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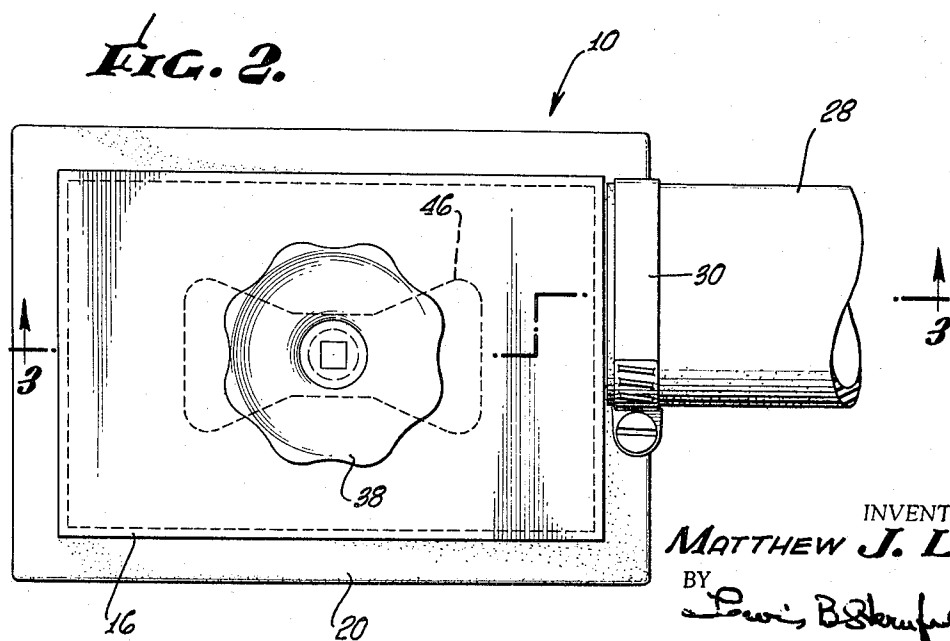
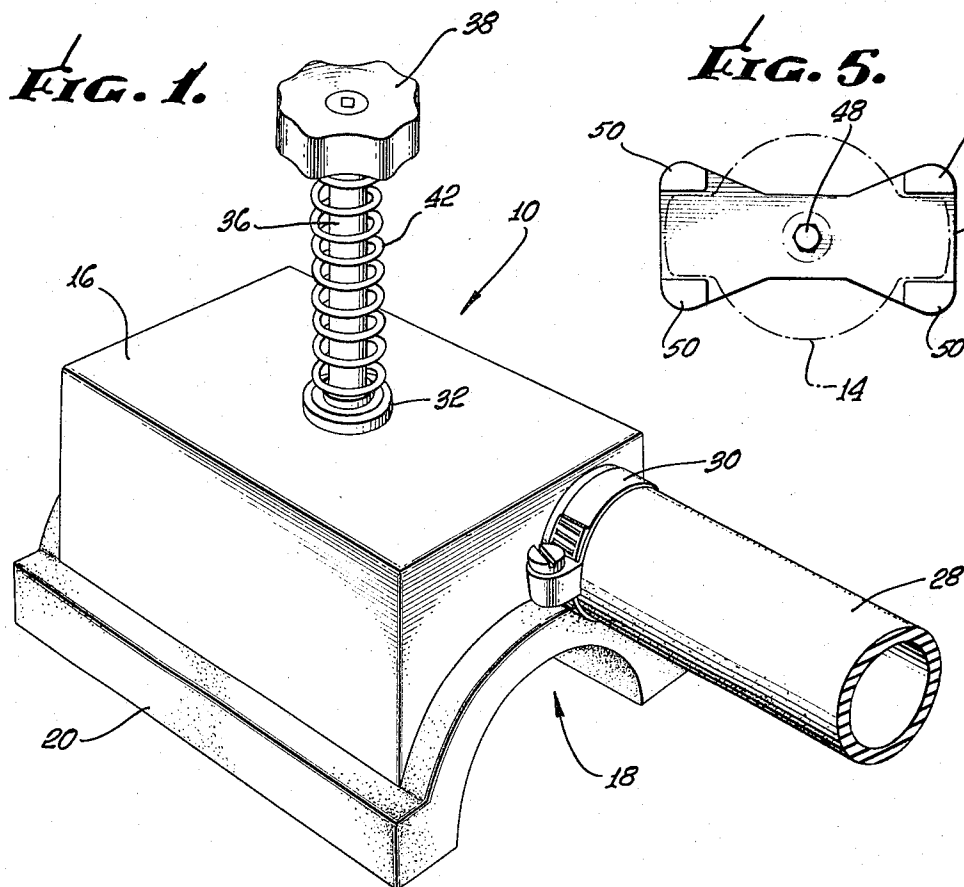
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3,371,563

SAFETY RADIATOR CAP REMOVAL TOOL

Filed Aug, 11, 1966

2 Sheets-Sheet 1



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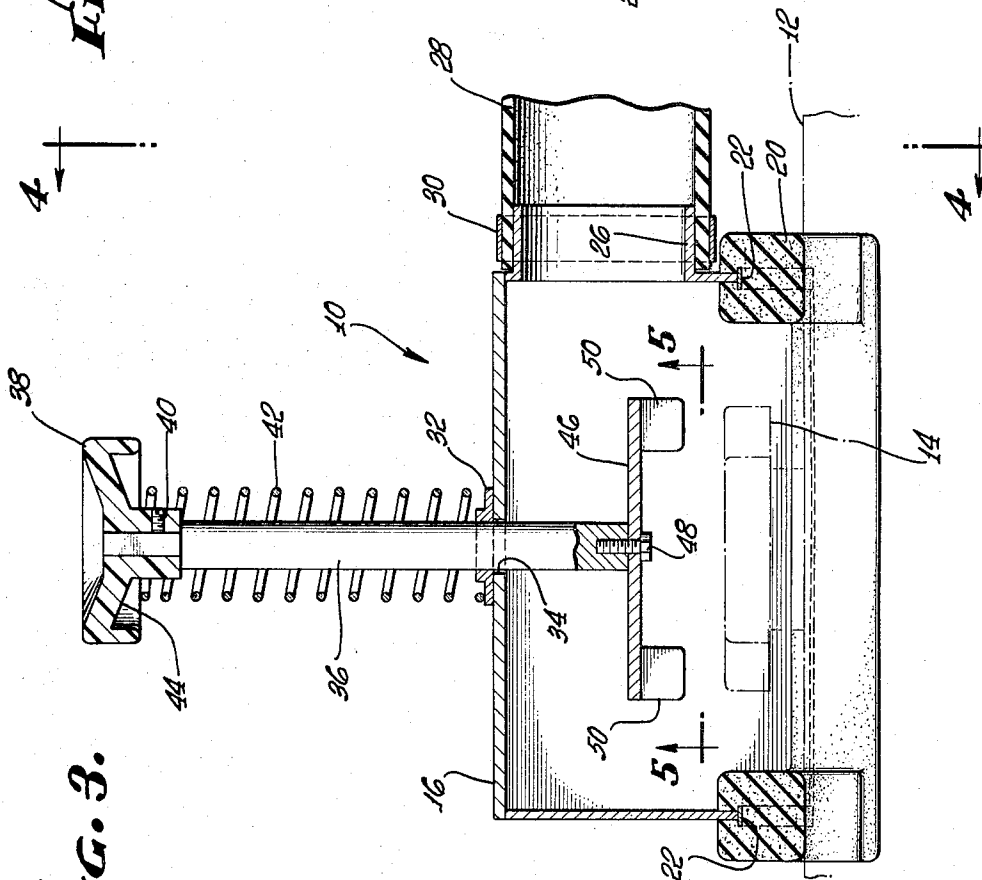
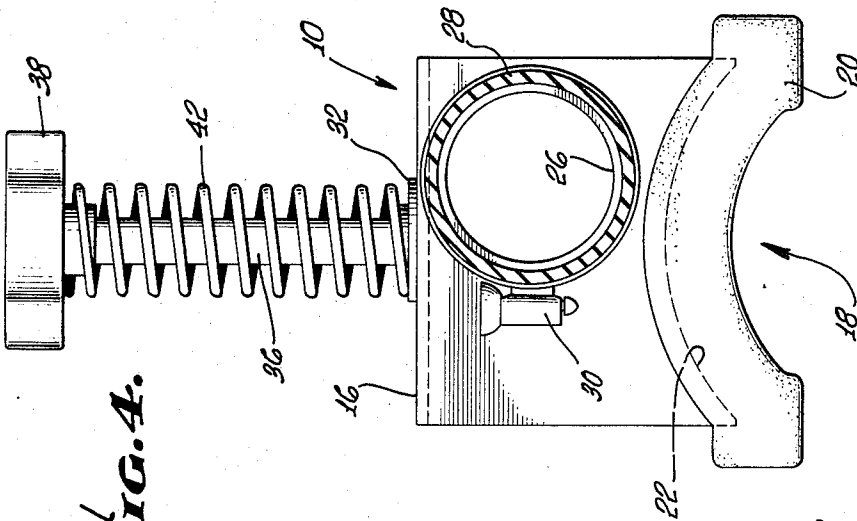
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# SAFETY RADIATOR CAP REMOVAL TOOL

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2 Sheets-Sheet 2



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## SAFETY RADIATOR CAP REMOVAL TOOL

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### ABSTRACT OF THE DISCLOSURE

A removal tool for safely removing a radiator cap comprising steam retaining chamber which is positionable over a radiator cap and a radiator. A shaft is slideably and rotatably received in the retainer and has a device interior of the chamber for gripping the cap at one end and a handle exterior of the chamber at the other end. A spring is positioned about the shaft between the handle and the steam retaining chamber so that, when the shaft is depressed and the gripping device engages the cap, the spring will exert a force on the retainer which force is greater than any steam pressure which may emanate from the radiator.

The present invention relates to a tool for removing radiator caps and, in particular, to such a tool having safety features for protecting the operator thereof from harm.

The removal of radiator caps from automobile radiators presents many potential dangers. The automobile engine may be overheated so that the temperature of the fluids and the pressure in the cooling system are high. Consequently, when the radiator cap is removed, steam will escape from the radiator to scald and burn the service station attendant or other person who has removed the cap. In addition, the pressure within the cooling system may be sufficiently high to hurl the radiator cap with great force against any persons standing near the automobile. Various means, such as pressure caps, have been devised to prevent such harm from occurring. However, these pressure caps do not always function properly and the above hazards still exist. Even when such a cap performs properly, steam and boiling coolant may nevertheless escape and injure a bystander. For these reasons, it is common practice to place a cloth over the cap to prevent the spraying of steam and boiling coolant. Furthermore, a radiator cap is frequently very hot, even when the coolant has not risen to its boiling point, and severe burns may result upon contact with the cap, despite the use of a cloth.

The present invention overcomes these and other problems by providing a steam retaining chamber which is positionable over the radiator cap in sealing engagement with the radiator and a device for gripping the cap and for maintaining the steam retaining chamber in sealing engagement with the radiator. A steam exhaust conduit may be secured to the chamber for directing the steam away from the cap removal tool and the operator thereof.

It is, therefore, an object of the present invention to provide a means for safely removing a radiator cap.

Another object is the provision of removing a radiator cap from a radiator with safety and with only one of the operator's hands.

These and other objects as well as a more complete understanding of the present invention will become more apparent from the following description of an exemplary embodiment and the accompanying drawings thereof, in which:

FIG. 1 is a perspective view of the invention;

FIG. 2 is a top view of the tool showing the radiator cap removal plate in phantom;

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FIG. 3 is a cross-section of the invention taken along lines 3-3 of FIG. 2;

FIG. 4 is a view of the invention taken along lines 4-4 of FIG. 3; and

FIG. 5 is a view taken along lines 5-5 of FIG. 3 showing a radiator cap in phantom.

Accordingly, a safety radiator cap removal tool 10 is shown as positioned on an automobile radiator 12 for removal of a cap 14 therefrom. Tool 10 comprises a steam retainer or chamber 16 having an opening 18 so that the retainer may be positioned over the radiator and so that cap 14 may project within the chamber. Sealing means such as a plastic gasket 20 is secured to the periphery of the open end 22 of steam retainer 16 about opening 18. Gasket 20 may be made of any sealing material suitable for withstanding high steam temperatures and pressures and may be affixed to or integrally molded with the chamber in any manner as is well known in the art. As best seen in FIGS. 1, 3 and 4, the gasket is shaped to conform with a radiator; however, any other shape which conforms to the shape of the radiator to provide a good seal therewith may be used.

A port is formed in chamber 16 by an outwardly extending flange 26. A hose 28 is secured to the flange by a clamp 30 for exhausting any steam from the chamber and away from the operator of the tool.

A bushing 32 is integrally formed with or separately secured to chamber 16 and is provided with a hole 34 for insertion therethrough of a shaft 36. A handle 38 is secured to the shaft by a set screw or pin 40 for reciprocation and rotation of the shaft. The handle is preferably made of a material which does not conduct heat so that any heat from the radiator will not be transferred to the operator of the tool. A spring 42 is positioned about shaft 36 between the underside 44 of handle 38 and bushing 32 of the chamber. The spring exerts a force between the handle and retainer 16 which force is greater than any steam pressure which may emanate from radiator 12. Consequently, when an operator places his hand on handle 38, steam retainer 16 will not be unseated and unsealed from the radiator under steam pressure.

A cap removal plate 46 is secured to shaft 36 by a threaded bolt 48 or similar securing means. Plate 46 is provided with four tabs 50, as best shown in FIG. 5, which are adapted to fit about radiator cap 14. The invention also contemplates that cap removal plate 46 be cup-shaped or that tabs be elongated further than illustrated in order to accommodate all radiator cap designs.

When it is desired to use the tool, the operator thereof places the tool over radiator 12, as depicted in FIG. 1, so that plate 46 and tabs 50 are positioned over radiator cap 14 and gasket 20 is sealingly engaged with the radiator. Depression of handle 38 moves plate 46 and tabs 50 into engagement with the radiator cap through shaft 36 and, at the same time, increases the force of spring 42 against steam retainer 16. Thus, even before the cap is turned and removed, there is a greater force exerted against chamber 16 than any force which could be exerted by the pressurized coolant in radiator 12. When plate 46 is so positioned on the cap 14, the operator turns the handle and cap 14 through tabs 50 to remove the cap and to allow any steam and fluid to escape from the radiator. The steam fills the steam retaining chamber and cannot escape because of the force exerted by the operator's hand on handle 38 and spring 42. If desired, hose 28 may be attached to the steam retainer for exhaust of the steam away from the tool and the operator.

Although the invention has been described with reference to a particular embodiment thereof, it will be realized that various changes and modifications may be made therein without departing from the spirit or scope of the invention.

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I claim:

1. A tool for safely removing a cap from a radiator without harm from steam therein comprising a steam retainer positionable over the cap and the radiator, shaft means slideably and rotatably received in said retainer, said shaft means including cap removal means secured at one end thereof within said retainer and means at the other end of the shaft means for manipulating said shaft means, and biasing means in cooperating engagement with said shaft means and said retainer for exerting a force on said retainer during the cap removal operation.

2. A tool as in claim 1 further including sealing means on said retainer to provide a sealing engagement between said retainer and the radiator during exertion of the force by said biasing means.

3. A tool as in claim 1 wherein said cap removal means includes a mechanism engageable with the cap.

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4. A tool as in claim 1 further including a pressure exhaust secured to said retainer for directing the steam away from said cap removal means and said retainer.

## References Cited

## UNITED STATES PATENTS

2,694,250	11/1954	Wright et al. ....	30—6.1
2,940,344	6/1960	Taylor .....	81—90.5
3,014,389	12/1961	O'Hara .....	81—90.5
3,037,408	6/1962	Rives et al. ....	81—90.3
3,253,485	5/1966	Grote .....	81—90.3 X

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