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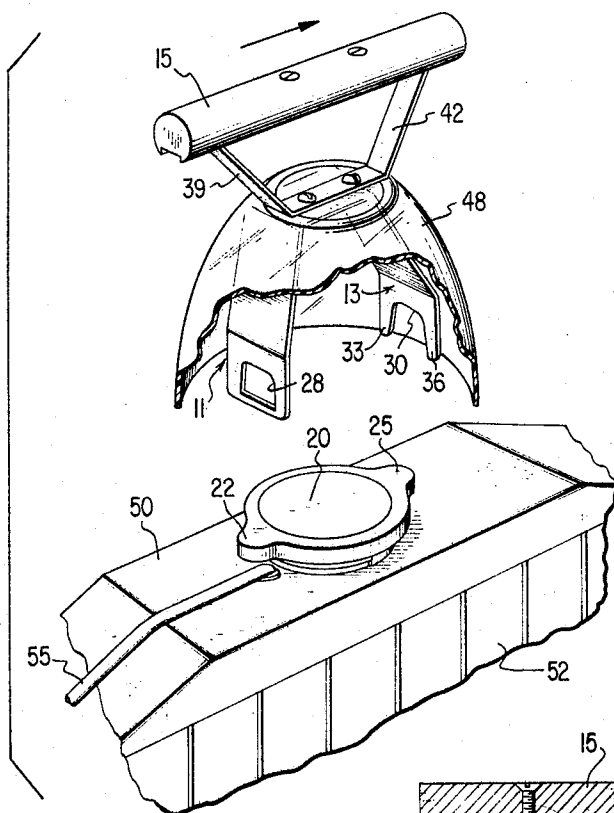


FIG. 1

FIG. 2

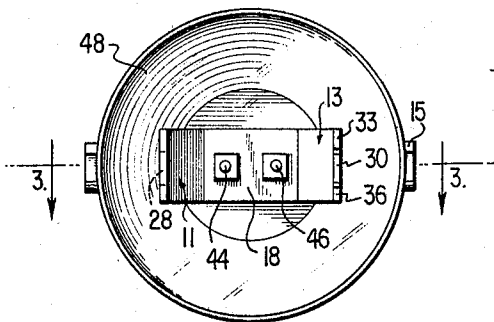
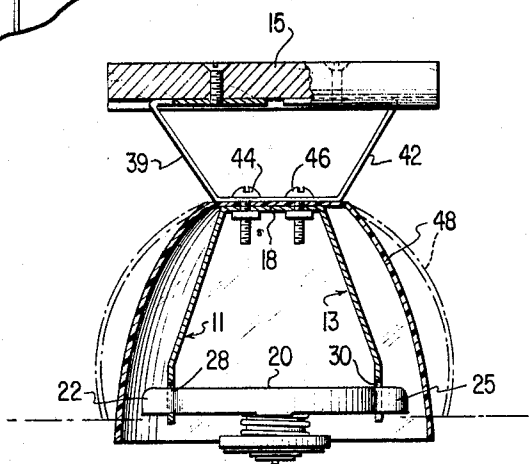


FIG. 3

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10 Claims

ABSTRACT OF THE DISCLOSURE

A wrench for the cap of an automobile radiator has two opposing jaws, one with a hole, the other with a slot to engage the ears of the radiator cap. A transparent, flexible shield may be attached to the wrench.

DESCRIPTION

This invention is concerned with the removal of the cap of an automobile radiator.

The removal of the cap from the radiator of an automobile usually occurs while the radiator is warm enough to emit steam against the arms of the attendant removing the cap and this steam is often produced in enough volume and at a sufficiently high temperature that serious burning and even maiming may occur. In removing the cap without tools, the attendant will usually finger the radiator cap gingerly, untwist it enough to release the pressure inside the radiator, wait for steam emission to subside or nearly subside and once more gingerly grasp the cap for complete removal.

As any driver who has watched it will realize, a good deal of time is used in this procedure which could be saved, both for the driver and the attendant, if a reliable wrench were available for use in removing radiator caps; however, the stringency of requirements for such a remover has apparently prevented the widespread adoption of such a mechanism. It must be remembered that radiator caps are used in a number of different sizes; however, a wrench for removal of the cap must be available at the gas pump of the service station, where storage space is restricted, so that a single wrench must be adaptable to securely grip any size cap, say, from 1 inch to 4 inches in diameter, which may be encountered. Also, advantageously, the wrench should be able to hold the cap even after removal, to prevent the attendant from having to further handle the removed cap to put it out of the way while replenishing the coolant fluid in the radiator, etc.

This invention provides a radiator cap wrench which meets this requirement and which is simple in construction and easy to use. The wrench comprises a pair of resilient opposed jaws, one of which has a hole, the other of which has a slot. Thus, due to the resilience of this arrangement of hole and slot, the attendant can fit the hole around one ear of the radiator cap and force the slot around the other ear, providing a firm grip upon any radiator cap which falls within a predetermined size range. The jaws advantageously are made by suitably bending or otherwise deforming a single strip of resilient metal, e.g. spring steel.

It is highly desirable for the wrench to be shielded, so that escaping steam will be directed away from the hands and face of the attendant removing the cap, but this shielding should not obscure the vision of the attendant unduly or prevent him from immediately being able to detect the location of the ears of the radiator cap, by which the cap is to be unscrewed. In this invention, the shield is in the form of a bell which can enclose the entire wrench and radiator cap and bear against the top of the radiator itself. Advantageously, the shield will be of a transparent, or at least translucent material for full awareness of the attendant while using the tool, but a

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material of more limited light transmission may be employed.

The shield advantageously is resilient and of such a length that its edges will rest on the radiator while the cap is being removed, directing the steam from the radiator in a tortuous path to the front and rear of the radiator. The flexibility of the shield also allows for securely gripping the cap with the wrench without interference from overflow pipes or other obstructions at the top of the radiator. The properties of resiliency and light transmission are found in a number of synthetic resin materials, any of which may be employed in manufacturing the shield. In particular, a transparent flexible plastic is preferred, such as polyethylene-vinyl acetate resin, sold, for example, by Union Carbide Corporation under the trade designation EVA. The use of a flexible plastic for the shield also is advantageous in several other respects. It avoids the noise and deformation which may occur when a sheet-metal object is dropped, and usually has no sharp edges. Plastic conducts heat less readily than metal and is lighter to ship and more resistant to corrosion.

The wrench of this invention is provided with a handle which may be connected directly to the junction of the jaws or alternatively may be connected to the wrench through the shield. Thus, the attendant may stand at the side of the radiator and forthrightly grasp with the wrench the cap and remove it without fear of being burned by the steam. With the cap removed, the wrench, still firmly gripping the cap, may be put aside while the attendant inspects the contents of the radiator, fills it, etc., and then the wrench may be used to reapply and tighten the cap, which after being firmly affixed to the radiator may be detached from the wrench by pulling the jaw having the hole against its ears to detach the slotted jaw after which the hole may be disengaged. Thus, no time is lost in waiting for the cap to cool.

The invention will be better understood by reference to the accompanying drawings, in which

FIGURE 1 is a perspective view, with the shield partly cut away, of a preferred embodiment of the wrench of this invention in position to be engaged with the cap of a radiator;

FIGURE 2 is a bottom view of the wrench; and

FIGURE 3 is a cross-sectional view along the line 3—3 of FIGURE 2, with the wrench holding a radiator cap.

As explained above, the wrench has as its essential components the jaws 11 and 13 and the handle 15. The jaws 11 and 13 may be joined by the suitable cross-member 18 and in the embodiment shown, the jaws 11 and 13 and the cross-member 18 are integral, being made from a single deformed strip of spring steel. The radiator cap 20 shown in the drawings is of conventional type, being provided with the ears 22 and 25. The form and resilience of the jaw structure 11—18—13 must be such that in the relaxed position shown in FIGURE 1, the distance between the jaws is slightly less than the radius of the smallest radiator cap with which it is intended to deal; yet the jaws must be resilient enough to be spread apart readily by the user of the wrench a distance at least as great as the radius of the largest radiator cap to be dealt with.

As can be seen from the drawing, one jaw, 11, is provided with the hole 28 which is sufficiently large to contain one ear 22 of the radiator cap 20. The other jaw, 13, is provided with the slot 30, as defined by the legs 33 and 36. It can be readily seen that in use the attendant will slip the ear 22 of the radiator cap 20 in the hole 28 and pull the wrench in the direction indicated by the arrow of FIGURE 1 until the jaws are widened enough to allow the legs 33 and 36 to slip readily down on either side of the ear 25, with the result that the cap 20 is firmly gripped for untwisting, or twisting, within the jaws 11 and 13.

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As shown, the handle 15 is advantageously made of wood or other non-heat conducting material and may be supported by legs 39 and 42 on the crosspiece 18. Bolt and screw sets 44 and 46, or other convenient means, may be used to fasten the handle to the crosspiece. This handle configuration allows ready storage of the wrench on a hook at the gas pump of a service station.

In the preferred embodiment shown, a shield 48 having a bell shape is provided. This shield, made of a light-transmitting, preferably transparent, resilient synthetic resin as described above, may be readily affixed between the handle legs 39 and 42 and the cross-member 18 of the wrench. As can be clearly seen in FIGURE 1, in its relaxed state the bell will overhang the wrench jaws 11 and 13 by a small distance. Advantageously, this distance will be sufficient so that when the wrench is engaged with the radiator cap, the bell will bulge against the top 50 of the radiator 52, as shown in the phantom lines in FIGURE 3. Also advantageously, this distance will be sufficient so that after the radiator cap is untwisted from its position on the radiator, the bell will still reach to the top 50 of the radiator 52, without interference from the overflow pipe 55.

It can thus readily be seen that while the radiator cap is being unscrewed, any steam escaping from the radiator will be directed to the front and rear of the radiator, under the lip of the bell 48, allowing the attendant to stand at the side of the radiator, relatively safe from contact with the pressurized steam.

What is claimed is:

1. A wrench for a radiator cap comprising a pair of resilient opposed jaws, one of said jaws being provided with a hole sufficient to contain an ear of a radiator cap, the other of said jaws being provided with a slot sufficient to fit around the opposed ear of said radiator cap, said jaws in the relaxed position being slightly closer to each other than the radius of the smallest size radiator cap of a predetermined size range, and the resilience of

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said jaws being sufficient to allow a distance between said jaws as great as the radius of the largest size radiator cap in said predetermined size range.

2. The wrench of claim 1 in which said opposed jaws comprise the ends of a unitary deformed strip of resilient metal.

3. The wrench of claim 2 in which the metal is spring steel.

4. The wrench of claim 2 in which the central portion of the deformed strip supports a handle for the wrench.

5. The wrench of claim 4 in which the handle is of wood.

6. The wrench of claim 5 in which a bell-shaped shield, made of light-transmitting, resilient material is attached to and surrounds said jaws.

7. The wrench of claim 1 in which a bell-shaped shield, made of light-transmitting, resilient material is attached to and surrounds said jaws.

8. The wrench of claim 7 in which the shield is transparent.

9. The wrench of claim 7 in which the shield is made of a polyethylene-vinyl acetate plastic.

10. The wrench of claim 7 in which the shield in its relaxed position extends below said jaws a sufficient distance that said bell-shape will bulge against the top of the radiator to which said cap is attached when said cap is engaged by the wrench.

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