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CARBURETOR STEP-UP

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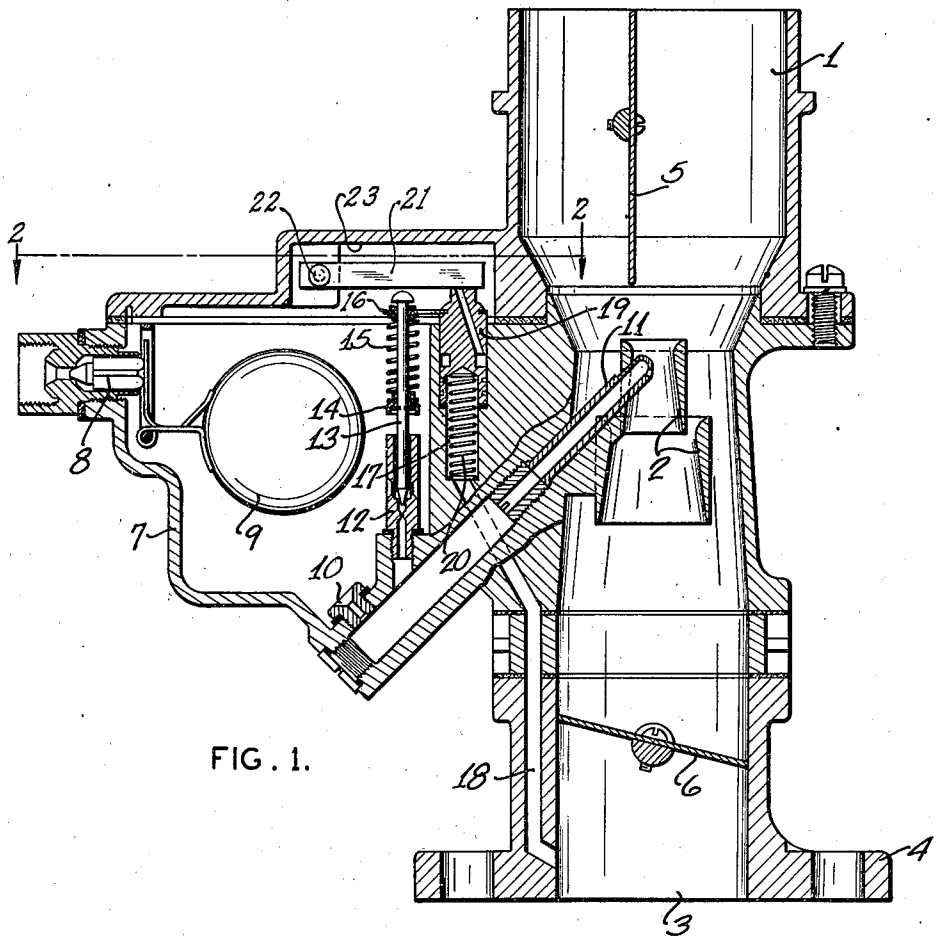


FIG. 1.

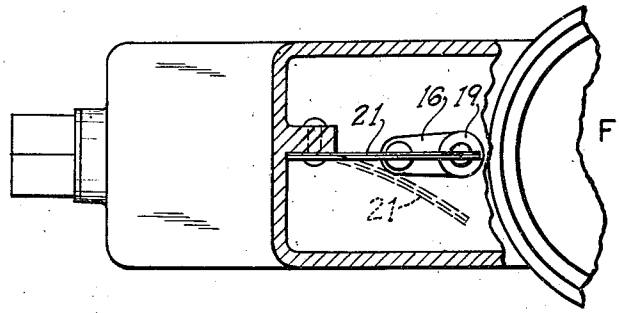


FIG. 2.

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CARBURETOR STEP-UP

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2 Claims. (Cl. 261—39)

This invention relates to carburetors for internal combustion engines and particularly to so-called step-up mechanisms therefor.

Most automotive carburetors now in use are provided with means for enriching the mixture supplied when the associated engine is subjected to an extra heavy load. Such means may take the form of a device responsive to suction posterior to the throttle for opening an auxiliary metering jet or for enlarging the effective area of the main metering jet, or the device may be operated mechanically from the throttle valve. The step-up device is ordinarily necessary only under extreme load conditions, and during most driving, an automobile engine will function to the satisfaction of the driver without this auxiliary fuel. Particularly under relatively high temperature conditions, the functioning of the auxiliary or step-up device may be largely dispensed with. Obviously, operation of the step-up device affects the economical operation of the vehicle.

Accordingly, it is an object of this invention to provide thermostatic means for restricting or preventing the operation of the step-up device under relatively high temperature conditions.

This object and other more detailed objects hereafter appearing are attained substantially by the device illustrated in the accompanying drawing in which

Fig. 1 is a vertical transverse section illustrating a carburetor embodying the invention.

Fig. 2 is a view of a portion of the structure shown in Fig. 1, taken on line 2—2 of Fig. 1, but with parts in different operative positions.

The carburetor shown includes an air horn 1, venturis 2, and outlet portion 3 forming a mixture conduit, the outlet portion being flanged as at 4 for attachment to the intake manifold (not shown) of an associated internal combustion engine. A choke valve 5 is mounted in the air horn and a throttle valve 6 is located near the outlet portion. Adjacent the mixture conduit is a bowl 7 within which fuel is maintained at a substantially constant level by the usual needle valve mechanism 8 controlled by a float 9. Fuel for normal operation is supplied to the mixture conduit through a calibrated metering orifice member 10 and main nozzle 11 terminating at the throat of the upper venturi 2.

There is also provided a suction step-up device including an additional orifice member 12 opening into the main nozzle passage and controlled by a needle 13 extending through a guide 14 and yieldingly secured at its upper end through coiled spring 15 to a strap 16. Adjacent needle 13 is a cylinder 17 communicating through passage 18 with the carburetor mixture conduit posterior to throttle 6. A piston 19 is slidable in cylinder 17 and constantly urged upwardly by coiled spring 20. Strap 16 is secured to piston 19 whereby needle 13 reciprocates vertically with the piston responsive to suction conditions in the mixture conduit. The various parts are constructed so that when the engine intake suction drops below a predetermined value, on the order of two inches of mercury, spring 20 will force piston 19 and needle 13 upwardly opening auxiliary orifice member 12 to supply additional fuel to the mixture conduit.

A thermostatic strip 21 of bi-metal is secured by means of a screw 22 within a recessed portion 23 of the float bowl cover. This thermostatic strip extends immediately above suction piston 19, and before a predetermined under-hood temperature is reached, is in a position as shown by dotted lines in Fig. 2, permitting normal operation of the step-up device. However, when a higher temperature is reached, thermostatic strip 21 will bend downwardly moving an abutment 24 at the end thereof into engagement with suction piston 19. The consequent restriction upon operation of the suction piston varies with the temperature and depends upon the relative strengths of the thermostat and spring 20. Strip 21 prevents operation of the step at extreme temperatures normally reached in summer driving, for instance.

The invention is intended for use with substantially any sort of step-up device which is provided with a member movable with the fuel enriching valve. Also the particular form of the thermostat and various features of the carburetor are not essential. The exclusive use of all modifications as come within the scope of the appended claims is contemplated.

I claim:

1. In a carburetor, a mixture conduit, a constant level chamber, a main fuel nozzle leading into said mixture conduit, port means providing constantly open communication between said nozzle and said chamber, a valve for said port means, a device responsive to predetermined high suction in said mixture conduit for moving said valve to a predetermined partially restricting position relative to in said port means to lean out the mixture supplied by the carburetor, a spring for urging said valve to a more open position under low suction conditions in said conduit, and a thermostat movable when the temperature is high to a position so as to constitute an abutment for said device to positively prevent opening movement of

said valve, said valve being free of said thermostat when the temperature is low whereby the position of said valve is controlled solely by suction and said spring.

2. In a carburetor, a mixture conduit having a Venturi tube and a throttle valve, a constant level chamber, a main fuel passage providing constant communication between said chamber and said Venturi tube, a second passage for supplying auxiliary fuel to said Venturi tube, an auxiliary valve controlling said second passage, a spring tending to open said auxiliary valve, a device including a piston actuated by predetermined suction posterior to said throttle to close said auxiliary valve against said spring, and a thermostat mounted adjacent said device and adapted to move transversely thereof when the temperature is high and said auxiliary valve is in its most restricting position to a position in the path of said device so as to constitute a positive abutment to prevent opening of said auxiliary valve by said spring.

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