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R. S. OWENS

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METHOD OF MAKING BOTTLE CLOSURES

Filed Jan. 23, 1929

Fig. 1.

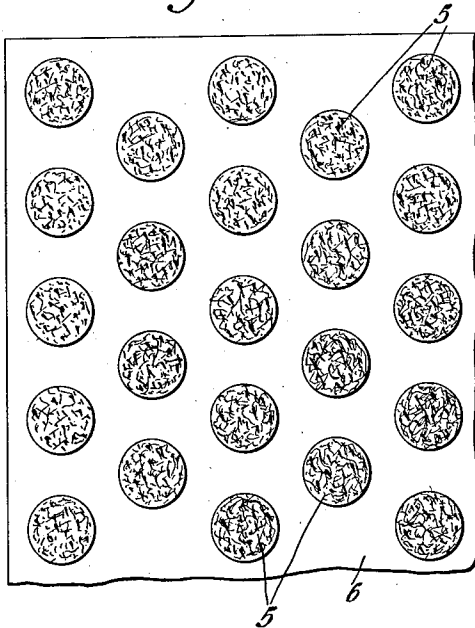


Fig. 2.

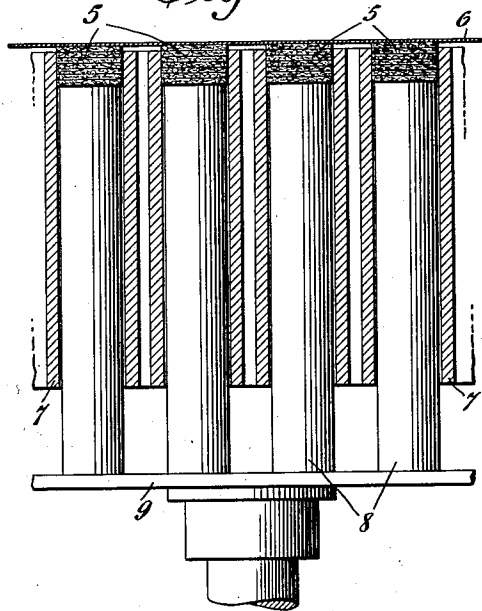


Fig. 3.

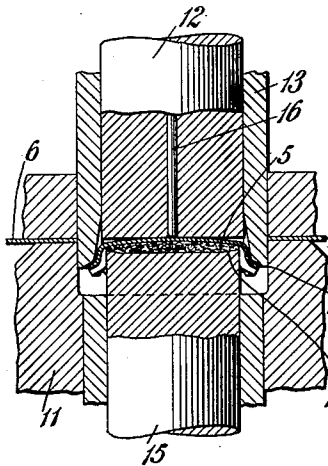


Fig. 4.

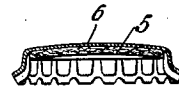
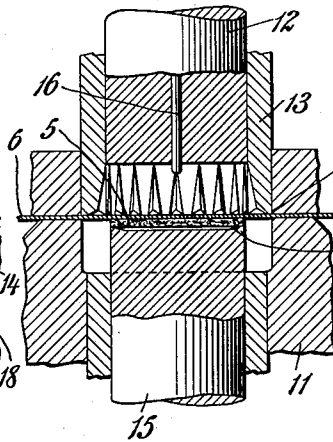
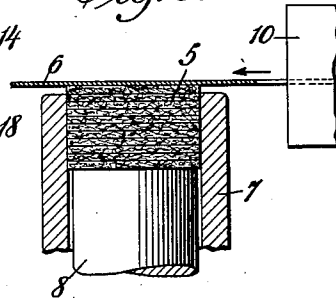


Fig. 6.

Fig. 5.



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METHOD OF MAKING BOTTLE CLOSURES

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The present invention relates to bottle closure and has for an object to provide an improved method of manufacture thereof.

It is current practice in the manufacture of bottle closures of the type comprising a metal cap with a packing disk therein to first form the metal cap with a crimped edge or a threaded flange and then to insert in each cap a packing disk of cork, paper or other suitable material, said packing disk sometimes being affixed to the inner face of the cap by an adhesive. The metal caps can be formed expeditiously by existing machines, but the insertion of the packing disks is a relatively slow operation and several machines are required for inserting the disks in the caps which are formed in one cap forming press.

The present invention provides an improved method of manufacturing the closures whereby the packing disks are first affixed to the sheet metal blank before the dieing out and forming operation is performed. By this arrangement one machine can be constructed which is sufficient to affix disks to all of the blanks as they are supplied to the closure forming machine and when the formed caps leave the machine they are already supplied with the required packing disk on their inner faces.

The nature and objects of the invention will be better understood from a description of a particular illustrative embodiment for the purposes of which description reference should be had to the accompanying drawings forming a part hereof and in which—

Figure 1 is a plan view of a blank sheet to which have been secured a number of packing disks of cork or the like for forming bottle closures,

Figure 2 is a diagrammatic sectional view of an apparatus for applying the packing disks to the underside of a blank sheet.

Figures 3 and 4 are sectional views indicating the operation of the blanking and

dieing apparatus by which the bottle closures are formed,

Figure 5 is a sectional view indicating the manner of applying the packing disk to the underside of the blank, and

Figure 6 is a sectional view of a finished bottle closure.

The method of the present invention comprises affixing to the sheet metal blank, from which disks are to be cut and formed to provide closure caps, a number of packing disks so positioned that when the bottle closures are completely formed each will contain a packing disk.

In the process to be particularly described for the purposes of illustrating the invention a series of packing disks 5 are affixed to the blank sheet 6 as, for example, by means of an apparatus such as shown diagrammatically in Fig. 2. Said apparatus may comprise a number of guides or tubes 7 each carrying a stack of packing disks 5 which are fed forward in the guides by plungers 8 all of which may conveniently be carried by a single head 9. Any suitable adhesive may be used to cause the disks to be retained on the sheet metal blank until the forming operation. The sheet metal ordinarily used in making bottle closures is coated with a lacquer and this may conveniently serve as the adhesive to retain the packing disks. In operation the lacquered sheet metal blank is heated to render the lacquer tacky, as for example in an oven 10 Fig. 5, and fed therefrom to the disk applying apparatus which may be so designed as to apply all of the disks simultaneously suitably spaced throughout the whole area of the blank.

As indicated diagrammatically in Figs. 3, 4 and 5 after the disks 5 are secured to the blank sheet by the disk applying apparatus, the sheet passes to a press wherein individual blanks are cut out and shaped to form closures. The press ordinarily will comprise a number of dies whereby the whole area of

the blank may be formed at one time into closures but in the diagrammatic drawings only one set of dies is shown. Each closure forming die may comprise a male die or
 5 plunger 11 and a female drawing die 12 with an outer sleeve 13, the cutting edge 14 of which engages the top of the blank to cut out the individual blank from the sheet. In
 10 operation the die 12 including the sleeve 13 will move downwardly to form the bottle closure. In its operative movement the sleeve 13 will first cut the individual blank from the sheet and then in cooperation with the plunger
 15 15 will draw the cap to final form as is usual practice. The sleeve and plunger of the female die will be given the respective movements to accomplish the desired forming operation and to eject the finished closure. An ejecting pin 16 may be provided, if
 20 desired. The end of the plunger 15 is preferably recessed and beveled toward its edge as indicated at 18, so that a greater pressure is applied at the edge of the packing disk to insure a proper forming of the closure and to
 25 prevent undue crowning of the substantially flat area thereof.

The foregoing particular description is illustrative merely and is not intended as defining the limits of the invention.

30 I claim:

1. The method of manufacturing bottle closures which comprises first affixing to a blank sheet a number of pre-formed packing disks, cutting out individual blanks from said
 35 blank sheet around said disks and shaping each individual blank to form a bottle closure with a packing disk on the inner face thereof.

2. The method of manufacturing bottle
 40 closures which comprises affixing to a blank sheet a number of pre-formed packing disks, cutting out individual blanks from said blank sheet with a packing disk centrally positioned on each blank and shaping said blanks be-
 45 tween dies to form bottle closures with the packing disks on the inner face thereof.

3. The method of manufacturing bottle closures which comprises first affixing to a blank sheet a plurality of pre-formed pack-
 50 ing disks and then forming from said sheet a plurality of bottle closures with packing disks on the inner face thereof.

4. The method of manufacturing a bottle closure which comprises affixing to a blank
 55 a pre-formed packing disk and shaping the blank between dies to form a bottle closure with the packing disk on its inner face.

5. The method of manufacturing a bottle closure which comprises affixing to a blank
 60 a pre-formed packing disc and shaping the blank to form a bottle closure with the packing disc on its inner face, by applying pressure by means of a die against the packing disc and forcing a co-operating die against
 65 the opposite surface of the blank.

6. The method of manufacturing a bottle closure which comprises affixing to a blank a pre-formed packing disc and shaping the blank to form a bottle closure with the pack-
 70 ing disc on its inner face, by applying pressure by means of a die to the periphery of the packing disc and forcing a co-operating die against the opposite surface of the blank.

In testimony whereof, I have signed my name to this specification this 3rd day of
 75 January, 1929.

ROBERT STUART OWENS.

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