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D. E. CRUSE
CONNECTOR FOR HYDROMETERS

2,254,102

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Fig. 1.

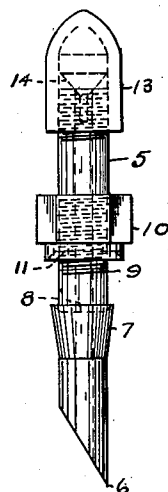
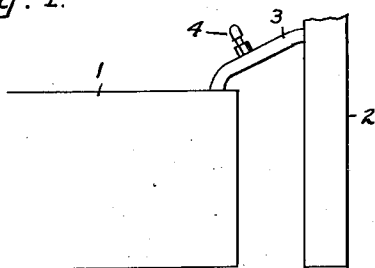


Fig. 2.

Fig. 3.

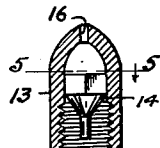
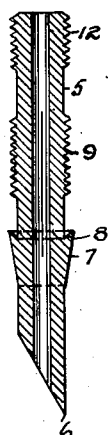


Fig. 4

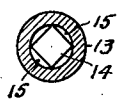


Fig. 5.

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CONNECTOR FOR HYDROMETERS

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3 Claims. (Cl. 123—193)

The invention relates to connections for hydrometers. The commonly used hydrometer for testing the strength of anti-freeze solutions in motor vehicles includes a tube that is usually inserted in the fill opening at the top of the radiator. In recently built vehicles it is difficult, if not impossible, to secure a sample of the solution through the fill opening of the radiator, and such samples are taken in many cases from the drain cock at the bottom of the radiator.

The object of my invention is to provide a simple device or connection adapted to be installed in the circulating cooling system of the engine to which an hydrometer may be readily attached and operated to withdraw a quantity of the cooling medium and determine its specific gravity.

In the present adaptation of the invention the device is intended to be installed in one of the hose connections between the engine and the radiator and such adaptation is illustrated in the accompanying drawing in which—

Figure 1 is a fractional view of a motor vehicle engine having the invention applied thereto.

Fig. 2 is an elevation of the connector.

Fig. 3 is a vertical cross-section of the connector with the cap and locking nut removed.

Fig. 4 is a vertical cross-section of the cap valve and Fig. 5 is a cross-section on line 5—5 of Fig. 4.

Referring to the illustrative drawing, 1 represents an internal combustion engine and 2 represents the radiator which communicates with the engine through the usual hose connections, the upper hose 3 being shown. The invention is shown as applied to the hose 3 and is indicated by reference character 4.

The device or connector constituting my invention consists of a tube or tubular member 5 having its lower end bevelled at an angle of about 60 degrees, or otherwise sharpened, and thereby forming a relatively sharp edge or end 6 at the extremity of said tube. At a selected point above said bevelled end is formed a downwardly tapering boss 7 that preferably surrounds the tube. The top of the boss 7, forming an outwardly faced shoulder, is preferably annularly recessed as shown at 8.

The tube is threaded at or outwardly from 9 above the boss shoulder and a nut 10 is turned upon said threads. The bottom of the nut is preferably annularly recessed at 11 to cooperate with the recess 8 in the boss.

The upper end of the tube is threaded at 12 and a threaded cap 13 is turned onto the said

threads. A valve 14 is located within the cap and is adapted to seat on the upper end of the tube, the seating of the valve being accomplished by rotating the cap on the tube. The upper portion of the valve is squared to provide spaces 15 through which the cooling medium may pass when the valve is unseated by rotating the cap in proper direction. A discharge opening 16 is formed in the top of the cap through which the medium passes into the hydrometer, the nozzle or hose or conduit of which is located on the cap 13 at the opening.

The connector is installed by forcing it through the wall of one of the hose connections between the engine and the radiator. The relative sharp lower edge or inner end of the connector facilitates the passage of the connector through said wall. The inward movement of the connector is continued until the boss 7 has passed through said wall to thus place the outwardly faced shoulder on the inner side of the wall. The nut 10 on the threaded portion 9 of the connector is then tightened to clamp the wall of the hose between the nut and the upper shouldered end of the boss 7. The material of the hose enters the annular recesses 8 and 11 in the boss and nut respectively and seals the connector in the hose so that there is no leakage at said point. The connector remains in the hose ready for use at any time.

In use, the hose of the commonly used hydrometer is engaged on the cap 13 and it and the cap are rotated sufficiently to unseat the valve 14. A quantity of the liquid in the cooling system of the engine is then drawn into the hydrometer and its strength determined thereby.

Since the sample is taken from the hose the true condition of the cooling liquid may be determined. A true sample cannot always be assured where it is taken from the top of the radiator.

The connector may be connected to the circulating system of the engine at any point where it is adapted to be attached, the attachment to the hose described above, being but one adaptation of the invention; and also, the shape and form of the parts, the construction of the valve and cap, and the association and use of the several elements and features may be varied to suit different requirements of use, without departing from the spirit and scope of my invention.

What I claim is:

1. A device for connecting a hydrometer to the circulating cooling system of an internal combustion engine comprising, in combination with

a circulating cooling system having the usual liquid conducting conduits, a tube, means connecting said tube with one of the conduits for discharge of liquid therefrom, valve means at the end of the tube, and an apertured cap on said tube having an outer end thereof rounded and reduced to receive and fit the liquid intake end of a hydrometer and said cap being associated with the valve whereby the cap can be turned when the hydrometer is fitted to the apertured portion thereof for unseating the valve so that liquid may be conducted through the aperture of the cap into the hydrometer.

2. In combination with the cooling system of an internal combustion engine, a connector for hydrometers comprising a tube connected with the cooling system, said tube being provided at its outer end with a valve seat and being externally screw threaded, an apertured cap turned onto the screw threaded end having its outer end shaped to fit the liquid intake end of

a hydrometer whereby said cap can be rotated, and a valve carried by said cap tightened against said valve seat and opened therefrom as the cap is turned.

3. A device for connecting a hydrometer for liquid intake comprising in combination with the liquid circulating cooling system of an internal combustion engine, a tubular body member adapted to be connected in communication with the liquid circulating system and having its outer end externally screw threaded and provided with a valve seat, a cap turned onto the screw threaded end and provided with an opening for withdrawal of liquid from the tube, said cap having the outer portion thereof around the opening shaped to receive and fit the intake end of a hydrometer and to permit turning of the cap upon the threaded end of the tube, and a valve carried by said cap and closed into and opened from said seat when the cap is turned.

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