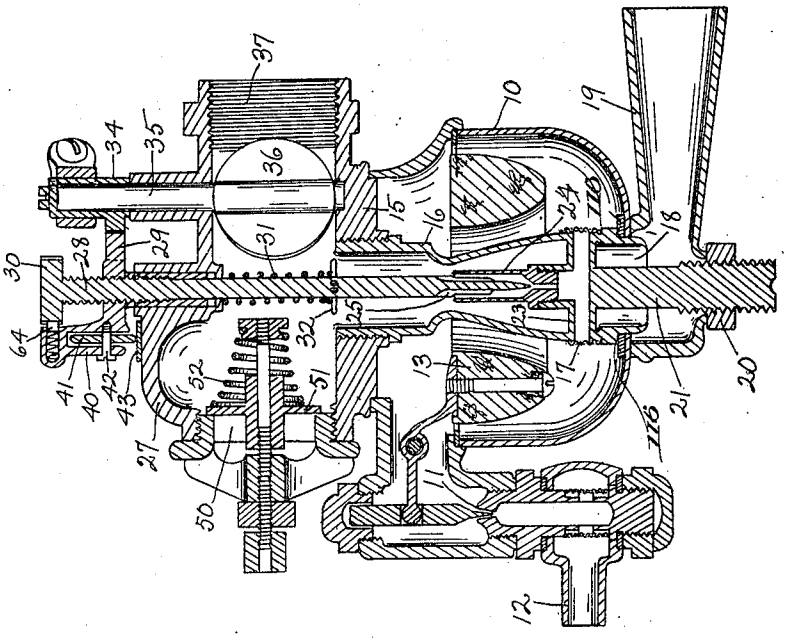
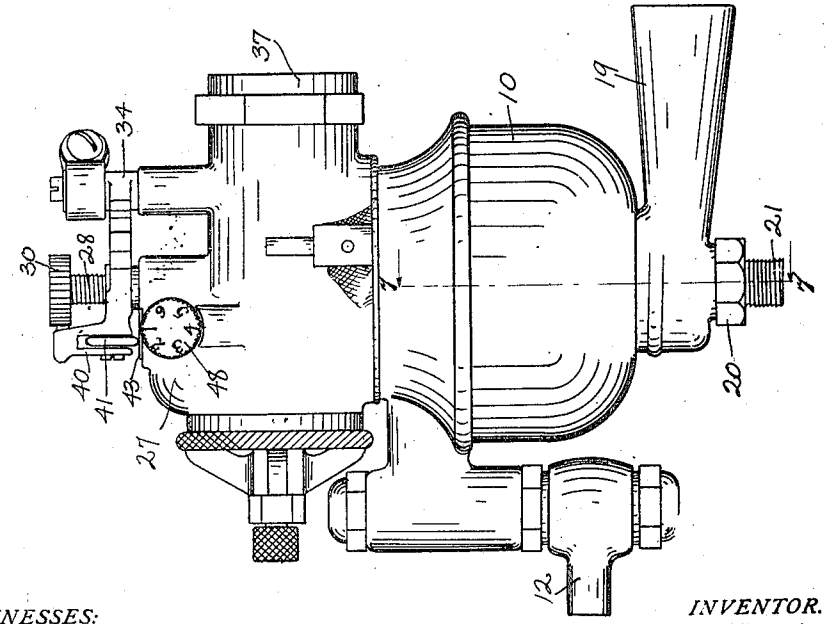


Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 3.

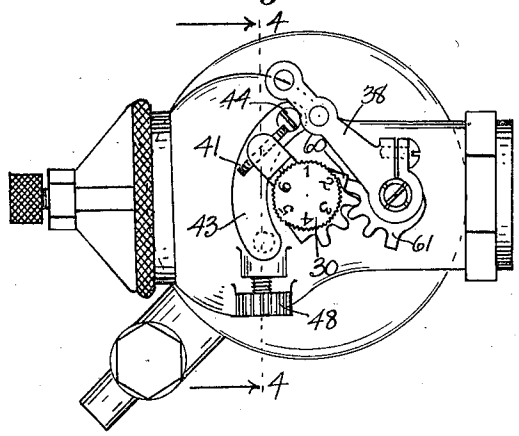


Fig. 4.

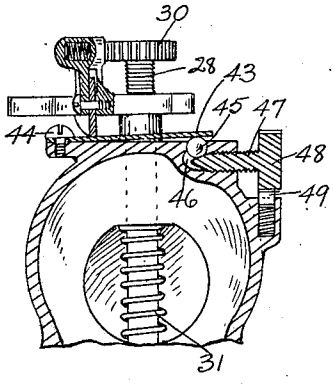


Fig. 5.

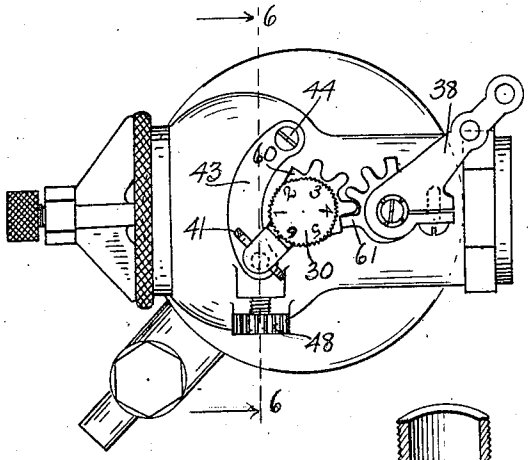


Fig. 6.

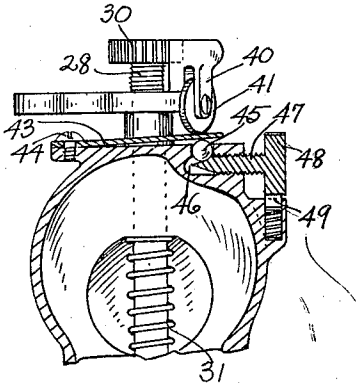
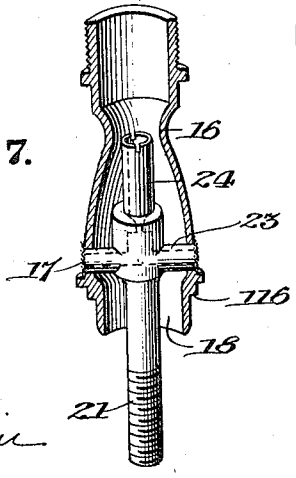


Fig. 7.



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UNITED STATES PATENT OFFICE.

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CARBURETER.

1,052,917. Specification of Letters Patent. Patented Feb. 11, 1913.

Application filed September 29, 1910. Serial No. 584,418.

To all whom it may concern:

Be it known that I, FRANK H. HEITGER, of Indianapolis, county of Marion, and State of Indiana, have invented a certain useful Carbureter; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings.

The object of this invention is to provide an improved means for regulating the fuel valve and particularly with reference to the operation of the carbureter, and more particularly to provide independent means for adjusting the fuel valve when the throttle is at its two extreme positions.

The nature of the invention will be understood from the accompanying drawings and the following description and claims.

In the drawings Figure 1 is a side elevation of the carbureter. Fig. 2 is a central vertical section therethrough. Fig. 3 is a plan view thereof with the throttle lever and associated parts in one position. Fig. 4 is a section on the line 4—4 of Fig. 3. Fig. 5 is a plan view with the throttle lever shown in a different position from what it is in Fig. 3. Fig. 6 is a section on the line 6—6 of Fig. 5. Fig. 7 is a section on the line 7—7 of Fig. 1 with portions omitted and portions shown in perspective.

Inasmuch as the invention relates to only a portion of the device as a whole, only that portion of the device to which the invention relates will be described herein, as the remaining portions will be understood by those skilled in the art from the drawing, and such remaining portions can be modified or constructed in any desired manner.

There is a bowl 10 for the gasolene, which overflows into it past the needle valve 11 from a suitable supply through the tube 12. A float 13 controls the needle valve. There is a top 15 for the float chamber and a tube 16 extends downwardly therefrom into close proximity with the lower part of the bowl, and is located centrally of the bowl and float. Near its lower end the tube 16 has a shoulder 116 which rests upon suitable packing on the inside of the bowl 10 and the extreme lower end 18 of said tube projects through said bowl into the horizontally disposed air inlet funnel 19. The arms of the inverted T connection 23 extend across the tube 16 near the lower part of the bowl 10 with screens or strainers 17 covering the entrances and a fuel nozzle 24 is screwed into the other branch of the T within the tube 16 and extends upward therefrom as hereafter described. There is a downward extension 21 from the lower side of the T 23 which extends centrally through the lower end 18 of the tube 16 and through the reduced end of the air funnel 19. Said funnel is clamped against the underside of the bowl 10 by a nut 20 in the threaded lower end of the extension 21. The T connection 23 extends through the tube 16, but does not entirely close the passage therethrough, so that there is ample passageway for air up through the cylinder 18 and for air and gasolene up through the lower part of the tube 16, so that the tube 16 forms a passageway for combined air and fuel. The fuel nozzle 24 which screws into the lower part of the tube 16 is central thereof and the outlet therefrom is controlled by a needle valve 25 which extends up centrally through the tube 16 and through the mixing chamber 27 and beyond the top of the device, and near its upper end it is threaded at 28 and screws into an oscillatory segmental plate 29 and the needle valve has a knurled head 30 on the upper end. It is pressed downwardly by the spring 31 lying coiled around the needle valve within the mixing chamber, the upper end of the spring bearing against the upper wall of the mixing chamber and the lower end bearing against the pin 32, which depresses the needle valve.

The teeth on the segmental plate 29 mesh with the teeth on the segmental plate 34, which is secured to the throttle shaft 35 which extends vertically through the upper part of the device and on its lower end carries a throttle valve 36 for regulating the outlet opening 37 to the fuel chamber of the cylinder. 38 is the throttle lever secured on the shaft 35. Hence when the throttle valve is operated, the segmental plate 29, which carries the needle valve 25, is oscillated, and as it is oscillated it elevates or lowers the needle valve because said segmental plate 29 carries an arm 40, which has a vertical wheel 41 on the pin 42, and said wheel travels on a curved plate 43, which is substantially horizontal. This plate is secured at one end to the top of the device by the screw 44, and at the other end, which is free, it bears on a ball 45, see Figs. 4 and 5, lying in a ball recess 46, and the ball is elevated and lowered by the pointed end of a screw 47, which has a knurled head 48 on it.

A spring-pressed pin 49 engages the periphery of the knurled head 48 and holds it in any position it is set. There is a second air inlet 50 which is closed by the valve 51, which is spring-pressed by the spring 52. This air inlet is on one side of the mixing chamber 27 and opposite the gas outlet to the cylinder.

The screw 47 is set so as to lift the ball 45 and push the free end of the plate 43 so as to make that plate inclined, as shown in Figs. 4 and 5. The plate is concentric with the stem of the needle valve, so that the wheel 41 will travel on it as the segmental plate 29 is oscillated by the throttle shaft. Therefore, when the throttle lever and other parts are in the position shown in Figs. 3 and 4, the needle valve 25 will be at the lowest limit of movement at which it has been set, and the throttle valve will be practically closed. As the throttle valve is opened gradually by operation of the throttle lever 38, the segmental plate 29 will be turned and the wheel 41 will travel over the plate 43, which is inclined, and that will cause the gradual elevation of the opening of the needle valve so as to cause more gasolene or fuel to pass from the float chamber to the mixing chamber. In other words, with this arrangement the quantity of fuel is controlled immediately and directly by the throttle lever so as to be in proportion to the opening through the outlet to the cylinder, and, therefore, in a sense in proportion to the demand for fuel. The extent of this opening movement of the needle valve is pre-determined by the adjustment of the screw 47 and for that purpose the knurled head 48 is numbered as shown in Fig. 1, so that the operator can see how to turn it in order to increase the supply of fuel by operation of the throttle lever. The needle valve is also primarily adjusted by turning the knurled head 30 on the stem thereof so as to cause the needle valve to seat and close when the throttle is closed, or to adjust the extent of opening through the nozzle 24 as may be desired. To that end the knurled head 30 is likewise numbered, as shown in Figs. 3 and 5, to indicate to the operator the adjustment made.

The segmental plate 29 and the segmental arm 34 are limited in their movements by the end teeth 60 on the segmental plate 29 having flat ends adapted to abut against flat stop surfaces 61 at the end of each row of teeth on the segmental arm 34.

It is observed that the segmental plate 29 is normally locked into engagement with the stem of the needle valve 25 by the spring-pressed end 64 in the upper portion of the arm 40 on the plate 29 engaging the knurled head 30, so that normally the plate 29 and stem of the valve 25 will turn together, and yet they may be adjusted relatively to each other when desired. The elevation of the needle valve is accomplished, therefore, wholly by the inclination of the plate 43.

I claim as my invention:

1. A carbureter including a casing, a needle valve and stem vertically mounted therein so as to be oscillatable, the upper portion of the valve stem being threaded, a spring tending to force said valve stem down to close the valve, a knurled head on the upper end of the valve stem, a segmental plate which screws on the threaded portion of the valve stem above the casing, said plate being provided with an upwardly extending portion, a spring-pressed pin in said upwardly extending portion which engages said knurled head and normally locks the two together, a roller mounted in connection with said segmental plate, a plate mounted on the casing and connected thereto at one end and free at the other end and over which said roller is adapted to move, a screw entering said casing and adapted to cause the elevation of the free end of said plate for inclining the same, a throttle valve, an operating lever therefor and means connected with the throttle valve and lever for oscillating said segmental plate and arranged so that said segmental plate will travel up on said inclined plate as said throttle valve goes to an open position.

2. A carbureter including a casing, a needle valve and stem vertically mounted therein so as to be oscillatable, the upper portion of the valve stem being threaded, a spring tending to force said valve stem down to close the valve, a knurled head on the upper end of the valve stem, a segmental plate which screws on the threaded portion of the valve stem above the casing, said plate being provided with an upwardly extending portion, a spring-pressed pin in said upwardly extending portion which engages said knurled head and normally locks the two together, a roller mounted in connection with said segmental plate, a plate mounted on the casing and connected thereto at one end and free at the other end and over which said roller is adapted to move, a screw entering said casing and adapted to cause the elevation of the free end of said plate for inclining the same, a throttle valve, a throttle valve shaft, a throttle valve lever, and a segmental arm secured on the throttle valve shaft which meshes with the segmental plate, said segmental plate and segmental arm having flattened stop portions adapted to engage and limit the oscillatory movements thereof in each direction.

3. A carbureter including a casing, a needle valve and stem vertically mounted therein so as to be oscillatable, the upper portion of the valve stem being threaded, a spring tending to force said valve stem

down to close the valve, a knurled head on the upper end of the valve stem, a segmental plate which screws on the threaded portion of the valve stem above the casing, said plate being provided with an upwardly extending portion, a spring-pressed pin in said upwardly extending portion which engages said knurled head and normally locks the two together, a roller mounted in connection with said segmental plate, a plate mounted on the casing and connected thereto at one end and free at the other end and over which said roller is adapted to move, the casing having a ball chamber under the free end of said plate, a ball in said chamber, a screw in the casing for elevating and lowering said ball so as to incline said plate more or less, a throttle valve, an operating lever therefor, and means connected with the throttle valve and lever for oscillating said segmental plate and arranged so that said segmental plate will travel up on said inclined plate as said throttle valve goes to an open position.

In witness whereof, I have hereunto affixed my signature in the presence of the witnesses herein named.

FRANK H. HEITGER.

Witnesses:
O. M. McLAUGHLIN,
G. H. BOINK.