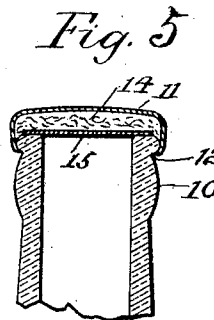
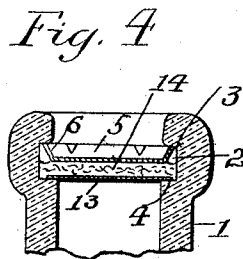
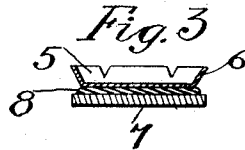
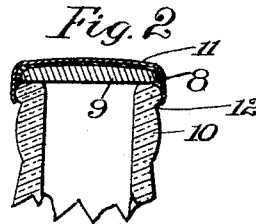
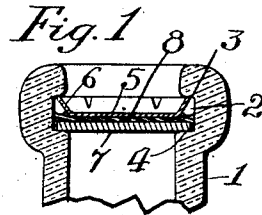


C. R. SCHMIDT.  
METHOD OF EFFECTING THE CLOSURE OF BOTTLES.  
APPLICATION FILED OCT. 22, 1907.

901,651.

Patented Oct. 20, 1908.



WITNESSES

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# UNITED STATES PATENT OFFICE.

CHARLES R. SCHMIDT, OF BALTIMORE, MARYLAND.

## METHOD OF EFFECTING THE CLOSURE OF BOTTLES.

No. 901,651.

Specification of Letters Patent.

Patented Oct. 20, 1908.

Application filed October 22, 1907. Serial No. 398,631.

*To all whom it may concern:*

Be it known that I, CHARLES R. SCHMIDT, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Methods of Effecting the Closure of Bottles, of which the following is a specification.

This invention has relation to methods of effecting the closure of bottles and has for its object the provision of a novel method of applying to bottles that class of closures in which a metallic closure portion is used in connection with a sealing disk or washer of elastic material, such as cork or the like.

It has been found that the cork disks or washers which are commonly used are ineffective in the production of a liquid and gas tight joint, unless an additional sealing material such as paraffin, shellac or cement is used for the reason that almost invariably the cork disks or washers have small holes or cracks extending from side to side either in the body of the disk or washer or at the edges and such holes or cracks would permit of the escape of gas or liquid or both unless filled or closed by the additional sealing material above mentioned.

Various methods and expedients have been adopted for applying the additional sealing material to the cork disks or washers, that most commonly employed being to coat the cork disk or washer, or the metallic closure portion with some resinous, pitchy or waxy substance in melted form or as a solution such as will harden when cold, or by evaporation of the solvent, and, while the coating is soft, then press the cork disk or washer and the metallic closure portion together and hold them in contact until the coating hardens and the disk is cemented to the metallic closure portion.

Where the above named method is employed there is no adhesion of the material by means of which the cork disk and the metallic closure portion are cemented to the glass of the bottle, as the closure is applied after the cementing material has hardened and hence the sealing of the bottle is necessarily more or less ineffective.

In Letters Patent of the United States granted to me July 2nd., 1907, No. 859,121, I have described and claimed a method of effecting the closure of bottles, consisting in applying a closure portion coated with waxy material and an elastic closure portion to a bottle and then heating the same so as to

soften the waxy material and cause it to spread so as to entirely cover and close all holes, cracks, seams, pores and spaces in the elastic closure portion and also tightly close and seal the joint formed at the meeting surfaces of the bottle neck and the closure.

In my present method I dispense with the step of softening the material employed to facilitate the sealing of the joint in my patented method and instead of employing a sealing material which necessitates the application of heat to soften it, I employ a plastic material of such character that it will spread or flow under the mere action of pressure exerted in applying the closure to a bottle so as to entirely close all cracks, holes, pores, or fissures in the elastic portion of the closure and also tightly close and seal the joint or joints formed at the meeting surfaces of the bottle neck and the elastic portion or the metallic portion of the closure.

In the accompanying drawing: Figure 1 is a vertical sectional view on an enlarged scale of a portion of a bottle neck having a closure of well known type applied in accordance with my present method. Fig. 2 is a similar view showing another well known type of closure also applied in accordance with my present method. Fig. 3 is a sectional view of the closure shown in Fig. 1 before its application to a bottle. Fig. 4 is a view similar to Fig. 1 of a modified form of my invention showing the same applied to the type of closure illustrated in Fig. 1. Fig. 5 is a view similar to Fig. 1 showing the modified form applied to the type of closure illustrated in Fig. 2.

In Fig. 1 the bottle neck is designated 1 and is formed with an internal groove 2 which has an upper shoulder 3 and a lower shoulder 4. The metallic portion of the closure which is designated 5 is in the form of a disk having an upturned edge 6 which bears against the upper shoulder 3 and the elastic portion of the closure, which is preferably a flat circular disk of cork, is designated 7 and rests upon the lower shoulder 4, both the metallic portion of the closure and the elastic portion of the closure therefore being located with their edges in the groove 2, and extending across and closing the orifice of the neck. The material by means of which the closing of the orifices in the elastic portion of the closure and the gas and liquid tight sealing of the joint is produced is designated 8 and this material as will be seen intervenes between

the metallic portion 5 and the cork disk 7 and has been spread out or caused to flow by the pressure exerted in inserting the closure in position so as to extend to the vertical wall 5 of the groove 2 to which it closely adheres.

The material 8 may be any material of a soft, plastic or semi-fluid character which will freely spread or flow under pressure but will maintain its soft, plastic or semi-fluid condition permanently under normal temperatures. Many materials possessing the above characteristics will suggest themselves to those skilled in the art and I suggest as a suitable material a mixture of bees-wax and 15 castor oil. In Fig. 3 of the drawing I have shown the closure of Fig. 1 before being placed in the bottle and it will be observed that the plastic material, before the closure is placed in the bottle is of greater thickness 20 and less extent laterally than after it has been compressed and spread by the pressure exerted upon it when the closure is pressed into place in the bottle.

While I prefer to apply the plastic material 25 between the metallic closure portion and the elastic disk before they are placed in the bottle, it is possible to first place the elastic closure portion in the bottle, then apply the plastic material upon the top of the elastic 30 closure portion and then press the metallic closure portion into place, thereby compressing and spreading the plastic material to the required extent.

In Fig. 2 of the drawing I have shown another type of closure in which the elastic 35 closure portion 9 rests upon the upper edge of the bottle neck 10, while the metallic closure portion 11 is in the form of a cap having a downturned edge which embraces the 40 top of the bottle neck and engages a groove 12 on the outside of the bottle neck as shown. In this form as in that shown in Fig. 1, the plastic material 8 is located between the elastic closure portion 9 and the metallic 45 closure portion 11 and is spread or caused to flow and cover the edge of the elastic closure portion and also fill and close up the joints between the closure portions and the glass of the bottle by the pressure exerted in applying the closure to the bottle. The plastic 50 material used and the manner of applying the

said material to the closure shown in Fig. 3 is the same as that hereinbefore described in the description of Fig. 1.

In Fig. 4 of the drawing I have shown a 55 modification of my invention applied to a closure of substantially the same type as that shown in Fig. 1 but in this form of my invention the cork disk 7 is dispensed with and a disk of waxed paper or equivalent material 60 13 is employed and, in order to give the required amount of elasticity to the non-metallic portion of the closure, I preferably use as a plastic material a mixture of paraffin, oil and cotton or wool fiber, this mixture 65 being designated 14 and being sufficiently plastic at normal temperatures to spread or flow under pressure so as to effect the required sealing of the bottle and being also sufficiently elastic to accomplish the function 70 performed by the elasticity of the cork disk 7, shown in Figs. 1 and 3.

Fig. 5 shows the modification adapted to the same type of closure as that shown in Fig. 2 and in this figure the plastic and elastic 75 material 14 is interposed between the metallic portion 11 of the closure and a disk of paper 15 which is substituted for the cork disk 9 of Fig. 2.

I claim:

1. The method of effecting the closure of 80 bottles while the bottle and its contents are unheated, consisting in applying to a bottle a plurality of closure portions and therebetween a material permanently plastic or 85 semi-fluid and adapted to flow under pressure at normal temperature, and then causing the said plastic material to spread or flow by subjecting it to pressure.

2. The method of effecting the closure of 90 bottles, consisting in applying to a bottle a plurality of closure portions and an intervening layer of material plastic or semi-fluid and elastic at normal temperature and then causing the said material to spread or flow by 95 subjecting it to pressure.

In testimony whereof I affix my signature, in presence of two witnesses.

CHARLES R. SCHMIDT.

Witnesses:

THOS. A. CONNOLLY,  
JOS. B. CONNOLLY.