United States Patent

Miller

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[54] HINGE PIN RETAINER CLIP

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[51] **Int. Cl.** **F16k 31/18**

[58] **Field of Search** 137/409, 410, 428, 423, 434, 137/400; 261/70

[56] **References Cited**

UNITED STATES PATENTS

2,202,993	6/1940	Mollberg	137/434
2,503,036	4/1950	Fricke et al.	137/434
2,790,456	4/1957	Shaw et al.	137/434 X

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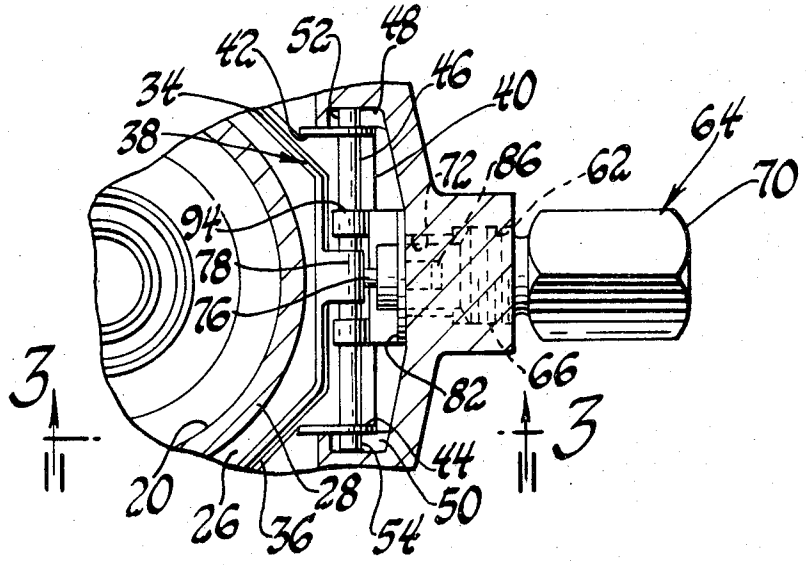
[57] **ABSTRACT**

A carburetor having a body with a fuel reservoir, fuel inlet valve assembly, a float within the fuel reservoir connected to a lever assembly and a hinge pin operatively connected to the lever assembly and received within support recesses formed in the reservoir, has a relatively resilient clip having relatively resilient arcuate arms engaging the hinge pin, a tab carried by the clip abuttingly engages a clearance passageway formed about the fuel inlet valve assembly and effectively resiliently urges the clip and arms downwardly against the hinge pin in order to hold it in assembled relationship within the recesses; an aperture formed through the clip body permits the extension therethrough of the fuel inlet valve assembly if such is necessary.

7 Claims, 5 Drawing Figures



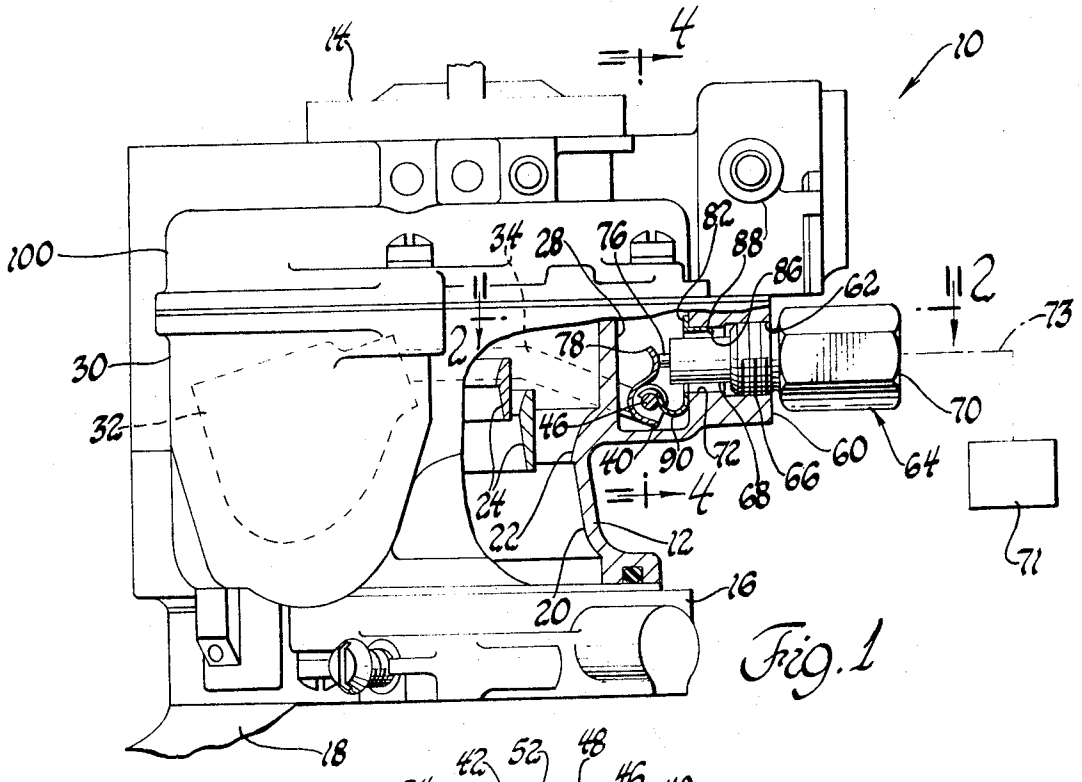


Fig. 1

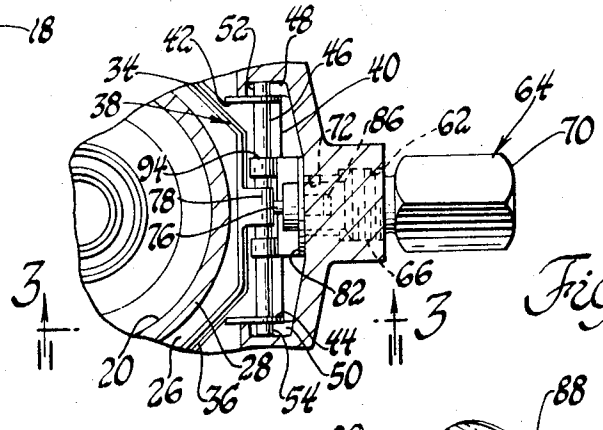


Fig. 2

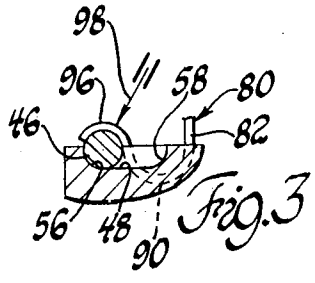


Fig. 3

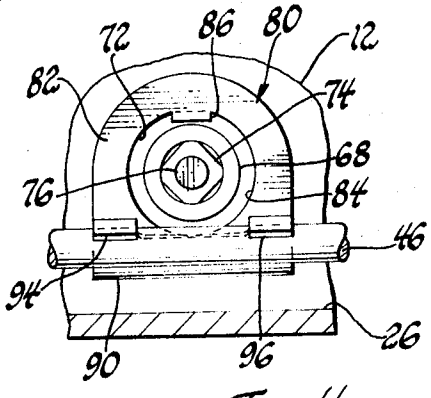


Fig. 4

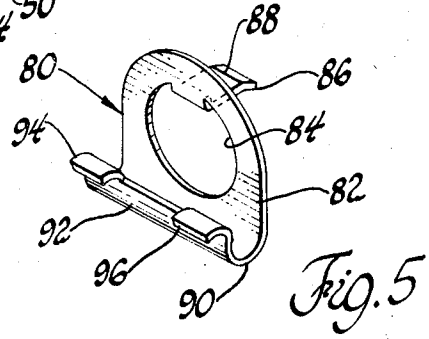


Fig. 5

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HINGE PIN RETAINER CLIP

BACKGROUND OF THE INVENTION

Retainer clips constructed in accordance with the prior art reacted against the fuel bowl cover of the carburetor assembly in order to, in turn, exert a holding force aginst the related float hinge pin. This, of course, required that the cover be assembled onto the related carburetor structure which, in turn, prevented adjustment of the fuel inlet means in order to achieve the desired normal fuel level within the fuel bowl or reservoir.

Additionally, prior art retainer clips often precluded the removal of the fuel inlet valve means without first disassembling the float assembly, hinge pin and retainer clip from the carburetor. Other problems were also encountered; for example, with some prior art clips it was impossible to adjust any of the components related to the control of the fuel inlet valve means because of obstructions inherent within the clip.

Accordingly, the invention as herein disclosed and described is directly concerned with the solution of the above as well as other attendant problems.

SUMMARY OF THE INVENTION

According to the invention, a hinge pin retainer clip, for a carburetor having a fuel reservoir chamber with a fuel inlet valve assembly adapted for communication between said fuel reservoir chamber and a related fuel supply system with a float-controlled lever assembly including a hinge pin therefor within said reservoir chamber for operatively engaging said inlet valve assembly for regulating the flow of fuel therethrough and into said fuel reservoir chamber, comprising a clip body portion, first relatively resilient abutment means carried by said clip body effective for engaging said hinge pin, and second abutment means carried by said clip body effective for engaging a stationary abutment surface carried by said fuel reservoir chamber, said second abutment means being effective upon engagement with said stationary abutment surface to urge said slip body and said first abutment means against said hinge pin so as to thereby fixedly retain said hinge pin in a prescribed position within said fuel reservoir chamber.

Various objects and advantages of the invention will become apparent when reference is made to the following detailed description considered in conjunction with the accompanying drawings.

DESCRIPTION OF THE DRAWINGS

In the drawings, wherein for purposes of clarity certain details may be omitted from one or more views:

FIG. 1 is a side elevational view of a carburetor assembly, embodying the invention, with portions thereof broken away and in cross section;

FIG. 2 is a fragmentary cross-sectional view taken generally on the plane of line 2—2 of FIG. 1 and looking in the direction of the arrows;

FIG. 3 is an enlarged fragmentary cross-sectional view taken generally on the plane of line 3—3 of FIG. 2 and looking in the direction of the arrows;

FIG. 4 is an enlarged cross-sectional view taken generally on the plane of line 4—4 of FIG. 1 and looking in the direction of the arrow; and

FIG. 5 is an enlarged perspective view of a retainer clip constructed in accordance with the teachings of the invention.

DESCRIPTION OF PREFERRED EMBODIMENT

Referring now in greater detail to the drawings, FIG. 1 illustrates in side elevation, with portions thereof broken away and in cross section, a carburetor assembly 10 having a main carburetor body 12 with an upper air inlet end 14 and a lower throttle body section 16 for connection to an associated engine intake manifold 18.

As shown in both FIGS. 1 and 2, the carburetor 10 has an induction passage 20 formed therethrough with a main venturi 22 within which is situated a main fuel discharge nozzle 24 which communicates, through suitable conduitry and metering means (not shown but well known in the art), with the fuel withing a fuel bowl or reservoir 26.

In the embodiment shown, the fuel reservoir 26 is formed so as to surround a substantial portion of the wall 28 defining the induction passage 20; as part of the fuel reservoir 26, housing portions 30—30 (one of which is shown in FIG. 1) disposed generally on opposite sides of the carburetor each contain a float 32 within an enlarged chamber in a manner so as to have such floats respectively connected to arms 34 and 36 of a float actuated lever assembly 38.

Arms 34 and 36 of lever assembly are joined as by an intermediate bight-like portion 40 which includes at its opposite ends upwardly directed tabs 42 and 44 each of which is provided with an aperture so as to slidably receive therethrough a hinge or pivot pin 46. As is shown by both FIGS. 2 and 3, the interior of chamber or reservoir 26 is provided with oppositely disposed recesses or grooves 48 and 50 which are adapted to support opposite ends 52 and 54 of the pivot shaft 46. Preferably, as typically shown in FIG. 3, the grooves 48 and 50 are formed as to have arcuate end abutment portions 56 and 58. (For purposes of reference, arcuate sections 56 may be referred to as "inner" or "inward" in that they are more closely situated toward the inner or central portion of the carburetor while arcuate sections 58 may therefore be referred to as "outer" or "outward.")

Carburetor body 12 is preferably provided with a boss 60 which, in turn, has an internally threaded portion 62 for threadably engaging a fuel inlet valve assembly 64 having a body or housing including an externally threaded portion 66, a generally tubular extension 68 and an externally projecting coupling portion 70 for connection to a suitable source or supply of fuel 71 as by related conduit means 73, is well known in the art. Preferably, the boss portion 60 also includes an enlarged cylindrical clearance type passageway 72 for freely allowing the passage therethrough of the extension 68.

As is well known in the art, the tubular extension 68 may slideably contain a needle valve 74, having flatted sides, which coacts with a valve seat formed internally of housing of valve assembly 64 for at times terminating further flow of fuel from the related fuel supply to the fuel reservoir or chamber 26. Needle valve 74 may include an axially directed extension 76 adapted to be abuttingly engaged by a tab 78 which may be formed integrally with the bight portion 40 of lever assembly 38 so as to be generally upwardly extending therefrom. As is well known in the art, the pressure of the related source of fuel supply causes the needle valve 74 to move toward the left (as viewed in either FIG. 1 or 2) causing the needle valve 74 to move away from its coacting seat thereby permitting the flow of fuel through the inlet valve assembly 64 into the carburetor fuel reservoir 26. As the level of fuel within the reservoir 26 increases, the floats 32 rises accordingly causing clockwise rotation (as viewed in FIG. 1) of the float lever 38 and float lever tab 78 about the center of pivot shaft 46. Tab 78 being in engagement with valve extension 76 causes the valve 74 to move progressively toward the right as to more nearly close off the flow of fuel through the cooperating valve seat within inlet valve assembly 64. When a predetermined level of fuel is attained within the fuel reservoir or chamber 26, tab 78 will have moved needle valve 74 sufficiently to the right to cause complete seating of the needle valve 74 against the valve seat thereby terminating further flow of fuel through inlet valve assembly 64.

A float hinge pin retainer clip 80, as best shown in FIG. 5, is comprised of a main body portion 82 having an aperture 84 formed therethrough with an integrally formed finger-like tab 86 having an upwardly disposed surface 88 adapted for abutably and frictionally engaging the upper inner surface of the clearance passageway 72. The lower end of body 82 continues to form a generally U-shaped bight portion 90 which terminates, at its outer leg 92, with spaced downwardly curled arcuate abutment arms 94 and 96. The combination of the

bight portion 90 and the tab or finger 86 provide a degree of resiliency in the clip 80 which enables the clip 80 to be assembled as shown, for example, by FIGS. 1 and 2. That is, after the floats 32 and lever assembly 38 along with hinge pin 46 are placed within fuel reservoir 26, with the ends 52 and 54 of hinge pin 46 loosely cradeled in grooves 48 and 50, the clip 80 may be assembled by merely inserting it so as to first have arcuate arm portions 94 and 96 engage pivot pin 46 and then resiliently forcing the clip body 82 downwardly sufficiently to permit the tang or finger 86 to be inserted within the passageway 72. Upon releasing the clip 80, the upper surface 88 of tab 86 abuttingly and frictionally engages the upper surface of clearance passageway 72. The aperture 84 formed through the clip body 82 permits the extension therethrough of housing portion 68 of the inlet valve assembly 64. As is illustrated in FIG. 3, arms 94 and 96 of clip 80 serve to provide a holding force against the pivot pin 46 as generally depicted by the arrow 98 which, in effect, is the resultant of two forces one of which is downwardly directed and the other of which is somewhat horizontal and directed inwardly or to the left as viewed in FIG. 3. Consequently, once the clip 80 is assembled as shown, the ends 52 and 54 of pivot pin 46 are held in abutting engagement against the inner arcuate surfaces 56 of grooves 48 and 50. It should, of course, be apparent that the provision of the cylindrical clearance passageway 72 is not essential to the practice of the invention. That is any suitable recess or abutment surface providing the function of the upper surface of clearance passageway 72 may be employed for providing the reaction necessary to produce the downward force by which the clip 80, once assembled, retains the pivot pin 46 in assembled relationship.

The invention provides various benefits over the prior art arrangements. For example, the prior art retainer means reacted against the fuel bowl cover 100 in order to in turn exert a holding force against the float hinge pin 46. This, of course, required that the cover 100 be assembled onto the associated carburetor body structure which, in turn, prevented adjustment of the fuel inlet means, including such components as the tab 78, in order to achieve the desired normal fuel level because the assembled cover 100 prevented access to such components. The invention, in contrast, does not depend upon having the cover 100 assembled in order to perform its holding function against hinge pin 46.

Further, the aperture 84 in clip body 82 permits the assembly of and withdrawal (as for purposes of replacement, etc.) of the fuel inlet valve assembly 64 without the necessity of disassembling the float lever assembly 38 or the clip 80. This same aperture 84 further enables the disassembly of the hinge pin 46 and float assembly 38 from the fuel reservoir without the necessity of first having to remove the fuel inlet valve assembly 64. All that is required is to, for example, insert a flat lever, such as a screw driver between the body 82 and interior end surface of boss 60 and to thusly pry out the snap tab 86 at which time the clip 80 can be lifted out of the reservoir or chamber 26. Additionally, as clearly shown in FIG. 1, even after complete assembly of the components (prior to assembly of cover 100) there are no obstructions to the adjustment of tab 78 which may be accomplished as by any suitable bending tool.

Although only one preferred embodiment of the invention has been disclosed and described it is apparent that other embodiments and modifications of the invention are possible within the scope of the appended claims.

I claim:

1. A hinge pin retainer clip, for a carburetor having a fuel reservoir chamber with a fuel inlet valve assembly adapted for communication between said fuel reservoir chamber and a related fuel supply system with a float-controlled lever assembly including a hinge pin therefor within said reservoir chamber for operatively engaging said inlet valve assembly for regulating the flow of fuel therethrough and into said fuel reservoir chamber, the ends of said hinge pin being disposed in oppositely disposed grooves formed in the wall of said chamber, said clip comprising a clip body portion, first relatively resilient abutment means carried by said clip body effective for engaging said hinge pin, and second abutment means carried by said clip body effective for engaging a stationary abutment surface carried by said fuel reservoir chamber, said second abutment means being effective upon engagement with said stationary abutment surface to urge said clip body and said first abutment means against said hinge pin so as to thereby fixedly retain said hinge pin ends in a prescribed position against the sides of said grooves within said fuel reservoir chamber.

2. A hinge pin retainer clip according to claim 1, wherein said clip body includes an aperture formed therethrough for the reception of at least a portion of said fuel inlet valve assembly.

3. A hinge pin retainer clip according to claim 1, wherein said first relativly resilient abutment means comprises at least one arm portion carried by said clip body, and wherein said second resilient means comprises a tab-like projection carried by said clip body and extending generally transversely thereof.

4. A hinge pin retainer clip according to claim 1, wherein said clip body includes an aperture formed therethrough for the reception of at least a portion of said fuel inlet valve assembly, wherein said first relatively resilient abutment means comprises at least one arm portion carried by said clip body, and wherein said second resilient means comprises a tang-like portion formed integrally with said clip body and extending generally transversely thereof.

5. A hinge pin retainer clip assembly according to claim 1, wherein said first relatively resilient abutment means comprises a lower disposed generally U-shaped bight portion having said clip body forming a first leg thereof and a second leg terminating in at least one generally arcuate arm portion for operatively engaging said hinge pin radially thereof.

6. A hinge pin retainer clip according to claim 1, wherein said stationary abutment surface comprises the upper portion of a clearance passageway formed in said carburetor for the accommodation therethrough of at least a portion of said fuel inlet valve assembly, wherein said fuel reservoir chamber is formed to provide said grooves for supporting said hinge pin, wherein said first relatively resilient abutment means comprises a lower disposed generally U-shaped bight portion having said clip body forming a first leg thereof and a second leg terminating in generally arcuate arm means for operatively engaging said hinge pin radially thereof, and wherein said second resilient means comprises a tab-like projection carried by said clip body and extending generally transversely thereof, said tab-like projection being effective to be received within and abuttingly engage said upper portion of said clearance passageway so as to thereby exert a downwardly directed force enabling said arcuate arm means to hold said hinge pin within said grooves.

7. A hinge pin retainer clip according to claim 1, wherein said stationary abutment surface comprises the upper portion of a clearance passageway formed in said carburetor for the accommodation therethrough of at least a portion of said fuel inlet valve assembly, wherein said fuel reservoir chamber is formed to provide said grooves for supporting said hinge pin, wherein said clip body includes an aperture formed therethrough for the reception of at least a portion of said fuel inlet valve assembly, wherein said first relatively resilient abutment means comprises a lower disposed generally U-shaped bight portion having said clip body forming a fist leg thereof and a second leg terminating in generally arcuate first and second spaced arm sections for operatively engaging said hinge pin radially thereof, and wherein said second resilient means comprises a tab-like projection formed integrally with said clip body and extending generally transversely thereof, said tab-like projection being effective to be received within and abuttingly engage said upper portion of said clearance passageway so as to thereby exert a downwardly directed force causing said first and second arm sections to resiliently hold said hinge pin within said grooves.

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