June 5, 1962 H. D. RIVES ETAL 3,037,408

RADIATOR CAP REMOVER

Filed Oct. 14, 1959 2 Sheets-Sheet 1

FIG. 1.

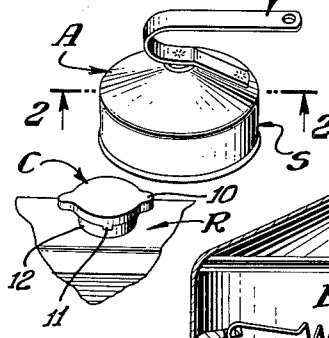


FIG. 2.

FIG. 3.

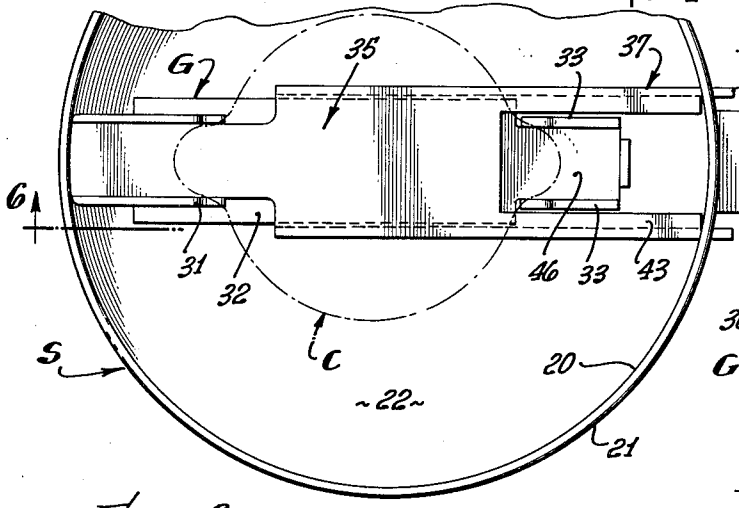


FIG. 4.

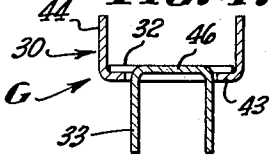


FIG. 5.

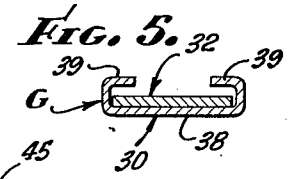
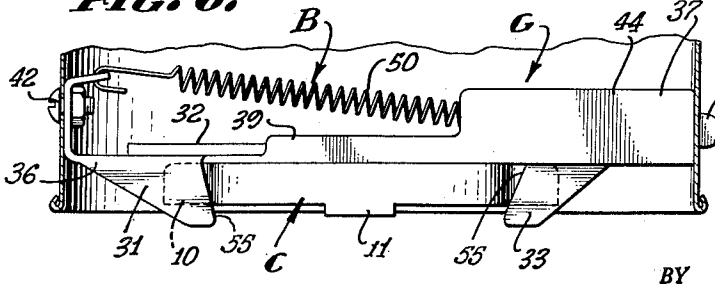


FIG. 6.



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RADIATOR CAP REMOVER

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FIG. 7.

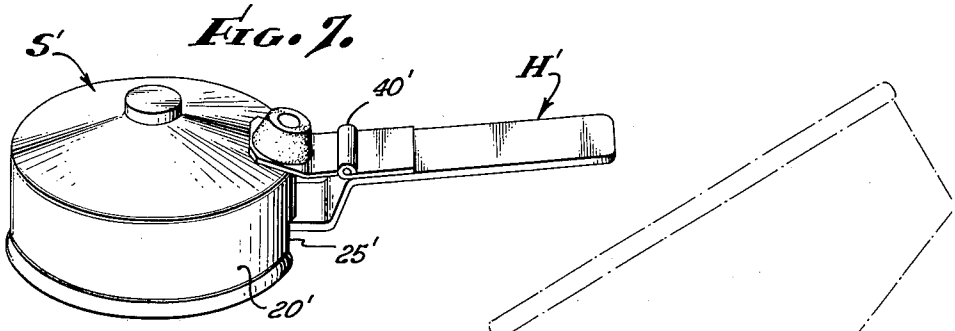


FIG. 8.

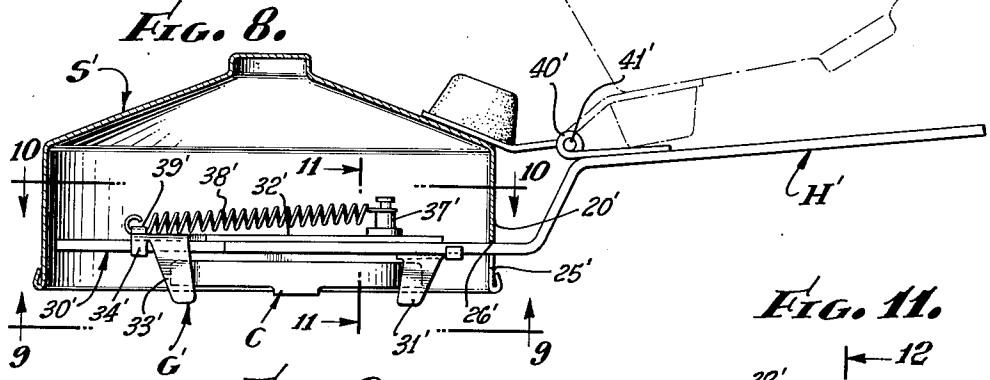


FIG. 9.

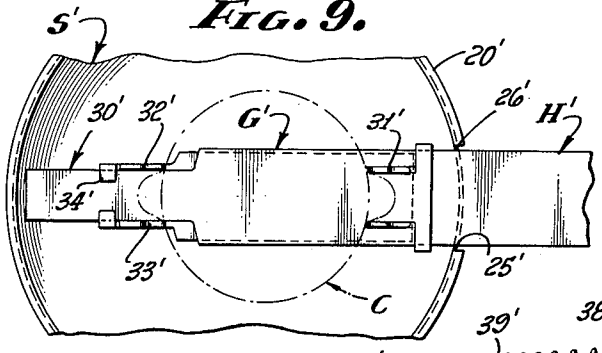


FIG. 10.

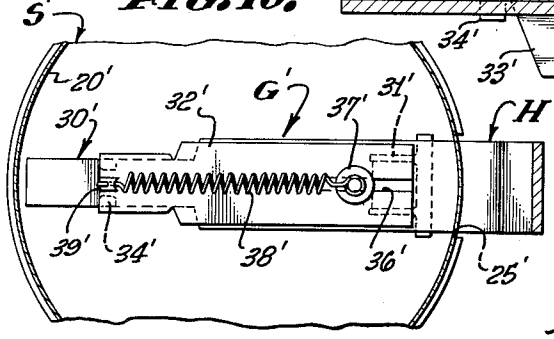


FIG. 11.

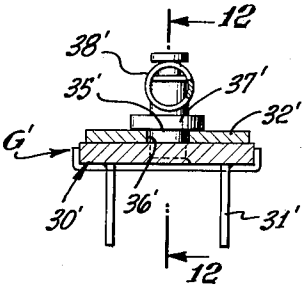
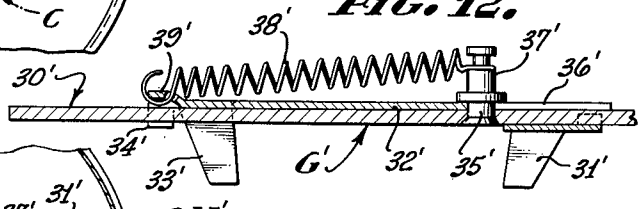


FIG. 12.



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United States Patent Office 3,037,408 Patented June 5, 1962

3,037,408

RADIATOR CAP REMOVER

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Filed Oct. 14, 1959, Ser. No. 846,416
19 Claims. (Cl. 81—3.42)

This invention relates to a device for removing caps and is particularly adapted for removing the caps from automobile radiators and other similar pressurized fluid handling means.

In the ordinary automobile and in other situations where water cooled internal combustion engines are employed, hot exchangers or radiators are provided to cool the water for circulation through the engines. The radiators are normally provided with water inlet openings at their uppermost portions, which openings are closed by means of a suitable cap.

In the normal course of operation of internal combustion engines, as when they are operated under a heavy load over a prolonged period and/or where they are operated in hot climates, they become overheated, causing the water to boil.

The ordinary radiator cap is provided with a pressure release valve means, as for example, a valve means which will open at seven pounds when the water in the radiator boils and thereby prevent bursting of the radiator. This, of course, permits a portion of the water to boil off, which water must be replaced.

It will be apparent that to replace the water which has boiled off, the cap must be removed. In doing this, the steam and boiling water under pressure in the radiator is released. Removal of the radiator cap under such conditions is therefore an extremely hazardous undertaking and is frequently encountered by service station personnel.

An object of the present invention is to provide a device for removing the caps from radiators when there appears or when it is known that the water therein is overheated and normal removal of the cap by hand would be hazardous.

An object of our invention is to provide a wrench-like structure adapted to cooperatively engage a standard radiator cap to facilitate disengagement of the cap from a radiator with which it is related.

Another object of our invention is to provide a device of the character referred to which includes a shield adapted to overlie the inlet opening of a radiator during removal of the cap therefrom.

Still another object of the present invention is to provide a device of the character referred to wherein the shield is provided with means for releasably engaging a radiator cap and is provided with a suitable handle for manipulating and/or operating the drive.

A general object of our invention is to provide a radiator cap removing device of the general character referred to which is easy and economical to manufacture and a device which is highly effective and dependable in operation, and a device which is both easy and convenient to use.

The various objects and features of our invention will be fully understood from the following detailed descriptions of typical preferred forms and applications of our invention, throughout which description reference is made to the accompanying drawings, in which:

FIG. 1 is a perspective view of the top and one side of our new device.

FIG. 2 is an enlarged detailed sectional view taken as indicated by line 2—2 on FIG. 1.

FIG. 3 is a view of a portion of the device taken as indicated by line 3—3 on FIG. 2.

FIG. 4 is a sectional view of a portion of the device taken as indicated by line 4—4 on FIG. 2.

FIG. 5 is a sectional view of a portion of the device taken as indicated by line 5—5 on FIG. 2.

FIG. 6 is a sectional view taken as indicated by line 6—6 on FIG. 3.

FIG. 7 is a perspective view of another or modified form of our invention.

FIG. 8 is a sectional view of the structure shown in FIG. 7.

FIG. 9 is a view taken as indicated by line 9—9 on FIG. 8.

FIG. 10 is a view taken as indicated by line 10—10 on FIG. 8.

FIG. 11 is a view taken as indicated by line 11—11 on FIG. 8.

FIG. 12 is a view taken as indicated by line 12—12 on FIG. 11.

This invention has to do with a device for removing the caps C from radiators R.

The standard or conventional radiator cap C is a substantially flat, disc-shaped metal part having a pair of radially outwardly projecting ears 10 at diametrically opposite sides, a downwardly extending flange about its perimeter and a pair of radially inwardly projecting thread engaging lugs 11 at the lower edge of the flange and adapted to engage a thread or cam surface on the neck 12 of the radiator which defines the inlet opening therefor.

Since radiator caps are standardized and do not form a part of the instant invention, further detailed description thereof is unnecessary and will be dispensed with.

The form of the device A that we provide and which is illustrated in FIGS. 1 through 6 of the drawings, involves generally, a downwardly opening cup-like, sheet metal, shell S, a handle H fixed to the shell and a cap gripping means G carried by the shell, in the interior thereof.

The shell S is a simple spun or drawn shell metal, cup-like part having a vertically disposed, annular side wall 20 having a beaded lower edge 21, and a top wall 22.

The top wall 22 is shown as being conical, however, this feature does not affect the invention.

The handle H can be of any suitable construction and design and is provided to facilitate handling and manipulation of the device.

In the case illustrated, the handle is a substantially horizontally disposed, U-shaped strap steel part having a lower leg 23 fixed to the top 22 of the shell as by spot welding 24, and a top leg 25. The handle is positioned on the top 22 of the shell S so that the top leg 25, which leg establishes the hand engaging part or handle per se, projects radially outwardly from the central vertical axis of the shell and is positioned a convenient distance thereabove.

The cap gripping means G that we provide includes an elongate, horizontally disposed carrier 30 fixed to and extending between diametrically opposite sides of the side wall 20 of the shell and having a pair of laterally disposed, downwardly projecting, cap-engaging jaws 31 thereon, a slide 32 shiftably carried by the carrier and having a pair of laterally spaced downwardly projecting cap engaging jaws 33 thereon and opposing the jaws 31 on the carrier and spring means B normally yieldingly urging the slide in a direction on the carrier to shift the jaws 33 towards the jaws 31.

The carrier 30 is an elongate, unitary member formed from a sheet metal and has a central portion 35 and end portions 36 and 37.

The central portion 35 has a flat, horizontally disposed body 38 and upwardly and inwardly turned, longitudinally disposed guide flanges 39 along its side edges.

The end portion 36 has an elongate body 40 of reduced lateral extent continuing from one end of the body 35

to the central portion and has a pair of downwardly projecting flange-like parts at opposite sides establishing the jaws **31**.

The end portion **36** of the carrier is further provided with an upwardly turned tab **41** at its outer end to occur adjacent the inner surface of the side wall of the shell S and to which it is secured by means of a suitable screw fastener **42**.

The other end portion **37** of the carrier **30** is characterized by a pair of laterally spaced, horizontally disposed rails **43** extending from the other end of the body to the central portion and each having an upwardly projecting flange **44** along its outer edge.

The outer ends of the flanges **44** are provided with tongues **45** to project through openings in the side wall of the shell S and to support and secure that end of the carrier in the shell.

The slide **32** is a substantially flat, elongate, horizontally disposed, rectangular, plate-like part and is slidably engaged on the top surface of the central portion **35** of the carrier **30**. The upwardly and inwardly turned guide flanges **39** on the carrier **30** occur at and overlie the opposite side edges of the slide to guide it longitudinally and to prevent it from shifting vertically out of position.

The slide is provided at its end related to the end portion **37** of the carrier, with an extension **46** which overlies the space defined by the rails **43** of the carrier and which carries the jaws **33**. The jaws **33** are formed integrally with the slide and depend from the opposite sides of the extension **46** thereof to project between the rails of the carrier where they oppose the jaws **31**.

The spring means B that we provide and which serves to normally yieldingly urge the jaws **33** towards the jaws **31** involves a simple tension spring **50** having a hook at one side engaged through a suitable opening in the upper end of the tab **41** on the carrier, and a hook at its other end engaged through a suitable opening in the extension **46** on the slide.

In practice, and as illustrated, the spring receiving openings in the carrier and slide can be provided in tabs formed on the carrier and slide and suitably turned or bent to facilitate engagement and proper positioning of the spring.

In practice, and as illustrated in the drawings, the several jaws **31** and **33** are spaced radially outward from the central axis of the device and each is provided with a substantially radially inwardly disposed cap engaging edge **55**, which edge is radially and downwardly inclined so as to, in effect, establish hooked engagement with radiator caps.

The spring means B normally urges the slide and the jaws **33** towards the jaw **31** and to a position where the jaws **33** engage and are stopped by the central portion of the carrier.

When the jaws **33** are in the above-mentioned normal position, the distance between the jaws **31** and **33** is less than the diametric extent of a standard radiator cap.

The jaws **31** and the two jaws **33** are spaced laterally a distance corresponding to the lateral extent of the lugs **10** of the standard radiator cap so that when the device is engaged with a radiator cap, the pairs of jaws embrace the tabs on the cap to which they are related.

When it is desired to remove the cap from a radiator, the jaws **33** are first engaged with one of the lugs **10**. The device is then urged in a direction across the top of the cap, thereby shifting the jaws **33** away from the jaws **31** and against the resistance of the spring **54**. When the jaws have parted a sufficient distance, and the jaws **31** reach a position where they will accommodate and receive the other tab **10** on the cap, the device is tipped to bring the jaws into engagement with the said other tab and the force urging the device across the cap is released. Upon release of the above-mentioned force, the action of the spring **50** serves to maintain the jaws in clamped engagement with the cap.

With the device thus engaged with the cap, the device is then rotated by means of the handle H and the cap is unscrewed from engagement on the radiator.

When the cap is removed in the above manner, any steam and/or water issuing from the radiator is caught by the shell and is prevented from reaching the operator's hand and arms in a manner such as would otherwise cause him harm or discomfort.

In practice, the handle H is arranged on the shell so as to occur in alignment with the means G which is hidden from view, below the shell and so as to facilitate orientation and engagement of the device with the radiator caps with which it is engaged.

When it is desired to remove the cap from engagement in the device so as to re-engage it on the radiator, it is a simple matter to engage it with one hand, spring the device slightly and withdraw the cap.

In the form of the invention illustrated in FIGS. 7 through 12 of the drawings, the cap gripping means G' is modified and made more simple, the handle H' is related directly to the means G' and the shell S' is pivotally carried by the handle H' in a manner so that the operator of the device can swing or pivot the shell upwardly and out of the way so that he can observe the cap and the means G' when engaging the device with the cap.

The means G', like the means G in the first form of the invention, includes an elongate carrier **30'** with a pair of laterally spaced, depending jaws **31'**, and an elongate slide **32'** with a pair of laterally spaced depending jaws **33'** at one end thereof.

The slide **32'** is slidably engaged on the top of the carrier with the jaws **33'** occurring at the opposite sides of the carrier and depending therefrom.

The slide **32'** is maintained in engagement on the carrier by means of a pair of downwardly and inwardly turned tabs **34'** at its end adjacent the jaws **33'** and which occur about the opposite sides of the carrier, and a vertically projecting pin **35'** on the carrier, slidably received in an elongate slot **36'** in the first mentioned end of the slide **32'** and having a head **37'** to overlie the top of the slide.

The spring means B' in this second form of the invention involves a simple tension spring **38'** having one end engaged on the head **37'** of the pin **35'** and its other end engaged with a pierced and upwardly offset portion **39'**, at the end of the slide **32'** where the tabs **34'** occur and remote from the end thereof in which the slot **36'** and the jaws **33'** are provided.

It will be apparent that this second form of the invention will operate in substantially the identical manner as does the first form of the invention.

The handle H' in this second form of the invention is an integral extension or continuation of the carrier **30'** and extends upwardly and then longitudinally outwardly from one end of the carrier.

It will be apparent that the handle H' can be at either end of the carrier **30'** as desired, or as circumstances require.

The shell S' of this second form of the invention is substantially the same as the shell S provided in the first form of the invention, but is pivotally connected to the handle H' by means of a suitable ring **40'**.

The side wall **20'** of the shell S' is provided with a suitable notch **25'** at its bottom edge to receive the carrier **30'** when the shell is down and so that the lower or bottom edge of the shell occurs in a plane below the means G' and adequately shields the means G'.

The notch **25'** has a flat bottom edge **26'** that engages the top of the carrier **30'** and acts as a stop to limit downwardly pivoting of the shell.

With the pivoted shell S' in this second form of the invention, the operator can pivot it upwardly preparatory to engaging the means G' with a radiator cap, having full

view of the operation, and thereafter swing the shell into shielding engagement or relationship with the means G.

It is to be understood that the shell S' could be pivotally mounted to the end of the carrier 30' remote from the handle H' as desired or, if circumstances require, and without altering the essence of the invention.

While in the two forms of the invention considered in the foregoing, we have shown and described preferred forms of the gripping means G and G', wherein the pair of jaws are shiftable relative to each other and serve to yieldingly clamp the radiator caps related thereto, and so that the caps will not be dropped thereby, subsequently to their removal from the radiators, it is to be understood that the pair of jaws could be in fixed predetermined spaced relationship with each other and so as to cooperatively engage a standard radiator cap, and still fall within the broader aspects of the invention.

If, as mentioned above, the jaws were fixed, both pairs could be established on the elements described and referred to as the carriers and the slides and spring means could be eliminated.

Since this third concept is so simple and apparent, consisting primarily of elimination of certain parts and means of the structures disclosed in the drawings, further drawings illustrating this concept are not provided and are not necessary.

It will be apparent that in practice, if desired, the shell S' in the second form of the invention can be left in its up position and need not be employed at all when the device is used.

Following this concept one step further, the hinge 40' securing the shell S' to the handle H' could be provided with a removable pin 41' so that should a person wish to dispense with the shell altogether, he could do so.

If the shell S' was removed, the remaining structure would remain identical to that illustrated in FIGS. 7 through 12 and nothing new would be added. Accordingly, the drawings have not been burdened with an illustration of such a modification, as such would be obvious.

It will be apparent from the foregoing that we have invented simple, practical, highly effective and dependable devices for safely removing standard radiator caps from the radiators on which they are engaged.

Having described only typical preferred forms and applications of our invention, we do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to ourselves any modifications or variations that may appear to those skilled in the art and fall within the scope of the following claims.

Having described our invention, we claim:

1. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, a downwardly opening cup-like shell adapted to overlie the cap, and gripping means within the shell, including relatively shiftable pairs of laterally spaced depending jaws with radially inwardly and downwardly inclined cap-engaging edges to engage and project beneath the diametrically opposite sides of the cap and to embrace and bear against the opposite side of the lugs related thereto.

2. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, a downwardly opening cup-like shell adapted to overlie the cap, and gripping means within the shell including a pair of laterally spaced depending jaws at opposite sides of the shell, each pair of jaws receiving one of the lugs on the cap therebetween and engaging the side of the cap adjacent the opposite sides of the lug.

3. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, a downwardly opening cup-like shell adapted to overlie the cap, and gripping means within the shell having a pair of laterally spaced fixed jaws to engage one side of the cap and the opposite sides of the lug on said one side of the cap and a pair of laterally spaced, shiftable jaws to engage the other side of the cap and the opposite sides of the lug on said other side of the cap and means to urge the shiftable jaws towards the fixed jaws and to maintain the cap in clamped engagement therebetween.

4. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, a downwardly opening cup-like shell adapted to overlie the cap, an elongate carrier carried by the shell and having a pair of depending laterally spaced jaws to engage the cap at the opposite sides of one of the lugs, a longitudinally shiftable slide carried by the carrier and having a pair of depending laterally spaced jaws, opposing the jaws on the carrier and adapted to engage the cap at the opposite sides of the other lug thereon, and spring means normally yieldingly urging the slide longitudinally of the carrier and the jaws thereon towards the jaws on the carrier and so as to maintain the cap in clamped engagement between the jaws.

5. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, a downwardly opening cup-like shell adapted to overlie the cap, an elongate carrier carried by the shell and having a pair of laterally spaced jaws depending from one end thereof and having radially inwardly and downwardly disposed cap engaging faces, upwardly and inwardly turned guide flanges intermediate the ends of the carrier and extending longitudinally along the side edges thereof and a pair of laterally spaced longitudinally disposed rails defining the other end of the carrier, an elongate plate-like slide slidably engaged on the top of the carrier and retained and guided by the guide flanges, said slide having a pair of laterally spaced jaws depending from one end thereof to project between the rails of the carrier and having radially inwardly and downwardly disposed cap engaging faces, and spring means adapted to normally yieldingly urge the slide longitudinally of the carrier and jaws together, with the cap engaged therebetween and with each lug on the cap engaged between a pair of jaws.

6. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, a downwardly opening cup-like shell adapted to overlie the cap, an elongate carrier carried by the shell and having a pair of depending laterally spaced jaws to engage the cap at the opposite sides of one of the lugs, a longitudinally shiftable slide carried by the carrier and having a pair of depending laterally spaced jaws opposing the jaws on the carrier and adapted to engage the cap at the opposite sides of the other lug thereon, and spring means normally yieldingly urging the slide longitudinally of the carrier and the jaws thereon towards the jaws on the carrier and so as to maintain the cap in clamped engagement between the jaws, and a handle fixed to the exterior of the shell to facilitate manipulation of the device.

7. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, a downwardly opening cup-like shell adapted to overlie the cap, an elongate carrier carried by the shell and having a pair of laterally spaced jaws depending from one end thereof and having radially inwardly and downwardly disposed cap engaging faces, upwardly and inwardly turned guide flanges intermediate the ends of the carrier and extending longitudinally along the side edges thereof and a pair of laterally spaced longitudinally disposed rails defining the other end of the carrier, an elongate plate-like slide slidably engaged on the top of the carrier and retained and guided by the guide flanges, said slide having a pair of laterally spaced jaws depending from one end thereof to project between the rails of the carrier and having radially in-

wardly and downwardly disposed cap engaging faces, and spring means adapted to normally yieldingly urge the slide longitudinally of the carrier and jaws together, with the cap engaged therebetween and with each lug on the cap engaged between a pair of jaws, and a handle fixed to the exterior of the shell to facilitate manipulation of the device.

8. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, a downwardly opening cup-like shell adapted to overlie the cap, an elongate carrier carried by the shell and having a pair of laterally spaced jaws depending from one end thereof and having radially inwardly and downwardly disposed cap engaging faces, upwardly and inwardly turned guide flanges intermediate the ends of the carrier and extending longitudinally along the side edges thereof and a pair of laterally spaced longitudinally disposed rails defining the other end of the carrier, an elongate plate-like slide slidably engaged on the top of the carrier and retained and guided by the guide flanges, said slide having a pair of laterally spaced jaws depending from one end thereof to project between the rails of the carrier and having radially inwardly and downwardly disposed cap engaging faces, and spring means adapted to normally yieldingly urge the slide longitudinally of the carrier and jaws together, with the cap engaged therebetween and with each lug on the cap engaged between a pair of jaws, and a handle fixed to the exterior of the shell to facilitate manipulation of the device, said handle extending along an axis parallel with the longitudinal axis of the carrier.

9. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, a downwardly opening cup-like shell adapted to overlie the cap, an elongate carrier carried by the shell and having a pair of laterally spaced jaws depending from one end thereof and having radially inwardly and downwardly disposed cap engaging faces, upwardly and inwardly turned guide flanges intermediate the ends of the carrier and extending longitudinally along the side edges thereof and a pair of laterally spaced longitudinally disposed rails defining the other end of the carrier, an elongate plate-like slide slidably engaged on the top of the carrier and retained and guided by the guide flanges, said slide having a pair of laterally spaced jaws depending from one end thereof to project between the rails of the carrier and having radially inwardly and downwardly disposed cap engaging faces, and spring means adapted to normally yieldingly urge the slide longitudinally of the carrier and jaws together, with the cap engaged therebetween and with each lug on the cap engaged between a pair of jaws, and a handle fixed to the exterior of the shell to facilitate manipulation of the device, said handle extending radially from the central vertical axis of the shell along an axis parallel with the longitudinal axis of the carrier and above the end of the carrier where the slide jaws occur.

10. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, a downwardly opening cup-like shell adapted to overlie the cap, an elongate carrier carried by the shell and having a pair of depending laterally spaced jaws to engage the cap at the opposite sides of one of the lugs, a longitudinally shiftable slide carried by the carrier and having a pair of depending laterally spaced jaws, opposing the jaws on the carrier and adapted to engage the cap at the opposite sides of the other lug thereon, and spring means normally yieldingly urging the slide longitudinally of the carrier and the jaws thereon towards the jaws on the carrier and so as to maintain the cap in clamped engagement between the jaws, said slide having tabs at its opposite sides to engage about the carrier and maintain the slide engaged on the carrier, said spring means including a pin on the carrier, a tab on the slide and a tension spring between the pin and the tab.

11. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, an elongate carrier to engage and extend across the top of the cap, two longitudinally spaced pairs of laterally spaced jaws related to and depending from the carrier to engage the lugs on the cap, and a downwardly opening cup-like shell pivotally secured to the carrier to normally overlie the carrier and the cap.

12. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, an elongate carrier, longitudinally spaced pairs of laterally spaced depending jaws related to and depending from the carrier to engage the lugs on the cap, an elongate handle extending from one end of the carrier, and a downwardly opening cup-like shell pivotally secured to the carrier to normally overlie and house the carrier, jaws, and the cap.

13. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, an elongate carrier to engage and extend across the top of the cap, pairs of laterally spaced jaws related to and depending from the carrier to engage the lugs on the cap, an elongate handle extending from one end of the carrier, and a downwardly opening cup-like shell pivotally secured to the handle to normally overlie the carrier and the cap.

14. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at diametrically opposite sides, said device including, an elongate carrier, two longitudinally spaced pairs of laterally spaced depending jaws on the carrier to engage the opposite sides of the lugs and the cap, and a downwardly opening cup-like shell pivotally secured to the carrier to normally overlie the carrier and the cap.

15. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, an elongate horizontally disposed carrier to engage and extend across the top of the cap, two longitudinally spaced pairs of laterally spaced, depending jaws on the carrier to engage the lugs on the cap, an elongate handle extending from one end of the carrier, and a downwardly opening cup-like shell pivotally secured to the carrier to normally overlie the carrier and the cap.

16. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, an elongate horizontally disposed carrier to engage and extend across the top of the cap, a pair of laterally spaced depending jaws on the carrier to engage one of the lugs on the cap, a slide on the carrier, a pair of laterally spaced depending jaws on the slide to engage the other lug on the cap, spring means normally yieldingly urging the slide longitudinally of the carrier and the pairs of jaws towards each other and into clamping engagement on the cap, a downwardly opening, cup-like shell to normally overlie the carrier and the cap and pivotally secured to the carrier.

17. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, an elongate horizontally disposed carrier to extend across the top of the cap, an elongate handle extending from the carrier, a pair of laterally spaced depending jaws on the carrier to engage the opposite sides of one of the lugs on the cap, a slide on the carrier, a pair of laterally spaced depending jaws on the slide to engage the opposite sides of the other lug on the cap, spring means normally yieldingly urging the slide longitudinally of the carrier and the pairs of jaws towards each other and into clamping engagement on the cap adjacent the sides of the lugs, and a downwardly opening cup-like shell to normally overlie the carrier and the cap and pivotally secured to the carrier.

18. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its diametrically opposite sides, said device including, an elongate horizontally disposed carrier to extend across the top of the cap, an elongate handle extending from the carrier, a pair of laterally spaced depending jaws on the carrier to engage the opposite sides of one of the lugs on the cap, a slide on the carrier, a pair of laterally spaced depending jaws on the slide opposing the first mentioned jaws to engage the opposite side of the other lug on the cap, spring means normally yieldingly urging the slide longitudinally of the carrier and the pairs of jaws towards each other and into clamping engagement on the opposite sides of the cap adjacent the opposite sides of the lugs, and a downwardly opening cup-like shell to normally overlie the carrier and the cap and pivotally secured to the handle.

19. A device for engaging a disc-shaped radiator cap with radially outwardly projecting lugs at its opposite sides, said device including, an elongate carrier with a pair of laterally spaced lug engaging jaws with longitudinally inwardly and downwardly inclined cap engaging edges, a slide slidably carried by the carrier and having a pair of laterally spaced lug engaging jaws with longitudinally inwardly and downwardly inclined cap engaging edges depending therefrom and from the carrier and spaced longitudinally from the jaws on the carrier and spring means to yieldingly shift the slide longitudinally of the carrier and the jaws on the slide towards the jaws on the carrier.

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