May 21, 1935. C. C. CURL 2,002,260

LOCKING CAP

Original Filed Dec. 12, 1932

Fig. 1.

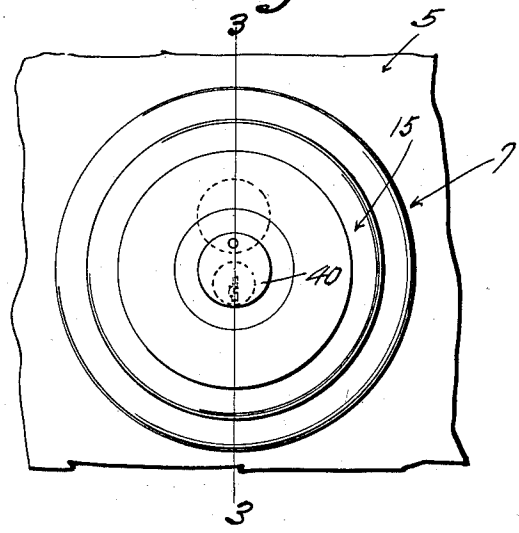


Fig. 2.

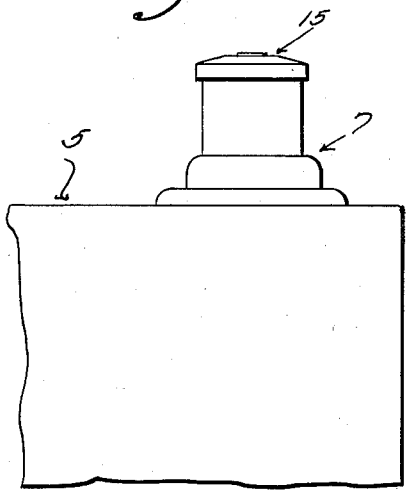


Fig. 3.

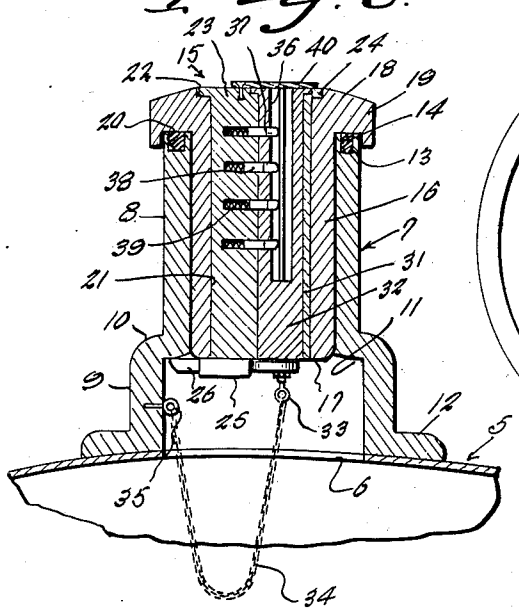
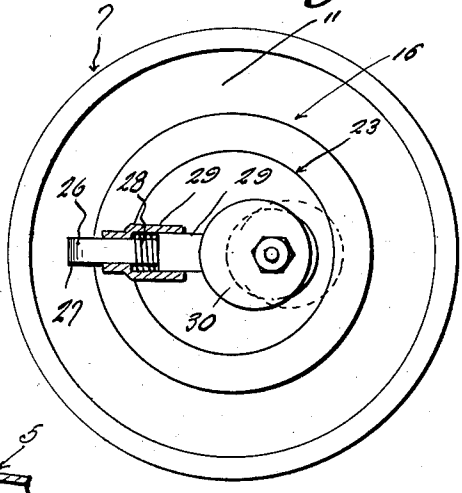


Fig. 4.



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LOCKING CAP

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2 Claims. (Cl. 70—90)

My invention relates to locking caps for closing tanks and the like, and particularly to a locking cap for the filling neck of an automobile fuel tank, and it is an important object of my invention to provide a locking cap of this character which is efficient and fool-proof in action and cannot be removed from locked position except by the use of the proper key.

It is also an important object of my invention to provide in a locking cap of this character a new organization of parts whereby mechanical efficiency, simplicity, and ease of operation are obtained.

It is also an important object of my invention to prepare a filling neck for receiving the locking cap, whereby a unit comprising the locking cap and the cooperating filling neck is produced which may be installed to take the place of the filling neck constructions on tanks and the like.

Other objects and advantages of my invention will be apparent from a reading of the following description in connection with the drawing, wherein for purposes of illustration I have shown a preferred embodiment of my invention.

In the drawing:—

Figure 1 is a view of an embodiment of the invention shown installed on a tank.

Figure 2 is a side elevational view of the structure shown in Figure 1.

Figure 3 is a transverse vertical sectional view taken approximately on the line 3—3 of Figure 1.

Figure 4 is a bottom plan view of Figure 3 showing the bolt guide in section.

Referring in detail to the drawing, the numeral 5 refers generally to a tank such as an automobile fuel tank having the filling opening 6. Mounted above the filling opening and secured upon the outside of the tank surrounding the opening is the filling neck 7. The filling neck 7 comprises a generally cylindrical tubular member which comprises the uniform cylindrical portion 8 and the cylindrical portion 9 of greater diameter formed on the lower end of the portion 8 and connected by means of an annular angular portion 10 which defines an interior shoulder 11. At the lower end of the portion 9 is an annular flange 12 which is secured to the tank 5. In the upper edge of the portion 8 is an annular channel or groove 13 in which is arranged a compressible member 14 which acts as a gasket in a manner to be described.

Rotatably received in the cylindrical tubular portion 8 of the filling neck 7 is the cylindrical body portion 16 of the locking cap generally designated 15. The cylindrical portion 16 fits rather closely in the portion 8 of the filling neck, but enough clearance is provided therebetween to permit rotation of the locking cap in the filling neck. The cylindrical body portion 16 of the locking cap is of approximately the same length as the portion 8 of the filling neck so as to bring the lower end 17 of the body portion 16 approximately on a level with the annular shoulder 11 in the interior of the filling neck 7.

On the upper end of the body portion 16 of the locking head is a flanged head 18 which has the annular flange 19 overhanging the walls of the portion 8 of the filling neck and extending therebeyond. In the undersurface of the flange 19 is an annular groove 20 which receives the upper end of the filling neck. When the locking cap is in the filling neck the top of the annular groove 20 rests upon the compressible member 14 so that a fluid seal and air seal between the upper end of the filling neck and the head of the locking cap is obtained.

A concentric axial, cylindrical opening 21 is provided through the head 18 and the body portion 16 of the locking cap, the opening 21 being provided at its upper end with a short portion of larger diameter 22. Fitted in the opening 21 is a cylinder lock mechanism generally designated 23 which has at its upper end a lateral flange 24 which seats in the groove 22. When so connected to the head and body of the cap, the lower end of the lock mechanism is flush with the lower end of the body portion 16.

Connected at one side of the lower end of the cylindrical lock mechanism 23 is a tubular guide 25 in which a bolt 26 having an upwardly curved surface 27 at its end is slidable and is normally retracted by a spring 28 contained within the guide 25. Engaged by one end of the spring 28 is a wider portion 29 which is also slidable in the guide 25 and has a curved inner end engaged with a circular eccentrically mounted cam 30 mounted on a part to be described. It will be observed that when the bolt 26 is outwardly projected under the shoulder 11 in the positions illustrated in Figure 3, that the cap will be locked against withdrawal, but may be rotated, the bolt 26 being slidably engaged under the shoulder 11 in the filling neck.

The body portion 23 of the cylindrical lock mechanism to which the bolt is mounted as described is provided with a longitudinal eccentric opening 31 similar in formation to the opening 21 in the cap itself wherein is seated the rotatable member 32 which has fixed to its lower end the cam 30 already described. Suitably con-

nected to this portion of the device is an eye 33 to which is attached one end of a guard chain 34 whose opposite end is anchored to the interior wall of the portion 9 of the filling neck as indicated at 35. The chain is of sufficient length to permit complete withdrawal of the locking cap from the filling neck so as to enable introduction of fuel into the filling neck, but prevent mislaying of the locking cap.

The rotatable member 32 is cylindrical in form and is provided with an axial cylindrical opening 36 extending from its upper end to a point removed from its lower end. This opening 36 is adapted to receive the key of the lock mechanism which has bits capable of entering openings 37 provided in one side of the member 32 for pushing spring pressed members 38 out of engagement with the openings 37 so that the member 32 may be rotated to operate the cam 30 for withdrawing the bolt 26 against the tension of the spring 28 from a position engaged with the shoulder 11 in the filling neck, to permit the locking cap to be withdrawn from the filling neck. The spring pressed members 38 are seated in and are operable in openings 39 in the body portion 23 of the lock mechanism. The openings 37 in the member 32 and the openings 39 in the body portion 23 are registrable in only one position of relative rotation of these members.

A suitable pivoted closure member 40 is arranged on the top of the body portion 23 for closing the opening 36 in the rotatable member 32 of the lock mechanism.

It will be observed that the location of the guide 25 to extend outwardly and under the lower end of the body portion 16 of the lock cap prevents withdrawal of the body portion 23 of the lock mechanism from the portion 16, and that the extension of the cam 30 always laterally beyond the sides of the rotatable member 32 and in engagement with the lower end of the portion 23 of the lock mechanism prevents withdrawal of the rotatable member 32 from the portion 23. If desired, the parts 16 and 23 may be swedged or otherwise secured together to prevent relative rotation and relative axial movement, but they will function for the purposes described without any connection in addition to those already named. It will be observed that the flange 24 on the upper end of the body portion 23 and the flange on the upper end of the rotatable member 32 prevent inward movement of these parts relative to the parts in which they are located.

Though I have shown and described herein a preferred embodiment of my invention, it will be definitely understood that I do not desire to limit the application of the invention thereto, and any change or changes may be made in material and structure and arrangement of parts, within the spirit of the invention and the scope of the subjoined claims.

What is claimed is:—

1. In a locking cap for a filling neck having an interior shoulder, a body disposable within the filling neck and having a flange to rest upon the outer end of said filling neck, a second body arranged within the first body and having spring pressed detents, a rotatable key operated member mounted in a longitudinal bore provided in said second body and having openings to receive said detents when said key operated member is in a certain position, means preventing relative axial movement of said second body and said rotatable key operated member, a cam fixed on the inner end of said rotatable member, a normally retracted bolt carried by the inner end of said second body and operatively engaged by said cam, said key operated rotatable member being rotatable for rotating the said cam and projecting said bolt outwardly into operative engagement with the shoulder of the filling neck.

2. A locking cap for a filling neck having an interior shoulder, said locking cap comprising a cylindrical body having at one end a lateral flange for engaging the outer end of said filling neck and closing the same, said body having an axial bore in which is rotatably fitted a second cylindrical body having a second lateral flange at its outer end engaging a portion of the outer end of the first cylindrical body, a detent guide fixed to the inner end of said second body and slidably engaging the inner end of said first body, a sliding detent in said guide, a spring in said guide normally retracting said detent from a position in which it engages under said interior shoulder of the filling neck, the engagement of said second lateral flange with the outer end of the first body and the engagement of said guide with the inner end of said first body operating to prevent relative axial movement but not relative rotation of said first and second cylindrical bodies, said second body being provided with a longitudinal bore, a key operated cylinder lock in said longitudinal bore having a cam engageable with the inner end of said sliding detent for projecting the same to locking position.

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