

Sept. 4, 1928.

1,682,766

W. G. NEWTON

### RADIATOR CAP

Filed Feb. 12, 1925

2 Sheets-Sheet 1

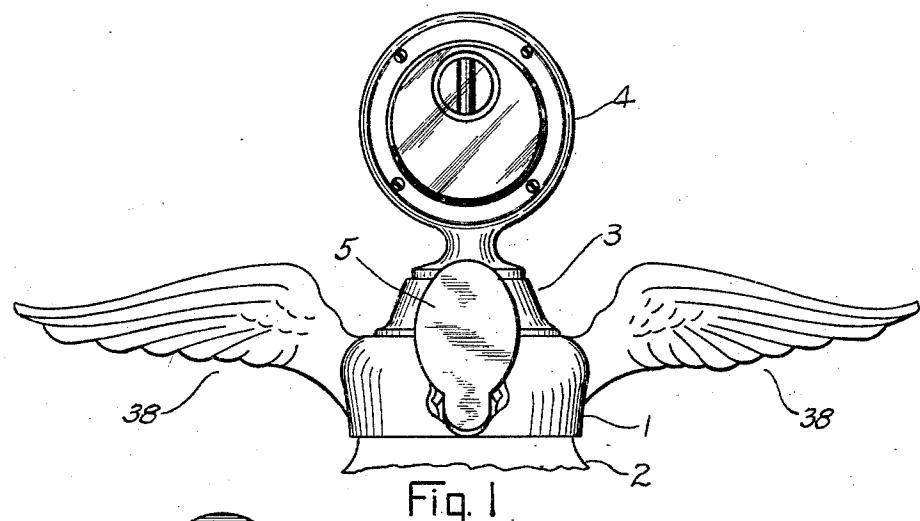


Fig. 1

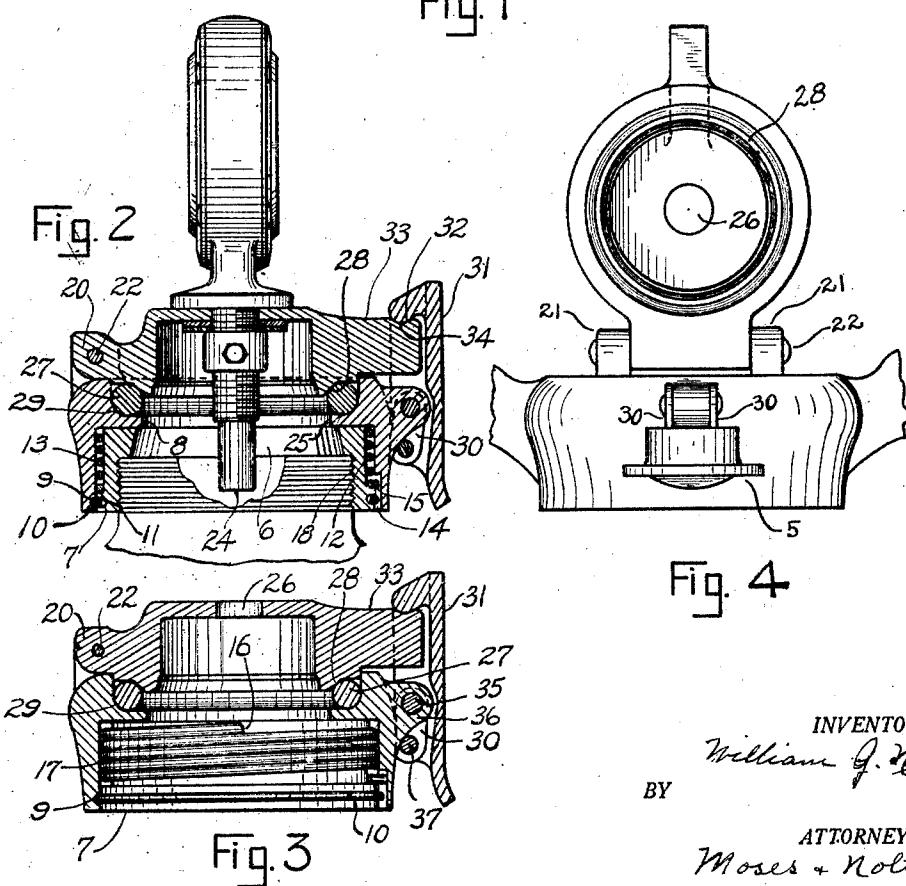


Fig. 3

BV

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2 Sheets-Sheet 2

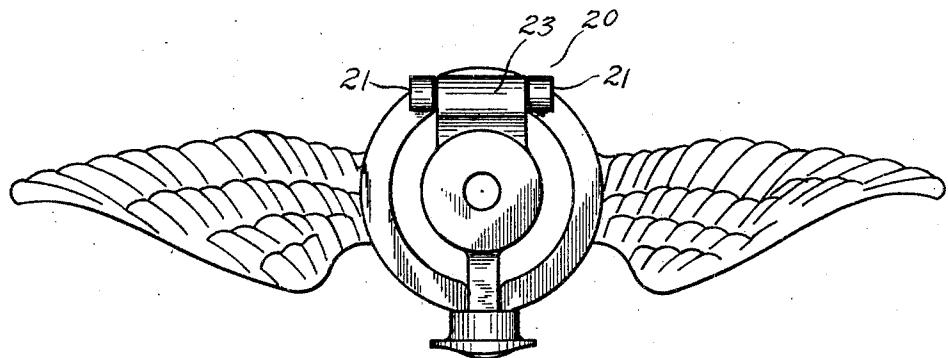


Fig. 5

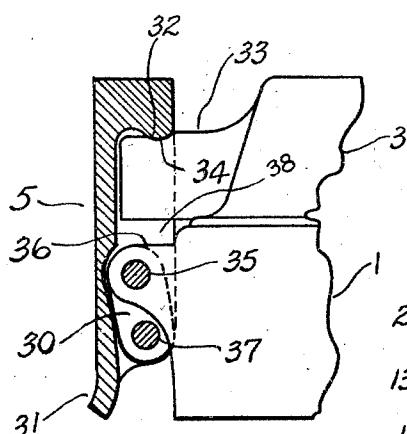


Fig. 7

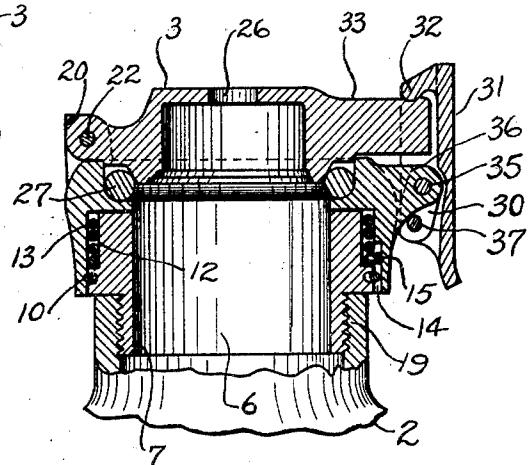


Fig. 6

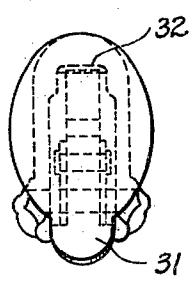


Fig. 8

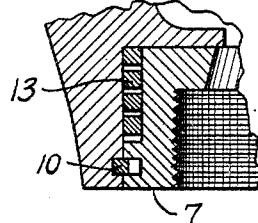


Fig. 9

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Patented Sept. 4, 1928.

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# UNITED STATES PATENT OFFICE.

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## RADIATOR CAP.

Application filed February 12, 1925. Serial No. 8,659.

This invention relates to an improvement in radiator caps for automobiles and the like.

It is one object of this invention to provide a radiator cap with a threaded member 5 to engage the neck of a radiator and to permit the cap to be screwed on the said neck, but to prevent the removal of the said cap. This is accomplished by providing a helical spring member between the threaded member 10 and the body portion of the cap, so that the threaded member is engaged and carried along by said spring when the body portion is rotated in one direction and is released when the body portion is rotated in an opposite direction.

Another object is to provide an improved latching means for securing the hinged lid of the cap.

Various other objects and advantages will 20 appear as the description of the invention proceeds.

In the accompanying drawings forming a part of this specification

Fig. 1 is a front elevation of a radiator cap embodying the present invention in position on a radiator neck.

Fig. 2 is a side elevation of Fig. 1 partly in section;

Fig. 3 is partial sectional view of the cap 30 itself shown in Fig. 1;

Fig. 4 is a front elevation of the cap shown in Fig. 1 with the cover open and the arms and indicating instrument omitted.

Fig. 5 is a top plan view of the cap shown 35 in Fig. 1;

Fig. 6 is a sectional view of a radiator cap with a modified threaded member or insert in the said cap;

Fig. 7 is an enlarged sectional view of the 40 latching means in place on the front of a radiator cap;

Fig. 8 is a front elevation of the latch itself.

Figure 9 is a fragmentary view of Figure 2 on an enlarged scale showing a helical spring and retaining ring of square cross section instead of round cross section.

Similar characters of reference refer to 50 similar parts in each of the accompanying drawings.

In the particular embodiment of the invention illustrated, the radiator cap comprises a body portion 1 mounted on the neck

of a radiator 2, and having a cover 3 hinged-ly connected thereto, and a latching means 5 attached to said body portion for locking the said cover in its closed position.

The body portion has an opening 6 there-through with an annular projection 8 near the upper end of said opening and an annular slot 9 near the lower end of said opening. A pair of oppositely extending arms 38 project from the outer surface of the said body portion for facilitating the application of the cap. As shown in the drawings, the arms are in the form of a pair of wings, which improve the appearance of the cap, but any form of arms or other means by which the cap may be rotated may be employed.

A threaded sleeve or insert 7 fits in the lower end of the opening in the body portion of the cap, and is held in place by a spring ring 10 fitting in the said slot 9 of the body portion and slot 11 in the said insert. The upper end of said insert has a re-cessed portion 12 in which a helical spring 13 fits.

The ring 10 and the spring 13 may be round, oblong, or of any desired shape in cross section, for instance, of square cross section as shown in Figure 9. The spring 13 has a hook 15 on one end thereof to engage a slot 14 in the said body portion. The other end 16 of said spring is tapered so that it slides freely over the surface of the insert.

If this spring be wound of a plurality of right hand turns 17, preferably slightly smaller than the said insert, then the said spring will tighten and hug the insert and carry it along when the cap is turned in a clockwise rotation. On the other hand, when the cap is rotated in a counter-clockwise manner, the spring will loosen and release the insert and slip freely over the surface of the said insert.

In other words, the insert is caused to rotate with the cap when the latter is screwed one way, and remains stationary when the cap is screwed or turned in the opposite way. It is similar in action to a friction clutch. By the use

of this construction, a non-reversible or uni-rotatable insert is obtained which may be used to make a radiator cap theft-proof.

The insert may be provided with either in-terior threads 18 as shown in Fig. 2, or ex-terior threads 19 as shown in Fig. 6. These

threads engage corresponding threads on the said radiator neck, and thus hold the cap in position on the radiator.

In order to permit the radiator to be filled, 5 the cap is provided with a removable lid or cover 3. In the illustrated embodiment of the invention, this is attached to the body portion of the cap by means of a hinge 20 at the rear of said body portion. The 10 said hinge has two lugs 21 projecting upwardly from the said body portion, for receiving a pin 22 which passes through the barrel 23 of said hinge. A central aperture 26 is provided in the cover for receiving the stem of the indicating instrument, so that the latter will be positioned symmetrically with respect to the radiator cap.

In order to make the cap fluid-tight, a 15 gasket 27 is inserted between the body portion and the cover. The gasket fits in a seat 23 in the upper part of the body portion, and is held firmly in that seat when the cover is closed by a conical shoulder 28 on the underside of the cover.

20 Any suitable means may be employed for holding the cover upon its seat, but an improved latching means 5 is illustrated, consisting of a pair of links 30 and a toggle latch 31, as is clearly shown in the enlarged 25 view in Fig. 7. The links are connected to a projecting lug 36 on the body portion by means of a pin 35. The other end of each link is connected to the toggle latch by a pin 37. The toggle latch has a projecting lug 32 at its upper end to engage a depression 34 adjacent the end of a radial projection 33 on the cover. This arrangement affords a positive latching means, because after the latch is forced inwardly past the dead center, it is held securely in place by the upward pressure of the radial projection 33 on the lug 32.

30 The use of long links is also eliminated by the use of this improved latch. It is to be noted that the short links are positioned wholly below the cover when the cap is in a closed position. In this manner, the links and the radial projection on the cover are concealed in a slot 38 on the back of the 35 latch. As the front of the latch presents a smooth surface, it may be provided with an ornamental escutcheon plate or the like.

40 Of course, it is to be noted that this improved latch may be used with any form of 45 hinged cap or cover.

It will be observed that by the use of the 50 insert described herein, a radiator cap may be securely attached to the neck of a radiator without fear of its removal. Furthermore, the cap may be screwed on the radiator neck until all the threads are engaged; and, then, by virtue of the smooth friction 55 clutch, the cap may be turned back to its correct position. This position being the 60 one in which the indicating instrument may

be clearly seen by the driver. Due to the friction of the helical spring on the insert, the cap is held in its correct position.

While I have, in this specification and the drawings which accompany it, shown certain constructions in which my invention may be embodied, it is to be understood that these are merely illustrative and obviously may be modified in many respects without departing from the spirit of the invention as defined in the appended claims.

70 What I claim is:

1. A radiator cap comprising a body portion, an insert fitting in said body portion for engaging the neck of a radiator, and a helical spring interposed between said body portion and said insert, said spring engaging and carrying the insert along with it when the body portion is rotated in one direction, and releasing said insert when rotated in the opposite direction.

2. A radiator cap comprising a body portion, an insert, and a friction clutch comprising a tension element gripping the insert and fitting in said body portion, the said clutch operating when the cap is turned in the direction to tension said element but releasing when turned in the opposite direction.

3. A radiator cap comprising a body portion, a cover for said body portion, and an insert for securing said body portion to the neck of the radiator, said insert comprising a hollow cylindrical member having a threaded portion for engaging the threads on the radiator neck and having a plain cylindrical surface thereon, and a helical spring wound around said cylindrical surface and anchored at one end to said body portion; so that when the cap is rotated one way the spring will grip and turn the insert, but will release its grip when the cap is turned the opposite way.

4. A radiator cap comprising a body portion having an opening therethrough with a slot adjacent the lower end, a cap for said body portion, a non-reversible insert attachable in fixed relation to the radiator, a spring fitting in the slot of said body portion for holding said body portion in its normal position longitudinally of the insert, and a second spring between the body and insert for resisting relative rotation thereof.

5. A radiator cap comprising a body portion, an insert therein attachable in fixed relation to the radiator, and spring means between the body portion and the insert fixing the longitudinal position of the cap body relative to the insert and also controlling the rotative movement of the cap body relative to the insert.

In testimony whereof I have affixed my signature to this specification.

WILLIAM G. NEWTON.