Dec. 3, 1946. J. H. O'NEIL 2,412,169

VACUUMIZED CAN CLOSURE

Filed Dec. 24, 1943

Fig. 1.

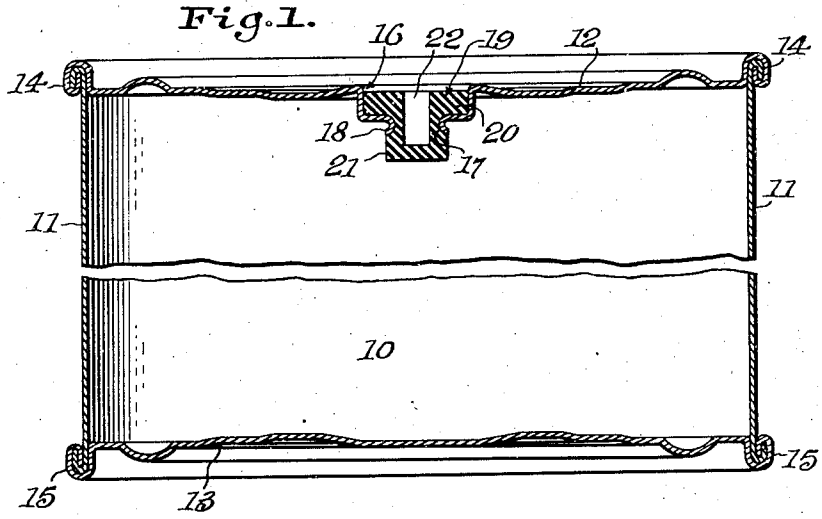


Fig. 2.

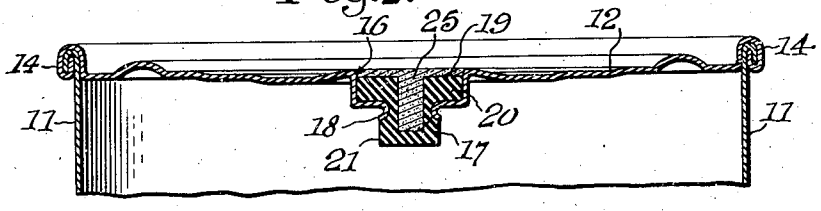
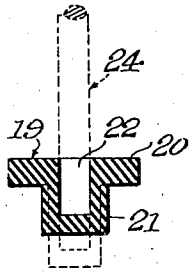


Fig. 4.



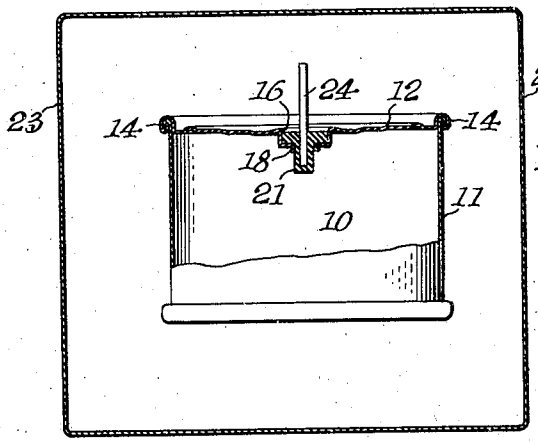


Fig. 3.

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VACUUMIZED CAN CLOSURE

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Application December 24, 1943, Serial No. 515,475

2 Claims. (Cl. 220—44)

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This invention relates to the sealing of cans, and primarily seeks to provide an improved vacuumized can closure.

One of the difficulties experienced in vacuum sealing cans results from the common practice of double seaming cans in the chamber in which the vacuum is drawn. When materials such as fine powder or the like are being so packed, there is a tendency for the material to get into the seam before the sealing is completed and this results in an imperfect seal and the loss of the vacuum in the can. The present invention seeks to provide a novel vacuumized can closure wherein the difficulties referred to are avoided.

It is an object of the invention to provide a vacuum sealed can in which the necessity of accomplishing the usual double seaming of the can cover in a vacuum chamber may be dispensed with.

It is an object of the invention to provide an inexpensive and improved insertible plug seal for cans.

A further object of the invention is to provide a novel resilient plug which may be inserted into an opening in a can to seal the same in a new and improved manner.

It is also an object of the invention to provide a can seal of the type stated which may be made tamper-proof in a very simple manner.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more fully understood by following the detailed description, the appended claims and the several views illustrated in the accompanying drawing.

In the drawing:

Figure 1 is a sectional view of a can illustrating the improved can sealing plug in sealed position.

Figure 2 is a sectional view of a portion of a can illustrating a plug seal which has been rendered tamper-proof.

Figure 3 illustrates the method of and apparatus for sealing cans, the step of inserting the sealing plug being shown.

Figure 4 is a detail view of the resilient plug.

Referring specifically to the drawing for a detailed description of the invention, numeral 10 designates a can having a body portion 11 and closures 12 and 13. The closures 12 and 13 are attached to the can body 11 by the usual form of rolled double seams 14 and 15 which may be hermetically sealed by a sealing compound included in the seam in the usual manner.

The top can closure 12 is provided with a central depression 16 having a central opening 17

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therein defined by a concentric flange 18. A resilient plug 19, preferably of rubber and comprising an enlarged head portion 20 which fits into the depression 16, and a shank portion 21 which is normally of greater cross-sectional area than the internal diameter of the opening 17, seals said opening. The plug 19 is provided with a central recess 22 extending into the plug through the head end 20 and into the shank portion 21.

The seams 14 and 15 of the can are formed and made hermetically tight in the usual manner. The can may be filled through the opening 17 after both seams 14 and 15 are formed, although it is preferred that the filling be accomplished before the top end closure is attached. The cans are first vacuumized in a chamber 23 and then the plugs 19 are inserted in the openings 17. This may be accomplished by forcing a rod 24 into the recess 22 in the resilient plug while the container is in the vacuum chamber so as to elongate the shank 21 of the plug and so reduce its cross-sectional area as to permit free insertion thereof through the opening 17. See Figures 3 and 4. When the pressure on the rod 24 is removed the shank 21 assumes its normal dimension and presses against the flange 18 of the opening 17 to vacuum seal the can. See Figure 1.

It should be noted that the plug recess 22 extends below the opening defining flange 18, when inserted in the manner illustrated in Figure 1. With the parts thus proportioned, air at atmospheric pressure in the recess 22 constantly tends to expand the plug shank against the flange and below the flange and thus facilitates retention of the desired vacuum seal.

If it is desired to make the can tamper-proof, material such as sealing wax 25 may be applied in the fluid state and will harden to provide a tamper-proof seal, as shown in Figure 2.

From the foregoing it will be apparent that the invention provides an improved closure for vacuumized cans, and that expensive machinery customarily required for double-seaming cans in a vacuum chamber is dispensed with.

Various other modifications and changes will occur to those skilled in the art, and the invention should be considered as limited only by the spirit and scope of the appended claims.

I claim:

1. A can having a vacuum drawn therein comprising a body, end covers on the can body, a collar formed in one of the end covers defining an opening therein and a rubber plug sealing said opening, said plug having a shank portion which

normally is larger in cross-sectional area than the inner diameter of said opening and which is forced into the can through said collar and expanded in sealing contact in said collar opening and also having a recess in said shank portion, said recess extending into said shank portion below the position of said collar so that air at atmospheric pressure in said recess will constantly tend to expand the plug shank against the collar and outwardly below said collar.

2. A can having a vacuum drawn therein comprising a body, end covers on the can body, a collar formed in one of the end covers defining an opening therein and a rubber plug sealing said opening, said plug having a shank portion which

normally is larger in cross sectional area than the inner diameter of said opening and which is forced into the can through said collar and expanded in sealing contact in said collar opening and also having a recess in said shank portion, said recess extending into said shank portion below the position of said collar so that air at atmospheric pressure in said recess will constantly tend to expand the plug shank against the collar and outwardly below said collar, said one cover also having a recess surrounding the opening therein, and said plug having an enlarged head thereon snugly fitting in said cover recess.

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