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GASOLINE TANK CLOSURE MEANS

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My invention relates to closure means for the filling spout of the gasoline tank of an automobile and it has for its object the provision of a new and improved form and arrangement of parts whereby a simplified construction may be attained which will be effective and convenient in use and attractive in appearance. It is one of the objects of my invention to provide a construction of this type comprising means for preventing the insertion of a siphoning tube of any effective size into the tank for protecting the tank against theft of gasoline therefrom.

To these ends, it is one of the objects of my invention to provide a construction of this type of a minimum number of parts by which an effective closure member shall be provided irremovably across the filling spout and of such a character as to permit free passage of gasoline therethrough and by which a cap shall be hinged mounted on the upper end of the spout for preventing the gasoline from splashing out of the tank. It is one of the objects of my invention to provide an improved arrangement for holding the hinged mounted cap alternatively in either its raised open position or its horizontal closed position, this result being preferably effected through the resiliency of the closure member which is preferably made in the form of an elongated spiral spring.

It is one of the objects of my invention to provide such an arrangement of said spiral spring member as to enable the spring to be threaded into position in the spout so that the upper ply of the spring shall underlie the inwardly turned flange at the upper end of the spout member, the arrangement to be such that the upper end portion of the spring must be elastically distorted more or less for threading the spring into position in the spout and such that a corresponding distortion for threading the spring out of position shall be very difficult or impossible whereby the spring is effectively protected against removal upwardly from the spout.

It is another object of my invention to improve devices of this type in sundry details hereinafter pointed out. The preferred means by which I have accomplished my several objects are illustrated in the drawing and are hereinafter specifically described. That which I believe to be new and desire to cover by Letters Patent is set forth in the claims.

In the drawing,—

Fig. 1 is a central vertical section through the preferred form of my improved closure means in position on the filling spout of a gasoline tank;

Fig. 2 is a view similar to Fig. 1 but showing the closure cap in its raised open position;

Fig. 3 is a sectional view taken substantially at line 3—3 of Fig. 2;

Fig. 4 is a perspective view of my improved closure means; and

Fig. 5 is a horizontal section through my improved device, taken substantially at line 5—5 of Fig. 1.

Referring to the several figures of the drawing, in which corresponding parts are indicated by the same reference characters, 10 indicates a gasoline tank having a filling spout 11 of the ordinary type mounted thereon. As is clearly shown in Figs. 1 and 2, the metal at the upper end of the spout 11 is turned inwardly to provide a flange 12 and then downwardly to provide a longitudinally extending flange 13, the flanges being cut away at opposite sides of the spout to provide notches 14 therein.

My improved closure means comprises a cap member 15 formed of sheet metal having a downwardly turned flange 16 about its outer edge. As is best shown in Fig. 5, a channel member 17 is secured upon the inner face of the cap 15, being held in position by means of suitable rivets 18. About the channel member 17 and within the flange 16, I have provided a gasket 19 of any approved form, such gasket being cut out at its intermediate portion about the channel member 17. As is best shown in Fig. 3, the cap member 15 is provided at one side with an extension 20 to serve as a handle for convenient manipulation of the cap. At the side adjacent to the handle extension 20, the metal of the cap is pressed upwardly to provide a groove 21 which serves as an air vent connecting the cut-out portion of the gasket with the outside of the gasket.

For connecting the cap 15 in position upon the filling spout and for providing a closure for the filling spout, I have provided an elongated spiral spring 22 which is formed of a considerable number of plies of the same diameter at one end and which is tapered to a point at the opposite end. The spring 22 is preferably formed of tempered steel so as to be of considerable strength and resiliency, being adapted to resist cutting in the cramped location within the filling spout 11 as hereinafter described and to be incapable of permanent distortion sidewise within the limits of such spout. The arrangement of the spring is such that it is capable of being threaded readily into the spout 11 so as to bring the top plies of the spring underneath the inwardly and downwardly turned flange portions 12 and 13.

The arrangement is such that at the end of the operation of threading the spring into position the top plies are distorted more or less for permitting the end portion of the top ply to pass downwardly through one of the notches 14. The arrangement is such that it is very difficult or perhaps impossible under ordinary conditions to produce the necessary distortion of the end portion of the spring for permitting the spring to be threaded out of engagement with the filling spout.

The cap 15 is connected with the spiral spring member 22 by means of a link 23 in the form of a strap of hardened sheet metal, the upper end of such strap being provided with an eye 24 thereon which is connected by means of a pin 25 extending between the sides of the channel member 17. At its lower end, the link 23 is provided with an eye 26 which is pivotally mounted about an inwardly offset portion 27 of one of the plies of the spring 22. The link 23 is of such length and connected with the spring 22 at such intermediate point therealong that the upper end portion of the spring member 22 is normally held in slightly compressed relation so as to be slightly under tension for holding the cap 15 effectively in position as shown in Fig. 1. The relation is such that when the cap 15 is swung upwardly and toward the right in Fig. 1 into the position as shown in Fig. 2, the tension of the upper end portion of the spring is substantially increased, as is indicated in said Fig. 2, the lower end portion of the spiral member being raised bodily with respect to the filling spout 11 and the tank 10.

When the cap 15 is swung upwardly and sidewise for carrying it to its open position, the end portion of the channel member 17 engages the upper end of the filling spout 10 at a point adjacent to the gasket 19, acting as a fulcrum for the cap with respect to the filling spout. At about the end of the upward movement of the cap 15, the channel member 17 slides outwardly with respect to the filling spout 11 into the position as shown in Fig. 2 until the link 23 is brought into engagement with the metal of the spout 11, the link 23 preferably being positioned so as to engage one of the notches 14 in such upward movement of the cap. As is clearly shown in Fig. 2, the link 23 which is bowed inwardly to a slight extent permits the bearings 25 and 27 to move into past-centers position with respect to the notch 14 for permitting the spring pressure applied through the link 23 from the spring 22 to hold the cap releasably in its fully opened position.

By my improved construction, I have provided an effective closure for the spout 11 by which the insertion of a siphoning tube of any effective size is prevented, the arrangement, however, being such that the gasoline is permitted to pass freely at high speed through the spout without objectionable splashing. By reason of my improved arrangement in which the inwardly offset portion 27 of the spring member is located substantially opposite the end of the top ply of the spring member, such end portion of the spring is caused to lie directly underneath the strap 23 so as to be protected effectively thereby with respect to any effort to remove the spring upwardly from the filling spout 11.

In the use of my improved construction, the cap 15 in its normal fully opened position extends downwardly at one side of the filling spout so as to bring the lower edge of the cap well below the upper end of the spout. In such position, the bearing portions at the end of the channel mem-

ber 17 are pressed firmly against the upper end of the spout 11 in position to act as a temporary fulcrum for the cap when pressure is applied thereto for moving it out of its past-centers locking position with respect to the spout for movement into its closed position.

While I prefer to employ the form of device as shown in my drawing, and as above described, it is to be understood that my invention is not limited thereto except so far as it may be so limited by the prior art, it being understood that changes might well be made in the form and arrangement without departing from the spirit of my invention.

I claim:—

1. In a closure device for the gasoline tank of an automobile, the combination of a cap adapted to seat on the inwardly turned flange at the upper end of the filling spout of a tank, a spiral spring member mounted below said flange across said filling spout effectively closing the spout against insertion of a siphoning tube therethrough but permitting free entrance of gasoline through the spout, and means connecting said cap with said spiral spring member adapted to permit the cap to swing upwardly and sidewise into open position and serving thus to put at least a portion of said spring member under increased tension and serving automatically to hold said cap releasably in its open position.

2. In a closure device for the gasoline tank of an automobile, the combination of a cap adapted to seat on the inwardly turned flange at the upper end of the filling spout of a tank, a spiral spring member mounted below said flange across said filling spout effectively closing the spout against insertion of a siphoning tube therethrough but permitting free entrance of gasoline through the spout, and means connecting said cap with said spiral spring member adapted to permit the cap to swing upwardly and sidewise into open position and serving thus to put at least a portion of said spring under increased tension and serving automatically by a past-centers movement to hold the cap releasably in its open position.

3. In a closure device for the gasoline tank of an automobile, the combination of a cap adapted to seat on the inwardly turned flange at the upper end of the filling spout of a tank, a spiral spring member mounted below said flange across said filling spout effectively closing the spout against insertion of a siphoning tube therethrough but permitting free entrance of gasoline through the spout, and means comprising a bowed member connecting said cap with said spiral spring member adapted to permit the cap to swing upwardly and sidewise into open position and serving thus to put at least a portion of said spring under increased tension, said bowed member being adapted to apply the spring pressure to the cap in a past-centers relation when the cap is in fully opened position for holding the cap releasably in such fully opened position.

4. In a closure device for the gasoline tank of an automobile, the combination of a cap adapted to seat on the inwardly turned flange at the upper end of the filling spout of a tank, a spiral spring member mounted below said flange across said filling spout effectively closing the spout against insertion of a siphoning tube therethrough but permitting free entrance of gasoline through the spout, means connecting said cap with said spiral spring member adapted to permit the cap to swing upwardly and sidewise into open position and

serving thus to put at least a portion of said spring member under increased tension and serving automatically by a past-centers movement to hold the cap releasably in its open position, and bearing means on said cap adapted by engagement with the upper end of the spout member to assist in moving said parts out of their past-centers locking position when said cap is moved downwardly to its closed position.

5. In a closure device for the gasoline tank of an automobile, the combination of a cap adapted to seat on the inwardly turned flange at the upper end of the filling spout of a tank, a spiral spring member mounted below said flange across said filling spout effectively closing the spout against insertion of a siphoning tube there-through but permitting free entrance of gasoline through the spout, means comprising a bowed member connecting said cap with said spiral spring member adapted to permit the cap to swing upwardly and sidewise into open position and serving thus to put at least a portion of said spring under increased tension, said bowed member being adapted to apply the spring pressure to the cap in a past-centers relation when the cap is in fully opened position for holding the cap releasably in such fully opened position, and bearing means on said cap adapted to engage the upper end of the filling spout at a point inside of the angle of said bowed member when the cap is in fully opened position and adapted to act as a temporary fulcrum for the movement of said parts out of their past-centers locking position.

6. In a closure device for the gasoline tank of an automobile, the combination of a cap adapted to seat on the inwardly turned flange at the upper end of the filling spout of a tank, a spiral spring member mounted below said flange across said filling spout effectively closing the spout against insertion of a siphoning tube there-through but permitting free entrance of gasoline through the spout, mounting and bearing means carried by said cap on its inner face and comprising bearing portions in substantially right angular position with respect to the face of the cap, and a link pivotally connected at one end with said mounting means and pivotally connected at its opposite end portion with said spiral

spring member serving to maintain at least a portion of said spring member under tension for holding the cap yieldingly in its closed position and adapted when said cap is raised into an open position to hold said spring member under increased tension, said bearing portions being adapted by engagement with said spout member to act as a fulcrum for the opening movement of the cap and adapted by a sliding movement with respect to the spout to place the parts in a past-centers locking position for holding the cap releasably in its fully opened position.

7. In a closure device for the gasoline tank of an automobile, the combination of a cap, a gasket mounted on the inner face of said cap and having a cut-out portion at an intermediate point, a groove in the inner face of said cap opening at its inner end at said cut-out portion of the gasket and opening at its outer end outside of the gasket, and means for holding said cap releasably in closure position on the inwardly turned flange at the upper end of the filling spout of a tank.

8. In a closure device for the gasoline tank of an automobile, the combination of a cap adapted to seat on the inwardly and downwardly turned flange at the upper end of the filling spout of a tank, a spiral spring member adapted to be threaded downwardly into said spout into position below said flange and arranged so as to resist strongly any effort to thread the member in the reverse direction for removal upwardly from the spout, and a metal strap pivotally connected at one end with said cap and at its opposite end with an intermediate ply of said spring member at one side thereof and arranged for holding the cap normally in closed position by spring pressure and adapted to permit upward swinging movement of the cap against said spring pressure, the free end of the top ply of the spring member being located opposite the point of connection of said strap with the spring member whereby said strap acts to cover and shield the end portion of the ply for resisting any effort to thread the member out of engagement with the spout.

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