

[54] **WRENCH FOR REMOVING AUTOMOBILE RADIATOR CAPS**

3,618,428 11/1971 Phipps..... 81/3.1 R

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[21] Appl. No.: **409,663**

[57] **ABSTRACT**

The opposing resilient jaws of a wrench for removing the cap of an automobile radiator have terminal end portions provided with means for engaging the ears on a radiator cap and each jaw is provided on its inner face above such means with a shoulder to seat on the ears or hook under the cap. The shoulders are arranged substantially normal to the axes of the jaws and are positioned in complementary facing relation. The distal ends of the jaws are outwardly flared so that the terminal end portions can easily slide over the cap.

[52] U.S. Cl. **81/3.1 R; 81/90 B**

[51] Int. Cl. **B67b 7/16; B25b 13/48**

[58] Field of Search **81/3.1 R, 3.1 B, 3.1 C, 81/3.1 D, 3.36, 3.38 R, 90 R, 90 B, 125**

[56] **References Cited**

UNITED STATES PATENTS

3,245,446 4/1966 Morifuji 81/125 X
3,481,227 12/1969 Shook 81/90 B X

2 Claims, 5 Drawing Figures

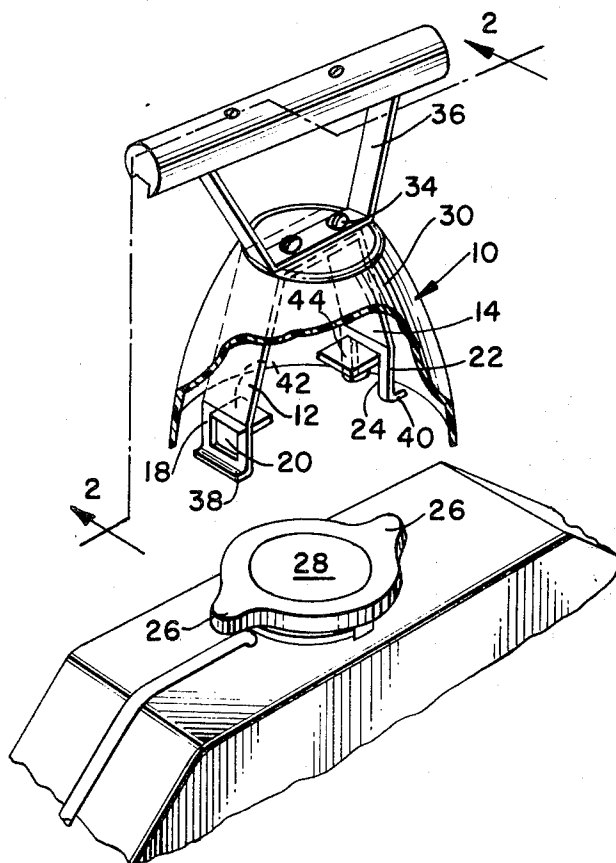


FIG. 1.

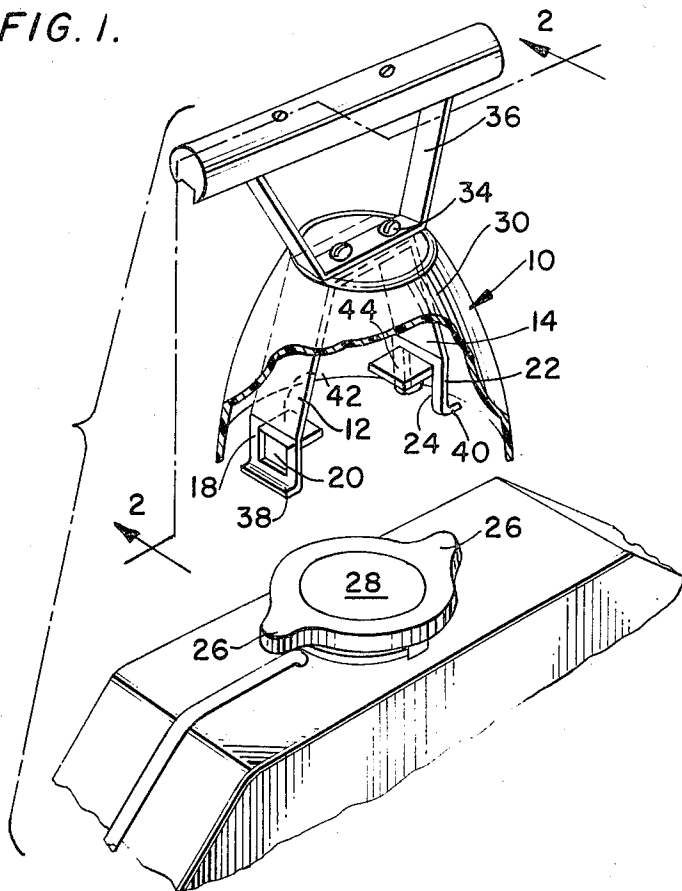


FIG. 2.

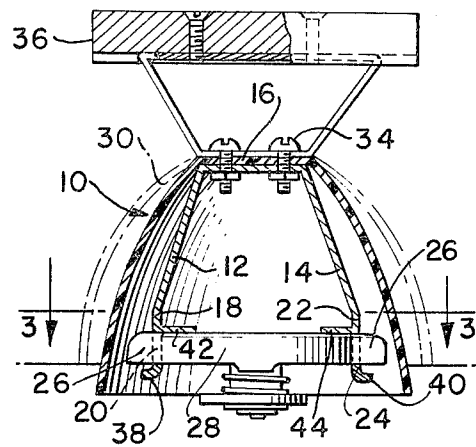


FIG. 3.

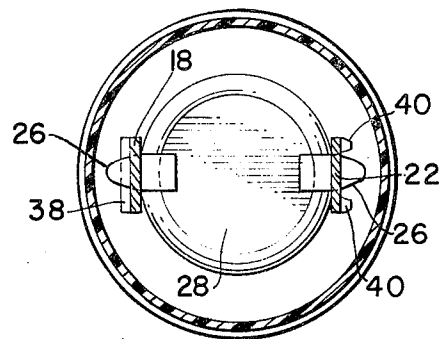


FIG. 4.

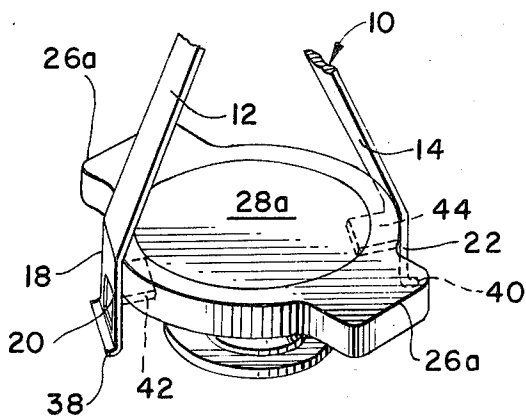
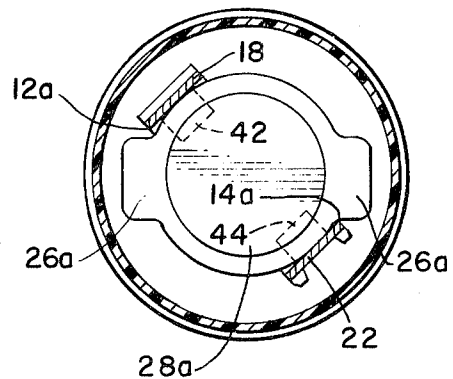


FIG. 5.



WRENCH FOR REMOVING AUTOMOBILE RADIATOR CAPS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention generally relates to improvements in wrenches and, more particularly, is directed to new and novel improvements in devices for removing the cap of an automobile radiator.

2. Description of the Prior Art

In the main, the present invention constitutes new and novel improvements over my earlier U.S. Pat. No. 3,481,227, granted on Dec. 2, 1961 (U.S. Cl. 81-3.1).

Such patent discloses a wrench having a pair of resilient opposed jaws having terminal end portions, one of which has a hole and the other of which has a slot. The hole and the slot are adapted to engage the ears of a radiator cap when the jaws are slipped over the cap. Due to the resiliency of the jaws, a user can fit the hole around one ear of the radiator cap and force the slot around the other ear, providing a firm grip upon the radiator cap. The jaws are connected at their inner ends by a cross member and a handle is attached to such connective member.

The jaw assembly of the wrench is enclosed within a bell-shaped shield that is advantageously transparent. It is highly desirable for the wrench to be shielded so that any escaping steam will be directed away from the hands and the face of a person removing the cap. The shield is of such a length that its edges will rest on the radiator while the cap is being removed so as to direct any steam downwardly towards the front and rear of the radiator.

Such wrench has proved very reliable and extremely useful in removing radiator caps. However, it has been found that several improvements have given greater versatility to the wrench and have permitted it to be utilized in a more expedient and reliable fashion.

SUMMARY OF THE INVENTION

One of the improvements resides in forming the distal ends of both jaws so that they are slightly outwardly flared or curved. Ideally, the distal ends are provided with a one-eighth inch radius at the bottom of the hole in one jaw and at the bottom of the slot in the other jaw. Such outwardly flared distal ends allow the jaws to glide smoothly over the radiator cap and also over a conventional drain pipe which extends from a side of the radiator spout. Without the outward curvature on the distal ends, such ends of the wrench, as shown in my earlier patent, have a tendency to catch on the ears of the cap and on the drain pipe with resultant scarring of and eventual damage to the cap and the drain pipe. This is obviated by providing the slight radius on the distal ends in accordance with the present invention.

In another improvement of the present invention, a flat shoulder or flange is created out of the material cut away from the jaws in the formation of the hole and slot of the patented construction. Such material was previously cut out in its entirety and discarded. In accordance with the instant invention, such cut-away material is bent upwardly and inwardly to provide lateral shoulders at the upper ends of the slot and the hole. The shoulders are arranged on the inner faces of the jaws and are disposed substantially normal to the axes

of the jaws and are arranged in an inwardly facing and complementary coplanar relationship.

The shoulders serve as stops to engage the upper faces of the ears when the ears are engaged by the slot and the hole. This permits the user to exert sufficient downward pressure on the jaws and, without spreading the jaws while the wrench is affixed to the radiator cap, to release the spring resistance within the cap, thus freeing the cap so that it may be turned more easily and more expediently removed from the radiator spout.

In addition, it has been found that the jaws of the patented wrench cannot engage wide eared radiator caps. And, if the slot and hole are made large enough to engage such wide eared radiator caps, then the hole and slot would be too large for properly engaging the ears of a more ordinary radiator cap. This problem has been obviated by the provision of the shoulders. For, in such instance, the shoulders are engaged under the radiator cap with the jaws positioned between the wide ears of the cap. Thus, the shoulders are hooked over the lower edge of the cap and, while exerting an upward pressure, the cap can be removed with the side edges of the jaws engaging the side edges of the ears. The cap can be easily turned and, when free, picked up while still hanging on the shoulders.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of the wrench of this invention showing the same in potential position for engagement with the cap of the radiator and with part of the shield shown broken away.

FIG. 2 is a vertical sectional view of the wrench and is taken substantially on line 2—of FIG. 1, but with the jaws shown engaged with the ears of the cap.

FIG. 3 is a transverse sectional view taken substantially on line 3—3 of FIG. 2.

FIG. 4 is a fragmentary perspective view of the wrench showing the jaws hooked on the underside of a wide eared radiator cap.

FIG. 5 is a cross-sectional view of the arrangement of FIG. 4 and showing how the jaws engage the side edges of the wide ears of the radiator cap.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now more particularly to the accompanying drawings, the wrench 10 is composed of a pair of opposing jaws 12 and 14 that are joined at their inner ends by a transverse cross member or transverse connecting means 16. The jaws and the cross member may be made integral by being made from a single deformed strip of spring steel. In any event, the jaws are resilient. As disclosed in my earlier patent, the terminal end portion 18 of the jaw 12 is formed with a hole 20 while the terminal end portion 22 of the jaw 14 is formed with a slot 24. The hole and the slot are of a size and shape to engage the ears 26 of a radiator cap 28.

A bell-shaped shield 30, preferably made of light transmitting, resilient material, like polyethylene-vinyl acetate plastic, surrounds the jaws and is attached thereto by fasteners 34 which also secure a handle means 36 to the cross member 16 or, in any event, to the inner connected ends of the jaws.

The distal ends 38 and 40 of the jaws are slightly outwardly curved or flared, preferably on a radius of about $\frac{1}{8}$ inch. The $\frac{1}{8}$ inch radius is at the bottom of the hole 20 and the bottom of the notch 22 and enables the jaws

to glide smoothly under the radiator cap and over the conventional drain pipe.

The hole 20 and the slot 22 are formed by cutting away part of the material of the jaws and such material is bent upwardly and inwardly to provide flat shoulders or flanges 42 and 44 that define cooperating stops. The shoulders are disposed in a coplanar and complementary arrangement and are arranged substantially normal to the axes of the jaws, at least to the terminal end portions of the jaws. The shoulders are disposed just above the hole and the slot so that they sit on the upper surface of the ears, as shown in FIG. 2.

In the instance where the cap 28a has wide ears 26a, as shown in FIGS. 4 and 5, the jaws are positioned over the cap between the ears and are placed so that the upper surfaces of the shoulders 42 and 44 are hooked below the lower edge of the cap. An upward pressure on the wrench will cause the shoulders to engage tightly under the cap while, at the same time, the side edges 12a and 14a of the jaws engage the sides of the ears, as shown in FIG. 5. The wrench can then be turned to unscrew the cap which will be picked up in the wrench while hanging on the shoulders.

Thus, it can be seen that by virtue of the improvements disclosed and claimed herein the wrench of my

earlier patent has been made more reliable, easier to use and of a more or less universal nature in that it can be used to remove any type of radiator cap, regardless of the formation or configuration of the ears on the cap.

While the best known embodiment has been disclosed and claimed herein, it is to be understood that changes are envisioned, such as come within the scope and spirit of the appended claims.

What is claimed is:

1. An improved wrench for a radiator cap comprising a pair of opposed resilient jaws arranged in spaced apart cooperating relation and having inner confronting faces, said jaws having terminal end portions provided with transverse cut-out portions for engagably receiving the ears of a radiator cap and flat lateral shoulders integrally formed on the inner faces of the jaws from the material cut-out from the jaws to define the cut-out portions which material is bent inwardly and upwardly and arranged laterally of the jaws so that the shoulders extend in an inwardly facing coplanar relation from the jaws,

2. The wrench of claim 1 wherein said jaws have outwardly flared distal ends.

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