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AIR HEATER FOR AUTOMATIC CHOKE CARBURETORS

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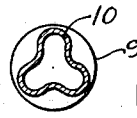


FIG. 3.

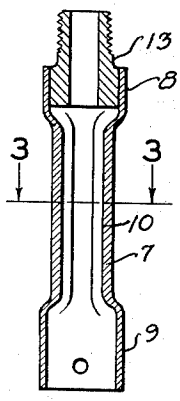


FIG. 2.

FIG. 1.

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AIR HEATER FOR AUTOMATIC CHOKE CARBURETORS

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1 Claim. (Cl. 257—241)

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This invention relates to air heaters for supplying heated air to carburetor automatic chokes.

Heated air for carburetor automatic chokes is often obtained from a stove or heater to which heat is supplied by the hot gases passing through the exhaust manifold. An object of this invention is to provide a highly efficient heater of this type.

Another object of the invention is to provide a heater tube in which the ratio of conductive surface area to cross-sectional area is relatively high thereby permitting relatively high conductivity.

A further object is to provide a tube of multifoil or fluted cross-section capable of being press-fitted through cylindrical openings in the exhaust manifold of an internal combustion engine without deformation of or damage to the fluted section.

Further objects and advantages will be apparent from reference to the disclosure and drawings, in which:

Figure 1 shows the air heater installed in the exhaust manifold, and connected to the automatic choke device on a carburetor;

Figure 2 is a longitudinal section through the heater tube; and

Figure 3 is a transverse section of the heater tube along the line 3—3 of Figure 2.

Referring to Figure 1, the numeral 1 refers to the exhaust manifold of an internal combustion engine. The reference numeral 2 generally indicates the intake manifold of the same engine. A conventional downdraft carburetor 3, including an outwardly extending flange 4 at its base, is attached to the intake manifold 2 by means of flange 4. A gasket 5 is interposed between flange 4 and intake manifold 2 to provide a seal. Carburetor 3 is provided with a conventional automatic choke device (not shown) enclosed within a casing 6. Such conventional automatic choke devices are thermostatic in operation, and their operation is responsive to engine temperature. This requires that heated air from the engine be introduced inside the casing 6 enclosing the automatic choke thermostat.

To provide the required heated air, fluted tube 7 is utilized. It is a relatively short tube, its length being slightly greater than the vertical dimension of the intake manifold 1. The ends 8 and 9 of tube 7 are of cylindrical shape, but the portion 10 intermediate the cylindrical ends is conveniently of trifoliate cross-section, the maximum transverse dimension of the trifoliate portion of the tube being relatively shorter than the diameter of the cylindrical end portions. This feature permits end portions 8 and 9 of tube 7 to be press-fitted into the cylindrical openings at 11 and 12 in the upper and lower surfaces of exhaust manifold 1. A hollow threaded plug 13 is press-fitted into the upper cylindrical end portion 8 of tube 7. One end of a tubular conduit 14 is secured to plug 13 by means of a threaded connector 15, and the other end of conduit 14 is similarly secured at 16 to the automatic choke device thereby providing a passageway connecting tube 7 with casing 6. The lower end of tube 7 opens downwardly. A disk of wire mesh 17 screens the open lower end of tube 7 to remove dust particles and other damaging impurities from the air entering the tube, and is retained in place by retainer cap 18. However, the lower end of the tube may be left open. Retainer cap 18 is a relatively short cylinder, the inner diameter of which is substantially equal to the outer diameter of lower end portion 9 of tube 7; it is formed with inwardly extending annular flange at the lower end which secures screen 17 against the lower edge of tube 7.

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In operation, unheated air is introduced to tube 7 through screen 17, which filters dust and other impurities from the air. The heat of passing exhaust gases is rapidly transferred to the unheated air within the tube because of the tube's large conducting area; the heated air passes upwardly through conduit 14 and into casing 6 to actuate the automatic choke thermostat encased therein.

The invention may be modified in various respects as will occur to those skilled in the art and the exclusive use of all modifications as come within the scope of the appended claim is contemplated.

What is claimed is:

A heat exchange device for use in transmitting heat to carburetors of internal combustion engines, including an exhaust manifold having aligned transverse openings, a substantially straight tube having a fluted medial portion and cylindrical end portions, said fluted portion being positioned medially and transversely with respect to said openings and being smaller in diameter than the diameter of said aligned transverse openings to permit the same to be readily inserted into position, and the cylindrical end portions being press-fitted in the openings in the exhaust manifold, one end of said tube having a foraminous disk at its outer end, a removable cap having a central opening for holding said

disk in place against the end of said tube, a transverse pin securing said cap in position and a tubular plug having a smooth, round surface portion press-fitted within the cylindrical end portion of the other end of said tube to firmly secure said tube in said manifold whereby movement between the manifold and the tube, due to thermal expansion, is confined to the opposite end of the tube, said plug also having a reduced threaded extension projecting beyond the end of said tube for connection with a tubular conduit.

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