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CARBURETOR DE-ICING MEANS

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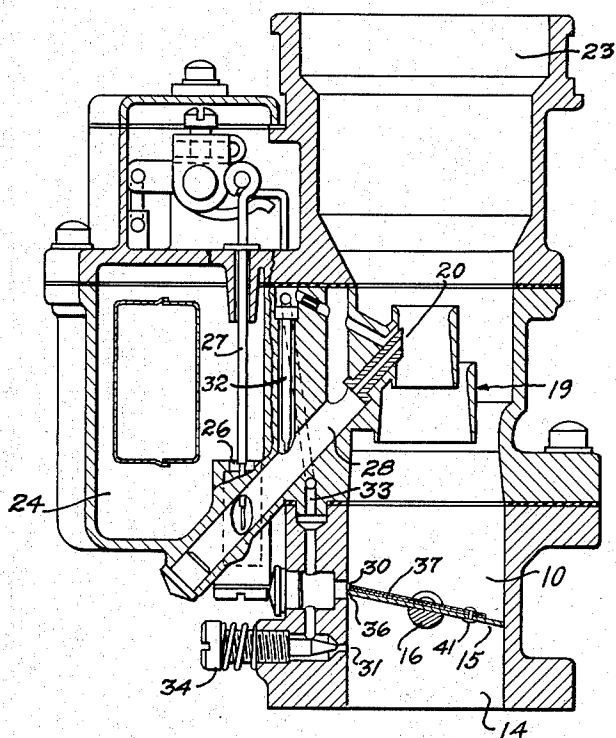


FIG. 1.

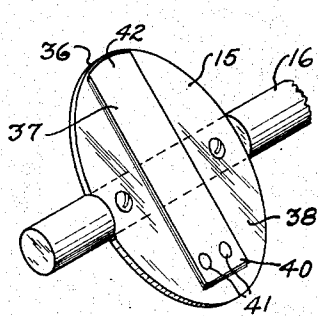


FIG. 2.

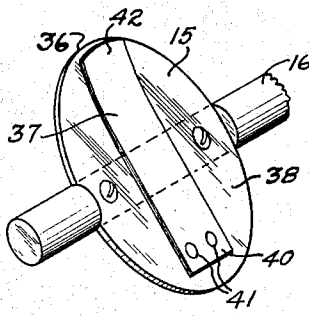


FIG. 3.

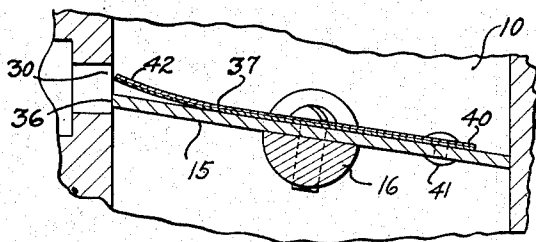


FIG. 4.

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CARBURETOR DE-ICING MEANS

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3 Claims. (Cl. 261-41)

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This invention relates to carburetors for internal combustion engines, and consists particularly in novel means for avoiding the ill effects of icing particularly in the vicinity of the throttle and idle port.

In the operation of a carburetor of the type having a butterfly throttle valve and an idling port controlled by the edge of the valve when the latter is closed or substantially closed, it is found in practice that the carburetor is subjected at times, to an icing condition on the throttle valve and in the region of the idling port. Rapid expansion of the air and vaporized fuel passing around the valve cools the valve and adjacent metal parts so as to condense and sometimes freeze moisture in the entering air. Such ice formation tends to cut off the supply of fuel and air to the engine resulting in erratic engine firing, or engine stalling.

It is the general object of the present invention therefore, to provide means automatically responsive to icing conditions to eliminate the ill effects mentioned and, more specifically to break up the ice formation and free the port. In the present example, such means preferably comprises a thermally responsive element mounted on the throttle valve adjacent the idle port so that when the throttle valve is substantially closed, and ice has formed at the idle port, the reduced temperature will cause a movement of the element and consequent breaking and removal of the ice.

The foregoing objects and other more specific objects will appear readily from the following description of the presently preferred embodiment of the invention, as illustrated in the accompanying drawing wherein:

Fig. 1 is a transverse sectional view vertically through a carburetor embodying the present invention;

Fig. 2 is an enlarged view in perspective, of the throttle valve having the device of the present invention associated therewith;

Fig. 3 is a view similar to that of Fig. 2, but showing the thermally responsive element with its free end displaced, and

Fig. 4 is a fragmentary enlarged view of the carburetor of Fig. 1, taken in the immediate region of the idle port and throttle valve thereof, illustrating the operative relation of the device of the present invention, to the idle port.

With reference first to Fig. 1, there is illustrated a carburetor of conventional construction having a fuel mixture conduit 10 open at 14 for communication with the engine intake manifold

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(not shown), passage 10 being controlled by a throttle valve 15 on pivot shaft 16 journaled in the walls of mixture conduit 10. Venturi stack 19, including main fuel nozzle 20 is formed in the mixture conduit anterior to throttle valve 15. An air intake passage 23 is formed in the carburetor anterior to the Venturi stack. A float-controlled fuel chamber 24 is provided for supplying fuel to main nozzle passage 20, 28 through metering orifice 26, controlled by metering valve 27, and to idling ports 30 and 31 through passages 32 and 33. As indicated, idling port 31 is provided with an adjusting needle valve 34.

As is usual in carburetors of this type, port 30 opens to mixture conduit 10 in a position for control by the throttle valve 15 when the latter is closed, the edge 36 of throttle valve 15 then being adjacent the portion of the mixture conduit wall surrounding port 30. A bi-metallic strip element 37 is arranged substantially along a diameter of the anterior face 38 of throttle valve 15, and has its end 40 secured to the valve in any suitable manner, as by the rivets 41. The opposite free end 42 extends abreast of the throttle valve edge portion 36. Element 37 is so calibrated that in normal carburetor operation when the temperature adjacent the idle port and throttle valve is above freezing, the element will lie flat on the valve as shown in the view of Fig. 2. On the other hand, when the element is subjected to freezing temperatures its free end portion 42 will move away from valve margin 36, as shown in Figs. 3 and 4, thereby breaking any ice formation adjacent the idle port and removing the ice particles.

Element 37 carried by the throttle valve in the position described, does not interfere in any way with normal carburetor operation in respect to fuel mixture flow through passage 10, since its normal or inactive position is flat against the anterior face of the throttle valve (Fig. 2). When however, the throttle is closed, the element is thereby located with its free end 42 closely opposed to port 30, so that in the presence of icing at the port it will function automatically in the manner indicated, to free the port. Element 37, which is capable of counteracting ice formation, may be mounted on structure adjacent the throttle or port.

Having now described and illustrated a presently preferred embodiment of the invention, it is to be understood that the embodiment shown may be modified without departing from the spirit and full intended scope of the invention as defined by the appended claims.

I claim:

1. In a carburetor having a fuel mixture passage, a throttle valve therein, a fuel port in the wall of said passage adjacent the edge of said throttle valve when closed, and a thermostatic strip lying diametrically on said throttle valve and having one end fixed thereto, the opposite end of said thermostat being free and located immediately adjacent the marginal portion of said throttle valve, at temperatures above freezing, and being constructed to flex away from said portion when the ambient temperature reaches freezing, so as to break ice formation about said portion.

2. In a carburetor having a fuel mixture passage, a butterfly throttle valve in said passage, a fuel port in the wall of said passage adjacent the edge of said throttle valve when closed, and a thermostatic strip on the anterior surface of said throttle valve and fixed at one end thereto, the free end of said strip terminating near and engaging the margin of said valve adjacent said port at temperatures above freezing, said strip

being constructed to flex away from said valve, in response to freezing ambient conditions, so as to break ice formation thereon.

3. In a carburetor having a fuel mixture passage and a fuel port open to said passage, a butterfly throttle valve in control of said passage and port, and a thermostatic element having a free part located immediately adjacent the periphery of said valve, adjacent said port, at temperatures above freezing, said free part of said element being constructed to flex, upon reaching freezing temperature, so as to break ice formed thereon.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,059,687	Gagg	Nov. 3, 1936
2,110,211	Farrell	Mar. 8, 1938
2,393,760	Eberhardt	Jan. 29, 1946
2,402,208	Read	June 18, 1946