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B. MOLLBERG

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VALVE DEVICE

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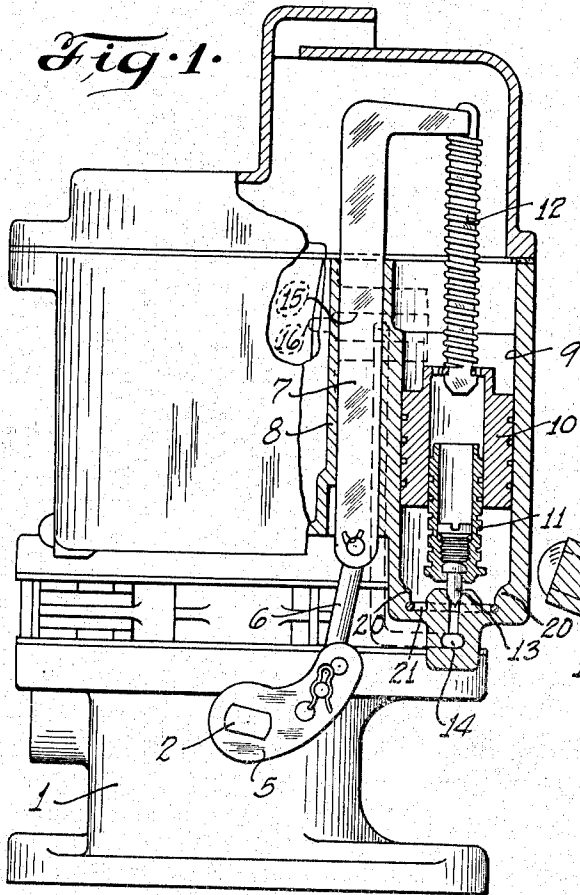
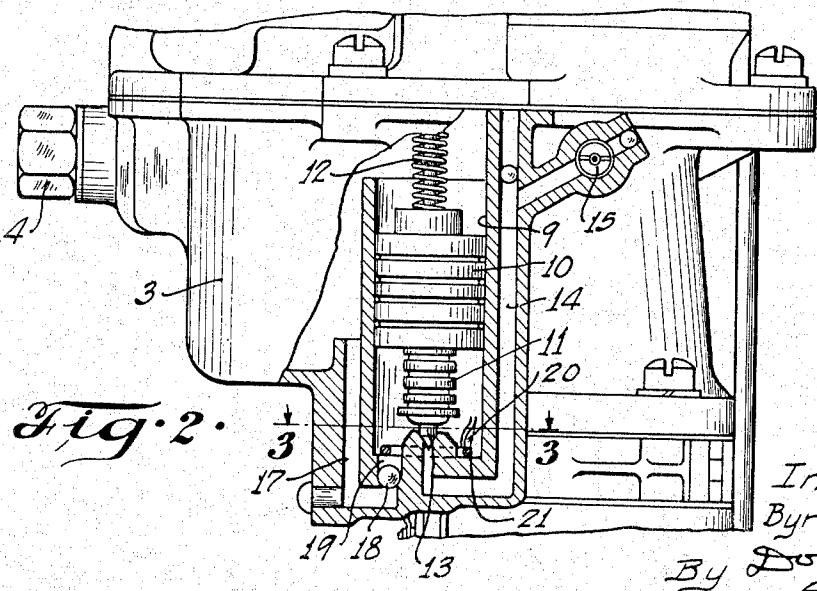
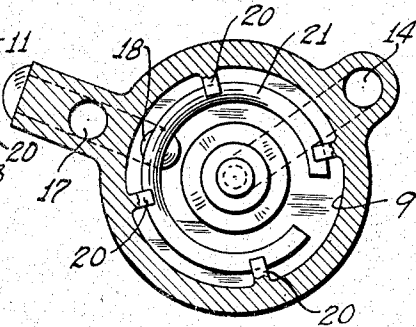


Fig. 3.



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UNITED STATES PATENT OFFICE

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VALVE DEVICE

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1 Claim. (Cl. 251—121)

This invention relates to valve devices and consists particularly in novel means for retaining a valve element within its chamber.

An object of the invention is to provide novel check valve retainer means which may be readily applied to a valve chamber positioned with respect to adjacent structure so as to be accessible with difficulty.

Another object is to provide novel, simplified, and inexpensive means for retaining in position the check valve in a carburetor accelerating pump in which the valve and its chamber are relatively small elements located at the bottom or closed end of the pump cylinder.

These objects and other more detailed objects hereafter appearing are attained substantially by the structure illustrated in the accompanying drawing, in which:

Figure 1 is a side view of an internal combustion engine carburetor, parts being broken away to illustrate the accelerating pump structure.

Figure 2 is a view taken substantially at 90 degrees to Figure 1 and showing the pump structure in section.

Figure 3 is a detail, horizontal section taken substantially on line 3—3 of Figure 2.

The carburetor illustrated comprises a barrel 1, enclosing the usual mixture passage and a throttle valve pivoted near the lower extremity thereof upon a shaft 2. Adjacent the barrel is a fuel bowl 3 having a threaded connection 4 for communication with a source of fuel. A manual crank or lever (not shown) is provided for operating the throttle. Formed rigid with throttle shaft 2 is a crank 5 connected by means of a link 6 with an inverted L-shaped member 7, which extends through and is sealed from the interior of the fuel bowl by an enclosure casing 8.

Also located within the fuel bowl is a pump cylinder 9 enclosing a piston 10 connected to member 7 by a lost motion spring and piston rod device 12. Located beneath piston 10 and slidable therein is a smaller cylinder 11 carrying a needle valve 13. Rotation of the throttle crank 5 in a clockwise direction, incident to opening movement of the throttle valve, forces piston 10 downwardly in cylinder 9, creating pressure in the cylinder beneath piston 10, which raises the valve carrier 11 permitting fuel to be ejected through passages 14 and 15 and a suitable nozzle 16 into the mixture passage. The details of the mixture passage, including the accelerating nozzle,

are well known in the art, as are also other features of the carburetor shown, and since they do not constitute the present invention, are not herein illustrated.

Rotation of throttle crank 5 counterclockwise, incident to closing of the throttle valve, lifts piston 10 causing fuel to be drawn from the bowl 3 through passage 17 and past intake ball check 18 into the pump cylinder. Valve carrier 11 drops during the intake stroke, cutting off the outlet passage. Ball 18 is received within a restricted aperture 19 in the lower end wall of the pump cylinder and cooperates with a valve seat at the bottom of this aperture.

Located at intervals around the side wall of the pump cylinder are a series of ribs 20 having inwardly inclined or tapered upper surfaces and slightly undercut lower portions adjacent the cylinder end wall for receiving a curved wire spring element 21 extending around the cylinder wall and across aperture 19 for confining ball 18 therein. Spring 21 may be conveniently assembled with the pump structure by being forced downwardly against tapered ribs 20, which movement compresses the circular spring so as to permit the same to pass the ribs and snap into the undercuts or recesses in the lower portions thereof. When so assembled, the retainer spring will be securely maintained in position by its inherent resilience and by the undercut ribs 20.

Obviously, the retainer spring may be otherwise shaped, if desired, and the cooperating abutments on the cylinder walls constructed to conform. The illustrated structure may be modified in this and other respects as will occur to those skilled in the art without departing from the spirit of the invention and the exclusive use of all such modifications as come within the scope of the appended claim as contemplated.

I claim:

In combination, a fluid pressure chamber of substantial depth and having a transverse end wall and side wall structure restricting access to said end wall, a recess in said end wall of substantially less area than said end wall and forming a valve chamber, abutment structure adjacent said recess but outside the same, and resilient valve retainer means lodged against said abutment structure and extending across the mouth of said recess to secure a valve therein.

BYRON MOLLBERG.