Nov. 26, 1935. M. E. CHANDLER 2,022,027

CARBURETOR

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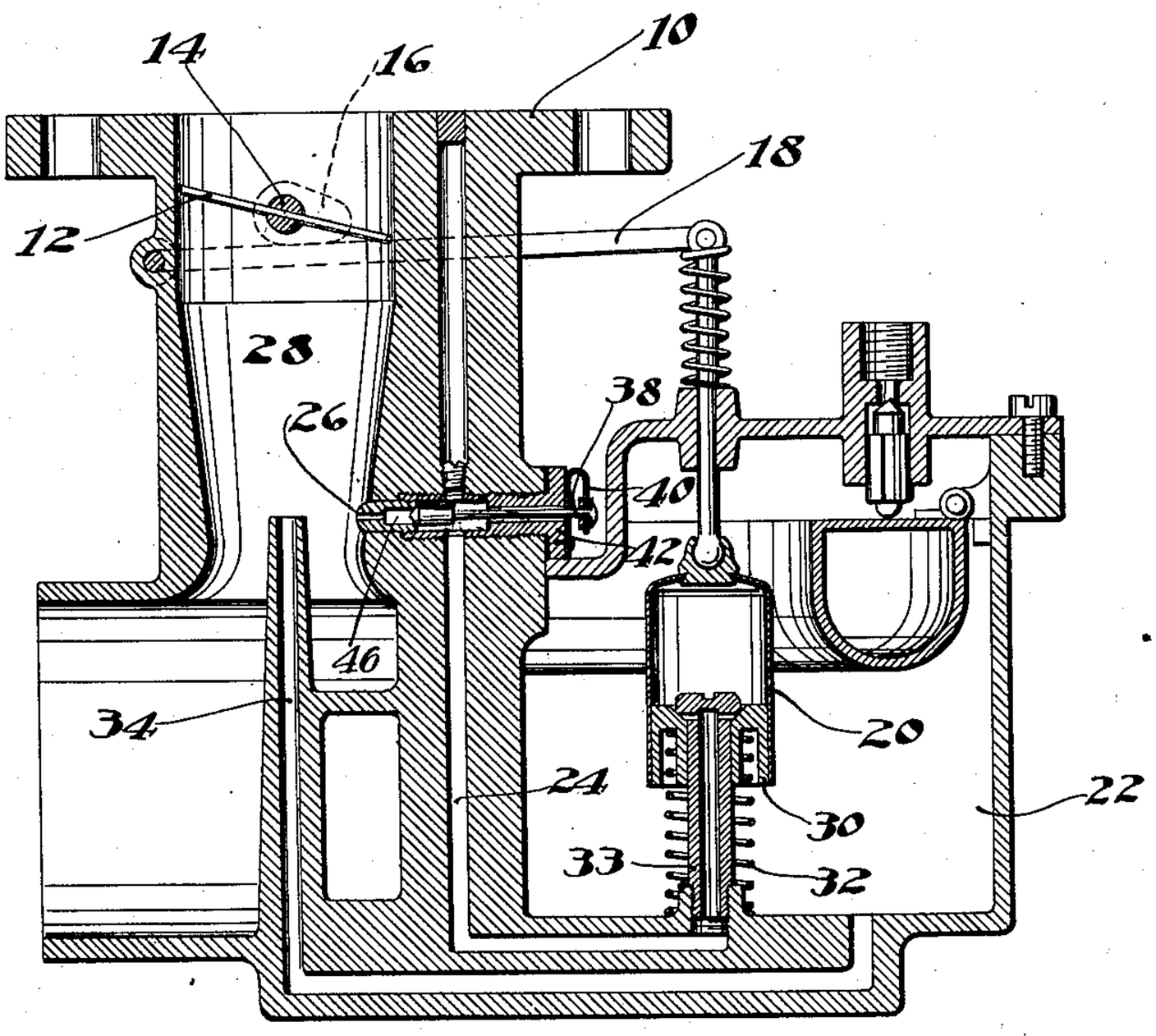

FIG. 1

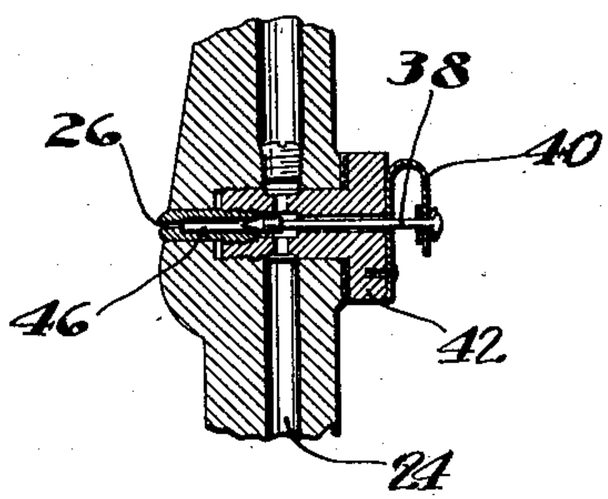

FIG. 2

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CARBURETOR

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11 Claims. (Cl. 261—34)

This invention relates to carburetors and more particularly to a thermostatic control of a fuel feeding device for a carburetor such as an acceleration pump.

An object of the invention is to provide a carburetor in which the quantity of fuel discharged by the acceleration pump is decreased with an increase in temperature. It is well known that internal combustion engines require a richer mixture during acceleration than during steady running. The richer mixture required for acceleration is usually supplied by a pump that is brought into action by the opening of the carburetor throttle valve either by a direct connection or by a vacuum operated device wherein the vacuum is controlled by the throttle opening. The fuel charge delivered by the pump is usually constant for each pump stroke and no compensation is made for temperature although it is known by those skilled in the art that the need for additional fuel varies inversely with the temperature.

A feature of the present invention is to provide the discharge conduits of the acceleration pump with a thermostat which will reduce the charge as the temperature rises.

Other objects and features of the invention will be apparent from the following description in connection with which I have illustrated the invention in the accompanying drawing in which:

Figure 1 is a vertical cross section of a carburetor embodying the invention; and

Figure 2 is an enlarged fragmentary view in cross section of the control valve.

In the drawing 10 is a carburetor having a throttle valve 12 pivotally mounted on a shaft 14 to which is secured a cam 16 which contacts with lever 18 and depresses cylinder 20 to force fuel from the float chamber 22 through the conduit 24 to the discharge orifice 26 that opens into the mixing chamber 28. The acceleration pump comprises a reciprocating cylinder 20, piston 30, which is held in its upper position by spring 32 and slidably mounted on the guide 33, all of which parts are old in the art and are explained herein to illustrate one form of acceleration pump which is preferred, although the invention is not limited to any particular form of acceleration pump and is equally adaptable to other constructions. The main fuel supply of the carburetor is drawn through jet 34 and the fuel pump acts to augment the regular supply during the opening of throttle valve 12.

The amount of fuel delivered at each stroke of the acceleration pump is constant under ordinary conditions and as it is desirable to reduce the charge when the external temperature is increased, I have provided a cross passage 46 which communicates with conduit 24 and in which is mounted a needle valve 38 having a head at its outer end to which is attached a U-shaped thermostat 40 which is riveted or otherwise secured to a fixed portion of the carburetor such as threaded plug 42. Thermostat 40, which is preferably formed of two metals having different coefficients of expansion, is arranged in a manner to insert valve 38 and cut off communication between passages 46 and 24 when the temperature is increased.

In operation, it will be seen that valve 38 is arranged to directly control the passage leading to orifice 26. The thermostat 40 is so arranged that an increase in temperature forces valve 38 toward the left, as viewed in the drawing, and closes passage 46 which leads to the discharge orifice 26.

While I have illustrated and described an embodiment of the invention, it is to be understood that this showing and description are illustrative only, and that I do not regard the invention as limited to the form shown and described, or otherwise, except by the terms of the following claims.

I claim:

1. A carburetor comprising a mixing chamber, an acceleration pump having its outlet terminating in the mixing chamber, a valve in said outlet, and a thermostat for controlling the valve.

2. A carburetor comprising a mixing chamber, an acceleration pump having its outlet terminating in the mixing chamber, a valve in said outlet, and a U-shaped thermostat for controlling the valve having one end secured to the carburetor and the other end secured to the valve.

3. A carburetor comprising a fuel reservoir, a main fuel passage, an auxiliary fuel passage, a pump supplying fuel thereto, a valve for changing the effective cross sectional area of the auxiliary fuel passage, and a thermostat arranged to open said valve with a decrease in temperature.

4. In a carburetor having a mixing chamber and a throttle, an acceleration pump having a fuel outlet terminating in said chamber, a thermostatic valve controlling the effective size of said outlet, the stroke of said pump being always proportional to the movement of said throttle regardless of the position of said valve.

5. In a carburetor having a mixing chamber and a throttle, an acceleration pump comprising a reciprocating cylinder, a fuel passageway from said cylinder terminating in said chamber, and

a thermostatic valve controlling the effective size of said passageway.

6. In a carburetor having a mixing chamber and a throttle, an acceleration pump comprising a reciprocating cylinder, a fuel passageway from said cylinder terminating in said chamber, and a thermostatic valve controlling the effective size of said passageway, the stroke of said cylinder being always proportional to the movement of said throttle regardless of the position of said valve.

7. In a carburetor having a mixing chamber with a main fuel jet therein, an acceleration pump operable in accordance with throttle position and having a fuel outlet separate from said main jet and terminating in the zone of the greatest air velocity through said chamber, and a thermostatic valve controlling the fuel issuing from said outlet by varying the effective size of the outlet.

8. In a carburetor having a main air passageway with a main fuel jet therein, a throttle actuated acceleration pump comprising a reciprocating cylinder and piston, having a fuel outlet separate from said main jet and terminating in the zone of the highest velocity of air through said passageway, and a thermostatic valve controlling the quantity of fuel issuing from said outlet by changing the effective size of the fuel outlet.

9. In a carburetor, a main induction passage, a throttle valve, an acceleration pump having a reciprocating cylinder, a fixed stem and a spring pressed piston member, a fuel passage from the acceleration pump to the induction passage, valve means controlling the fuel passage, thermostatic means for actuating the valve means to vary the effective size of the fuel passage, and throttle actuated means for reciprocating the cylinder through a stroke always proportional to the movement of the throttle valve regardless of the position of the thermostatic means.

10. A carburetor having a main induction passage, a throttle valve, a throttle actuated acceleration pump comprising a cylinder and a reciprocating piston, a fuel passage from the acceleration pump to the induction passage, a valve means controlling the fuel passage, thermostatic means for actuating the valve means and controlling the effective size of said fuel passage, the stroke of said piston being always proportional to the movement of the throttle valve regardless of the position of the thermostatic means.

11. In a carburetor, a mixing chamber, a venturi, a main fuel jet positioned to discharge at the most restricted section of the venturi, a throttle valve, an acceleration pump including a throttle actuated reciprocating cylinder having a stroke always proportional to the movement of the throttle, a fuel outlet from the acceleration pump separate from the main fuel jet and terminating in the most restricted section of the venturi, and a thermostatically controlled valve operable to vary the effective size of the fuel outlet from the acceleration pump.

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