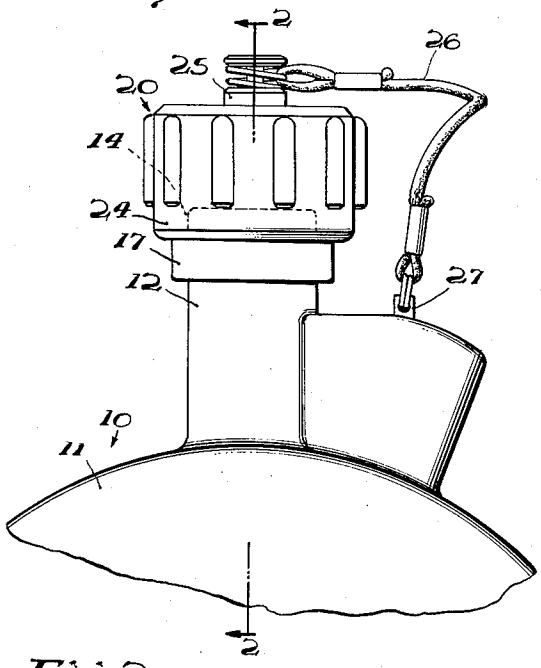
April 4, 1961 G. E. CAINE ET AL 2,978,134

CLOSURE ASSEMBLY

Filed July 31, 1959

Fig. 1.



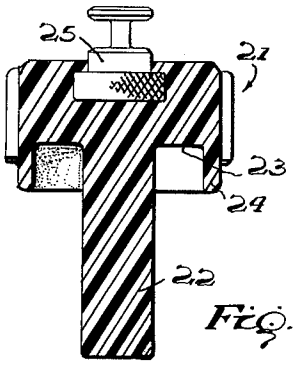


Fig. 3.

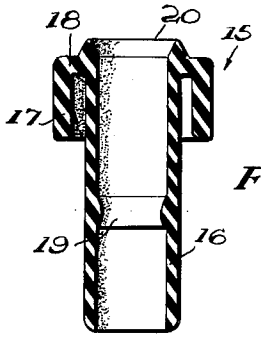


Fig. 4.

Fig. 2.

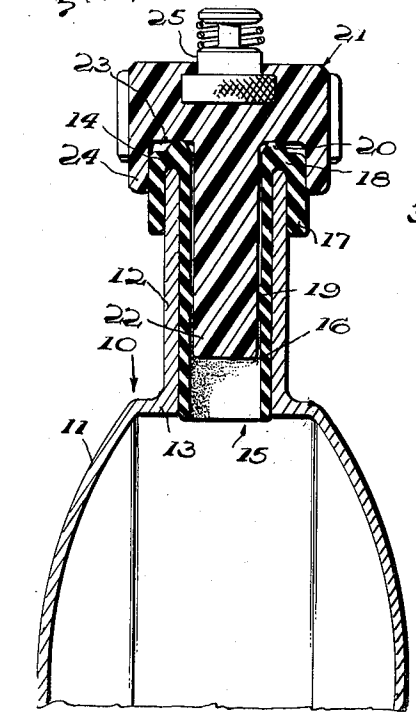


Fig. 5.

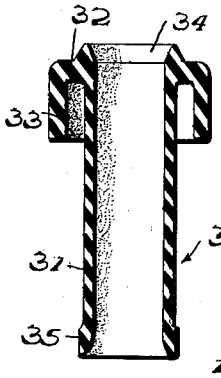
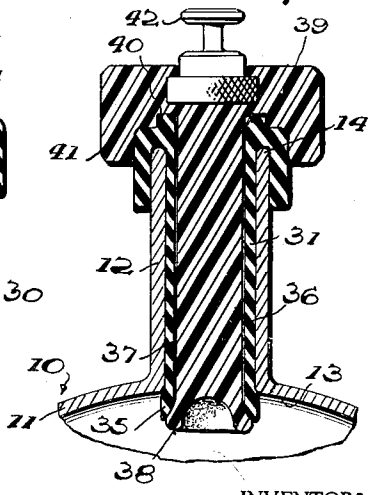


Fig. 6.



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2,978,134

CLOSURE ASSEMBLY

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Filed July 31, 1959, Ser. No. 830,970

7 Claims. (Cl. 215—47)

The invention relates to closures for containers and more particularly to a closure assembly for metal containers which are adapted to hold hot liquids and which have a neck from which a person may drink. As is well known, most metals are excellent conductors of heat whereby one drinking hot liquid from the neck of a metal canteen or the like can easily burn his lips by contact with the hot metal of the neck. Also, this conducted heat tends to cool the contents of the container if it is permitted to be dissipated.

With the foregoing in view, it is an object of the invention to provide an improved liner and lip guard for the neck of a metal container.

A further object is to provide in combination with an improved lip guard and liner for the neck of a receptacle, an improved closure for the receptacle.

A further object is to provide an improved closure assembly of the class described.

Other objects and advantages reside in the particular structure of the invention, the structure of the several elements of the same, combinations and subcombinations of such elements with each other and/or with a receptacle or container, all of which will be readily apparent to those skilled in the art upon reference to the attached drawing and to the following specification wherein the invention is shown, described and claimed.

In the drawing:

Figure 1 is a fragmentary elevational view of the top of a container having one form of the invention applied thereto;

Figure 2 is a vertical sectional view taken substantially on the plane of the line 2—2 of Figure 1;

Figure 3 is a longitudinal vertical sectional view through a closure element of the invention;

Figure 4 is a view like Figure 3 through the guard-liner element of the invention;

Figure 5 is a view like Figure 4 of a modification of the liner element; and

Figure 6 is a view like Figure 2 showing the modification of Figure 5 applied thereto and utilizing a modification of the closure element also.

Referring specifically to the drawing wherein like reference characters designate like parts in all views, and referring at first to the species of the invention illustrated in Figures 1–4 inclusive, 10 designates generally any suitable drinking receptacle or container such as a metallic canteen which may have a wall portion 11 which merges with a neck portion 12 to provide a radially outwardly directed internal shoulder 13. The neck includes a free outer or upper end 14. The closure according to this species of the invention comprises a combined lip guard and liner which is generally indicated at 15 and which includes a tubular liner portion 16 which has a close fit on the inner surface of the neck 12 and a like but larger tubular skirt 17 which has a close fit on the upper portion of the outer surface of the neck. The liner and skirt are connected together at the top by an integral web 18 which is adapted to overlie the free outer end

14 of the neck 12. A compressible circumferential rib 19 is formed integral with the liner portion 16 and extends radially inwardly thereof in downwardly spaced relation to the web 18. The outer or top surface of the web 18 is formed with an annular compressible rib 20 which extends axially outwardly of the member 15 in at least partially overlying relation to the outer end 14 of the neck. The combined lip guard and liner 15 is preferably formed in its entirety of one piece of elastomeric material and may be either a synthetic elastomer or a natural rubber. A preferred material is an elastomer based on a silicone resin and known as silicone rubber which has the quality of remaining resilient at extremely low temperatures.

In use, the member 15 is applied to the neck 12 by spreading the skirt 17 and inserting the liner 16 into the neck 12 and then allowing the skirt 17 to snap inward into contact with the outer surface of the neck. The upper end of the neck is now resiliently gripped between the liner 16 and skirt 17 with the web 18 resting atop the outer end 14 of the neck. Thus, a user of the canteen may drink from the neck without burning his lips thereon because of the insulating qualities of the liner-guard 15. This guard not only protects the lips but because the liner portion 16 is substantially coextensive in length with said neck 12, the latter is prevented from being heated through conduction of heat from the liquid contents as the user drinks therefrom.

To close the container 10, there has been provided a closure member 21 which includes a plug portion 22 which is shaped and sized to have close sliding fit in the liner portion 16. The length of the plug portion 22 is such that it extends below the circumferential rib 19 and compresses the same whereby to provide a seal and also to provide means resisting the withdrawal of the plug portion 22 from the liner 16. The top of the closure 21 includes a radially outwardly extending annular flange 23 which engages and compresses the annular rib 20 of the web 18 when the closure is seated, Figure 2, whereby to provide a second seal. A cylindrical flange or skirt 24 depends from the flange 23 and has a close sliding fit on at least the upper end of the skirt 17 of the guard portion whereby to compress the same against the upper outer surface of the neck 12, to provide supplemental means for resisting the withdrawal of the closure 21 from the container. Any suitable means such as the post 25 may be imbedded in the closure 21 for attaching any suitable tether 26 thereto to prevent loss thereof. The other end of the tether 26 may be suitably secured to the container 10 as at 27, Figure 1.

Figure 5 illustrates a modification of the combined liner and lip guard. This species of the invention is generally indicated at 30 and comprises a tubular liner portion 31 which is connected by an integral web 32 to an outer skirt 33. An annular compressible rib 34 is integral with the web 32 and extends axially outwardly thereof as in the first described species. The liner 31 is slightly longer than the neck 12 and includes a lower end formed with radially outwardly directed means 35 which resiliently underlies the shoulder 13 of the container to resist withdrawal of the liner from the neck. In the species illustrated such means 35 comprises a circumferential rib extending radially outwardly of the lower end of the liner 31. The member 30 is formed of the same material and is applied to the neck 12 in the same way as in the first described species.

Figure 6 shows the liner 30 of Figure 5 applied to the container neck 12 and shows also a novel closure 36 for the same. The closure 36 comprises a plug portion 37 having a lower end formed with generally outwardly extending means 38 which underlies the rib 35 of the liner 31 to provide means resisting the withdrawal of the plug

portion from the liner. As illustrated, means 38 comprises an integral semi-rigid flange. The upper end of the closure 36 includes a radially outwardly directed flange 39 having an anular groove 40 which is adapted to receive the rib 34 therein and compress the same to form a seal when the plug portion 37 is seated. A cylindrical flange or skirt 41 depends from the flange 39 and grips the upper end of the skirt 33 as in the species of Figures 1–4. As before a post 42 may be molded in the closure 36.

In both species of the invention, the closures 21 and 36 are preferably formed of suitable, inert plastic material such as high density polyethylene. Likewise, in both species of the invention it is preferred that the guard-liner should be formed of silicone rubber or a like elastomer having similar characteristics. This combination of materials not only provides insulating means which is not affected by moisture but also enables the use of separate gaskets to be eliminated as the ribs 20 and 34 as well as 19 and 35 cooperate with the closures to provide built-in gaskets.

It follows then that both species of the invention are capable of accomplishing the objects of the invention at low cost without sacrificing quality as each type of device is capable of being mass produced by compression or other molding operations in standard molds.

Moreover, while there has been shown and described what are now considered to be the preferred forms of the invention, it should be understood that the same is susceptible of other forms and expressions. Consequently, the invention is not considered as being limited to the precise structures shown and described hereinabove but only as hereinafter claimed.

We claim:

1. The combination with the neck of a metal canteen or the like, said neck having a free outer end as well as inner and outer surfaces; of a combined lip guard, liner and stopper for said neck comprising inner and outer tubular portions adapted to have a close fit with and to resiliently engage said inner and outer surfaces of said neck therebetween throughout the lengths of said tubular portions, an integral web connecting said tubular portions and adapted to overlie said free outer end of said neck, said web and outer tubular portion providing a lip guard, said inner tubular portion comprising said liner, at least one compressible annular rib integral with said liner and extending radially inwardly thereof in axially inwardly spaced relation to said web, a substantially rigid stopper, said stopper including a cylindrical plug portion insertable into said liner, said plug portion having a sealing part formed with a uniform cylindrical surface throughout its length which is sized to compress said rib to form a seal therewith and provide a frictional egnagement with said plug to resist withdrawal of the latter from said liner, and said engagement of said sealing part of said plug with said rib being weaker than the engagement of said lip guard and liner with said inner and outer surfaces of said neck whereby said plug is withdrawable from said liner without dislodging said lip guard and liner from said neck.

2. A device according to claim 1, wherein said liner is substantially coextensive in length with said inner surface of said neck.

3. The combination with the neck of a metal canteen or the like, said neck having a free outer end as well as inner and outer surfaces; of a combined lip guard, liner and stopper for said neck comprising inner and outer tubular portions adapted to have a close fit with and to resiliently engage said inner and outer surfaces of said neck therebetween throughout the lengths of said tubular portions, an integral web connecting said tubular portions and adapted to overlie said free outer end of said neck, said web and outer tubular portion providing a lip guard, said inner tubular portion comprising said liner, at least one compressible annular rib integral with said liner and extending radially inwardly thereof in axially inwardly spaced relation to said web, a substantially rigid stopper, said stopper including a cylindrical plug portion insertable into said liner, said plug portion having a sealing part formed with a uniform cylindrical surface throughout its length which is sized to compress said rib to form a seal therewith and provide a frictional engagement with said plug to resist withdrawal of the latter from said liner, said stopper including an outer end formed with a radially outwardly directed portion, a tubular skirt depending from said radially outwardly directed portion, said skirt being sized to have a close friction fit on those portions of said outer tubular portion covered thereby, and said engagement of said skirt and said sealing part of said plug with said combined lip guard and liner being weaker than the engagement of the latter with said neck whereby said plug may be withdrawn from said lip guard and liner without dislodging the latter from said neck.

4. A combined lip guard, liner and closure for the neck of a metal receptacle, said receptacle including a wall portion, said neck including a free outer end as well as inner and outer surfaces and said neck merging with said wall portion of said receptacle to provide a radially outwardly directed shoulder; said lip guard and liner comprising a member formed of elastomeric material including an inner tubular member providing said liner, an outer tubular member, said members having outer ends connected by an integral web, said web and outer tubular member providing said lip guard, said lip guard and liner being adapted to have a close fit on said neck and to resiliently engage therebetween the inner and outer surface areas of said neck covered thereby, said liner being slightly longer than said neck and having a free inner end, radially outwardly projecting means integral with said free inner end of said liner, said last named means being adapted to underlie said shoulder to provide resilient means resisting withdrawal of said liner from said neck, said closure comprising a plug having a close sliding fit in said liner, said plug having an inner end including resilient radially outwardly directed means adapted to underlie said radially outwardly projecting means of said liner to provide means resisting withdrawal of said plug from said liner, and the engagement of said combined lip guard and liner with said neck and shoulder being stronger than the engagement of said plug with said liner whereby to permit the withdrawal of said plug from said liner without dislodging said lip guard and liner from said neck.

5. A combined lip guard-liner and closure for the neck of a drinking receptacle, said receptacle including a wall portion, said neck including a free outer end as well as inner and outer surfaces, said neck merging with said wall portion to provide a radially outwardly directed shoulder; said lip guard-liner comprising an inner tubular portion providing said liner and an outer tubular portion, an integral web connecting said liner to said outer tubular portion, said web and outer tubular portion providing said lip guard, said lip guard and liner being adapted to have a close fit on said neck and to resiliently engage therebetween the inner and outer surfaces areas thereof covered thereby said liner being slightly longer than said neck and having a free inner end formed with an integral radially outwardly extending rib adapted to underlie said shoulder to provide resilient means resisting withdrawal of said liner from said neck, said closure comprising a cylindrical plug having a close sliding fit in said liner, said plug having an inner end formed with an integral annular diagonally outwardly directed flexible flange adapted to underlie said rib of said liner and resist withdrawal of said plug from said liner, and the engagement of said lip guard-liner with said neck and shoulder being stronger than the engagement of said plug with said liner whereby to permit said plug to be withdrawn

from said liner without dislodging said lip guard-liner from said neck.

6. The combination of claim 5, wherein said plug includes an upper end formed with a radially outwardly directed flange having an integral depending cylindrical skirt, and said skirt being sized to compress against said outer surface of said neck underlying portions of said outer tubular portion.

7. A combined lip guard-liner and closure for the neck of a drinking receptacle, said receptacle including a wall portion, said neck including a free outer end as well as inner and outer surfaces, said lip guard-liner comprising an inner tubular portion providing said liner and an outer tubular portion, an integral web connecting said liner to said outer tubular portion, said web and outer tubular portion providing said lip guard, said lip guard and liner being adapted to have a close fit on said neck and to resiliently engage therebetween the inner and outer surfaces areas thereof covered thereby, said liner being substantially the same length as said neck, said

closure comprising an elongated cylindrical plug having a close sliding fit in said liner, at least one of said plug and liner being formed with an integral and substantially radially directed means adapted to cooperate with the other of said liner and plug to resist withdrawal, of said plug from said liner, and the engagement of said lip guard-liner with said neck being stronger than the engagement of said plug with said liner whereby to permit said plug to be withdrawn from said liner without dislodging said lip guard-liner from said neck.

References Cited in the file of this patent

UNITED STATES PATENTS

302,268	Lothrop	July 22, 1884
2,228,936	Walter	Jan. 14, 1941
2,690,861	Tupper	Oct. 5, 1954

FOREIGN PATENTS

773,755	France	Sept. 10, 1934
1,038,817	France	May 13, 1953

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,978,134 April 4, 1961

George E. Caine et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 4, line 62, after "thereby" insert a comma; column 6, line 5, after "withdrawal" strike out the comma.

Signed and sealed this 5th day of September 1961.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents

USCOMM-DC