Nov. 14, 1933. W. F. BROGE 1,935,260

CARBURETOR

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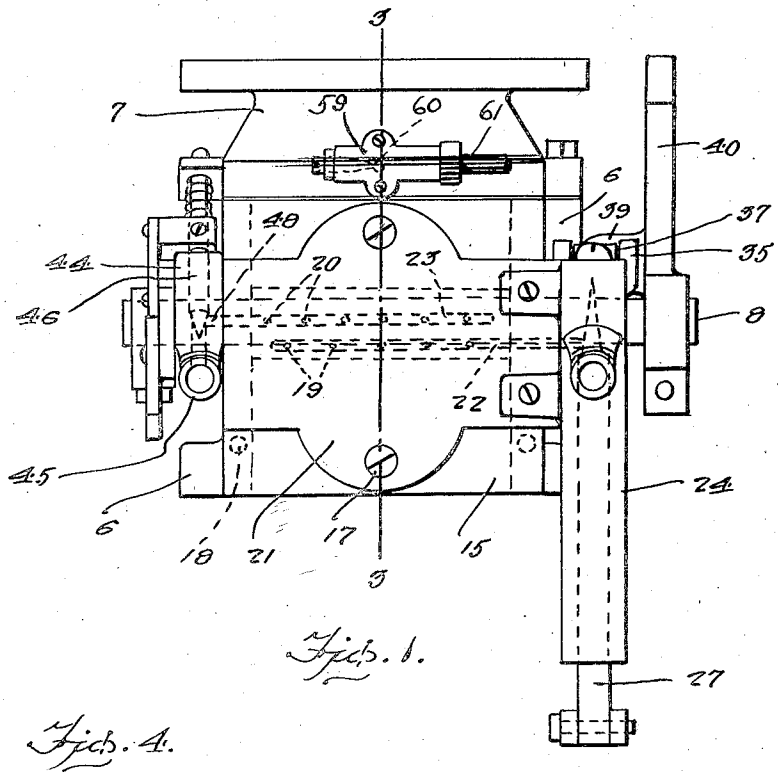


Fig. 1.

Fig. 4.

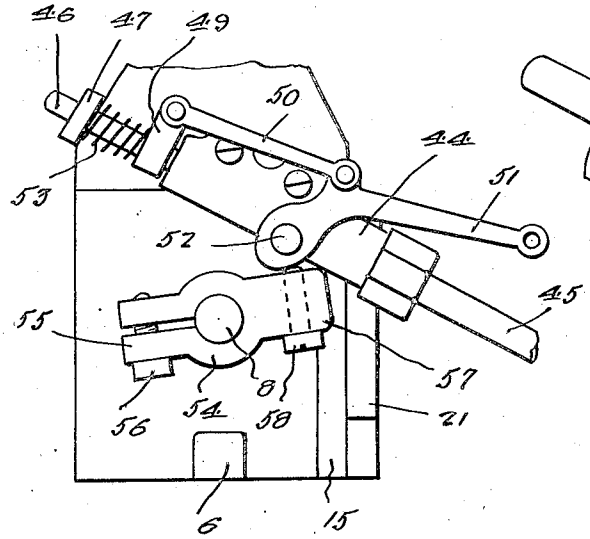
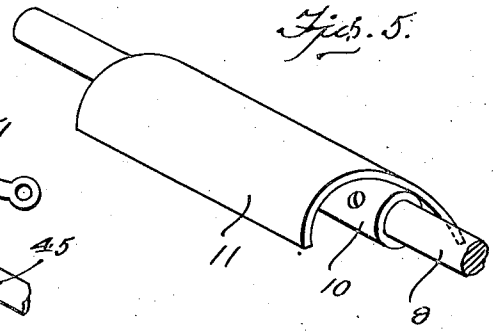


Fig. 5.



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Fig. 2.

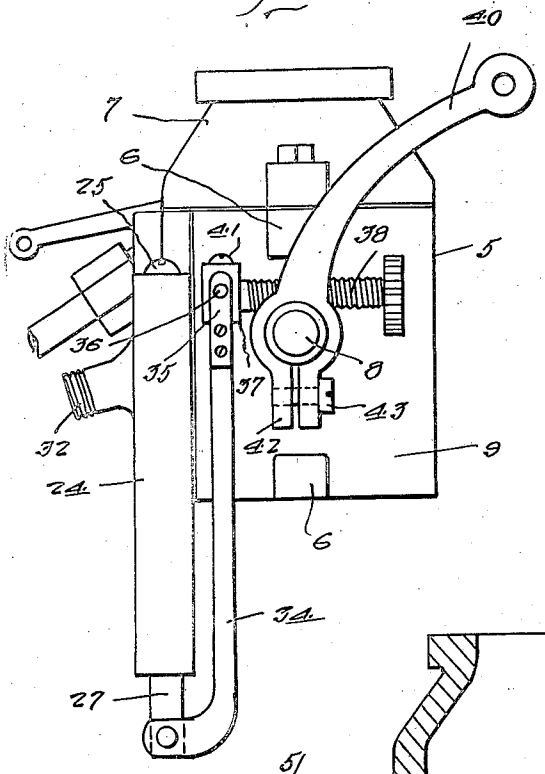


Fig. 6.

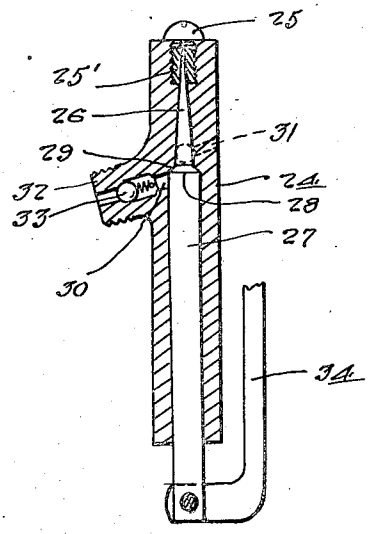
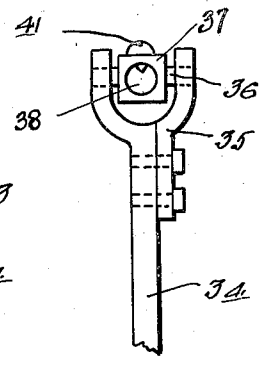


Fig. 7.



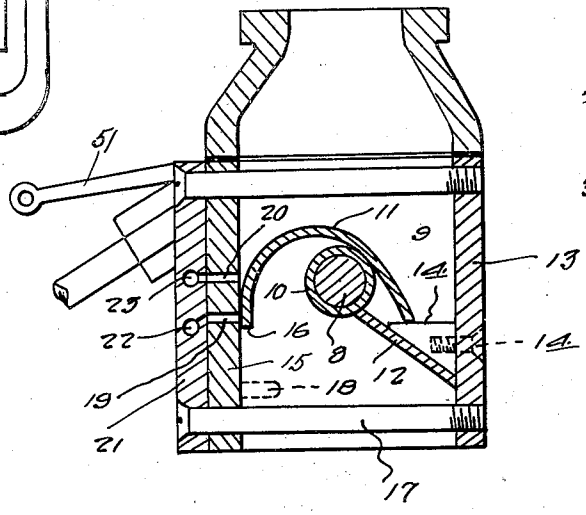


Fig. 8.

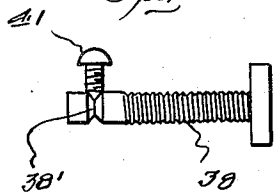


Fig. 3.

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CARBURETOR

William F. Broge, Detroit, Mich.

Application April 5, 1932. Serial No. 603,414

6 Claims. (Cl. 261—50)

The present invention relates to improvements in carburetors designed particularly for using gasoline and other high grade fuel.

One of the important objects of the present invention is to provide a carburetor wherein the use of the usual float chamber and associated mechanism is dispensed with.

Another object is to provide a carburetor of a simple and compact construction, efficient in operation, inexpensive to manufacture and assemble and otherwise well adapted for the purpose for which the same is intended.

Other objects and advantages reside in the special details of construction and operation as more fully hereinafter described and claimed in the following specification and illustrated in the accompanying drawings forming part hereof, wherein the reference numerals designate corresponding parts throughout and in which

Figure 1 is a front elevational view,

Figure 2 is a side elevational view showing the throttle valve,

Figure 3 is a vertical sectional view taken on a line 3—3 of Figure 1,

Figure 4 is a side elevational view showing the choke valve,

Figure 5 is a perspective view of the arcuate plate valve and shaft,

Figure 6 is a sectional view through the throttle valve housing,

Figure 7 is a detail of the pivoted connection for the adjusting screw of the throttle valve, and

Figure 8 is a detail of the adjusting screw.

Referring to the drawings in detail, wherein I have shown a preferred embodiment of my invention, the numeral 5 designates a casing generally, open at each end and having its walls at right angles. Threaded bosses 6 are formed adjacent each open end to either of which may be attached a flanged throat 7 for attaching the casing to an engine intake manifold. The opposite end constitutes an air intake and may be provided with any conventional air-filter (not shown), if desired.

A shaft 8 is positioned transversely in the casing with its ends journalled in openings in the walls 9 and projecting outwardly from opposite sides. Mounted on the shaft within the casing is a sleeve 10 to which an arcuate plate valve 11 is welded or otherwise fixedly secured, the plate having its axis longitudinally of the shaft and eccentrically positioned with respect to the shaft, the end edges of the plate being fitted closely against the side walls 9. A baffle plate 12 is disposed in the casing having one edge disposed in wiping engagement with the shaft and with its opposite edge inclined toward and abutting the rear wall 13. A threaded lug 14 is carried by the plate 12 for receiving a screw 14' for attaching to the rear wall. The side edges of the baffle plate abut the side walls 9 so that air entering the casing is directed toward the front wall 15 for passing around the front edge 16 of the arcuate plate valve 11.

The lug 14 also constitutes a stop for the rear edge of the arcuate plate valve to limit its movement in one direction.

The front wall 15 is removably secured in position by threaded bolts 17, dowels 18 serving to align the edges of the front and side walls. The front wall is provided with two rows of openings 19 and 20 disposed parallel to the axis of the shaft, the openings 19 being positioned for closing by the arcuate plate valve 11 when the face adjacent the front edge 16 is moved against the front wall and when the rear edge of the plate engages the stop 14, as shown in Figure 3 of the drawings. When the shaft is rotated to disengage the rear edge of the plate from the stop it will be apparent the front edge will gradually move away from the front wall to allow air to be sucked through the casing and pull fuel through the openings 19, said openings having a suitable connection with a fuel feed pipe as more fully hereinafter explained. The openings 20 are at all times out of engagement by the plate valve 11 and positioned intermediate the valve and the throat 7.

The bolts 17 also serve to attach a plate 21 to the outer side of the front wall 15, the inner face of the plate having a pair of parallel grooves 22 and 23 communicating respectively with the rows of openings 19 and 20, each of the grooves having one end extending to an opposite edge of the plate 21.

To one side of the casing is secured a tubular valve housing 24, open at each end and provided with a threaded screw 25 in one end, the screw having a tapered recess 25' in its inner end forming a seat for the tapered end 26 of a needle valve 27 reciprocally mounted in the housing.

A shoulder 28 is formed on the valve cooperating with a seat 29 in the housing to control passage of fuel through passages 30 and 31 extending laterally through opposite sides of the housing and positioned respectively below and above the seat 29. The passage 30 communicating with a threaded nipple 32 for attaching a pipe line leading to a fuel tank (not shown). A ball check valve 33 is also positioned in the nipple 32.

The passage 31 registers with the end of the groove 22 for discharging fuel through the openings 19 of the casing.

The outer end of the valve 27 projects from the housing 24 and has one end of a link 34 pivotally attached thereto. The link extends parallel to the needle valve and is provided with an apertured yoke 35 at its opposite end in the openings of which is pivoted trunnions 36 formed on a block 37. An opening is formed in the block for receiving one end of an adjusting screw 38 threaded through a boss 39 on one side of a throttle lever 30. A locking screw 41 is seated in an annular groove 38' of the adjusting screw 38 for securing the latter against movement in the block 37.

The lever 40 has a split opening for adjustably mounting on one end of the shaft 8, the split ends 42 being secured in a clamped position on the shaft by a screw 43.

To the opposite wall of the casing is attached a tubular valve housing 44, open at each end, and with a fuel feed pipe 45 attached to one end, said pipe also having a ball check valve (not shown) therein. A needle valve 46 is reciprocally mounted in the housing with one end projecting therefrom and slidable in a guide 47 formed on the casing.

The internal construction of the housing 44 and valves 46 is substantially the same as that of the housing 24 and valve 27 and a further detailed description of the same is therefore believed unnecessary. The housing 44 has a lateral passage 48 which registers with the groove 23 of the plate 21 for feeding fuel through the row of openings 20 of the casing.

A collar 49 is secured to the outer end of the valve 46 and to which is pivotally attached one end of a link 50, the opposite end of the link being pivoted to a choke lever 51, the latter being pivotally attached to a pin 52 projecting from the housing 44. A coil spring 53 is mounted on the valve between the guide 47 and collar 49 for normally urging the valve into a closed position. A lug 54 is provided with a split opening for adjustable mounting on the end of the shaft 8 adjacent the housing 44, the split end 55 being secured in clamped position by a screw 56. An extension 57 constituting a cam is formed on the lug for engagement by one end of the lever 51, whereby to simultaneously move the arcuate plate valve 11 into an open position upon the opening movement of the valve 46. The cam is provided with a screw 58 for the purpose of adjustment to take up wear occasioned by the operation of the lever 51.

It will be apparent from the foregoing that the operation of the valve 46 will also cause a slight opening movement of the arcuate plate 11 to allow sufficient air to pass through the casing for sucking the fuel through the openings 20, but still providing a richer mixture than when the lever 40 is operated, the latter being used for normal operating conditions after the motor has been started. Upon releasing the choke lever 51 the same will automatically close through the action of the spring 53.

The lever 40 is operable independent of the valve lever 51, the former serving to simultaneously open the needle valve 27 and the arcuate plate valve 11 to allow the suction of the engine to draw air and fuel through the casing in a predetermined ratio.

If desired an idling valve 59 may be provided for the carburetor and secured thereto in any suitable position to control the feeding of fuel through an aperture 60 positioned in the wall of the carburetor beyond the valve 11.

Fuel is fed to the valve 59 by means of a feed pipe 61.

While I have disclosed a preferred embodiment of my invention it is to be understood that various changes may be made in the construction thereof without departing from the spirit of the invention, or the scope of the appended claims.

I claim:

1. A carburetor comprising a casing having a fuel intake in one wall, and air intake in the casing, a shaft revoluble in the casing and an arcuate plate eccentrically carried by the shaft with its face adjacent one edge in cooperating relation with said wall for movement toward or away from the wall upon operation of the shaft, a baffle directing the path of air along said wall and a stop engageable with the plate for limiting movement thereof in one direction.

2. A carburetor comprising an open-ended casing attachable at one end to an engine manifold, the opposite end providing an air intake, a fuel intake port in one wall of the casing, a fuel feed pipe connected thereto, a shaft journalled in the casing with its ends projecting outwardly thereof, a baffle directing air passing through the casing along said wall, an arcuate plate carried by the shaft and cooperating with said wall to control the discharge of fuel and air from the casing, a stop limiting movement of the plate when in closed position, a lever attached to the shaft, a valve for the fuel pipe and an operative connection between the lever and the valve for simultaneously operating the plate and the valve.

3. A carburetor comprising an open-ended casing, one end constituting an air intake and the opposite end attachable to an engine manifold, a fuel intake port in one wall of the casing, a shaft revoluble in the casing having its ends projecting therefrom, a valve carried by the shaft for controlling the passage of air and fuel through the casing, a second fuel port beyond the valve, fuel feed pipes connected to each of the ports, valves for each pipe, an operating lever attached to one end of the shaft for said first named valve, an operating connection between said lever and the valve for said first named fuel port for the simultaneous operation thereof, a lever for the valve of the second named fuel port and an operating connection between said last named lever and said shaft for simultaneously opening all of the valves.

4. A carburetor comprising an open-ended casing, one end constituting an air intake and the opposite end attachable to an engine manifold, a fuel intake port in one wall of the casing, a shaft revoluble in the casing having its ends projecting therefrom, a valve carried by the shaft for controlling the passage of air and fuel through the casing, a second fuel port beyond the valve, fuel feed pipes connected to each of the ports, valves for each pipe, an operating lever attached to one end of the shaft for said first named valve, an operating connection between said lever and the valve for said first named fuel port for the simultaneous operation thereof, a lever for the valve of the second named fuel port and an operating connection between said last named lever and said shaft for simultaneously opening all of the valves and spring means for closing the valve for said last named

fuel port independent of the closing of said other valves.

5. A carburetor comprising a hollow casing forming an air passage and having a plurality of rows of openings in one wall, a plate secured to said wall having fuel passages communicating with the respective rows of openings, fuel feed pipes connected to said fuel passages, individual valves for the feed pipes and the air passage of the casing and means connecting the valve of one feed pipe with the valve of the air passage for simultaneous actuation.

6. A carburetor comprising a hollow casing forming an air passage and having a plurality of rows of openings in one wall, a plate secured to said wall having fuel passages communicating with the respective rows of openings, fuel feed pipes connected to said fuel passages, individual valves for the feed pipes and the air passage of the casing, the valve of one of said feed pipes and the valve for said air passage being connected for simultaneous actuation independent of the valve of the other feed pipe and an independent operating connection for the valve of the last named feed pipe for simultaneously actuating all of the valves.

WILLIAM F. BROGE.