March 13, 1928. 1,662,482

R. E. WARD

LOCKING MECHANISM FOR FILLING TUBE CAPS

Original Filed May 26, 1926

Fig 1

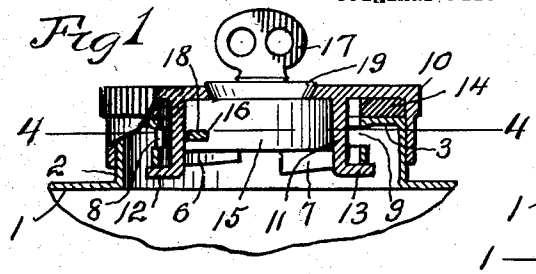


Fig 2

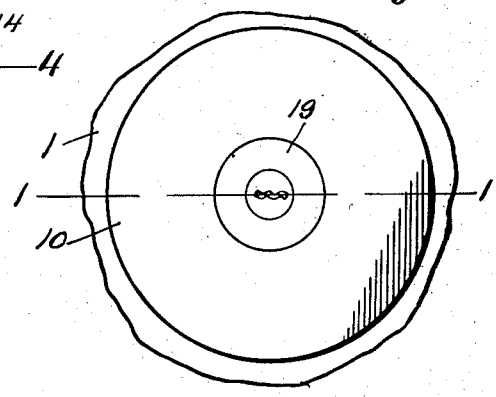


Fig 3

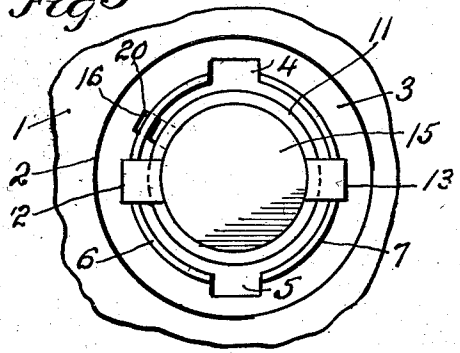


Fig 5

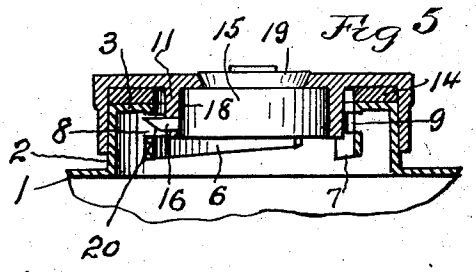


Fig 4

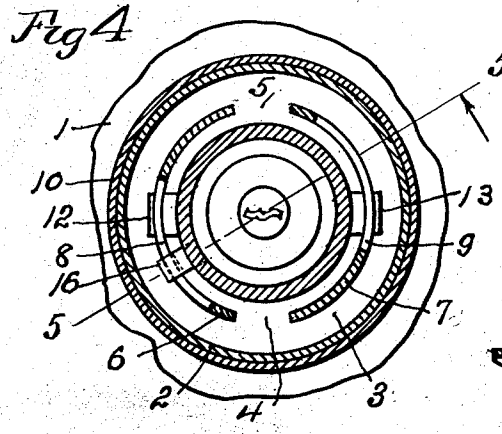
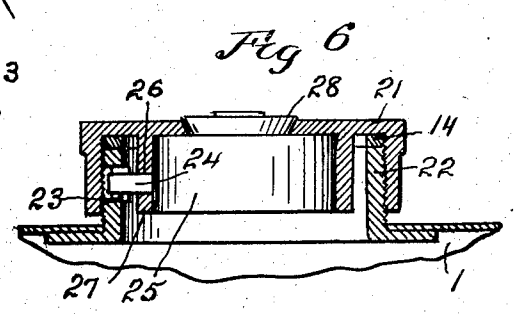


Fig 6



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UNITED STATES PATENT OFFICE.

ROBERT E. WARD, OF KANSAS CITY, MISSOURI.

LOCKING MECHANISM FOR FILLING-TUBE CAPS.

Application filed May 26, 1926, Serial No. 111,786. Renewed January 25, 1928.

My invention relates to improvements in locking mechanisms for filling tube caps. It is particularly well adapted for use on automobile gasoline tanks.

The principal object of my invention is to prevent unauthorized removal of gasoline from an automobile tank.

A further object of my invention is to provide a locking mechanism of the kind described, which is simple, cheap, durable, not liable to get out of order, which permits the easy and quick application of the cap to or removal from a filling tube by an authorized person, and which is readily adaptable to automobile gas tanks of types now in use.

The novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawing, which illustrates my invention,

Fig. 1 is a view partly in side elevation and partly in vertical section on the plane of the line 1—1 of Fig. 2.

Fig. 2 is a plan view of a filling tube cap provided with my improved locking mechanism, a portion of the tank being shown.

Fig. 3 is a bottom view of the same.

Fig. 4 is a top view of the same, parts being shown in section on the line 4—4 of Fig. 1.

Fig. 5 is a section on the line 5—5 of Fig. 4, the lock being shown in side elevation.

Fig. 6 is a modification of my invention shown adapted to a cap of the screw cap type, the view being partly in side elevation and partly in central vertical section, Fig. 2 also representing a plan view of the modified form of my invention.

Similar reference characters designate similar parts in the different views.

Referring to Figs. 1 to 5, 1 designates an ordinary automobile gas tank, a portion only being shown, having a filling tube 2 provided at its upper end with an annular inwardly extending portion 3, having in its inner edge two diametrically opposite notches 4 and 5, and having extending downwardly from its inner edge respectively between said notches two arcuate flanges 6 and 7, respectively provided with two horizontal slots or openings 8 and 9.

10 designates the body of a filling tube cap adapted to be fitted on the tube 2, and provided on its under inner side with an annular flange 11, which is provided with two diametrically opposite outwardly extending arms 12 and 13, each of which is adapted to pass through either of the notches 4 or 5 and to engage either of the inclined edges with which the bottom edges of the arcuate flanges 6 and 7 are respectively provided.

14 designates a gasket mounted on the portion 3 of the tube and under the cap 10.

When the cap 10 is slipped onto the tube 2 with the arms 12 and 13 of the cap alined with the notches 4 and 5, and the cap is then turned counterclockwise, as viewed in Fig. 4, the arms 12 and 13 will operatively and slidably engage the adjacent inclined bottom edges of the arcuate flanges 6 and 7, thereby drawing the cap tightly downwardly against the gasket 14.

To prevent the unauthorized removal of the cap from the filling tube, by holding the cap from being turned to the entering position of the arms 12 and 13 through the notches 4 and 5, there is provided a lock having a casing 15 of cylindrical form fitted in the annular flange 11 of the cap.

The lock may be of any ordinary type, which may have a laterally extending slidable bolt 16 mounted in and projecting from the side of the casing, and the bolt is, preferably, one which automatically is normally moved to the locking extended position in any manner common with locks of this general type. The lock may have any usual means for being operated to manually withdraw the bolt 16 inwardly from the locking position, such as a key 17, Fig. 1.

The bolt 16 extends through and is slidable in a transverse hole provided through the annular flange 11 and designated by 18, Figs. 1 and 5. The bolt 16 is adapted, when the cap 10 has been fitted on the tube 2 and turned to the locking position, shown in the drawing, to enter the slot 8 or 9 which is next adjacent thereto and which alines with the hole 18.

When the bolt is in either slot 8 or 9, it will engage the adjacent arcuate flange 6 or 7, as the case may be, and will hold the cap from being turned to the entering or initial position of the arms 12 and 13 with reference to the notches 4 and 5.

For fastening the casing 15 to the cap, the upper side of the casing may be provided with a flaring extension 19 fitted in a flaring central hole in the top of the cap 10, such flaring of the extension 19 being ob-

tained by peening the edge thereof. By having the bolt 16 extended through the hole 18 of the annular flange 11, the casing 15 is reliably held from turning in the cap.

The under side of the outer portion of the bolt 16 may be upwardly and outwardly inclined to enable it to be readily forced inwardly to permit the arms 12 and 13 to pass through the notches 4 and 5 without having to use the key 17 to move the bolt to the unlocked position. Such inclined portion of the bolt 16 is designated by 20, Fig. 3.

In applying the cap, of the form shown in Figs. 1 to 5, the cap is disposed on the tube 2 with the arms 12 and 13 alined with the notches 4 and 5 and pressed downwardly, thereby forcing the bolt 16 inwardly until it is at the inner side of the adjacent arcuate flange 6 or 7 as the case may be, after which the cap is turned counterclockwise, as viewed from above, until the cap is tightly against the gasket 14, at which time the bolt 16 will be automatically forced into the adjacent slot 8 or 9, thereby locking the cap from being turned to the initial or entering position.

To remove the cap, the key 17 is turned so as to withdraw the bolt 16 from the slot in which it is disposed, and the cap is then turned clockwise, as viewed from above, to the initial position, when it may be upwardly withdrawn from the tube 2. By having the arms 12 of the cap interlock with the flanges 6 and 7, when the cap is turned from the initial fitting on position, the cap is held from accidental withdrawal outwardly from the tube when the bolt 16 is in the unlocked position, such as might occur should the bolt become stuck so that it would not enter the adjacent slot 8 or 9.

In the form shown in Fig. 6, the cap 21 is an ordinary form of screw cap having internal threads fitted to the external threads of a filling tube 22, which is provided with a transverse hole or slot 23 adapted to receive a slidable bolt 24, which is mounted in a casing 25 and which extends through a hole 26 provided in an annular flange 27, corresponding in function and position to the flange 11 of the other form of my invention, excepting that it has no lateral arms. The casing 25 is fitted in the annular flange 27 and may have a central upper portion 28 peened in a central hole in the cap similarly to the extension 19 in the other form of my invention.

In the operation of the form shown in Fig. 6, the bolt 24 is withdrawn to the unlocking position, and the cap 21 is then turned on the tube 22 until it is tightly against the gasket 14 and the bolt 24 is in register with the slot 23, which may extend for a relatively long distance around the tube. The bolt is then locked and made to enter the slot 23, thereby holding the cap from being unscrewed from the tube.

I do not limit my invention to the structures shown and described, as modifications other than shown may be made, within the scope of the appended claims, without departing from the spirit of my invention.

What I claim is:—

1. In a locking mechanism for filling tube caps, the combination with a filling tube having an annular inwardly extending portion having at inner edge a notch, of a cap having on its under side an annular flange provided with an outwardly extending arm adapted to pass through said notch and, when the cap is turned from the entering position of said arm, to engage the under side of said portion, and a lock having a casing fitted in said annular flange, and a bolt movable in said casing to and from a locking position and extending through said flange, and adapted when in the locking position and the cap is not in said entering position of said arm to lockingly engage said tube and hold the cap from being turned to said entering position.

2. In a locking mechanism for filling tube caps, the combination with a filling tube having an annular inwardly extending portion provided at its inner edge with a notch, said portion having at one side of said notch a downwardly extending arcuate flange provided with a slot, the under edge of said flange being inclined downwardly from said notch, of a cap adapted to be fitted on said tube and having an annular flange on its under side provided with a transverse hole adapted to register with said slot, said annular flange having an outwardly extending arm adapted to pass through said notch, and, when the cap is turned from the entering position of said arm, to engage said inclined edge, and a lock having a casing fitted in said annular flange, and a bolt extending through and slidable in said hole into said slot for holding said cap from being turned to said entering position of said arm.

In testimony whereof I have signed my name to this specification.

ROBERT E. WARD.