

[54] **CARBURETOR**

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[52] U.S. Cl. **261/44 R, 261/DIG. 38**

[51] Int. Cl. **F02m 9/06**

[58] Field of Search **261/44 A, 44 R, DIG. 38**

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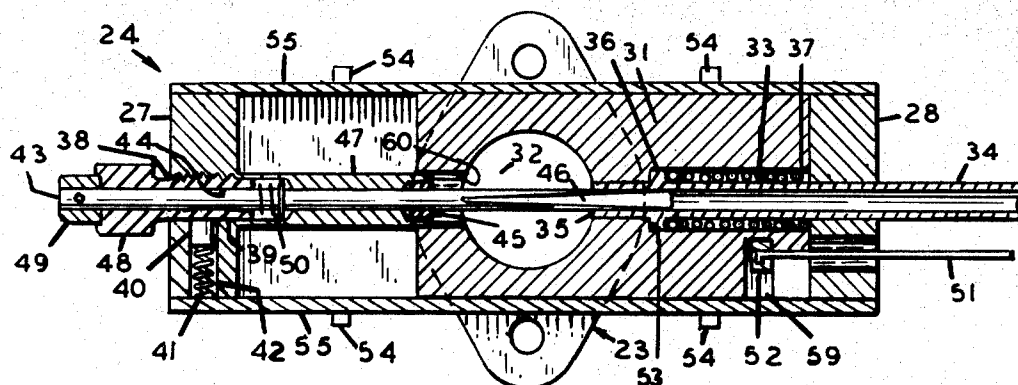
[57] **ABSTRACT**

A carburetor improvement that can function in any mounted or turned position and have a positive shut-off of liquid fuel when a slide fuel tube is closed against a gasket on a needle. The needle is of uniform round material with a flat taper portion from the end thereof in the liquid fuel tube to near the gasket. The liquid fuel flows into the throttled air passage of the carburetor and increases as the tube is gradually withdrawn from the gasket to expose greater portions of the flat taper portion on the needle. The liquid fuel tube is mounted in a throttle slide valve plate to move therewith.

The needle flat taper portion is adjusted by being turned against the flow of throttled air for decreasing the supply of liquid; and adjusted by being turned with the flow of air to increase the flow of liquid at any instant sliding position.

A threaded knob bushing is provided for the needle to be turned therein and further adjust the flow of liquid fuel by longitudinal relative movement of the needle in the end portion of the tube.

2 Claims, 20 Drawing Figures



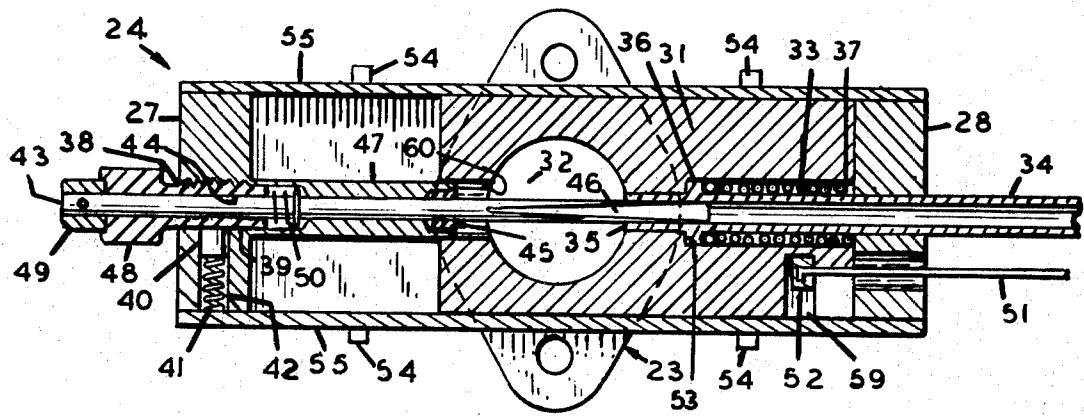


FIGURE 1.

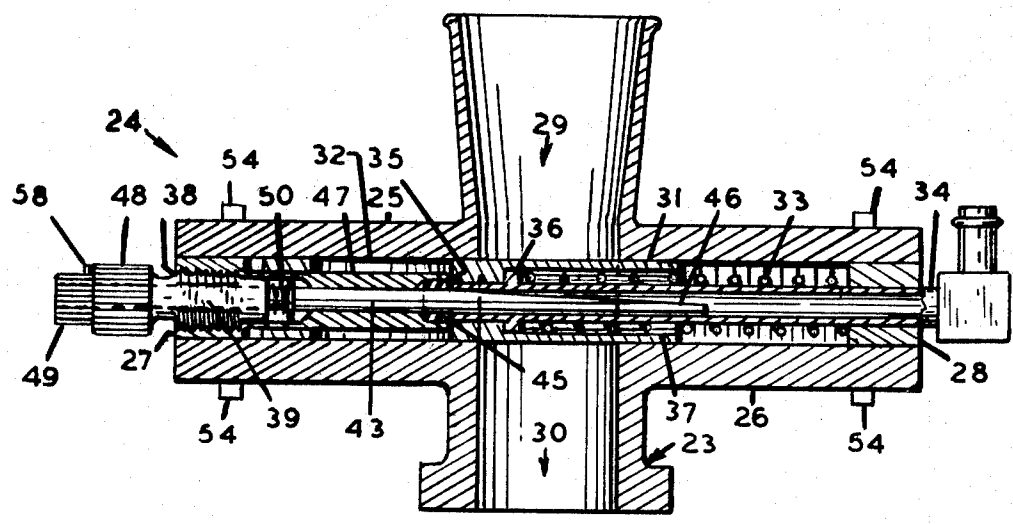


FIGURE 2.

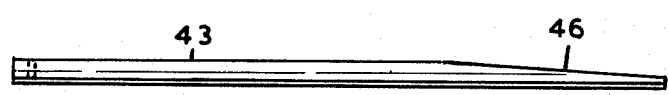


FIGURE 3.

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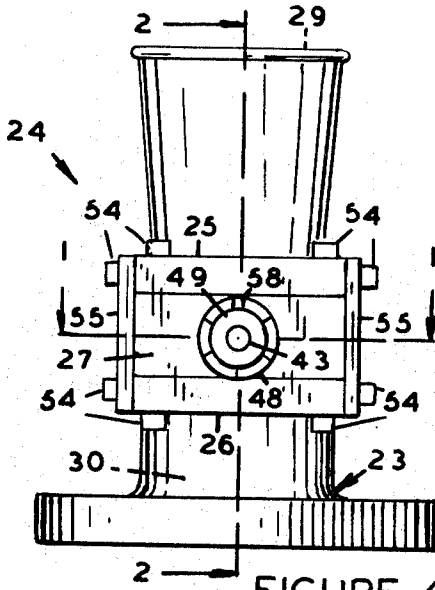


FIGURE 4.

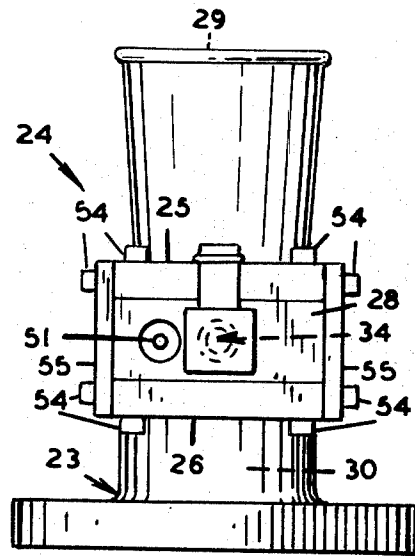


FIGURE 5.

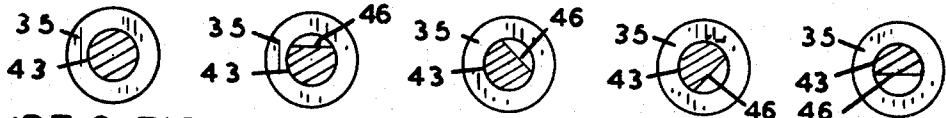


FIGURE 6. FIGURE 7. FIGURE 8. FIGURE 9. FIGURE 10.

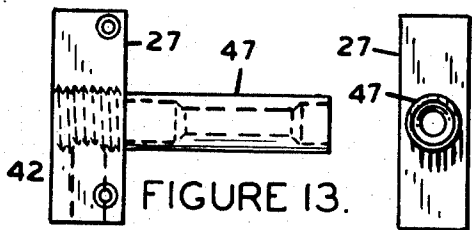


FIGURE 13.



FIGURE 16. FIGURE 17.



FIGURE 11. FIGURE 12.

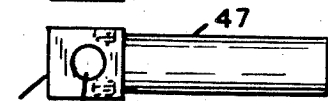


FIGURE 14.

FIGURE 15.

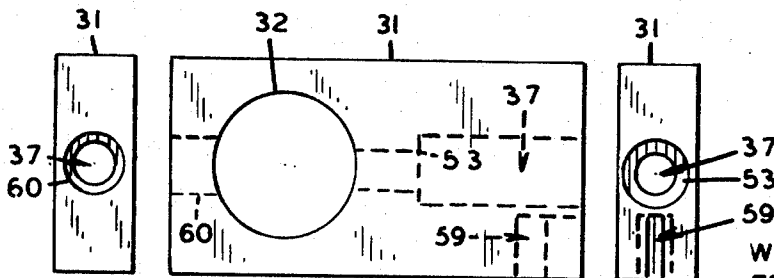


FIGURE 19. FIGURE 18. FIGURE 20.

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CARBURETOR

BACKGROUND OF THE INVENTION

This invention relates to a carburetor without a liquid bowl reservoir for use on motorcycles; especially of the racing type.

Heretofore, carburetors were restricted to one position for mounting; and were made essentially with a bowl for liquid fuel having a float and needle to control the level of fuel by gravity in the bowl; and had a jet tube to feed the liquid fuel from the bowl into the throttled air flow through the carburetor.

The improved carburetor may be turned in any position for mounting; and has a positive shutoff of the liquid fuel when a fuel tube is closed on a needle against a gasket around the needle.

The liquid fuel flow is gradually increased by movement of the fuel tube away from the gasket on the needle. A flat taper portion is on the needle from the end of the needle located in the tube to a position near the gasket. The fuel tube moves away from the gasket; by being mounted in a slide valve plate having the means of throttle remote control; to increase the flow of liquid through the instant exposure of the opening caused by the flat taper portion on the needle.

The needle has rotatable and longitudinal adjustment for the quantity of fuel flow from the end of the fuel tube relative to any instant movement of the fuel tube.

BRIEF SUMMARY OF THE INVENTION

The carburetor has a slide valve plate that is slidable between a plate having an air intake opening and a plate having a vapor fuel outlet opening adapted for the intake of an internal combustion engine. The ends of the air intake opening plate and the vapor fuel outlet plate are spaced with connected end plates. Side plates are secured to the sides of the carburetor to seal against leakage of air or vapor fuel.

A gasket of neoprene material is mounted in one end portion of the carburetor. The needle is mounted to be manually rotated in a bushing. The bushing is threaded in one end of the carburetor. The needle extends through the gasket and into a liquid fuel tube.

The liquid fuel tube is slidable through the opposite end wall of the carburetor. The end of the fuel tube is anchored and pivoted on its longitudinal axis in the slide valve plate with the end of the tube opening into the throttle opening of the slide valve plate.

The needle is of round stock elongated material and has a flat taper portion thereon extended from the end thereof located in the end portion of the fuel tube to a position near the gasket.

The needle flat taper portion is adjusted by being turned against the flow of the throttled air through the carburetor for decreasing the supply of liquid fuel flow; and adjusted by being turned in the opposite direction with the flow of vapor fuel to increase the flow of liquid fuel at any instant sliding position.

A knob on the bushing is provided to turn the threaded bushing in the end wall of the carburetor one or more revolutions for longitudinal relative adjustment of the needle in the end portion of the liquid fuel tube.

Means are provided for holding a knob secured on the end of the needle against the knob on the bushing to move together for longitudinal movement of the needle.

Some motorcycle racers prefer to mount the carburetor in an upright position with the knob adjustment on the bottom of the carburetor and feel the adjustments to correspond with the performance of the motorcycle especially in a race. Some racers prefer to mount the carburetor with the knob adjustments on the top of the carburetor for visual operation. Some motorcycle racers prefer to mount the carburetor in a horizontal position as shown in the drawings.

The fine adjustment of increasing or decreasing the liquid fuel flow in the carburetor while in the heat of a race often makes the difference between winning or losing a race.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view illustrating a section of the improved carburetor taken on lines 1—1 of FIG. 4 and turned at a right angle thereto.

FIG. 2 is a view illustrating a section of the carburetor taken on lines 2—2 of FIG. 4 and turned at a right angle thereto.

FIG. 3 is a view illustrating the needle with the flat taper portion thereon.

FIG. 4 is a view illustrating an end elevation of the carburetor; showing the knob control of the needle; and knob control of the bushing.

FIG. 5 is a view illustrating the opposite end elevation of the carburetor; and showing the supply fitting for the fuel tube; and throttle wire.

FIG. 6 is a view illustrating an enlarged end of a fuel tube fully closed over the round section of the needle shown in section.

FIG. 7 is a view illustrating an enlarged end of the fuel tube partly moved on the needle from the closed position showing the jet opening formed by the flat taper portion on the needle. The needle is shown in section.

FIG. 8 is a view similar to FIG. 7 with the needle flat taper portion turned to adjust the flow of liquid fuel.

FIG. 9 is a view similar to FIG. 8 except the flat taper portion on the needle is turned for further adjustment.

FIG. 10 is a view similar to FIG. 9 except the flat taper portion on the needle is turned in the opposite direction from that shown in FIG. 7 for a greater adjustment of liquid fuel flow from the jet opening.

FIG. 11 is a view illustrating the end of the liquid fuel tube plural flat taper portions shown on the needle in section.

FIG. 12 is a view illustrating a fragmentary length of needle with plural flat portions thereon.

FIG. 13 is a view illustrating a plan of the end wall with internal threads for the knob on the bushing. A tubular extension is projected therefrom to support the gasket.

FIG. 14 is a view illustrating the inward side of the wall shown in FIG. 13.

FIG. 15 illustrates an end elevation of the end wall shown in FIG. 13.

FIG. 16 illustrates an edge view of the gasket.

FIG. 17 illustrates the face view of the gasket.

FIG. 18 illustrates a face view of the throttle slide valve plate.

FIG. 19 is a view illustrating one end view of the slide valve plate.

FIG. 20 is a view illustrating the opposite end of the slide valve plate.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The carburetor 24 housing comprises: a plate 25 and a plate 26 spaced by end plates 27 and 28. An air intake opening 29 is located in plate 25. A vapor fuel outlet opening 30 is located in plate 26. A flanged neck 23 is provided on plate 26 for a connection to an internal combustion engine not shown.

The means for throttling air through the carburetor housing 24 comprises: a slide valve plate 31; slidable between plates 25 and 26; abuts the end wall plate 28; when the throttle opening 32 is aligned with the air intake opening 29 and the vapor fuel outlet opening 30. A compression helical coil spring 33 is on a liquid fuel tube 34 to normally close the throttle opening 32 through the carburetor 24. The liquid fuel tube 34 is mounted transversely through the end wall plate 28 and projects into the slide valve plate 31. The end 35 of the liquid fuel tube 34 is positioned at the edge of the throttle opening 32 of slide valve plate 31 and slides therewith. An anchor flange 36 is secured on the end portion of the liquid fuel tube 34 and receives the end of the compression spring 33 slidable in opening 37 of the slide valve plate 31 to normally close the slide valve plate opening 32.

The means for adjusting the liquid fuel comprises; a bushing 38 threaded through the end wall 27. The bushing 38 has a flat side 39 thereon for a latch member 40 to bear against the flat side 39 upon each revolution thereof. The latch member 40 is held against the flat side 39 of the bushing 38; by means of a compression spring 41; with both being located in the bore 42 of the end wall 27.

An elongated uniform round needle 43 is mounted to slide and turn in the bearing 44 of the bushing 38; and is extended through a neoprene gasket 45 located in the end portion of the carburetor housing 24; and further extends across the throttle opening 32; and into the end portion of the liquid fuel tube 34.

The needle 43 has a flat taper portion 46 thereon extended from the end of the needle located in the end portion of the liquid fuel tube 34 to near the gasket 45. The gasket 45 is located near the edge of the throttle opening 32; and receives the end of the fuel tube 35 for complete shutoff of liquid fuel; when the slide valve plate 31 closes the throttle opening.

The gasket 45 is mounted in the free end portion of the tube 47. The tube 47 is supported by the end wall 27.

The bushing 38 has a knob 48 thereon for turning the bushing 38 each revolution against the pressure of the latch member 40 for longitudinal adjustment of the needle 43. The needle 43 has a knob 49 secured on the outward end portion thereof. The knob 49 is held against knob 48 by means of a spring 50 mounted on the needle 43 inside of the carburetor housing 24; and bears against the inward end of the bushing 38.

A throttle wire 51 is anchored to the slide valve plate 31 by a lug 52 located in the slide valve plate; and is operated against the compression spring 33 by the operator of the motorcycle.

The liquid fuel adjustments comprise: the end of the fuel tube 35 is withdrawn from the gasket 45 as the throttle valve is opening and exposes a gradually increased orifice between the end of the tube 35 and the flat taper portion 46.

Knob 49 on the needle 43 can be manually turned to cause the flat taper portion 46 to face the air intake opening 29 for a reduced amount of liquid fuel flow; or turned to face the vapor outlet to cause a greater amount of flow of liquid fuel.

If a still further adjustment is desired by the operator; he may turn the knob 48 on the bushing 38 one or more revolutions to move the needle 43 longitudinally to change the size of the orifice; created by the tube end 35 and flat taper portion 46; at any instant position of throttle movement.

A shoulder 53 in slide valve plate 31 is provided for an anchorage flange 36; to bear against and actuate the movement of the slide valve plate 31; by means of the compression spring 33.

An opening 59 is provided in the slide valve plate 31 for receiving the anchorage lug 52 for the throttle wire 51.

Plural flat taper portions 56 and 57 shown in FIG. 11 are for still further adjustment of the liquid fuel flow from the tube end 35.

An indicator 58 on knob 49; shows the relative position of the flat taper portion 46 on the needle 43; located in the liquid fuel tube 34.

Screws 54 are shown as a means for securing the carburetor housing 24 together. Side plates 55 prevent leakage of air and vapor fuel in the carburetor 24.

The fine adjustments of increasing or decreasing the liquid fuel flow in the throttle portion of the carburetor; while in the heat of a race; often make a difference between winning or losing a race.

The bore 60 in slide valve plate 31 receives the tube 47 when the slide valve plate 31 closes the throttle opening of the carburetor 24.

I claim:

1. A carburetor improvement that can function in any turned position; and have several means of adjustments for the controlled flow of liquid fuel directly into the throttled opening; and seal the liquid fuel with a positive shutoff when the throttle is closed; the carburetor improvement comprising in combination:

- a. a carburetor having at least two elongated plates spaced with two end walls;
- b. a slide valve plate fitted to slide longitudinally between said carburetor elongated plates;
- c. an air intake opening located in one of the mentioned elongated plates;
- d. a vapor fuel opening being in the opposite elongated plate;
- e. said slide valve plate having an opening therethrough to register with said air intake opening and said vapor fuel opening when one end of said slide valve plate abuts one mentioned end wall;
- f. a liquid fuel tube being located longitudinally within said slide valve plate;
- g. said liquid fuel tube having one end thereof anchored in said slide valve plate to open into the slide valve plate opening;
- h. said liquid fuel tube opposite end portion being slidable through the mentioned abutted wall of said carburetor;
- i. a needle of uniform round elongated material;
- j. said needle being manually rotatable through the opposite mentioned end wall;
- k. a gasket;

- l. said needle being extended through said gasket and said opening in said slide valve plate and further extended into the end portion of said liquid fuel tube;
 - m. said gasket being mounted within said carburetor and located on said needle opposite said liquid fuel tube opening and spaced at least the width of the opening in said slide valve plate;
 - n. said needle having a taper flat portion thereon from the free end thereof located in said liquid fuel tube to a position near said gasket;
 - o. a knob being secured on the outward end portion of said needle;
 - p. a helical coil compression spring coaxially mounted on said liquid fuel tube between the mentioned slide valve plate and the mentioned abutted wall;
 - q. and means to throttle the opening of the slide valve plate relative to the air intake opening and vapor fuel opening against the action of said helical coil compression spring.
2. A carburetor that can function in any position; and have plural means of adjustment for the controlled flow of liquid fuel from a tube directly into the vapor fuel opening of the carburetor; the improved carburetor comprising in combination:
- a. a carburetor housing having an elongated closed box like walled structure;
 - b. a slide valve plate being slidable longitudinally within said carburetor walled structure;
 - c. an air intake opening located in one elongated wall of said carburetor housing;
 - d. a vapor fuel opening located in the opposite elongated wall of said carburetor housing;
 - e. said slide valve plate having an opening therethrough to axially register with said intake opening and said vapor opening for passage of air and fuel respectively;

- f. said slide valve plate having one end thereof abutting one end wall of said carburetor housing when said opening thereof is registered with said air intake opening and said vapor fuel opening;
- g. a liquid fuel tube located longitudinally within said slide valve plate;
- h. said liquid fuel tube having one end thereof anchored in said slide valve plate to open into said slide valve plate opening;
- i. said liquid fuel tube opposite end portion thereof being slidable through the mentioned abutting end wall of said carburetor housing;
- j. a bushing being threaded into the opposite end wall portion of said carburetor housing;
- k. a needle of uniformed elongated round material;
- l. said needle being rotatably and slidably mounted through said bushing and said opening in said slide valve plate into said fuel tube;
- m. a gasket;
- n. said gasket being mounted within said carburetor housing and located on said needle opposite said liquid fuel tube end and spaced to at least equal the width of the opening in said slide valve plate;
- o. said needle having a taper flat portion thereon extended from the free end of the needle located in said liquid fuel tube to a position near said gasket;
- p. a knob on the outward end of said bushing;
- q. a knob being secured on the outward end portion of said needle;
- r. a helical compression spring coaxially mounted on said needle to hold said mentioned knobs together;
- s. a helical coil compression spring coaxially mounted on said liquid fuel tube between the mentioned anchorage thereof and the mentioned abutting wall of the carburetor housing;
- t. and means to throttle the opening of said slide valve plate against the action of said helical coil compression spring on said liquid fuel tube.

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