

June 18, 1946.

L. B. READ
DEICING VALVE

2,402,208

Filed April 5, 1943

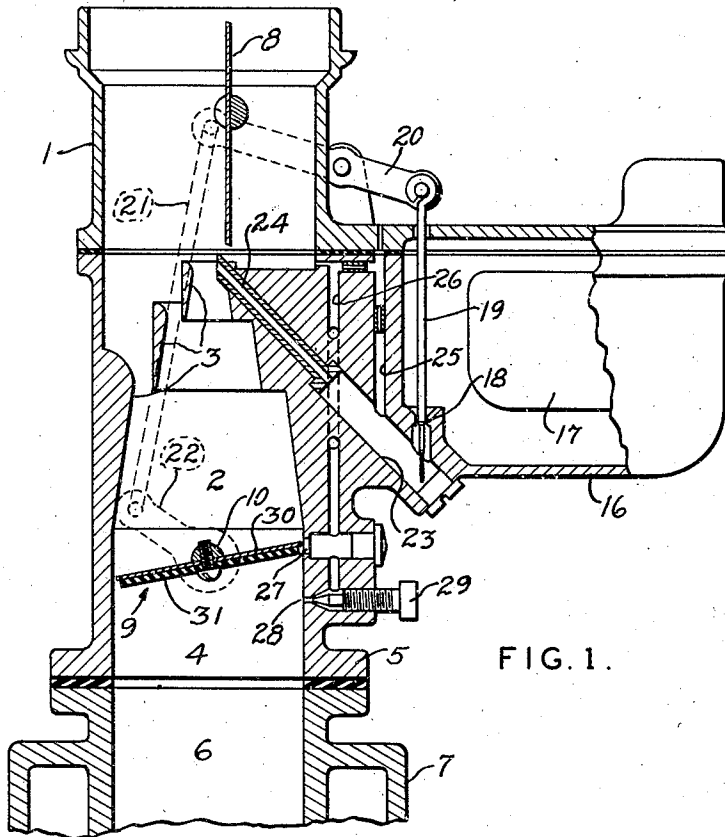


FIG. 1.

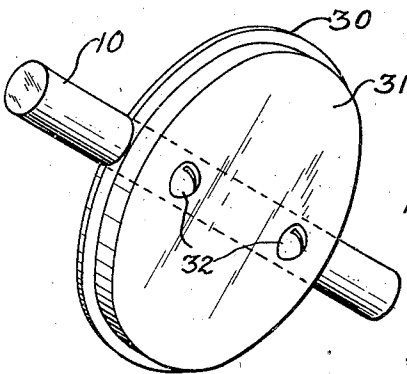


FIG. 2.

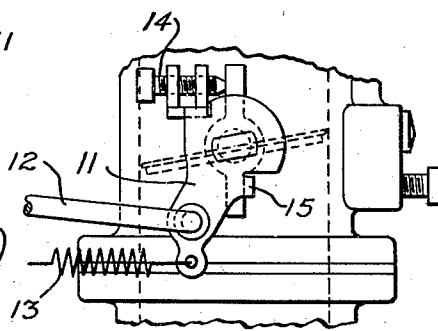


FIG. 3.

INVENTOR
LELAND B. READ

Danald H. Read
ATTORNEY

UNITED STATES PATENT OFFICE

2,402,208

DEICING VALVE

Leland B. Read, South Bend, Ind., assignor to
Carter Carburetor Corporation, St. Louis, Mo.,
a corporation of Delaware

Application April 5, 1943, Serial No. 481,845

1 Claim. (Cl. 261-41)

1

This invention relates to carburetors for internal combustion engines and consists particularly in novel means for resisting icing at the throttle valve and idle port.

In the most familiar form of automotive carburetor, the throttle valve is held slightly open during normal idling to permit the passage of sufficient air to combine with fuel emerging from the idling port to form a properly combustible idling mixture. This air, in passing around the edge of the throttle, expands sharply and, in cool weather before the engine has become fully heated, this expansion frequently causes such cooling of the throttle plate as to cause a formation of ice on the anterior surface and edges thereof and block the idling port. The main object of the present invention is to provide means to prevent or retard the formation of such ice on the throttle and in the vicinity of the idle port.

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

Fig. 1 is a vertical section through a carburetor embodying the invention and

Fig. 2 is a perspective view of the novel throttle valve.

Fig. 3 is a side view showing the lower part of the carburetor.

The carburetor illustrated is of the downdraft type including an air inlet horn 1, mixing conduit 2 with venturis 3, and outlet portion 4, flanged as at 5 for attachment to an engine intake manifold 6 above "hot spot" portion 7. The air horn is controlled by a choker valve 8 and the outlet portion by a butterfly throttle, generally indicated at 9 and pivotally mounted on a shaft 10.

On one end of shaft 10 there is secured an operating arm 11 having secured thereto a link 12 extending to the usual accelerator pedal. A throttle return spring is diagrammatically indicated at 13. Closing movement of the throttle is adjustably limited to a slightly open idling position by engagement of a screw 14, carried by arm 11, and a fixed abutment 15. Adjacent the barrel there is provided a chamber 16 within which fuel is maintained at a substantially constant level by the usual needle valve mechanism (not shown), and float 17. Fuel is supplied to the carburetor

2

through a metering orifice 18 controlled by a metering pin 19 connected to the throttle by means of a lever 20, link 21, and crank 22 rigid with throttle shaft 10. The main fuel supply passes through inclined passage 23 terminating in a nozzle 24 discharging into the smallest venturi 3. Idling fuel is supplied through interconnected idling passage 25, 26 terminating in ports 27 and 28 which open posterior to the throttle when closed. Port 28 is provided with an adjusting screw 29.

The throttle plate is formed of a metal disk 30 on its upper or anterior side and a disk 31, formed of suitable heat insulating material such as Bakelite, on its lower or posterior surface. The disks are secured together and to shaft 10 by means of screws 32. Metallic disk 30 is shown as extending slightly beyond lower layer 31 so as to form a sharp edge for cooperating with idling port 27 for metering the fuel supply during idling operation.

In operation, air is drawn downwardly through the carburetor barrel and, during idling, sweeps around the edge of the throttle plate to mix with fuel emerging from ports 27 and 28. Because of the sharply decreased pressure posterior to the throttle, this air expands quickly as it passes the throttle, resulting in a cooling action upon the throttle plate. The insulating layer 31 serves to retard the cooling of the metal disk until heat from the engine and hot spot 7 is transmitted to the carburetor.

The exclusive use of all modifications as come within the scope of the appended claim is contemplated.

I claim:

In a carburetor, a mixture conduit, a throttle therein, an idle port discharging adjacent to the edge of said throttle when closed, said throttle being formed of a relatively thick disc of heat insulating material forming the posterior surface thereof, to retard the cooling of said throttle during idling due to the expansion of air passing the same, and a thin, metal disc forming the anterior surface thereof, the edge of said insulating disc being spaced inwardly from the edge of said metal disc closest to said idling port to facilitate varying the discharge from said port by said metal disc during idling and off idling operation.

LELAND B. READ.