July 26, 1960 J. E. ESHBAUGH ET AL 2,946,215

PRESS-ON CLOSURE FOR FILLER PIPES

Filed Sept. 11, 1957 2 Sheets-Sheet 1

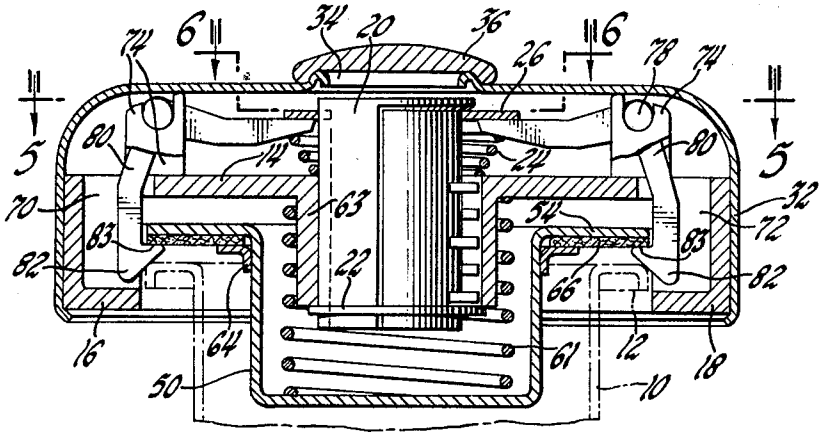


Fig. 1

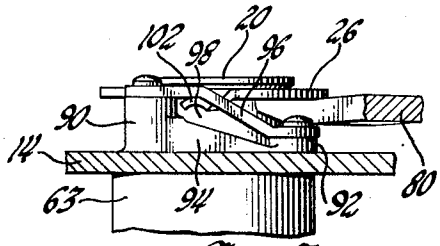


Fig. 3

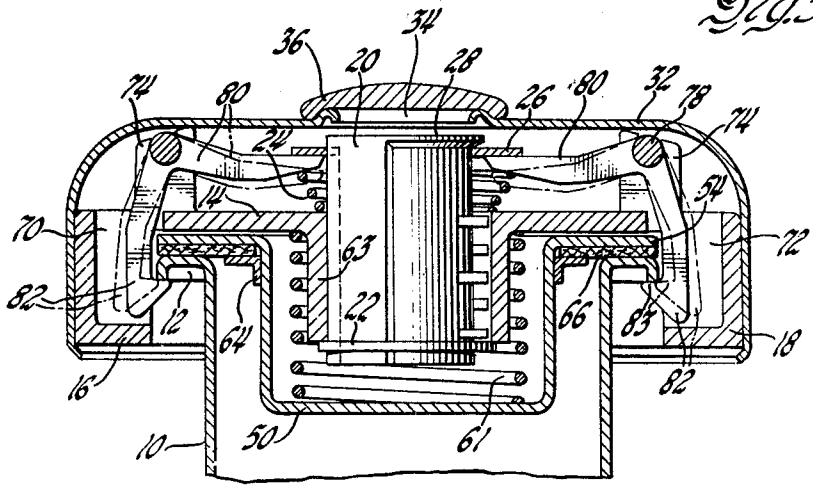


Fig. 2

INVENTORS
Jesse E. Eshbaugh,
David G. Keil &
BY Quin H. Schmidt
J. W. Lovett
ATTORNEY

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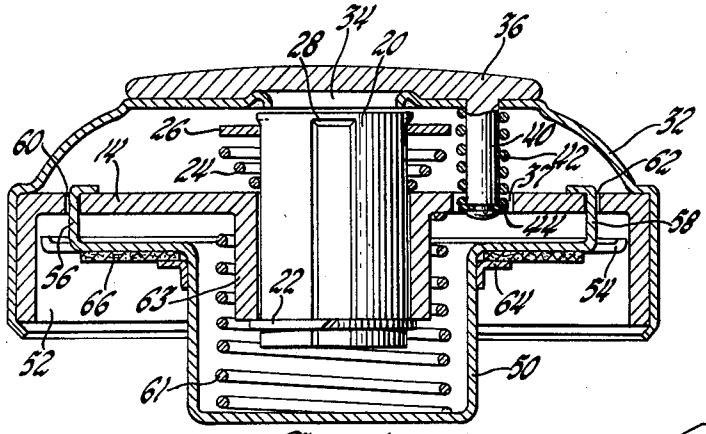


Fig. 4

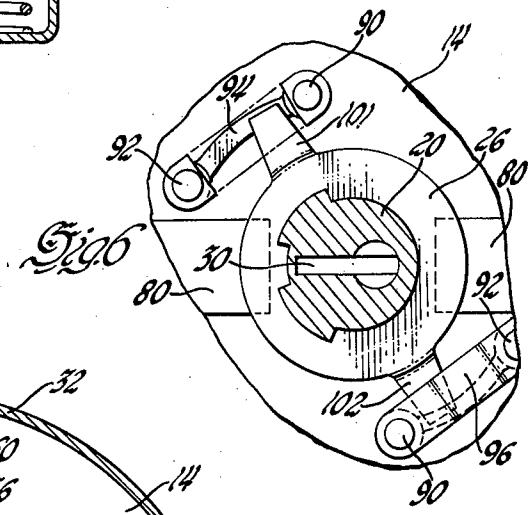


Fig. 6

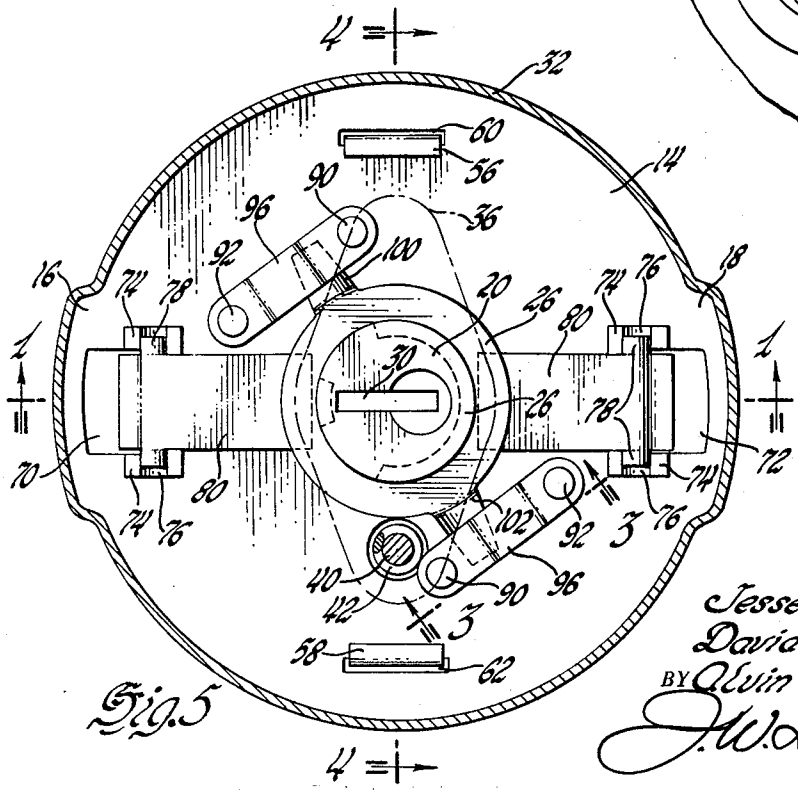


Fig. 5

INVENTORS
Jesse E. Eshbaugh,
David G. Keil &
BY Alvin H. Schmidt
J. W. Lovett
ATTORNEY

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PRESS-ON CLOSURE FOR FILLER PIPES

Jesse E. Eshbaugh, David G. Keil, and Alvin H. Schmidt, Flint, Mich., assignors to General Motors Corporation, Detroit, Mich., a corporation of Delaware

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4 Claims. (Cl. 70—169)

This invention relates to closures and more particularly to closures which may be applied to the flanged ends of filler pipes such as employed on gasoline tanks by merely pressing the closures without rotation into their positions on the flanged ends.

In automotive vehicles of recent design a difficulty has arisen in securing adequate room in the body or fender structure for rotating the conventional gasoline tank caps or closures in placing them in their locked positions. Not only must sufficient room be provided for the width of such a cap or closure, but room must be provided for the operator's hand to move in turning the closure to its sealed or unsealed position.

The object of the present invention is to provide an improved closure which need only be linearly pressed on and into its operative or sealed position with respect to the outwardly flanged end of a filler pipe.

Another object of the present invention is to provide a press-on closure which is simple in construction and which may be released from an out-turned filler pipe flange only by the use of a key.

These and other important features of the invention will now be described in detail in the specification and then pointed out more particularly in the appended claims.

In the drawings:

Fig. 1 is a sectional view taken substantially on line 1—1 of Fig. 5 through a closure in which the present invention is embodied the closure appearing in its unlocked or unsealed position with respect to the out-turned flange of a filler pipe;

Fig. 2 is a sectional view similar to that of Fig. 1, but with the closure in its locked or sealed position;

Fig. 3 is an enlarged view taken in section looking in the direction of the arrows 3—3 in Fig. 5;

Fig. 4 is a sectional view looking in the direction of the arrows 4—4 in Fig. 5 the filler pipe being omitted;

Fig. 5 is a sectional view looking in the direction of the arrows 5—5 in Fig. 1; and

Fig. 6 is a sectional view looking in the direction of the arrows 6—6 in Fig. 1.

The present closure is of the type which may be used to close the end of a filler pipe having an out-turned flange such as the pipe 10 shown in dot-and-dash lines in Fig. 1 and in solid lines in Fig. 2. This filler pipe is illustrated with an out-turned peripheral flange 12 which is conventional in automotive use.

The closure itself includes a die cast frame 14 which is substantially cylindrical in its exterior contour but is extended slightly in diametrically opposed portions 16 and 18 shown in Figs. 1 and 5. The frame is centrally apertured to receive a locking cylinder 20. This cylinder is retained in its axial position by means of a snap ring 22 and a coil spring 24. The latter bears down on the top surface of the frame 14. The upper end of the spring 24 presses upwardly against the cranks 80 which in turn bear against a disk 26 which is seated against the under side of a flange 28 formed on the top end of the cylinder. The disk 26 is so made as to interlock and rotate with

the locking cylinder 20 when the latter is rotated by means of a key which can be inserted in a keyway 30 (Fig. 5). A thin metal cover 32 is provided having an aperture 34 through which the key may be inserted and the aperture 34 is protected by a small elongated cover 36 pivoted in a conventional manner by a pin 40 to the cover 32. A spring 42 cooperates with a snap ring 44 to prevent rattling of the small cover 36 on the assembly. An opening 37 in the frame 14 provides sufficient clearance to permit the end of the pin 40 to move laterally a sufficient extent for seating or unseating of the cover over the aperture 34.

A cup member 50 is loosely retained within a depending skirt 52 (Fig. 4) which is an integral part of the frame 14. The margin of the cup 50 is in the form of a circular flange 54 from which two upstanding tabs 56 and 58 are struck. These tabs extend loosely up through two slots 60 and 62 formed in the frame and are bent over as shown clearly in Fig. 4. The tabs 56 and 58 are of such length that when the closure is removed from a filler pipe 10 a space of determined maximum extent exists between the flange 54 and the underside of the top wall in the frame 14. A coil spring 61 is placed under compression between the end of the cup 50 and the frame 14 and is retained in its position by a hub 63 which constitutes a portion of the frame in which the locking cylinder 20 is mounted. A ring 64 is joined or press-fitted to the exterior of the cup 50 to retain a sealing gasket 66 in position on the underside of the flange 54.

The extending portions 16 and 18 of the frame are formed with right angle passages 70 and 72, respectively, and adjacent each of these passages and integral with the frame are two of four upstanding lugs 74. Each of these lugs is notched at its top as at 76 (Fig. 5) for the retention of a trunnion portion 78 which is integral with one of two bell cranks 80. Each crank 80 has a depending end 82 forming a latch with a shoulder 83 adapted to engage the underside of the flange 12. The other end of each of the bell cranks 80 extends inwardly, as shown in Fig. 5, to engage the underside of the disk 26.

Between each of the slots 60 and 62 and the right angle passage 70 or 72 are located two upstanding projections 90 and 92 joined by an inclined portion 94. These projections and the portion 94 are integral with the frame 14 and the construction is clearly shown in Fig. 3. A partially inclined plate 96 connects the tops of each pair of the projections 90 and 92 and a space 98 is defined between the inclined frame portion 94 and the plate 96 which cooperate to form finger guides. The disk 26 is provided with two diagonally opposed fingers 101 and 102 integral therewith and each of these is adapted to bear against the underside and inclined portion of the plate 96.

Assuming that the closure is to be applied to seal a filler pipe, such closure is first placed on the filler pipe flange 12 as discosed in Fig. 1. The subsequent application of a slight pressure on the exterior of the closure and in a linear direction will cause the inclined surfaces on the ends of the bell cranks 80 to be cammed outwardly. As a result, the latches 82 will be forced into the right angle passages 70 and 72, the spring 24 yielding to permit swinging of the bell cranks. The closure will then assume the position shown in Fig. 2 with the latches 82 snapping back into position for engaging the underside of the flange 12 and the sealing gasket 66 engaging the topside of the flange 12. In this position of the closure a slight clearance will exist between the flange 54 and the upper wall of the frame 14. Because of this clearance the spring 61 is enabled to perform its function in resiliently holding the sealing gasket 66 in sealing position. The lugs 74 contact the outer cover 32 so that pressure exerted on the latter when the closure is in sealing position will not unlatch the device from the flange 12. The locking cylinder 20

must be turned with a key if the closure is to be removed from the pipe **10**.

With a turning of the locking cylinder **20**, the fingers **101** and **102** are cammed downwardy by the two plates **96** to compress the spring **24** and move the latches **82** outwardly. The closure is then unlocked from the filler pipe **10** and free for removal.

We claim:

1. A press-on closure for the end of a filler pipe having an outwardly extending circular flange, said closure comprising a frame open at one side to receive said flange, bell crank levers pivotally supported on said frame with opposed latch ends for engaging said flange, the other ends of said levers extending toward the axis of the closure, a lock cylinder releasably mounted in said frame for rotation, spring means acting on said other ends and urging said bell crank levers to rotate into latching positions, and cam means mounted on said lock cylinder and frame for rotating said levers away from latching positions upon rotation of said lock cylinder in one direction.

2. A press-on closure comprising a frame with an aperture adapted to fit over an out-turned flange of a filler pipe, a casing covering said frame and fixed in position relative thereto, a locking cylinder mounted for rotation in said frame and accessible with a key through said casing, a cup member loosely attached to said frame and having an annular seat for engaging said flange, a first coil spring compressed axially between said frame and cup member, bell cranks with pivoting means fixed in positions on said frame within said casing, opposed latch ends on said bell cranks and adapted to engage said pipe flange, a second coil spring urging the other ends of said bell cranks into their closure locking positions, cam means including a disk with fingers attached to said locking cylinder to rotate therewith and inclined guides fixed

to said frame for contacting said fingers, and the arrangement being such that rotation of said locking cylinder in one direction causes engagement of said fingers with said guides and consequent compression of said second spring and rotation of said bell cranks into their closure release positions.

3. A press-on closure as set forth in claim 2, the said first coil spring being arranged to urge said cup member away from said frame whereby said annular seat may resiliently engage said pipe flange when said closure is in operative position on said pipe.

4. A press-on closure for the end of a filler pipe having an outwardly extending peripheral flange, said closure comprising a frame open at one side to receive said flange, levers pivotally supported on said frame with opposed and inwardly directed latch ends for engaging said flange, other ends of said levers extending toward the axis of the closure, a casing rigidly fixed to said frame and covering said levers, a lock cylinder releasably mounted for rotation in said frame and accessible through said casing with a key to effect the release, spring means interposed between said other ends and said frame and urging said latch ends inwardly, cam means mounted on said lock cylinder and frame for rotating said latch ends outwardly to their unlocked positions upon rotation of said lock cylinder in one direction by use of said key, and said latch ends having surfaces inclined to said axis and effective to force said latch ends outwardly when said closure is being applied to said filler pipe flange against the force of said spring means.

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