

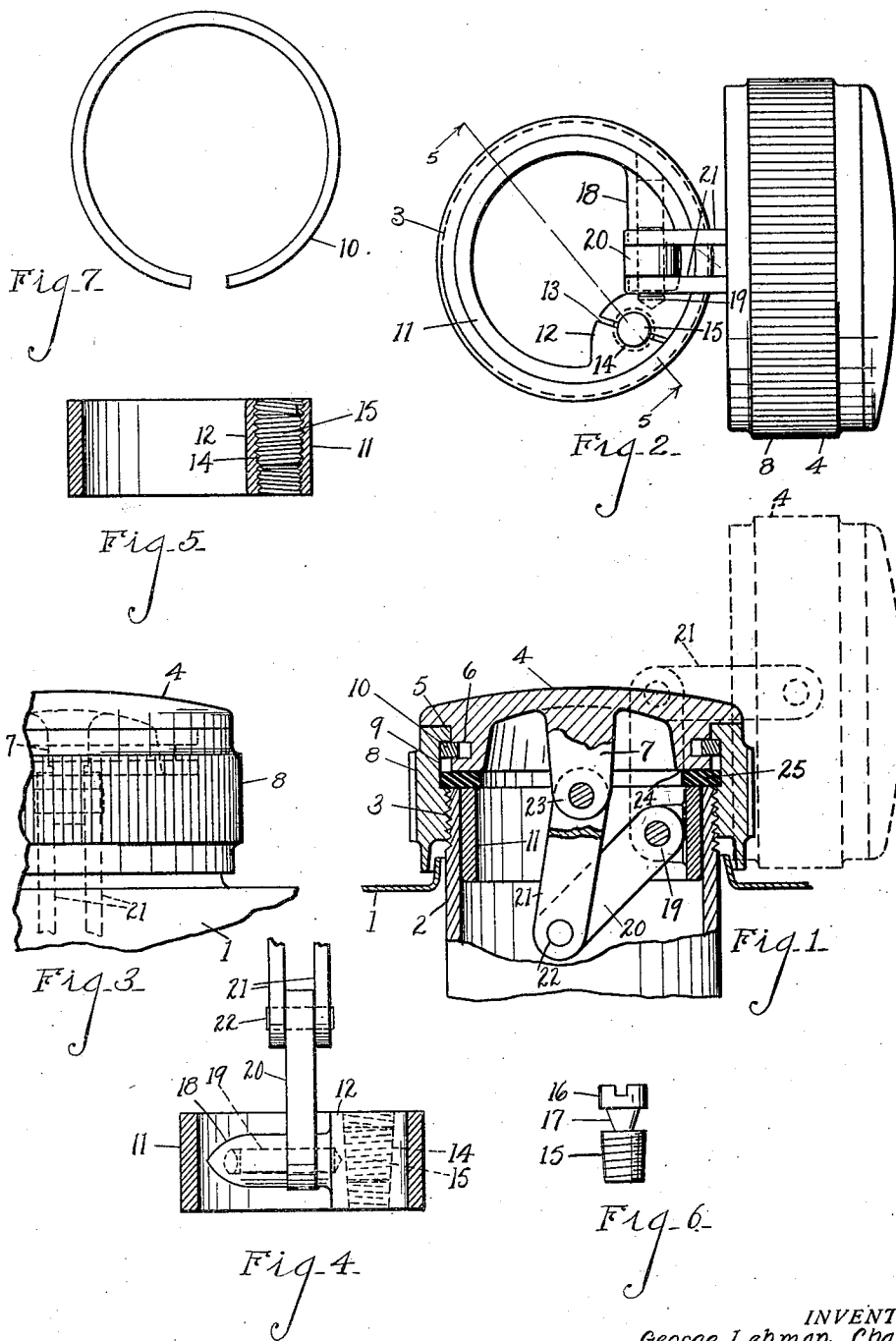
Sept. 4, 1928.

1,683,383

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CLOSURE FOR RADIATORS AND THE LIKE

Filed Oct. 15, 1927



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## UNITED STATES PATENT OFFICE.

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## CLOSURE FOR RADIATORS AND THE LIKE.

Application filed October 15, 1927. Serial No. 226,394.

The main object of this invention is to provide a closure for radiators of automobiles, tanks and the like which may be readily released to permit filling, the cap, however, being permanently attached so that it cannot be carried away or lost.

A further object is to provide a structure having these advantages which is easy to manipulate, attractive in appearance and at the same time comparatively inexpensive.

Objects pertaining to details and economies of my invention will definitely appear from the description to follow. The invention is defined in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawing, in which:

Fig. 1 is a detail view partially in vertical central section of a radiator neck closure embodying the features of my invention, the cap being shown in detached position by dotted lines.

Fig. 2 is a plan view of the parts shown in Fig. 1, the radiator shell being omitted and the cap being shown in open position by full lines.

Fig. 3 is a fragmentary side elevation with the cap closed.

Fig. 4 is a fragmentary view of the anchoring sleeve and cap retaining links, the links being in extended position.

Fig. 5 is a sectional view through the anchoring sleeve on line 5-5 of Fig. 2.

Fig. 6 is a side elevation of the expanding plug for the anchoring sleeve.

Fig. 7 is a plan view of the split retaining ring for the clamping collar of the cap.

Referring to the drawing, 1 represents the shell of a radiator and 2 the neck. The neck 2 is externally threaded at 3.

The cap 4 has an external downwardly facing shoulder 5 and an external groove 6 below this shoulder. The cap also has a central depending ear 7.

The collar 8 is internally threaded to coact with the threads of the neck and has an internal groove 9 engaged by the split retaining ring 10 arranged in the groove 6 in the cap, thus rotatably securing the collar to the cap. When thus assembled the collar constitutes, in effect, a part of the cap.

The anchoring ring 11 has an enlargement 12 at one side with a split 13 extending through the enlargement, thus providing a

split ring, this enlargement having a tapered threaded bore 14 therein.

The anchoring sleeve or ring is placed within the neck with its upper edge flush with the upper edge of the neck and expanded therein by means of the tapered plug 15 which is screwed into the tapered bore 14. This tapered plug has a slotted head 16 formed by the annular groove 17 in the plug so that when the plug is turned down sufficiently to expand the anchoring ring, the head is twisted off so that it is impossible to remove the anchoring ring.

This anchoring ring has a boss-like ear 18 projecting inwardly at one side to receive the pin 19 which pivotally connects the link 20 to the anchoring ring. The link 21 is connected to the link 20 by the pivot 22 and to the ear 7 by the pivot 23.

The groove 9 is of such width as to extend below the lower edge of the cap which forms a gasket seat 24. The edge of the gasket 25 engages in the groove 9 and seats against this seat 24 so that when the collar is threaded upon the neck, the gasket is clamped between the cap and the edges of the neck and anchoring sleeve which form a seat therefor.

With this arrangement the cap is securely retained. At the same time when the collar is unscrewed the cap may be lifted upwardly and swung to one side with the link 20 in a substantially vertical position and the link 21 in a substantially horizontal position, supporting the cap in a vertical position at the side of the neck.

The device is attractive in appearance and very convenient to manipulate.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. The combination of a threaded neck, an externally shouldered cap having an annular groove below its shoulder and a central depending ear, a collar fitting within said shoulder of said cap and internally threaded to coact with said neck and having an internal annular groove, a split ring disposed in said groove in said cap to engage said groove in said collar whereby the collar is rotatably connected to the cap, the groove in the collar being of such width as to extend below the bottom of the cap, a split anchoring sleeve disposed within the neck with its upper edge flush with the upper edge of the

neck, said anchoring sleeve having an inwardly projecting ear thereon, means for expanding said sleeve for permanently securing the same within said neck, links pivotally connected to each other and to said ears on said cap and anchoring sleeve permitting the cap to be swung upwardly and to the side of the neck when said collar is unscrewed from the neck, and a gasket disposed with its outer edge within said groove in said collar to be clamped between the bottom of the cap and the upper edges of the neck and anchoring sleeve.

2. The combination of a threaded neck, an externally shouldered cap having an annular groove below its shoulder and a central depending ear, a collar fitting within said shoulder of said cap and internally threaded to coact with said neck and having an internal annular groove, a split ring disposed in said groove in said cap to engage said groove in said collar whereby the collar is rotatably connected to the cap, a split anchoring sleeve disposed within the neck, said anchoring sleeve having an inwardly projecting ear thereon, means for expanding said sleeve for permanently securing the same within said neck, and links pivotally connected to each other and to said ears on said cap and anchoring sleeve permitting the cap to be swung upwardly and to the side of the neck when said collar is unscrewed from the neck.

3. The combination of a threaded neck, an externally shouldered cap having an annular groove below its shoulder, a collar fitting within said shoulder of said cap and internally threaded to coact with said neck and having an internal annular groove, a split ring disposed in said groove in said cap to engage said groove in said collar whereby the collar is rotatably connected to the cap, a split anchoring sleeve disposed within the neck, means for expanding said sleeve for permanently securing the same within said neck, and links pivotally connected to each other and to said cap and anchoring sleeve permitting the cap to be swung upwardly and to the side of the neck when said collar is unscrewed from the neck.

4. The combination of a threaded neck, a cap having an annular external groove, a collar internally threaded to coact with said neck and having an internal annular groove, a split ring disposed in said groove in said cap to engage said groove in said collar whereby the collar is rotatably connected to the cap, the groove in the collar being of such width as to extend below the bottom of the cap, an anchoring member disposed within the neck, links pivotally connected to each other and to said cap and anchoring member permitting the cap to be swung up-

wardly and to the side of the neck when said collar is unscrewed from the neck, and a gasket disposed with its outer edge within said groove in said collar to be clamped between the cap and the neck.

5. The combination of a threaded neck, a cap having an annular external groove, a collar internally threaded to coact with said neck and having an internal annular groove, a split ring disposed in said groove in said cap to engage said groove in said collar whereby the collar is rotatably connected to the cap, an anchoring member disposed within the neck, and links pivotally connected to each other and to said cap and anchoring member permitting the cap to be swung upwardly and to the side of the neck when said collar is unscrewed from the neck.

6. The combination of a threaded neck, a cap, an internally threaded neck engaging collar rotatably connected to said cap, a split anchoring sleeve disposed within said neck with its upper edge flush with the upper edge of the neck, a tapered threaded expanding plug for said sleeve, links pivotally connected to each other and to said cap and anchoring sleeve, and a gasket disposed between said cap and neck to be clamped thereby through the adjustment of said collar.

7. The combination of a threaded neck, a cap, a collar rotatably connected to said cap and internally threaded to coact with said neck, an anchoring member within said neck, a central depending ear on said cap, and links pivotally connected to each other, one of said links being pivotally connected to said ear on said cap and the other to said anchoring member whereby when the said collar is unscrewed from said neck the link connected to said anchoring member may be swung to a vertical position and the link connected to said cap to an approximately horizontal position, thereby supporting the cap in a vertical position at the side of the neck.

8. The combination of a threaded neck, a cap, a collar rotatably connected to said cap and internally threaded to coact with said neck, an anchoring member within said neck, and links pivotally connected to each other, one of said links being pivotally connected to said cap and the other to said anchoring member whereby when the said collar is unscrewed from said neck the link connected to said anchoring member may be swung to a vertical position and the link connected to said cap to an approximately horizontal position, thereby supporting the cap in a vertical position at the side of the neck.

In witness whereof I have hereunto set my hand.

GEORGE LEHMAN CHAPPEL