March 4, 1930. J. S. REID 1,749,604

SEALING GASKET FOR NECK AND CLOSURE STRUCTURES

Filed Dec. 19, 1928

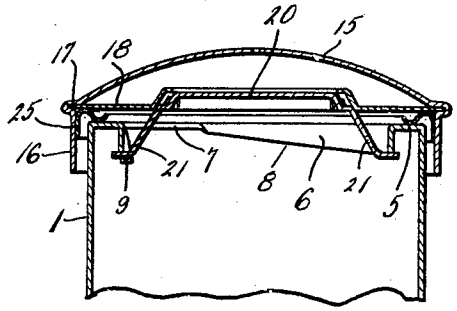


FIG. 1

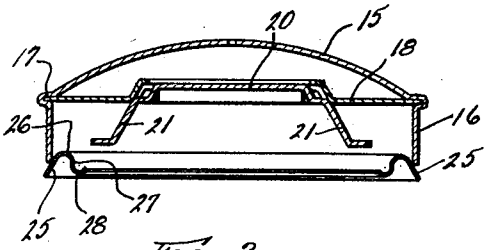


FIG. 2

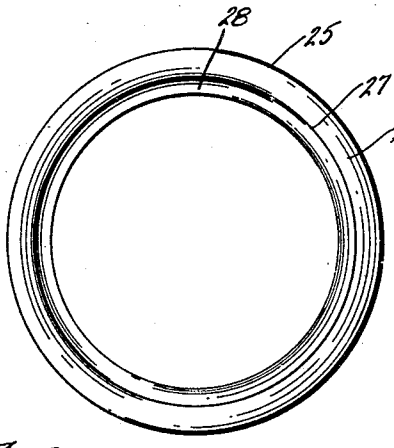


FIG. 3

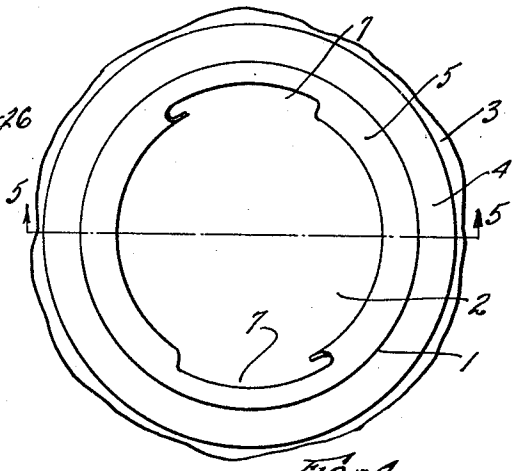


FIG. 4

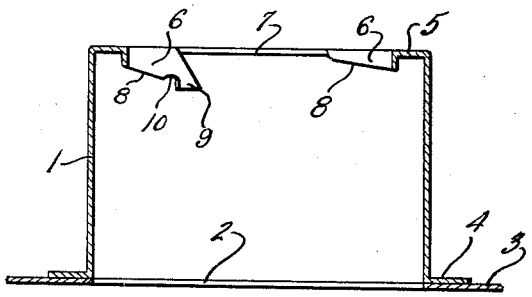


FIG. 5

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UNITED STATES PATENT OFFICE

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SEALING GASKET FOR NECK AND CLOSURE STRUCTURES

Application filed December 19, 1928. Serial No. 327,053.

This invention relates to improvements in sealing gaskets for neck and closure structures and more particularly, for neck and closure structures of the bayonet joint type. These structures are used, for example, with the radiators and the gasoline tanks of automobiles and each includes a tubular neck having one end adapted to be secured to the radiator or gasoline tank around the opening therein and a closure adapted to be detachably connected to the other end of the neck, the sealing gasket being interposed between the closure and the neck.

The general object of the present invention is the provision of an improved sealing gasket for neck and closure structures of the character described; which gasket is a one-piece metal member maintained in assembled relation with the closure of the structure by its own resiliency; and which gasket has especially effective sealing portions for line engagement or contact with both the closure and the neck.

Further objects of the invention are in part obvious and in part will appear more in detail hereinafter.

In the drawing, Fig. 1 is a central vertical sectional view of one form of neck and closure structure having my improved sealing gasket; Fig. 2 is a similar view of the closure of the structure with the gasket in initial position to effect its assembly therewith; Fig. 3 is a top plan view of the gasket; Fig. 4 is a top plan view of the neck of the structure shown in Fig. 1; and Fig. 5 is a vertical sectional view of said neck on the line 5—5, Fig. 4.

In the present embodiment of the invention, I have illustrated a neck and closure structure of the form shown in my Patent No. 1,593,847 of July 27, 1926, to which patent reference may be had, if desired.

The neck of the structure here illustrated includes a tubular body member 1 adapted to be positioned about the opening 2 of a receptacle 3, such as an automobile radiator or gasoline tank. Said body member may be an integral part of said receptacle or a separate member suitably secured thereto, the latter arrangement being here shown with said body member provided with a laterally extending base flange 4 adapted to be welded or otherwise suitably secured to the receptacle 3. Said body member is provided at its upper end with an inwardly extending transverse wall 5 which terminates in a depending flange 6. At two diametrically opposed points, portions of wall 5 and flange 6 are cut away to provide two opposed passageways 7 through which are adapted to be passed the locking fingers of the closure of the structure, as will later appear. The cutting away of portions of said wall and said flange provides two depending flange portions 6 each of substantially semi-circular form and the lower edges of said flange portions are inclined to provide cam surfaces 8 along which ride the closure locking fingers in effecting detachable connection of the closure to the neck. To limit rotary movement of said closure locking fingers up along said cam surfaces, each of the flange portions 6 is provided with a depending stop projection 9 adjacent the inner end or the high point of its cam surface, and adjacent these stop projections each cam surface is provided with a dwell 10, in which dwells the closure locking fingers are adapted to seat when the closure is completely connected to the neck, all as will later appear.

The closure of the structure includes a body member having a dome-shaped top portion 15 and a depending cylindrical skirt portion 16 having a diameter slightly larger than that of the tubular neck body member 1, as clearly indicated in Fig. 1. Crimped or otherwise suitably secured to the closure body member at the junction of the top and skirt portions thereof is the edge portion 17 of a transverse disc 18 having a central cavity within which is crimped or otherwise suitably secured the substantially circular base portion 20 of the closure locking member. Said locking member also includes two diametrically opposed resilient locking fingers 21 extending downwardly and outwardly from the base portion 20 thereof, as clearly shown in Figs. 1 and 2.

The closure is detachably connected to the neck by passing the locking fingers 21 there-

of downwardly through the neck passageways 7, the closure being then turned in a clockwise direction which causes the closure locking fingers to ride up the neck cam surfaces 8 until they reach the dwells 10 therein, further rotary movement in this direction of the closure locking fingers being prevented by the stop projections 9. To remove the closure from the neck, it is only necessary to turn the closure in the reverse direction, whereupon the closure locking fingers leave the dwells 10, ride down the cam surfaces 8 until they reach the passageways 7, after which the closure can be readily lifted from the neck, all as will be readily understood.

For sealing purposes, a resilient gasket is usually interposed between the closure and the neck of such a structure, said gasket lying between and engaging the top transverse flange 5 of the neck and the lower marginal surface of the transverse disc 18 of the closure. These gaskets are usually of cork, rubber or other material having the desired amount of resiliency but which are more or less rapidly deteriorated if subjected to certain liquids, such as the anti-freezing solutions put into automobile radiators in the winter.

The present improved sealing gasket is a simple one-piece member made of a material which is inherently resilient but which will not be deteriorated if subjected to the anti-freezing solutions above mentioned, one material suitable for the purpose being spring brass.

Said gasket is of the usual annular form and includes an outer side portion 25 adapted for engagement with the inner surface of the closure skirt portion 16, an annular closure-sealing portion 26 extending inwardly from the upper end of said side portion 25 and arched upwardly in cross section; an inner side portion 27 inclined downwardly and inwardly from the inner end of the closure-sealing portion 26; and an annular neck-sealing portion 28 extending inwardly from the lower end of the inner side portion 27 and arched downwardly in cross section, all as clearly indicated in Figs. 1 and 2.

Normally, or before the gasket is assembled with the closure, as indicated in Fig. 1, the outer side portion 25 of the gasket extends upwardly and inwardly with the lower part thereof of greater diameter than that of the closure skirt portion 16. The gasket can therefore be assembled with the closure only by pushing or springing inwardly the lower part of the gasket side portion 25, so that it will enter the space within the closure skirt portion. The assembly of the gasket with the closure is accomplished by applying the gasket to the closure in the manner indicated in Fig. 2, with the gasket outer side portion 25 engaging the lower edge of the closure skirt portion 16. The resiliency of the metal of the gasket permits the gasket to be pushed upwardly within the closure skirt portion and the sealing portion 26 at the top of the gasket is brought into engagement with the lower marginal surface of the closure transverse disc 18, this being the proper position of the gasket with respect to the closure and such position being indicated in Fig. 1.

The tendency of the lower part of the gasket outer side portion 25 to spring outwardly maintains the gasket in proper assembly with the closure, although said gasket can be readily removed from the closure, when desired. As shown in Fig. 1, the lower arched portion 28 of the gasket engages the top surface of the transverse neck flange 5 and the pressure therebetween, just as between the upper arched portion 26 of the gasket and the closure disc 18, is sufficiently great to produce a tight seal, such pressure being produced by the engagement of the closure locking fingers 21 with the neck cam surfaces 8.

What I claim is:

1. In combination with a tubular neck and a detachable bayonet-joint closure therefor, of a gasket for sealing cooperation with both said neck and said closure; said neck having a top transverse gasket-engaging wall and cam portions adjacent thereto; said closure having a transverse gasket-engaging wall and a surrounding depending skirt portion and also having resilient fingers for locking engagement with the cam portions of said neck; and said sealing gasket having annular sealing portions for cooperation with the transverse walls of said closure and said neck and also having an inherently resilient outer portion of greater diameter normally than that of said closure skirt portion so that said gasket can be assembled with said closure, within the skirt portion thereof, only by forcing or jamming said gasket within said skirt portion, said inherently resilient gasket outer portion springing inwardly to permit such assembly.

2. In combination with a tubular neck and a detachable bayonet-joint closure therefor, of a gasket for sealing cooperation with both said neck and said closure; said neck having a top transverse gasket-engaging wall and cam portions adjacent thereto; said closure having a transverse gasket-engaging wall and a surrounding depending skirt portion and also having resilient fingers for locking engagement with the cam portions of said neck; and said sealing gasket having an annular sealing portion upwardly arched in cross-section for cooperation with the transverse wall of said closure and annular sealing portion downwardly arched in cross-section for cooperation with the transverse wall of said neck and also having an inherently resilient outer portion of greater diameter normally than that of said closure skirt por-

tion so that said gasket can be assembled with said closure, within the skirt portion thereof, only by forcing or jamming said gasket within said skirt portion, said inherently resilient gasket outer portion springing inwardly to permit such assembly.

3. In combination with a tubular neck and a detachable bayonet-joint closure therefor, of a gasket for sealing cooperation with both said neck and said closure; said neck having a top transverse gasket-engaging wall and cam portions adjacent thereto; said closure having a transverse gasket-engaging wall and a surrounding depending skirt portion and also having resilient fingers for locking engagement with the cam portions of said neck; and said sealing gasket comprising a one-piece metal member having annular sealing portions for cooperation with the transverse walls of said closure and said neck and also having an inherently resilient outer portion of greater diameter normally than that of said closure skirt portion so that said gasket can be assembled with said closure, within the skirt portion thereof, only by forcing or jamming said gasket within said skirt portion, said inherently resilient gasket outer portion springing inwardly to permit such assembly.

4. In combination with a tubular neck and a detachable bayonet-joint closure therefor, of a gasket for sealing cooperation with both said neck and said closure; said neck having a top transverse gasket-engaging wall and cam portions adjacent thereto; said closure having a transverse gasket-engaging wall and a surrounding depending skirt portion and also having resilient fingers for locking engagement with the cam portions of said neck; and said sealing gasket comprising a one-piece inherently resilient metal member having an annular sealing portion upwardly arched in cross-section for cooperation with the transverse wall of said closure and an annular sealing portion downwardly arched in cross-section for cooperation with the transverse wall of said neck and also having an outer portion of greater diameter normally than that of said closure skirt portion so that said gasket can be assembled with said closure, within the skirt portion thereof, only by forcing or jamming said gasket within said skirt portion, said gasket outer portion springing inwardly to permit such assembly.

5. In combination with a tubular neck and a detachable bayonet-joint closure therefor, of a gasket for sealing cooperation with both said neck and said closure; said neck having a top transverse gasket-engaging wall and cam portions adjacent thereto; said closure having a transverse gasket-engaging wall and a surrounding depending skirt portion and also having resilient fingers for locking engagement with the cam portions of said neck; and said sealing gasket comprising a one-piece metal member having annular sealing portions for cooperation with the transverse walls of said closure and said neck and also having an inherently resilient outer portion normally inclined upwardly and inwardly with its lower part of greater diameter than that of said closure skirt portion so that said gasket can be assembled with said closure, within the skirt portion thereof, only by forcing or jamming said gasket within said skirt portion, the lower part of said inclined outer portion springing inwardly to permit such assembly.

In testimony whereof I hereby affix my signature.

JAMES S. REID.