

Aug. 18, 1925.

1,550,302

C. A. ZAROBsky

CLOSURE

Filed Aug. 25, 1923

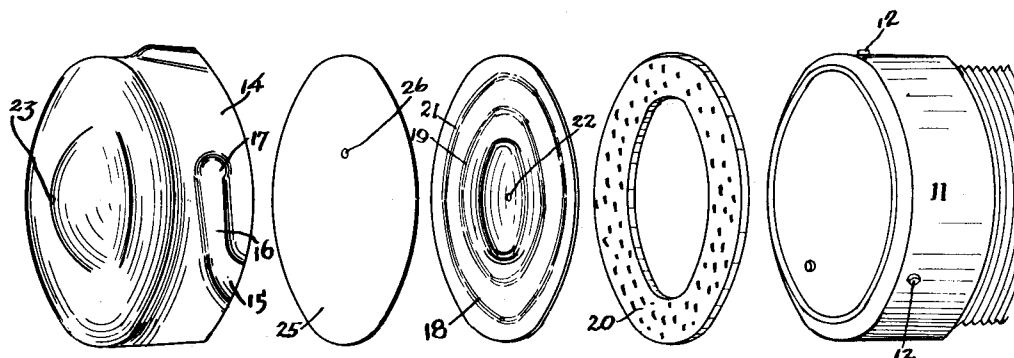


FIG. 1

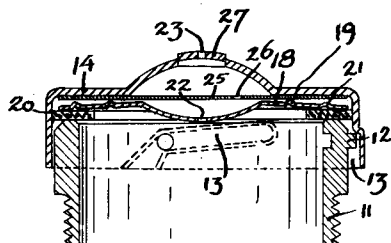


FIG. 2

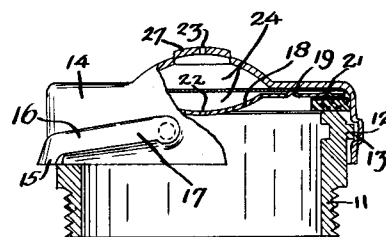


FIG. 3

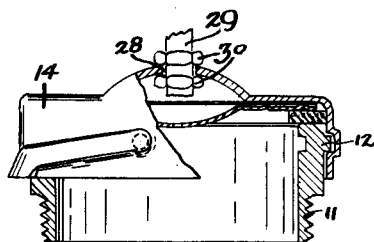


FIG. 4

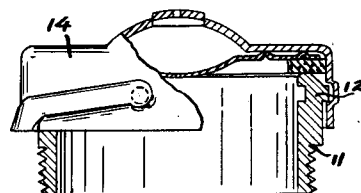


FIG. 5

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Patented Aug. 18, 1925.

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UNITED STATES PATENT OFFICE.

CHARLES A. ZAROBsky, OF CLEVELAND, OHIO, ASSIGNOR TO THE SIMPLEX CAP COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

CLOSURE.

Application filed August 25, 1923. Serial No. 659,249.

To all whom it may concern:

Be it known that I, CHARLES A. ZAROBsky, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Closures, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

My invention provides a device particularly designed and entirely satisfactory as a closure for the stem of an automobile radiator but is applicable to devices other than radiator stem closures and other than closures of any sort.

Figure 1 is an expanded view showing the various parts of one form of my invention.

Figure 2 is a central vertical section of the parts shown in Figure 1 showing them in partially assembled position.

Figure 3 is a section similar to Figure 2 showing the parts in completely assembled position.

Figure 4 is a section similar to Figure 3 illustrating the method of application to this closure of an instrument such as a motor, while

Figure 5 is a view similar to Figure 3 illustrating a second form of my invention.

The closures herein disclosed are particularly designed for closing an automobile radiator stem yet at least some of the essential features thereof may be incorporated in closures for other purposes and in articles other than closures of any sort.

The construction shown in Figures 1 through 4 comprises a stem 11 provided with a plurality of pins 12 projecting from the exterior surface thereof and adapted to be engaged by the walls of recesses 13 formed upon the side of a cap 14 and each comprising a part 15 communicating with the edge of the cap 14 and a part 16 substantially parallel to the edge of the cap 14 and terminating in a shallow locking depression 17, the pins 12 and recesses 13 thus constituting bayonet joints adapted to hold the cap 14 upon the stem 11 and at the same time permit ready removal thereof.

While the portion 15 of the recesses 13 may be formed in any suitable shape I prefer to form it at an angle of about 45 degrees to the edge of the cap 14 whereby continued disassembling rotation of the cap

14 will result in an action between the pins 12 and the walls of the portions 15 of the recesses 13 which will automatically separate the cap 14 from the stem 11 and eliminate the necessity for a separate longitudinal movement of the cap for removal thereof.

In order to retain the cap 14 against vibratory or other accidental displacement I position between the cap 14 and the stem 11 a resilient disc 18 formed, so far as this function is concerned, in the shape of a very flat truncated cone and I then form the various parts in such manner and of such relative size that positioning of the cap 14 upon the stem 11 necessitates a flattening of the disc 18 against the resilient resistance thereof and therefore places the disc 18 under a tension which is effective to constantly hold the pins 12 in the locking depressions 17 and entirely prevent accidental displacement of the cap 14 from the stem 11.

In order to form a more perfect seal between the stem 11 and the disc 18 I prefer to insert therebetween a sealing ring 20 which may be of any suitable material such as cork composition. When such a ring is employed, however, I find it desirable, in order to prevent the rapid deterioration of the ring which would result from rubbing thereof by another body, to incorporate in my closure some expedient which will facilitate relative frictional movement between parts of the closure other than the disc 20 and will thus prevent the rotation of the cap 14 relative to the stem 11 from causing movement of the ring 20 relative to either the disc 18 or stem 11. I find that I may accomplish this result conveniently by providing upon the upper face of the disc 18 an annular rib 19 which will move over an adjacent surface with almost negligible friction and therefore act to localize between itself and the part adjacent to it the entire relative movement resulting from the rotation of the cap 14 relative to the stem 11. In order to continue this action when the disc 18 is substantially flattened I find it advisable to provide upon the disc 18 near the outer periphery thereof a second rib 21 which I prefer to form not higher than the first rib 19 to thereby insure that the ribs 19 and 21 at least do not detract from the locking action of the disc 18. Under certain circumstances I may de-

sire to form the rib 19 substantially higher than the rib 21 to thus increase the effective height of the disc 18 and thereby increase the locking action of the disc 18.

It will be understood that in assembling the cap 14 on the stem 11 the action of the cap 14 against the disc 18 over the complete annular surface formed by the rib 19, and the counter action of the stem 11 against the disc 18 over the complete annular surface of the disc 18 aligned, axially of the joint, with the stem 11 and unaligned, axially of the joint, with the annular surface formed by the rib 19, will cause a flexing of the disc 18 against the resilient resistance of the disc 18 whereby the disc 18 will be under tension when the cap 14 and stem 11 are assembled and will, by that tension, maintain a firm engagement between the pins 12 and the walls of the grooves 16 to thus prevent accidental vibratory disengagement of the cap 14 from the stem 11.

In order to provide for the escape of vapor through the closure I may form in the disc 18 and cap 14 small apertures 22 and 23 whereupon, in order to substantially prevent the escape of fluid, I find it desirable to convex in opposite directions the central portions of the disc 18 and cap 14 to provide therebetween a pocket 24 which acts as a baffle to the escape of fluid. Under certain conditions I may desire to provide additional resistance to the escape of fluid and in such case I may introduce between the disc 18 and the cap 14 a baffle disc 25 provided with an aperture 26 permitting the passage of vapor but positioned out of alignment with the apertures 22 and 23 to further retard the flow of fluid.

This disc 25 should be formed of a material which will resist the action of the fluid and vapor to which it is exposed and in addition, in order to insure that the relative movement between the cap 14 and stem 11 still occurs between the cap 14 and disc 18, should be formed of a material which will also slide easily upon both the cap 14 and rib 19. I find that one material suitable for the purpose is board impregnated with paraffine.

In recent years there has come into widespread use a device popularly known as a moto-meter designed to be positioned upon the closure of the radiator stem of an automobile. In order to provide for the ready addition of such an instrument to the closure herein shown I provide this closure with a section 27 partially severed from the remainder of the closure and therefore adapted to be readily completely severed to provide in the closure an aperture 28 through which the stem 29 of such an instrument may be inserted and then clamped into position by means of suitable nuts 30 screw threaded to the stem 29 and clamp-

ing between themselves the adjacent edges of the cap 14.

The form of closure illustrated in Figure 5 is in all respects similar to that shown in Figures 1 through 4 except that it omits the baffle disc 25.

It will be apparent from the above description that I have provided closures readily attachable to and removable from a stem, reliably secured in position against vibratory displacement, permitting the escape of vapor while substantially preventing the escape of fluid, adapted to readily receive an instrument such as a moto-meter, and possessing other advantages readily apparent from a consideration of the structures. It will also be apparent to those skilled in the art that the particular constructions herein disclosed may be variously changed and modified without departing from the spirit of my invention or sacrificing the advantages thereof. It will also be clearly understood that at least some of the features and advantages of my invention may be employed in closures other than those of the type herein shown and in face in articles other than closures of any type. It will therefore be understood that the disclosures herein are illustrative only and that my invention is not limited thereto.

I claim:

1. In combination, a duct, a cap therefor, means for securing together said cap and said duct operable by relative longitudinal movement of said duct and said cap and subsequent relative rotative movement of said duct and said cap, a resilient disc interposed between said duct and said cap, a baffle disc interposed between said resilient disc and said cap, said resilient disc being provided with an annular rib arranged to be pressed against by one of the adjacent parts and positioned interiorly of the area of said disk which is pressed against by the other of said adjacent parts, and said cap and duct and resilient disc and baffle disc being so proportioned that assembly of said cap and said duct necessitates springing of said resilient disc, whereby said cap and duct when assembled are held against accidental relative rotative movement.

2. In combination, a duct, a cap therefor, said cap being convexed outwardly over its central portion and apertured in its convexed portion to permit the passage of vapor therethrough, means for securing together said cap and said duct operable by relative longitudinal movement of said duct and said cap and subsequent relative rotative movement of said duct and said cap, a resilient disc interposed between said duct and said cap convexed outwardly over its central portion and apertured in its convexed portion to permit the passage of vapor therethrough, a baffle disc interposed between

said cap and said resilient disc spaced over its central portion from both said cap and said resilient disc and apertured in its spaced portion to permit the passage of vapor therethrough, said cap and said duct being provided with surfaces for pressing against said resilient disc which are unaligned and so proportioned that assembly of said cap and said duct necessitates springing of said resilient disc, whereby said cap and duct when assembled are held against accidental relative rotative movement, and said three apertures being substantially out of alinement.

3. In combination, a duct, a resilient disc overlying said duct and apertured to permit the passage of vapor therethrough, a cap overlying said duct and said resilient disc, pressing upon said resilient disc interiorly of the area over which said duct presses upon said resilient disc, and apertured to permit the passage of vapor therethrough, said duct and said cap being centrally oppositely convexed to provide a baffle chamber therebetween, a baffle disc interposed between said cap and said resilient disc, spaced at its central part from both said cap and said resilient disc, and apertured in its spaced part to permit the passage of vapor therethrough, said cap and said duct being provided with bayonet joint connections so positioned that said resilient disc must be flexed in assembling said cap on said duct, whereby said cap is held firmly in position on said duct, and said three apertures being substantially out of alinement.

4. In combination, a duct, a cap therefor provided in its outer wall with an aperture adapted to permit the passage of vapor therethrough, means for securing together said cap and said duct operable by relative longitudinal movement of said duct and said cap and subsequent relative rotative movement of said duct and said cap; a resilient disc interposed between said duct and said cap spaced from said cap over its central portion and provided in its spaced portion with an aperture adapted to permit the passage of vapor therethrough, a baffle disc interposed between said resilient disc and said cap spaced at its central portion from both said resilient disc and said cap and apertured to permit the passage of vapor therethrough, said resilient disc being provided with an annular rib arranged to be pressed against by one of the adjacent parts and positioned interiorly of the area of said disc which is pressed against by the other of said adjacent parts, said cap and duct and resilient disc and baffle disc being so proportioned that assembly of said cap and said duct necessitates springing of said disc, whereby said cap and duct when assembled are held against accidental relative rotative

movement, and said three apertures being unaligned.

5. In combination, a duct, a cap therefor provided in its outer wall with an aperture adapted to permit the passage of vapor therethrough, means for securing together said cap and said duct operable by relative longitudinal movement of said duct and said cap and subsequent relative rotative movement of said duct and said cap, a resilient disc interposed between said duct and said cap spaced from said cap over its central portion and provided in its spaced portion with an aperture adapted to permit the passage of vapor therethrough, a baffle disc interposed between said resilient disc and said cap spaced at its central portion from both said resilient disc and said cap and apertured to permit the passage of vapor therethrough, said resilient disc being provided with an annular rib arranged to be pressed against by said baffle disc and positioned interiorly of the area of said disc which is pressed against by said duct, said cap and duct and resilient disc and baffle disc being so proportioned that assembly of said cap and said duct necessitates springing of said resilient disc, whereby said cap and duct when assembled are held against accidental relative rotative movement, and said three apertures being unaligned.

6. In combination, a duct member, a cap member adapted to close one end of said duct member, a resilient disc interposed between said members and acted against by said duct member over a first surface and said cap member over a second surface, and bayonet joint means arranged to hold said members in assembled relation with said disc therebetween, said first surface and said second surface being unaligned axially of said joint, said members and disc being so formed that said disc is sprung from its normal position when said members are so assembled, and said cap member and disc being oppositely concaved over their central portions to form a chamber therebetween and apertured in said concaved portions to permit passage of vapor therethrough.

7. In combination, a duct member, a cap member, a resilient disc interposed between said members and acted against by said duct member over a first surface and said cap member over a second surface, and bayonet joint means arranged to hold said members in assembled relation with said disc therebetween, and provided with a locking depression adapted to deter disassembling relative rotation of said members, said first surface and said second surface being unaligned axially of said joint, said members and disc being so formed that said disc is sprung from its normal position when said members are so assembled, and said cap and said disc being oppositely concaved over

their central portions to form a chamber therebetween and apertured to permit passage of vapors through said chamber.

8. In combination, a duct member, a cap member adapted to close one end of said duct member, a resilient disc interposed between said members and acted against by said duct member over a first surface and said cap member over a second surface, a second disc interposed between said duct and said cap, and bayonet joint means arranged to hold said members in assembled relation with said discs therebetween, said first surface and said second surface being unaligned axially of said joint, said members and discs being so formed that said resilient disc is sprung from its normal position when said members are so assembled, said cap and the disc remote therefrom being oppositely concaved over the central portion thereof to form a chamber therebetween, and said cap and both said discs being apertured to permit passage of vapor through said chamber.

9. In combination, a duct member, a cap member, a resilient disc interposed between said members and acted against by said duct member over a first surface and said cap member over a second surface, a second disc interposed between said cap member and said duct member, and bayonet joint means arranged to hold said members in assembled relation with said discs therebetween, and provided with a locking depression adapted to deter disassembling relative rotation of said members, said first surface and said second surface being unaligned axially of said joint, said members and discs being so formed that said resilient disc is sprung from its normal position when said members are so assembled, said cap and the disc remote therefrom being oppositely concaved over their central portions to form a chamber therebetween, and said cap and both said discs being apertured to permit passage of vapor through said chamber.

10. In combination, a duct member, a cap member adapted to close one end of said duct member, a resilient disc interposed between said members and engaging said duct member over a first surface and said cap member over a second surface, and bayonet joint means arranged to hold said members in assembled relation with said disc therebetween, said first surface and said second surface being unaligned axially of said joint and said members and disc being so formed that said disc is sprung from its normal position when said members are so assembled, said cap member being provided with a section united to the remainder of said cap by a weakened area designed to readily yield to permit easy removal of said section to form an aperture adapted to receive an instrument such as a moto-meter.

11. In combination, a first part, a second

part, means for securing said parts together operable by relative longitudinal movement of said parts and subsequent relative rotative movement of said parts, a resilient disc interposed between said parts, a baffle disc interposed between said resilient disc and one of said parts, said resilient disc being provided with an annular rib arranged to be pressed against by one of the adjacent parts and positioned interiorly of the area of said disc which is pressed against by the other of said adjacent parts, and said parts and said resilient disc and said baffle disc being so proportioned that assembly of said parts necessitates springing of said resilient disc, whereby said parts when assembled are held against accidental relative rotative movement.

12. In combination, a duct member, a cap member adapted to close one end of said duct member, a resilient disc interposed between said members and acted against by said duct member over a first surface and said cap member over a second surface, and bayonet joint means arranged to hold said members in assembled relation with said disc therebetween, said first surface and said second surface being unaligned axially of said joint, said members and disc being so formed that said disc is sprung from its normal position when said members are so assembled, said disc being concaved away from said cap member over its central portion to form a chamber between said disc and said cap member, and said disc and said cap member being apertured at said concaved portion to permit passage of vapor therethrough.

13. In combination, a duct member, a cap member adapted to close one end of said duct member, a resilient disc interposed between said members and acted against by said duct member over a first surface and said cap member over a second surface, and bayonet joint means arranged to hold said members in assembled relation with said disc therebetween, said first surface and said second surface being unaligned axially of said joint, said members and disc being so formed that said disc is sprung from its normal position when said members are so assembled, said cap member being concaved away from said disc over its central portion to form a chamber between said disc and said cap member, and said disc and said cap member being apertured at said concaved portion to permit passage of vapor therethrough.

14. In combination, a duct member, a cap member adapted to close one end of said duct member, a resilient disc interposed between said members and acted against by said duct member over a first surface and said cap member over a second surface, and bayonet joint means arranged to hold said members in assembled relation with said disc

therebetween, said first surface and said second surface being unaligned axially of said joint, said members and disc being so formed that said disc is sprung from its normal position when said members are so assembled, and said cap member and disc being oppositely concaved over their central portions to form a chamber therebetween and to permit passage of vapor through said chamber.

- 10 15. In combination, a duct member, a cap member adapted to close one end of said duct member, a resilient disc interposed between said members and acted against by said duct member over a first surface and
15 said cap member over a second surface, and bayonet joint means arranged to hold said members in assembled relation with said disc therebetween, said first surface and said second surface being unaligned axially of
20 said joint, said members and disc being so formed that said disc is sprung from its normal position when said members are so assembled, said disc being concaved away from said cap member over its central portion
25 to form a chamber between said disc

and said cap member, and said disc and said cap member being formed to permit passage of vapor through said chamber.

16. In combination, a duct member, a cap member adapted to close one end of said duct member, a resilient disc interposed between said members and acted against by said duct member over a first surface and said cap member over a second surface, and bayonet joint means arranged to hold said members in assembled relation with said disc therebetween, said first surface and said second surface being unaligned axially of said joint, said members and disc being so formed that said disc is sprung from its normal position when said members are so assembled, said cap member being concaved away from said disc over its central portion to form a chamber between said disc and said cap member, and said disc and said cap member being formed to permit passage of vapor through said chamber.

In testimony whereof, I hereunto affix my signature.

CHARLES A. ZAROSKY.