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C. GEDDES

2,270,729

CLOSURE

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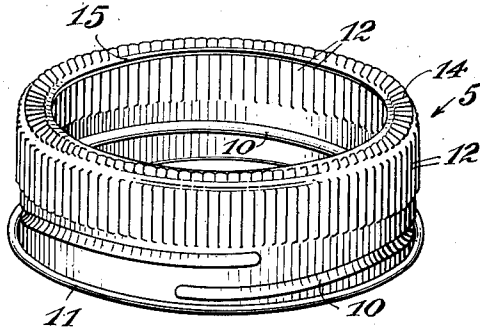


Fig. 1.

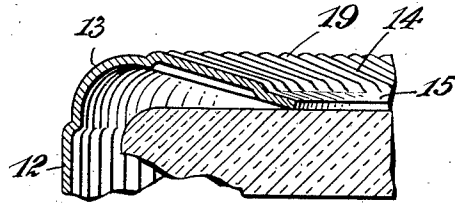


Fig. 4.

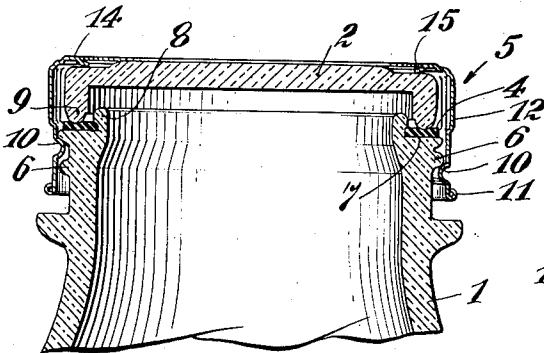


Fig. 2.

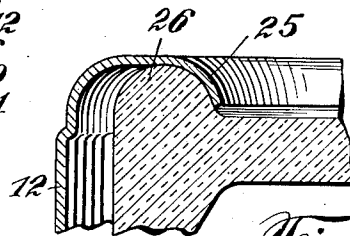


Fig. 7.

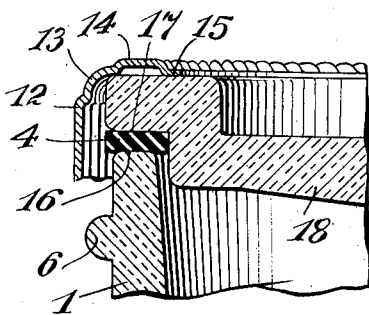


Fig. 3.

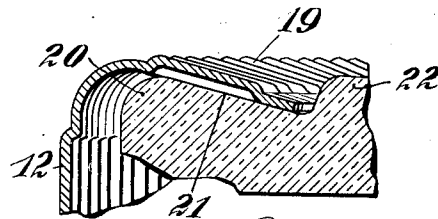


Fig. 5.

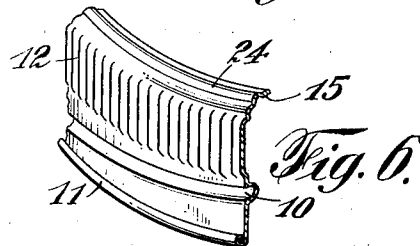


Fig. 6.

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UNITED STATES PATENT OFFICE

2,270,729

CLOSURE

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In Canada February 24, 1938

2 Claims. (Cl. 215—43)

The present invention relates to a closure and package, and more particularly to the type in which a screw ring is utilized for holding a glass or metal cover in place on a container to form a hermetic seal.

There are two general types of covers and containers now in commercial use and these are used primarily for home canning. In one, the glass container has a shoulder substantially at its rim to seat a gasket on which a cover with a depending part rests. In the other, the container has the usual type of rim and the cover has a shoulder or ledge on which the gasket seats. The present invention pertains more particularly to the screw ring which is applied to the container to engage and hold the cover in place and to form a hermetic seal on the container. Certain features of the invention include an improved cover construction in addition to the features of the screw ring.

One of the difficulties encountered in the use of screw rings is the tendency of the cover retaining flange to curl upwardly at its edge when applied to a container. This decreases the holding power of the ring and, in addition, exposes the sharp edge of the metal which frequently inflicts hand injuries on the user. The screw rings are repeatedly applied for sealing the container during consumption of the contents and, in many cases, the same jars and screw rings are used for several seasons and, therefore, may be filled and emptied several times. The ring, to be satisfactory, must be capable of withstanding the most severe use for several seasons.

Another difficulty is in the construction of the screw threads on the ring. The present type of thread extends from the top to the bottom of the skirt of the ring and around the ring, in some cases two or more times. Such threads on a ring tend to envelop the threads on the glass container. Due to limitations in manufacture, it is not possible to maintain the thread projections uniform in all cases. Frequently, the enveloping part of the thread on the ring grips the thread on the container, which increases excessively the forces required to apply or remove the cap. The termination of the thread at the bottom of the cap usually gives an irregular appearance, which is undesirable.

The present invention aims to overcome the above difficulties by providing a screw ring having an improved cover retaining flange which will maintain its shape throughout its life. The ring may be used with the two types of covers

now in commercial use, with the above advantages, and may be used with an improved type of cover, illustrated herein, with an even greater advantage. The improved skirt and thread construction facilitates application and removal of the ring and permits a more secure seal.

An object of the present invention is to provide an inexpensive, practical screw ring and package.

Another object of the invention is to provide a screw ring having an improved closure retaining flange.

Another object of the invention is to provide a screw ring having an improved thread construction.

Another object of the invention is to provide a stronger and more durable screw ring.

A further object of the invention is to improve the appearance of screw rings and to prevent their getting out of shape with repeated use.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawing, forming a part of the specification, wherein

Fig. 1 is a perspective view showing a preferred embodiment of the present invention;

Fig. 2 is a sectional view showing the closure illustrated in Fig. 1 applied to a container;

Fig. 3 is an enlarged sectional view of the closure illustrated in Fig. 2 utilized with another type of cover member;

Fig. 4 is an enlarged sectional view of a modification of the cover retaining flange illustrated in Fig. 1;

Fig. 5 is an enlarged sectional view of the screw ring shown in Fig. 4 utilized with an improved cover member;

Fig. 6 is an enlarged sectional view of another type of flange; and

Fig. 7 is an enlarged sectional view illustrating still another type of retaining flange and cover.

Referring again to the drawing, and more particularly to Figs. 1 and 2, there is shown a package comprising a container 1 having a cover 2 seated on a gasket 4 to form a seal on the container. The cover is held in position by a screw ring 5.

The container 1 is preferably made of glass with a screw thread 6 at its upper end and with a ledge 7 adapted to seat the gasket 4 which is held against inward movement by a rim 8 on the container, and preferably against upward movement by an annular recess located at the lower part of the rim 8.

The cover 2 is preferably made of glass, although certain of the features of the invention may be attained with a metal cover. An annular downward extending enlargement 9 thereon engages and compresses the gasket 4.

The screw ring 5 may comprise a substantially cylindrical skirt portion and an inturned flange adapted to extend over and hold the cover in place. The skirt, in its preferred form, has a screw thread 10 therein adapted to cooperate with the threads 6 on the container. The thread differs from those now in use in that it is a spiral groove extending once about the container. A slight overlap may be provided at the ends of the thread or there may be a slight gap. By limiting the length of the thread substantially to one revolution, the thread on the container is not enveloped but is engaged only on its under side. In applying the ring, the rotative effort is largely taken up by the inclined plane action tending to pull the cap tightly down on the cover. The thread on the ring does not envelop the thread on the container and, hence, there can be no gripping or squeezing action tending to make removal and application more difficult. The lower end of the thread preferably terminates a slight distance from the bottom of the cap so that a rolled or beaded edge 11 may be provided which strengthens the lower part of the cap and, in addition, substantially conceals the raw edge of the cap to give a smooth and attractive appearance. The upper end of the thread preferably terminates substantially midway the skirt of the ring, leaving ample space for a relatively wide band of corrugations or knurls 12. The knurls reinforce the skirt of the cap and provide an excellent grip. While various types of knurls may be satisfactorily used, it is preferred that the knurls be rolled outwardly, as shown more particularly in Fig. 2, so that their minimum diameter corresponds with the diameter of the blank from which the ring is formed, to prevent any interference between the knurls on the ring and the threads on the container.

The flange at the upper edge of the ring has an annular corrugated band 14 which is medially disposed with reference to the edge of the flange and to the corner formed by the flange and the skirt. The corner separating the corrugations on the flange and the corrugations on the skirt is preferably smooth to facilitate manufacture of the cap. Having the skirt corrugations extend over the edge of the cap to merge with the corrugations on the flange raises certain manufacturing difficulties, and hence makes such a construction impracticable. The cover is preferably well-rounded as shown at 13 in Fig. 3 to form in effect, an arch which reinforces and strengthens the flange. The inner part of the flange is preferably a plain band 15 set downwardly with respect to the corrugated band to engage the glass cover. By setting this inward portion downwardly, the exposure of the raw edge is reduced to a minimum. The construction of the flange is such that the corrugations 14 minimize bending of the flange, thus tending to hold the inner edge down. The downwardly

set plain band 15 reinforces the plain smooth corner at the junction of the skirt and flange and tends to prevent it from bending. It is to be noted that if the corrugations extended completely to the edge, there would be an accordion effect but the plain reinforcing edge acts as a hoop to prevent any spreading of the corrugated parts and tends to hold the flange rigidly in position. It has been found that the construction described above is considerably stronger than a plain flange and that the tendency of the edge to bend upwardly is greatly minimized.

The screw ring described above is shown in Fig. 3 applied to a slightly different cover and container construction. In Fig. 3, a different construction of container and cover are shown to illustrate the application of the screw ring thereto. The container has the usual type of rim 16 and the cover has a seat 17 for the gasket 4 which is held against inward movement by means of a central depending portion 18 on the closure. Expressed in another way, the gasket seat in Fig. 3 is on the cover whereas, in Fig. 1, it is on the container.

Fig. 4 illustrates a modification of the cover retaining flange of the screw ring wherein the entire flange 19 is inclined downwardly from the corner to the inner edge. The location of the corrugations therein, the smooth corner joining the corrugations and the skirt, and the smooth band or zone forming the inner edge are substantially the same as in the preferred embodiment illustrated in Figs. 1, 2 and 3. The principle of operation is substantially the same as the preferred embodiment but, in the modified form, the edge of the flange must be raised substantially before it reaches a horizontal plane. The free edge is, therefore, more concealed and less likely to be raised to an objectionable degree. In addition, downward inclination of the flange increases the strength and holding power of the flange. The plain band 15 at the edge serves as a hoop which has to be stretched to force the flange upwardly. The corrugations prevent the flange from bending and transmits the pressure from the band 15 to the corner, thereby providing a rigid construction.

Fig. 5 shows the flange construction of Fig. 4 applied to cover 20 having a corresponding inclined surface 21 adjacent its outer periphery to cooperate with the flange on the rim. In this construction, the pressure is distributed substantially over the entire width of the flange and not concentrated at its outer edge. In addition, the cover part has a ridge 22 which extends upwardly above the inner edge of the flange and prevents any contact therewith.

In Fig. 6, a further modification of the flange is shown, in which an annular rib 24 is utilized to strengthen the flange. While this construction has certain advantages, it has not been found to be as effective in preventing curling as the preferred embodiments of Figs. 1 to 5.

Fig. 7 illustrates a further embodiment of the retaining flange in which the down-turned edge 25 thereof fits over an annular enlargement 26 on the periphery of the cover. The relation of the cover and flange causes a distribution of the forces and prevents the upward curling of the edge. In addition, the downwardly depending flange 25 serves as a strengthening means for the horizontal part of the flange.

In operation, the jar or container 1 is filled with preserves, preferably quite hot, and the gasket and cover applied. Thereafter, the screw ring is

threaded to the container and screwed down to hold the cover rigidly in position. The construction of the flange prevents or minimizes any tendency of the edge to curl upwardly and the construction of the ring greatly facilitates application and removal of the ring, with minimum effort. If any jam or other tacky material spills over the container, it will be effective only on the lower side of the container thread and will not materially hinder removal of the ring.

It will be seen that the present invention provides an inexpensive, improved screw ring adapted to form a secure seal a greater number of times than is true of prior screw rings, and which minimizes gripping or wedging of the screw ring threads over the container threads. The ring is strong and durable and may be used over a long period of time without becoming deformed or bent out of shape due to rough usage.

As various changes may be made in the form, construction and arrangement of the parts herein without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. A screw band clamping member for holding a cover member on a container, having a depending skirt and an annular inwardly extending holding flange at the upper part of said skirt forming a central opening, said flange being connected with the skirt by an uninterrupted annular arch portion and having a relatively wide annular band of radially extending narrow ribs extending inwardly and downwardly from said arch portion to prevent upward curling of said flange under sealing pressure, and said flange having a relatively narrow uninterrupted cover contacting smooth band extending inwardly from the inner ends of said radial ribs which extends

completely about the opening formed by said flange and prevents circumferential spreading of the radial ribs with respect to each other when the flange is subjected to sealing pressure.

2. A sealed package comprising the combination of a container having a sealing surface at the upper part thereof and a screw thread below said sealing surface, a gasket on the sealing surface, a cover member seated on the gasket having an annular downwardly inclined surface at the upper part thereof for receiving the flange of a screw band clamping member and having an upwardly projecting central portion positioned inwardly with respect to said inclined surface, a screw band clamping member having a skirt portion cooperating with the screw thread on the container to secure the cover member to the container and having an annular inwardly extending holding flange at the upper part of said skirt portion forming a central opening and connected with the skirt by an uninterrupted annular arch portion, said flange having a relatively wide band of radially extending narrow ribs extending inwardly from said arch portion inclined downwardly and lying against said inclined surface of the cover member to prevent upward curling of said flange due to sealing pressure, said flange having a relatively narrow uninterrupted cover contacting smooth band extending inwardly from the inner ends of said radial ribs and completely about the opening formed by said flange and inclined downwardly to lie against said inclined surface of the cover member and to prevent circumferential spreading of the radial ribs with respect to each other when the flange is subjected to sealing pressure, said upwardly projecting central portion of the cover member preventing contact of the hand of a user with the inner free edge of the narrow cover contacting smooth band.

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