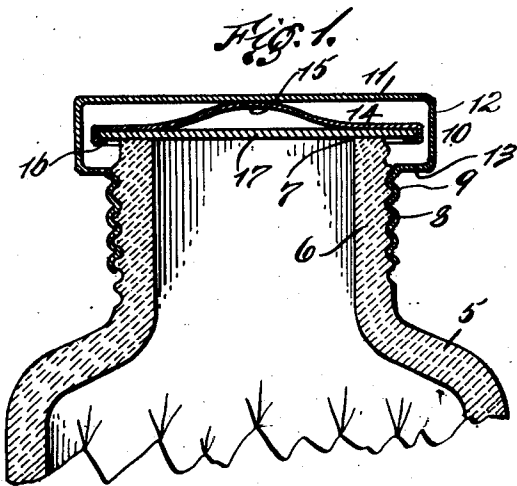
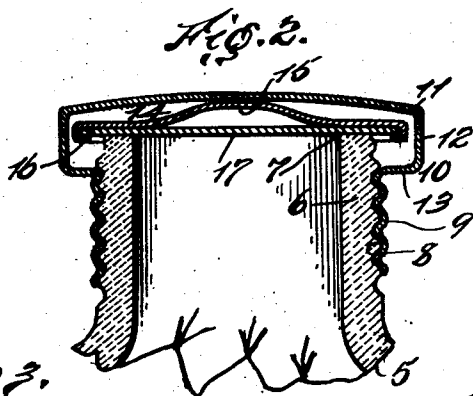
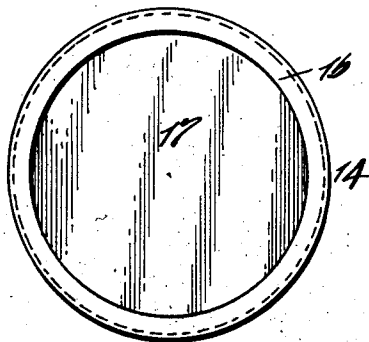
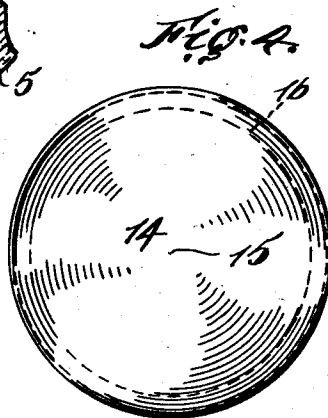


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N. LEE
CLOSURE

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UNITED STATES PATENT OFFICE.

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CLOSURE.

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My invention relates to closures used for sealing the openings in containers, jars or bottles made chiefly of glass or other friable material, and the objects of my invention are, among other things, to form a closure which shall effectively seal such container openings by being pressed firmly down on the circular rim or mouth of such openings with a substantially uniform pressure, and without rotating or revolving the closure lining or packing which is usually in actual contact with the rim or edges of the container opening when the closure is being secured in position, thereby avoiding any possible injury or distortion of such lining or packing. A further object of my invention is to provide an exceedingly simple and durable container closure which may be easily and cheaply constructed, and which will readily adapt itself to any irregularities in the configuration, plane or size of the customary form of container openings to prevent leakage, thereby furnishing an effective closure seal which can also be repeatedly used for re-sealing the opening of the container after the closure has been initially removed, and which is further adapted to take up any possible looseness of the parts caused by the shrinkage of the lining or packing due to atmospheric conditions or otherwise.

With the above and other objects in view, my invention comprises the novel construction, combination and arrangement of parts to be hereinafter specifically described and thereafter particularly pointed out in the appended claims.

I attain the foregoing advantageous results by the closure shown in the accompanying drawings in which—

Figure 1 is a vertical sectional view of a preferred embodiment of my invention mounted upon the top of the container opening before the parts are secured in sealed position;

Figure 2 is a view similar to that shown in Fig. 1, but after the parts comprising my closure-seal have been secured in sealed position;

Figure 3 is a detail plan view of the lining-holder looking from the bottom; and

Figure 4 is a detail plan view similar to Fig. 3 but looking from the top.

Similar numerals refer to similar parts throughout the several figures.

Referring to Figures 1 and 2, the container

5 preferably made of glass or other friable material has the upwardly-projecting neck 6 integrally formed therewith which terminates in the circular opening or mouth 7 upon which the closure is located and securely held to seal the interior of the container. The upper portion of the neck 6 is exteriorly threaded as at 8 which threads 8 are engaged by the interiorly threaded circular depending flanges 9 of the outer shell or cap 10 which is formed of a resilient sheet-metal having the crown 11 and the circular sides 12 preferably formed with the bent-in rim 13 from which the threaded flanges 9 depend as shown.

Within the outer shell 10 and loosely held between the crown 11 and rim 13 is arranged the lining-holder 14 which is formed of resilient sheet-metal with a centrally-disposed upwardly extending projection or dome 15 adapted to bear against the central portion of the crown 11, as shown; the outer circular edges of the holder 14 are bent under as at 16 to hold the disk-shaped lining or packing 17 which is preferably made of some slightly-compressible material as cardboard for example, and is pressed down on the upper rim of the opening or mouth 7 when the parts are secured in operative position. In order that the sealing attained by the improved closure through the compression of the lining 17 on the mouth 7 shall be tight and thoroughly effective at all points, the holder 14 is preferably shaped so that it is in actual contact with the lining 17 for a slight distance inside the zone of contact between the lining and mouth, as shown in Figures 1 and 2. The projection or dome 15 forms a central anti-frictional bearing between the crown 11 and holder 14, thereby enabling the latter to be held in place without rotation on the mouth 7 when the outer shell or cap 10 is screwed down on the neck 6. As containers or bottles when molded of glass usually have slight projecting ridges or "fins" on the top edges, it is of decided advantage to press the lining 17 firmly down on the mouth 7 without rotating or rubbing the lining laterally across such ridges which would tend to tear or otherwise injure the lining thereby endangering or destroying the effectiveness of the seal.

The operation of my improved closure is substantially as follows: When the parts are assembled in the position as shown in Fig-

ure 1, the cap 10 is revolved so that the threads of the flanges 9 engage and coact with the exterior threads 8 on the neck 6 to depress the cap 10; meanwhile the projection or dome 15 is rotatively in contact with the crown 11, and as the cap 10 is screwed down on the neck 6, the crown is slightly sprung outwardly and the holder 14 is also slightly flattened out laterally as the lining 17 and the holder 14 are simultaneously pressed home upon the opening or mouth 7 as shown in Figure 2. The effect of such complementary spring action between the crown 11 and holder 14 with its resilient dome 15 is that the lining 17 and the holder 14 are simultaneously firmly forced as a unit and compressed downwardly on the mouth 7 without any rotation of the lining and holder, and the pressure being centrally applied enables such lining to adapt itself to any inequalities in top surface of the mouth and to be compressed thereon with a more or less uniform pressure, while radially expanding with the holder 14 within the annular recess formed in the cap between the crown 11 and depending flanges 9, which is of considerable importance due to the slight imperfections generally occurring in the configuration of the openings of containers, particularly when molded from glass.

It is manifest that my improved closure may be readily removed and afterwards replaced on the container opening to accomplish re-sealing; that a looseness in the sealing caused by the possible shrinkage of the lining or packing may be easily taken up by screwing the cap 10 further down on the neck 6; and that I have provided a container closure which embodies in itself exceptional fewness and simplicity of parts with great effectiveness of seal under different conditions in usage.

It will be understood that the closure device herein shown and described may be variously modified and changed without departing from the principle and scope of my invention as defined in the claims.

I claim as my invention:—

1. A closure for container openings comprising, in combination, a circular closure member formed integrally of resilient sheet metal having an upwardly projecting centrally-disposed dome and with its rim crimped annularly about the outer edges of a circular compressible liner in contact with the rim of the container opening inside the crimped rim of the closure member bearing only on the liner along its peripheral margin in vertical alinement with said container opening rim, and an outer cap secured rotatably to the container and bearing centrally, anti-frictionally and yieldingly only on the dome of said closure member simultaneously to press inwardly and also ra-

dially expand both closure member and liner as a unit in all directions with substantially uniform pressure on the rim of the container opening.

2. A closure for container openings comprising, in combination, a circular closure member formed integrally of resilient sheet metal having an upwardly projecting centrally-disposed dome and with its rim crimped annularly about the outer edges of a circular compressible liner in contact with the rim of the container opening inside the crimped rim of the closure member bearing only on the liner along its peripheral margin in vertical alinement with said container opening rim, and an outer cap secured rotatably to the container and bearing centrally, anti-frictionally and yieldingly only on the dome of said closure member simultaneously to press inwardly and also radially expand both closure member and liner as a unit in all directions with substantially uniform pressure on the rim of the container opening without rotating either closure member or liner transversely on said rim.

3. A closure for container openings comprising, in combination, a circular closure member formed integrally of resilient sheet metal having an upwardly projecting centrally-disposed dome and with its rim crimped annularly about the outer edges of a circular compressible liner in contact with the rim of the container opening inside the crimped rim of the closure member bearing only on the liner along its peripheral margin in vertical alinement with said container opening rim, and an outer cap secured rotatably to the container and having a resilient crown bearing centrally, anti-frictionally and yieldingly only on the dome of said closure member simultaneously to press inwardly and also radially expand both closure member and liner as a unit in all directions with substantially uniform pressure on the rim of the container opening.

4. A closure for container openings comprising, in combination, a circular closure member formed integrally of resilient sheet metal having an upwardly projecting centrally-disposed dome and with its rim crimped annularly about the outer edges of a circular compressible liner in contact with the rim of the container opening inside the crimped rim of the closure member bearing only on the liner along its peripheral margin in vertical alinement with said container opening rim, and an outer cap secured rotatably to the container and having a resilient crown bearing centrally, anti-frictionally and yieldingly only on the dome of said closure member simultaneously to press inwardly and also radially expand both closure member and liner as a unit in all

directions with substantially uniform pressure on the rim of the container opening without rotating either closure member or liner transversely on said rim.

5 5. In a closure for container openings a screw-cap engaging screw-threads on the neck of the container, said cap having an annular outwardly extending recess formed integrally therein in the transverse plane of
10 the opening between cap crown and screw-threads, and a circular resilient closure member having a mutual centrally-disposed and anti-frictional contact with said screw-cap and also carrying a compressible liner of
15 greater diameter than said container opening and having its edges held by the crimped rim of said closure member loosely disposed concentrically within said recess and radially expandible therein in all directions as a unit
20 when both closure member and lining are pressed against said opening by said cap.

6. In a closure for container openings a screw-cap engaging screw-threads on the neck of the container, said cap having an
25 annular outwardly extending recess formed integrally therein in the transverse plane of the opening between cap crown and screw-threads, and a circular resilient closure member having a mutual centrally-disposed and
30 anti-frictional contact with said screw-cap

and also carrying a compressible liner of greater diameter than said container opening and having its edges held by the crimped rim of said closure member and of greater diameter than said container opening loosely
35 disposed concentrically within said recess and radially expandible therein in all directions as a unit when both closure member and lining are pressed against said opening by said cap.

7. In a closure for container openings a screw-cap engaging screw-threads on the neck of the container, said cap having an annular outwardly extending recess formed integrally therein in the transverse plane of
40 the opening between cap crown and screw-threads, and a circular resilient closure member having a mutual centrally-disposed and anti-frictional contact with said screw-cap and also carrying a compressible liner of
45 greater diameter than said container opening and having its edges held by the crimped rim of said closure member and of greater diameter than said container neck loosely
50 disposed concentrically within said recess and radially expandible therein in all directions as a unit over said opening when both closure member and lining are pressed
55 against said opening by said cap.

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