

April 5, 1938.

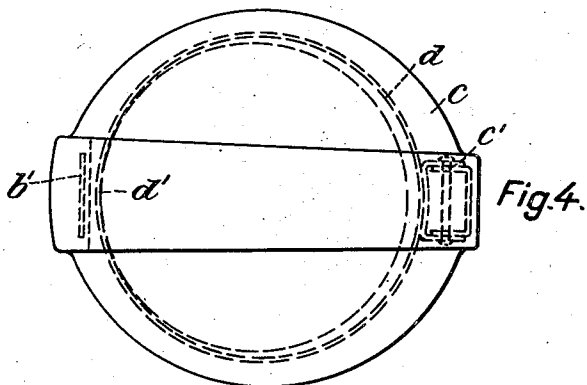
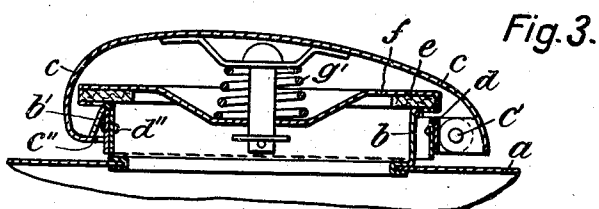
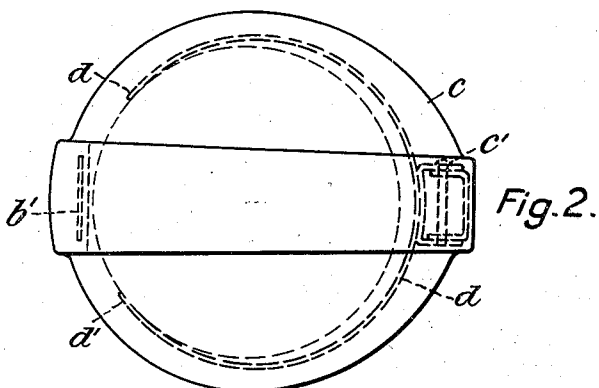
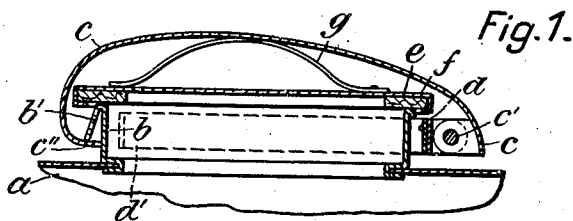
F. E. KRAUSS

2,113,484

HINGED CLOSURE FOR PETROL TANKS

Filed April 23, 1936

2 Sheets-Sheet 1



Inventor
F. E. Krauss

By: *Glascock Downing & Seebold*
ATTYS.

April 5, 1938.

F. E. KRAUSS

2,113,484

HINGED CLOSURE FOR PETROL TANKS

Filed April 23, 1936

2 Sheets-Sheet 2

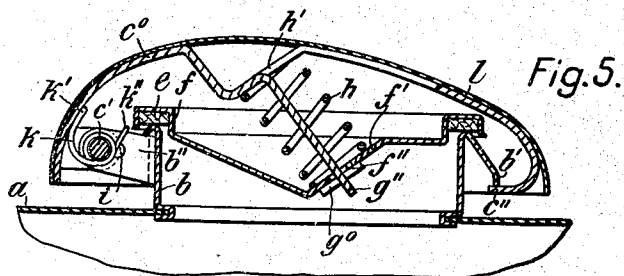


Fig. 5.

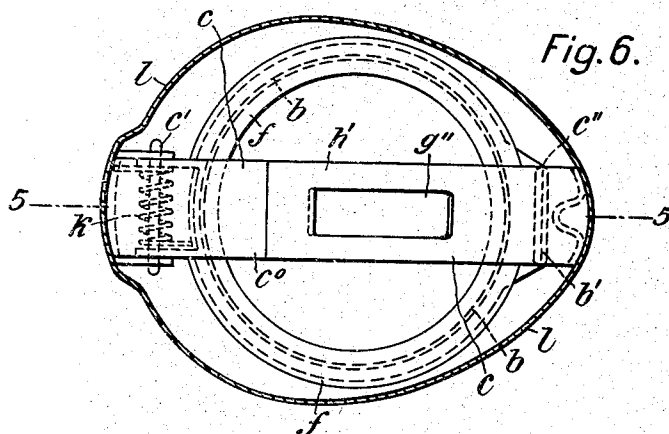


Fig. 6.

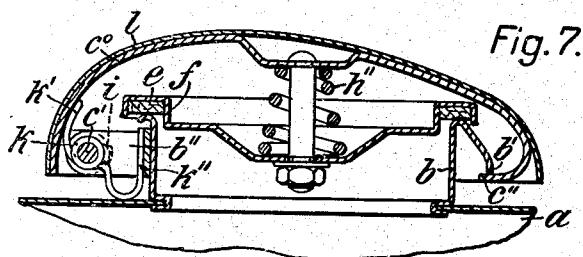


Fig. 7.

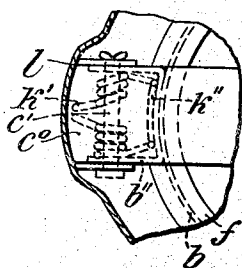


Fig. 8.

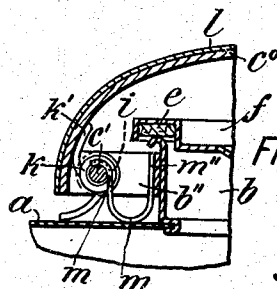


Fig. 9.

Inventor:
F. E. Krauss

By: Glasgow Downing & Lebold
Attys.

UNITED STATES PATENT OFFICE

2,113,484

HINGED CLOSURE FOR PETROL TANKS

Friedrich Emil Krauss, Schwarzenberg, Saxony,
GermanyApplication April 23, 1936, Serial No. 76,057
In Germany May 6, 1935

4 Claims. (Cl. 220—35)

The screw closures usually employed for petrol tanks on automobile vehicles have the great disadvantage that the screw cap is a loose member, which is liable to fall off and even to be lost. With snap closures, which are also usual, there are projecting parts, which give rise to fouling, and which also cannot be adapted to the requisite stream-line formation. Since the projecting parts, such as pawls and the like, have to be pushed up, both hands are usually required for the purpose of opening the cap. The projecting parts also give rise to the tearing of gloves when operating the petrol tank.

The object of the present invention is to provide a closure which will be free from the aforementioned disadvantages, the closure cap being pivoted to a spring, which bears on the filling neck opposite to the hinge, and under the stress of which the cap snaps on to the neck. The spring may surround the filling neck to a greater or less extent, without being secured to it, but it might alternatively be connected fast to the filling neck opposite to the hinge. The opening of the cap is then effected by a light pressure upon its front portion or at the snapping-in point, in opposition to the pressure of the spring. When open, the cap remains connected with the filling neck, but admits of being removed therefrom by an energetic pull, when it merely embraces the neck. Such a cap furthermore presents the possibility of a construction which is completely smooth on the outside, and in which there are no projecting or even sharp-edged parts at all. The cap also presents to the hand a surface which is completely smooth throughout its entire extent.

The closure cap may alternatively be connected with the filling neck by a hinge joint, the hinge pin of which is guided in elongated holes, which extend radially in relation to the filling neck. A spring *f*, i. placed round the hinge pin tends to push the joint away from the filling neck and to keep the cap closed.

Several forms of construction of the invention are illustrated by way of example in the accompanying drawings, in which

Figure 1 shows one example in longitudinal section, and Figure 2 shows a plan view thereof.

Figure 3 shows another example in longitudinal section, and

Figure 4 is a corresponding plan view.

Figure 5 shows a third constructional example of the hinged closure in longitudinal section on the line 5—5 in Figure 6, and

Figure 6 shows a plan of this closure in horizontal section through the outer cover cap.

Figure 7 shows a fourth constructional example in longitudinal section.

Figure 8 is a partial plan view thereto with horizontal section through the outer cover cap, and

Figure 9 shows a fifth constructional form in a partial longitudinal section.

According to Figures 1 and 2, the filling neck *b* projecting up from a petrol or like tank *a* is completely free, except that it forms a snapping-in lug *b'* in front. The closure cap *c* is pivoted at *c'* to a spring clip *d*, and comprises in front an element *c''*, which engages underneath the lug *b'* when the cap is closed. The spring *d*, in relation to its contact at *d'* with the neck *b*, for its connecting point with the cap *c* at *c'*, has such a stress that the spring tends, when embracing the filling neck *b*, to push the cap *c*, with its hinge joint *c'*, away from the filling neck *b*. The spring *d* accordingly bears against the filling neck *b* only with its front ends *d'* when the cap *c* is closed. By pressing against the joint *c'* with the hand upon the cap *c*, the spring *d* yields, and the cap becomes displaced forward to such an extent that the element *c''* becomes disengaged from the lug *b'* and the cap *c* can be rocked upwards about its hinge *c'*.

A packing disc *e* is mounted on a carrying disc *f*, which is preferably connected with the cap *c* by a spring *g*, which produces the counter-pressure for sealing the closure in a fluid-tight manner.

In the example illustrated in Figures 3 and 4, the spring *d*, which in this case may be a closed ring, is secured to the neck *b* at *d''* underneath the lug *b'*. The action is the same, except that the cap *c* cannot be pulled off the neck *b*. The sealing disc *e* is pressed on to the neck by a helical spring *g'*.

In the constructional example shown in Figures 5 and 6, the cap is in the shape of a stirrup *c'*, and is connected with a covering hood *l* and with the filling neck *b* by the hinge joint *c'*. The eyes *b''* of the joint on the filling neck *b* or on the cap stirrup *c'* have elongated holes *i* in a direction transverse to the filling neck *b*. Around the hinge pin *c'* is placed a helical torsion spring *k*, which bears with one end *k'* from below against the cap stirrup *c'*, and engages with its other end *k''* round the edge of the eye *b''* on the filling neck *b*. The cap stirrup *c'*, for the sake of improving the appearance, is covered by or connected with the outer hood *l*, which is made separately, and can therefore be highly polished and chromium plated.

A bearing wall h' , inclined to the axis of the filling nozzle b , is pressed out of the cap stirrup c^0 . Opposite to it, and in staggered relationship thereto, the sealing cap f , which holds the sealing insertion e , has a bearing wall f' likewise pressed out. Between the two walls h' and f' is lodged the closing spring h , which bears against them at its ends.

Finally a tongue g'' may be pressed out of the cap stirrup c^0 , and may extend through the spring h and the inclined wall f' , with the interposition of a split pin g^0 . The wall f' is formed with an aperture f'' for the passage of the tongue g'' , which allows some clearance to the cap f in relation to the stirrup c^0 . The cap stirrup c^0 has an element c'' adapted to engage under the lug b' of the filling neck b . The spring k has the effect of tending to open the closure cap. The spring h is positioned in the same plane in which the cap is withdrawn and inclined to the joint c' . Thereby the spring h has the tension to pull the joint c' away from the neck b , so that the engagement of the element c'' underneath the lug b' becomes operative when the cap is pushed on.

For the opening of the cap it is merely necessary to push it transversely somewhat away from the filling neck b so that the element c'' becomes free from the lug b' . The cap then springs up.

In Figures 7 and 8, the spring h'' is placed vertical with the action to press down the disc f with the packing e upon the filling neck b . The spring k is drawn with its other curved end k'' to the filling neck b or to its eyes so that this spring has the action to draw away the joint c' from the filling neck b . Therefore the element c'' will engage the lug b' when the cap is pushed on. For opening the cap will be pushed with its joint c' to the filling neck b and opposing the spring k till the element is disengaged from the lug b' . The spring k therefore has the double action of tending to open the cap and to draw away the joint c' from the neck b .

In Figure 9 a separate spring m is inserted to draw away the joint c' from the neck b . One end m' of this spring presses against the joint c' and the other end m'' against the eyes b'' of the neck b .

What I claim is:—

1. A hinged closure, more particularly for the petrol tanks of motor cycles, comprising a filling neck on the tank, a closure cap, a hinge joint located outside the filling neck and connecting the closure cap to the filling neck, at least one element of the hinge joint being movable radially in relation to the filling neck, and the closure cap being movable bodily with the movable element of the hinge joint in the same direction, spring means tending to move the movable element of the hinge joint radially away from the filling neck, a lug on the filling neck at the side diametrically opposite to the hinge joint, and an engaging element on the closure cap adapted to

engage under the said lug when the cap is pushed down and then allowed to move parallel to a diameter of the filling neck under the action of the spring means.

2. A hinged closure, more particularly for the petrol tanks of motor cycles, comprising a filling neck on the tank, a closure cap, a hinge joint located outside the filling neck and connecting the closure cap to the filling neck, the said hinge joint permitting movement of the closure cap bodily, when closed, in a direction perpendicular to the axis of the pivot, a lug on the filling neck at the side diametrically opposite to the hinge joint, an engaging element on the closure cap adapted to snap past the said lug when the closure cap is pushed down, and spring means tending to move the closure cap bodily, when closed, parallel to a diameter of the filling neck, in such a direction as to draw the engaging element underneath the lug.

3. A hinged closure, more particularly for the petrol tanks of motor cycles, comprising a filling neck on the tank, a closure cap, a pair of hinge eyes projecting outwards from the filling neck, a pair of hinge eyes projecting inwards from the closure cap, a hinge pin mounted in one of these pairs of hinge eyes, the other pair of hinge eyes being formed with elongated holes through which the hinge pin passes, the elongation of the holes being in a direction parallel to a diameter of the filling neck, spring means tending to open the closure cap and to move it in such a direction that the pair of hinge eyes thereon moves radially away from the filling neck, a lug on the filling neck at the side diametrically opposite to the pairs of hinge eyes, and an engaging element on the closure cap adapted to engage under the said lug when the cap is pushed down and then allowed to move parallel to a diameter of the filling neck under the action of the spring means.

4. A hinged closure, more particularly for the petrol tanks of motor cycles, comprising a filling neck on the tank, a closure cap, a pair of hinge eyes projecting outwards from the filling neck, a pair of hinge eyes projecting inwards from the closure cap, a hinge pin mounted in one of these pairs of hinge eyes, the other pair of hinge eyes being formed with elongated holes through which the hinge pin passes, the elongation of the holes being in a direction parallel to a diameter of the filling neck, a torsion spring coiled round the hinge pin tending to raise the closure cap, another spring tending to move the closure cap in such a direction that the pair of hinge eyes thereon moves radially away from the filling neck, a lug on the filling neck at the side diametrically opposite to the pairs of hinge eyes, and an engaging element on the closure cap adapted to engage under the said lug when the cap is pushed down and then allowed to move parallel to a diameter of the filling neck under the action of the spring means.

FRIEDRICH EMIL KRAUSS.