N. DU BOIS.

RADIATOR CAP.

APPLICATION FILED MAR. 12, 1915.

1,223,156. Patented Apr. 17, 1917.

Fig. 1.

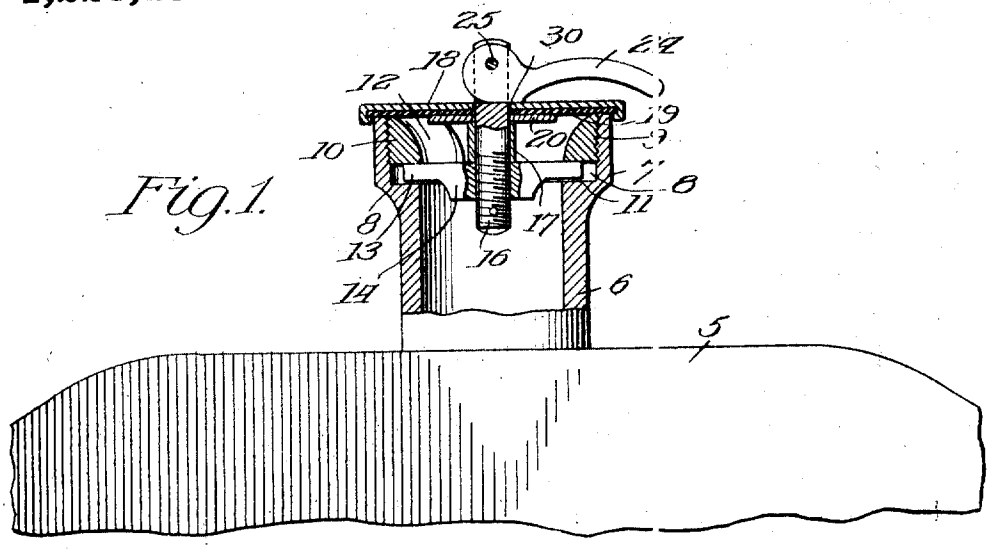


Fig. 2.

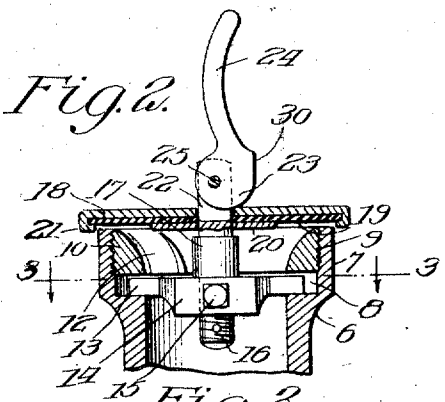


Fig. 3.

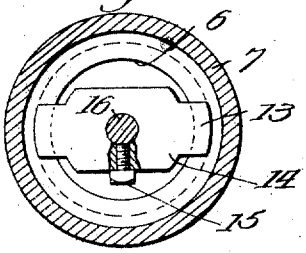


Fig. 4.

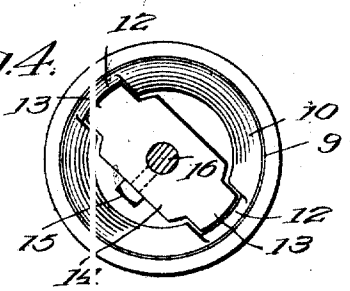
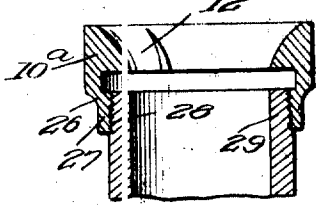


Fig. 5.



WITNESSES:

Samuel E. Wade

Alan H. Garner.

INVENTOR

Nelson Du Bois

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

NELSON DU BOIS, OF LONG BEACH, CALIFORNIA.

RADIATOR-CAP.

1,223,156. Specification of Letters Patent. Patented Apr. 17, 1917.

Application filed March 12, 1915. Serial No. 14,136.

To all whom it may concern:

Be it known that I, NELSON DU BOIS, a citizen of the United States, and a resident of Long Beach, in the county of Los Angeles and State of California, have invented a certain new and useful Improvement in Radiator-Caps, of which the following is a specification.

This invention relates to an improvement in radiator caps, and one of the principal objects of the invention is to provide a cap which may be readily put in place upon the stem of the radiator, and which may be adjusted for securely sealing the stem against leakage.

Another object of the invention is to provide a radiator cap in the form of a gasket adapted to be secured upon a radiator stem and adapted to be engaged by a cross piece carried by a shaft or stud on which is provided a closure or plate fitted with suitable gaskets and adapted to be clamped into engagement with the stem through the medium of a cam lever for securely sealing the stem.

A further object is to provide a device of the class described which will be extremely simple, durable, efficient in operation, and inexpensive to manufacture.

With these and other objects in view which will become apparent as the description proceeds, the invention resides in the combination, construction, and arrangement of parts hereinafter described and particularly pointed out in the appended claims.

In the drawings:

Figure 1 represents a view in section taken through a radiator stem and a cap constructed according to my invention, showing the cap in locked position on the stem;

Fig. 2 represents a similar sectional view taken through the cap and stem showing the cap in unlocked position;

Fig. 3 represents a view in section taken transversely on the plane indicated by the line 3—3 of Fig. 2, looking in the direction indicated by the arrow;

Fig. 4 represents a view looking down into the stem, the shaft or stud being shown in section, and the cross piece being shown in position before being turned beneath the bushing;

Fig. 5 represents a view in section of the upper end of the stem and of a bushing of modified form which may be utilized with my device.

Referring more particularly to the drawing, at 5 is represented the upper portion of an automobile radiator, and at 6 is shown the radiator stem, through which the cooling liquid may be poured into the radiator. In the embodiment shown in the first four figures of the drawing, the upper end of the stem is enlarged as at 7 and is provided with an enlargement 8 of the bore in the stem, said enlarged portion 7 being internally threaded as shown at 9. An annular externally threaded bushing 10 is screwed into the upper end of stem 6, and when in position is disposed in spaced relation with the shoulder 11 formed at the lower terminal of the enlargement 8 of said stem.

Bushing 10 is provided internally at diametrically opposed points, with recesses 12, of a width equal to or slightly greater than the reduced ends 13 of a cross piece 14. The latter is secured by means of a set screw 15 on the lower end of a vertically disposed threaded shaft or stud 16 on which it is turned. This stud is provided above the cross piece 14 with a sleeve 17, and above the sleeve upon the shaft or stud is slidably disposed an annular closure or plate 18 equipped with a gasket 19 and a small washer 20. The closure or plate is provided with a depending concave marginal flange 21, within which the gasket 19 fits. This gasket is made of rubber or some other resilient material. The washer 20 is of smaller diameter than the gasket, and similarly to the gasket and the closure or plate is provided with a central opening through which the shaft or stud 16 extends. The closure, gasket, and washer are thus slidably disposed upon the shaft.

The upper end of the shaft is centrally recessed or slotted as at 22 for the reception of a cam 23 carried on the inner end of a cam lever 24. The cam is pivoted at a point off center to the stem by means of a suitable pin 25, in such manner that when the cam lever is thrown downwardly pressure will be exerted upon the closure plate through the medium of the cam.

The bushing 10 shown in Fig. 5 is devised for attachment to stems not provided with

the upper enlarged portion 7. Said bushing is provided with a depending flange 26, having an inwardly extending enlarged portion 27. This enlarged portion is internally threaded as at 28 and is adapted to screw onto the externally threaded upper portion 29 of the stem. The enlargement 27 occurs in spaced relation to the main body portion or bushing 10^a so that when the latter is in place a space will occur between said bushing and the upper end of the stem.

In operation the bushing is first secured to the radiator stem, and the cross piece 14 is then so positioned that its reduced ends 13 occur in registration with the recesses 12 in the bushing, whereupon the cross piece together with the stem, closure, and lever is lowered until the ends 13 of the cross piece rest against the upper end of the stem. The whole device is then twisted until the cross piece ends are moved out of registration with the recesses 12, and the cam lever 24 is then forced downwardly until the squared portion 30 of the cam bears against the upper surface of the closure or plate. This action of the cam lever draws the cross piece up against the under side of the bushing and at the same time compresses the gasket 19 between the upper end of the stem as in the first four figures of the drawing, or against the upper edge of the bushing 10^a as in the fifth figure of the drawing, in accordance with whether the former or latter type of bushing is used, and the closure plate 18 so as to provide a leak proof joint. The internal diameter of the depending flange 21 provided on the closure is equal to or may be just slightly greater than the external diameter of the upper portion of the stem, so that the flange will depend without the stem when the closure is in finally locked position.

When in finally locked position, the washer 20 abuts against the upper end of sleeve 17, and the latter at its lower end abuts against the cross piece 14, so that no leakage around the shaft or stud 16 will occur.

The cross piece 14 is adjustably positioned on the stud or shaft by means of the set screw, so that bushings of varying thicknesses or depth may be accommodated.

Although I have described the preferred embodiment of my invention, it will be understood that I may desire to make such changes therein as do not depart from the spirit of the invention and which fall within the scope of the appended claims.

I claim:—

1. A cap comprising a bushing adapted to be secured upon a radiator stem, and being provided with diametrically opposed recesses internally thereof, a shaft, a cross piece adjustably positioned upon the shaft and provided with reduced ends adapted to be passed through the recesses in the bushing whereby the cross piece may be turned relatively to the bushing to engage beneath the same, a closure slidably positioned upon the shaft and being provided with a depending marginal flange, a gasket disposed against the closure within the flange, a washer disposed on the shaft beneath said gasket, said closure, gasket, and washer being movable longitudinally of the stem, a sleeve interposed on the stem between the cross piece and washer, said stem being provided with a recess in one end above the closure, a cam pivoted off center within the recess, a handle on which said cam is carried, said handle adapted to be manipulated whereby to engage said cam against the closure plate for compressing the gasket between the plate and upper end of the bushing, substantially as described.

2. A closure comprising a bushing adapted to be attached to a radiator stem, a cross piece adapted to be detachably engaged against and beneath the bushing, a shaft on which the cross piece is carried, a closure plate slidably disposed upon the shaft, a gasket carried by the closure plate, a sleeve disposed upon the shaft between the closure plate and the cross piece, and a cam carried by the shaft and movable into engagement with the closure plate for compressing the gasket against the bushing and against the sleeve.

3. In a cap, the combination of a bushing adapted to be connected with the stem of a radiator, a shaft having a threaded lower end, a cross piece threadedly connected with the threaded portion of the shaft, a set screw carried by the cross piece engaging the shaft, a closure plate slidably disposed upon the shaft, a sleeve disposed on said shaft between the closure plate and the cross piece, a cam carried by the shaft and movable whereby to force said closure plate toward the bushing, and compressible means adapted to be compressed between said closure plate and the bushing and the sleeve, respectively.

4. A radiator cap comprising a bushing adapted to be connected with the stem of a radiator, a cross piece detachably engaged beneath the bushing, a shaft on which the cross piece is carried, a closure plate, slidable on the shaft arranged above the bushing, compressible means carried by the closure plate, a sleeve mounted on the shaft between the closure plate and the cross piece, and means for forcing the closure plate toward the cross piece whereby to compress the compressible material against the bushing and against the sleeve.

5. A device of the character described, including a bushing adapted to be connected with the stem of a radiator, a closure plate arranged on one side of the bushing, a shaft

slidably extending through the plate, a cross piece arranged to engage against the opposite side of the bushing, a gasket arranged between the closure plate and bushing, means whereby the closure plate may be drawn along the shaft to compress the gasket against the radiator stem, and means between the gasket and cross piece against which the gasket is pressed when the plate is drawn along the shaft.

NELSON DU BOIS.

Witnesess:
O. M. VALENTINE,
C. E. BRASHEAR.