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LOCKING CAP FOR AUTOMOBILE RADIATORS.

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1,422,372. **Patented July 11, 1922.**

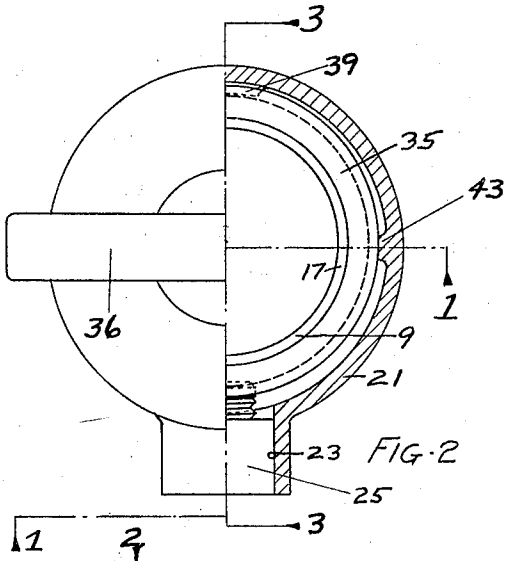


FIG. 2

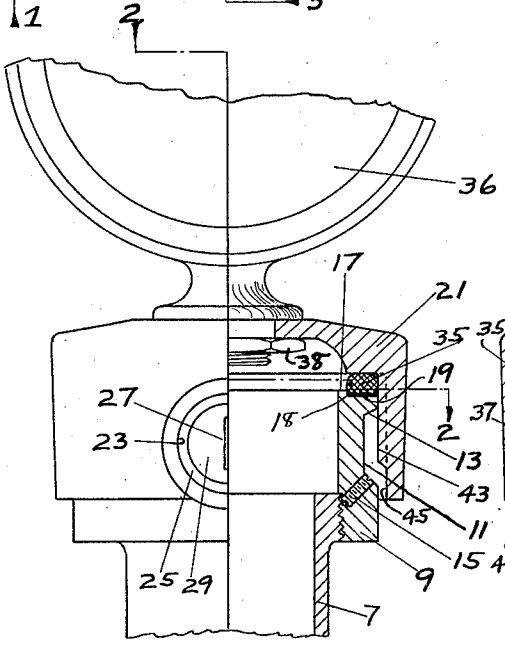


FIG. 1

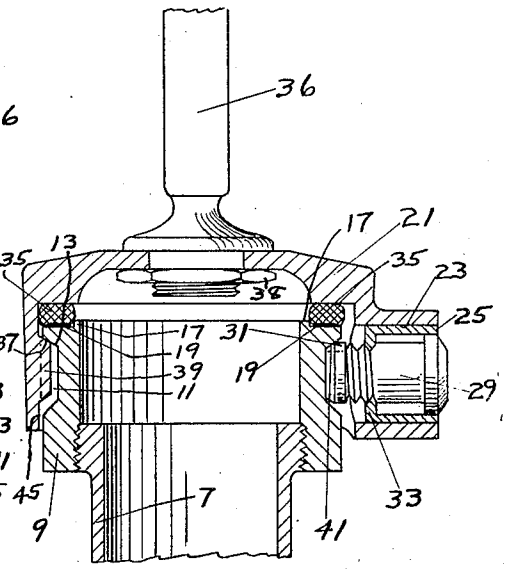


FIG. 3

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LOCKING CAP FOR AUTOMOBILE RADIATORS.

1,422,372. Specification of Letters Patent. Patented July 11, 1922.

Application filed April 25, 1921. Serial No. 464,324.

To all whom it may concern:

Be it known that I, HARVEY S. PARDEE, a citizen of the United States, and a resident of Chicago, county of Cook, State of Illinois, have invented an Improvement in Locking Caps for Automobile Radiators, of which the following is a specification.

This invention relates to mechanical apparatus, and with regard to certain more specific features, to a radiator cap for automobiles.

Among the several objects of the invention may be noted the provision of a simple and durable cap; the provision of an inexpensive and compact locking device; and the provision of an effective and reliable device for locking a cap against displacement and at the same time insuring a tight connection between the cap and the member upon which it is mounted. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the features of construction, combinations of elements, and arrangements of parts which are exemplified in the construction hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, in which is illustrated one of various possible embodiments of the invention,

Fig. 1 is a front elevation, partly in section on the line 1—1 of Fig. 2;

Fig. 2 is a plan, partly in section on the line 2—2 of Fig. 1; and

Fig. 3 is a transverse vertical section on the line 3—3 of Fig. 2.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

Referring now more particularly to Fig. 1, there is illustrated at 7 an annular member, in this instance a so-called neck of an automobile radiator.

The present invention may be applied to many if not all types of neck in general use at the present time. An adapter member 9 of suitable diameter to fit upon the neck 7 is provided with threads cooperating with the threads of the neck. In the present instance the neck is shown as having external threads, so that the adapter is provided with internal threads cooperating therewith.

Above the portion carrying the threads, the adapter has a peripheral groove 11, the upper lateral edge of which is beveled as indicated at 13. Suitable means such as a locking screw 15 (Fig. 1) are provided in order to secure the adapter in fixed position upon the neck 7.

The adapter at its upper end is provided with a shoulder 17 (Figs. 1 and 3), the upper edge of which is peaned over to form a peripheral groove 18 to retain in position a flat metal ring 19, in this instance a thin copper ring, rotatably mounted within said peripheral groove 18.

Mounted upon the adapter is a cap 21. This cap has a forwardly extending cylindrical bore 23 for the reception of a lock barrel 25 which contains tumbler mechanism (not shown) of any suitable type. When a proper key (not shown) is inserted in the keyhole 27 (Fig. 1) the tumblers are drawn into the bolt 29 and it is possible to rotate the bolt within the barrel.

In the illustrated embodiment of the invention, the bolt is threaded in the barrel, as is indicated in Fig. 3. Assuming the lock to be in engaging or locking position, as in Fig. 3, the bolt may be rotated counterclockwise (Fig. 1), thereby shifting the bolt toward the right in Fig. 3 with respect to the cap. Such rotation of the bolt is limited by a steel collar 31 (Fig. 3) secured upon the inner end of the bolt, and of large enough diameter to abut against the inner annular end of the barrel 25. This is for the purpose of preventing removal of the bolt from the barrel.

When the bolt has been rotated far enough toward the right in Fig. 3 to bring it out of the recess 11 in the adapter member, the cap 21 may be removed from the adapter member by lifting the former upward.

When the device is to be assembled and locked upon the neck the adapter member is first threaded into position upon the neck, and is secured thereon by means of a set screw 15 (Fig. 1). The metal ring 19 is already in place upon the adapter. A yielding gasket or washer 35, preferably of rubber, is in the cap. The cap has a thermometer or other suitable device 36 secured thereon by means 38 inaccessible from the outside of the cap. The lock bolt is in its unlocking position. The cap is slipped downwardly upon the adapter. The lock bolt is then rotated clockwise (Fig. 1) to force it toward the left (Fig. 3) with respect to the cap. During such motion the bolt enters

the peripheral groove 11 in the adapter member, and forces the cap toward the right (Fig. 3) thereby causing the beveled upper surface 37 (Figs. 2 and 3) of the projection 39 on the cap to ride downwardly upon the adjacent portion of the upper beveled edge 13 of the groove 11 in the adapter member, and thus forcing that portion of the cap downward upon the adapter member. At the same time, the co-action of the inner beveled surface 41 of the bolt with the adjacent beveled upper edge 13 of the groove 11 in the adapter member also forces that portion of the cap downwardly upon the adapter member. A further result of this movement of the bolt in locking direction is, that the cap is locked upon the adapter member, by the co-action of the bolt and the projection 39 with the groove 11.

This downward movement of the cap against the adapter member compresses the gasket 35 and forms a tight joint between adapter member and cap.

Once the bolt has reached its locking position (Fig. 3) and the key has been removed, it is not possible to displace the bolt. The cap is thus securely locked against removal from the adapter, and the thermometer cannot be removed.

In addition to the projection 39, two projections 43 (Figs. 1 and 2), one on either side of the bore 45 of the cap, are provided, to serve as guides for the movement of the cap toward the right and left (Fig. 2) with respect to the adapter, and to reduce or eliminate side play between such parts. These projections offer only a comparatively small amount of friction to oppose relative movement of cap and adapter member..

When the cap is in place and locked upon the adapter member, rotation of the cap does not disengage the lock. Such rotation of the cap merely causes rotation of the gasket 35 and ring 19. As the metal ring is rotatably mounted upon the adapter member, the ring simply rotates with respect thereto. And since the groove 11 extends entirely around the adapter member, rotation of the cap and hence of the lock bolt and projection 39 can take place indefinitely, these parts simply sliding around the beveled upper surface 13 of the groove 11.

In view of the above, it will be seen that the several objects of the invention are attained and other advantageous results achieved.

As many modifications might be made of the embodiment above set forth, without departing from the spirit or scope of the present invention, it is to be understood that the above description and the accompanying drawings are to be interpreted as illustrative and not in a limiting sense.

I claim:

1. In apparatus of the class described, in combination, a cap, a lock in the cap, comprising a bolt, an annular member on which the cap fits, means rotatably mounted upon the annular member, a compressible gasket positioned between said means and said cap, whereby the rotation of the cap upon the annular member rotates simply the gasket and said means, the movement of the bolt into locking position serving to secure the cap against removal from the annular member and also compressing the gasket to form a tight joint between the cap and the annular member.

2. In apparatus of the class described, in combination, a cap adapted to fit upon an annular member and adapted to be rotated indefinitely thereupon, a lock in the cap having a bolt; an adapter member adapted to be secured upon said first member, the cap fitting upon said adapter member, means rotatably mounted upon the adapter member, a compressible gasket positioned between said means and said cap, whereby the rotation of the cap upon the adapter member merely rotates the gasket and said means, the movement of the bolt into locking position serving to secure the cap against removal from the adapter member and also compressing the gasket to form a tight joint between cap and adapter member.

3. In apparatus of the class described, in combination, a cap adapted to fit upon the neck of an automobile radiator and adapted to be rotated indefinitely thereupon, a lock in the cap, comprising a bolt longitudinally movable into and out of locking position, key-released tumbler mechanism adapted to hold said bolt in position, an annular adapter member adapted to be secured upon said neck and provided with a peripheral groove having an upper beveled edge, means comprising one or more beveled projections in the cap adapted to engage said edge when the bolt is in locking position, the bolt having a beveled inner surface also engaging said edge when in locking position, a flat metal ring rotatably mounted upon the upper surface of the adapter member, a compressible gasket positioned between said ring and said cap, whereby the rotation of the cap upon the adapter member rotates merely the gasket and ring, the bolt and projection then rotating in the groove, the movement of the bolt into locking position serving to secure the cap against removal from the adapter member and also compressing the gasket to form a tight joint between cap and adapter member; means preventing or limiting side-play between cap and adapter member; a thermometer mounted on the cap, and means for securing said thermometer thereon, said means being inaccessible when the cap is locked in position.

4. In apparatus of the class described, in

combination, a cap adapted to fit upon the neck of an automobile radiator, and adapted to be rotated indefinitely thereupon, an annular member adapted to be secured upon said neck and located between the neck and cap, means for securing the annular member against removal from the neck, means for locking the cap against removal from the annular member, a flat metal ring rotatably mounted upon the upper surface of the annular member, and a compressible gasket positioned between said ring and said cap, whereby the rotation of the cap upon the annular member rotates merely the gasket and ring.

5. In apparatus of the class described, in combination, a cap adapted to fit upon the neck of an automobile radiator, an annular member adapted to be secured upon said neck and located between the neck and cap, means for securing the annular member against removal from the neck, means for locking the cap against removal from the annular member, a flat metal ring rotatably mounted upon the upper surface of the annular member, and a compressible gasket positioned between said ring and said cap.

6. In apparatus of the class described, in combination, a cap adapted to fit upon the neck of an automobile radiator, an annular member adapted to be secured upon said neck and located between the neck and cap, means for securing the annular member against removal from the neck, means for locking the cap against removal from the annular member, a flat metal ring rotatably mounted upon an annular surface of the annular member, said surface being adjacent to an annular surface on the cap, a compressible gasket positioned between said ring and said cap, a device mounted upon the cap, and means for securing said device thereupon, said means being inaccessible when the cap is in service.

In testimony whereof, I have signed my name to this specification this 23d day of April, 1921.

HARVEY S. PARDEE.