C. R. KEERAN.

PROCESS FOR FORMING TWO-PIECE CAPS FOR RECEPTACLES.

APPLICATION FILED NOV. 13, 1917.

1,340,449. **Patented May 18, 1920.**

Fig. 1.

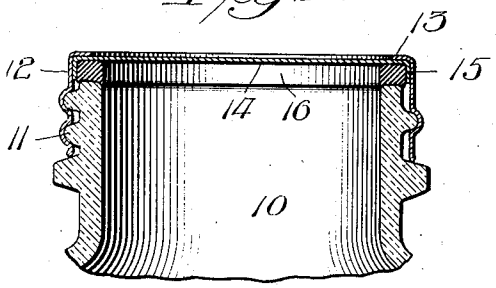


Fig. 2.

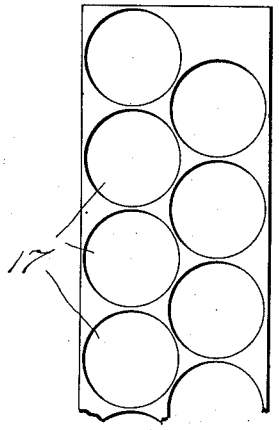


Fig. 3.

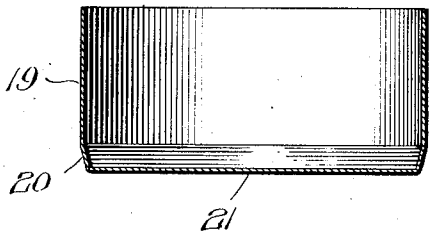


Fig. 4.

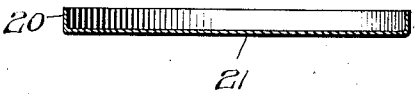
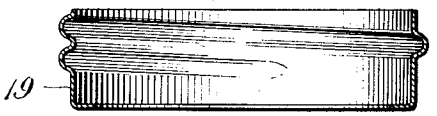


Fig. 5.



Witness:
Harry S. Gaither

Inventor:
Charles R. Keeran
by Blaming & Blaming
Attys

UNITED STATES PATENT OFFICE.

CHARLES R. KEERAN, OF CHICAGO, ILLINOIS.

PROCESS FOR FORMING TWO-PIECE CAPS FOR RECEPTACLES.

1,340,449. Specification of Letters Patent. Patented May 18, 1920.

Application filed November 13, 1917. Serial No. 201,767.

To all whom it may concern:

Be it known that I, CHARLES R. KEERAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Processes for Forming Two-Piece Caps for Receptacles, of which the following is a specification.

This invention relates to a process employed in the manufacture of what is known as "two piece" caps for receptacles,—that is, the kind wherein two separable pieces are used in forming the closure.

The description to follow will deal primarily with caps intended for sealing preserving jars, catchup bottles, and the like.

My invention has for its specific object a process by which two piece caps may be formed from metal blanks with the least possible loss or waste of material. According to the manufacturing methods now employed in making two piece screw caps for Mason jars, bottles, or the like, the cap, or disk proper,—that is, the part which covers the mouth of the receptacle—is formed from a blank stamped from a metal strip or sheet. The screw ring is formed from a separate blank, much larger in diameter. As these blanks are circular in formation, there is necessarily considerable waste material left in the sheet or strip from which the blanks are punched. Accordingly, it is the primary object of this invention that two piece caps should be formed from a single blank of approximately the same size as that now used in making the screw rings, thus saving an amount of material about equal to that now wasted in the making of the caps or disks from separate blanks.

The particular steps in the manufacture of the present two piece caps may be clearly understood by reference to the accompanying drawing, wherein:

Figure 1 shows a conventional design of a two piece cap as applied to a preserving jar of the Mason type;

Fig. 2 represents a metal strip from which blanks have been punched to provide the disk and ring portions;

Fig. 3 represents the blanked material in the first step of the process, the die having formed it in the shape of a cup;

Fig. 4 represents the severed bottom of the cup in the second stage of the process, the edges of the bottom being upturned to form a flange; and

Fig. 5 represents the last stage of the process in which the cylindrical walls of the cap have been spun to form a securing ring having screw threads and an upturned flange.

As already explained, the two piece cap produced according to the present process is applicable to different kinds of receptacles or containers, a suggested use being indicated in Fig. 1, wherein is represented a jar neck 10 having formed thereon threads 11 with which a threaded securing ring 12 may coöperate, an inturned flange 13 being provided on one end of the ring. The seal is obtained with the aid of a circular disk 14, having its edges turned to provide a flange 15. In use, a gasket 16 is interposed between the disk and the receptacle mouth, the flange 15 encircling the gasket, and the flange 13 on the ring overlying the peripheral edge of the disk to clamp the same operatively upon the receptacle.

In the manufacture of a two piece cap, such as the one described, I employ a process somewhat as follows: A metallic strip is subjected to a blanking process for the purpose of stamping out circular pieces. The least waste results if these pieces be punched out according to the arrangement of Fig. 2, wherein a metal strip is shown with a series of staggered holes 17, from each of which a circular disk has been struck.

These circular stampings are next subjected to the action of a multiple die. Since dies of this character, and suitable for the purposes of this invention, are very well known, it is thought unnecessary to illustrate any such device in the drawing. The die acts upon the circular stampings to shape them in the form of a cup, such as shown in Fig. 3, having circular side walls 19 beveled inwardly, as at 20, immediately adjacent to the cup bottom 21. The bottom 21 is next severed from the cylindrical walls of the cup along the line of juncture between its cylindrical and beveled portions. This severing may be accomplished by the action of the die, by revolving shears, or in any other suitable manner. The cup bottom so severed is obviously provided with a beveled flange, which is next straightened up, as shown in Fig. 4. The disk so formed is complete, ready for use, and corresponds in all respects to the disk 14, shown in Fig. 1.

After severing the bottom from the walls

of the cup, a circular ring remains which, in the next operation, is placed in a machine to be spun. This last step forms on the ring threads capable of coöperating with the threads 11 on the receptacle neck, and an inturned flange 13 capable of overlying the peripheral edge of the disk 14. In all respects the securing ring thus formed is the same as that shown in Fig. 1. It is obvious, of course, that, where other means than cooperating screw threads are provided for securing the ring to the receptacle, appropriate peripheral configurations for this purpose will be formed on the ring when it is subjected to the spinning operation.

In some cases it is preferred that the cap for the closure shall consist of a disk 14 without any peripheral flange of the kind which has been designated by the numeral 15. According to my invention a disk of this character would be formed in substantially the same manner as has already been explained, excepting that the cylindrical walls 19 would extend in a straight line clear to the bottom 21, and the severing of the bottom would be at the juncture line between the walls and bottom of the cup. The cylindrical remains of the cup would then be spun as already described to produce the inturned flange 13 capable of overlying the peripheral edges of the disk 14 when assembled operatively for sealing purposes.

In the art to which this invention relates, it has been known, as I am aware, to manufacture securing rings by subjecting a circular blank to the action of a die, which first cups it, and thereafter strikes from the cup bottom a circular disk of less diameter than that of the cup leaving an inturned flange on the cup end. Such a circular disk, however, is too small to coöperate with the ring of which it was originally an integral part, and must accordingly be thrown aside as scrap unless used with a smaller circular ring adapted to fit upon a receptacle neck of corresponding size. According to the present invention, however, I am enabled, by forming the blank into a cup of sufficient depth with a beveled portion at its bottom, to provide a disk having sufficient material to coöperate with the securing ring of which it was originally an integral part. It follows, therefore, that the process herein described results in less waste of material than the methods generally employed, and involves less expense in the production of the two pieces forming the closure.

I claim:

1. The process of forming a two-piece receptacle cap consisting in: blanking out a circular disk; punching the disk in the form of a cup; beveling inwardly the portions of the cylindrical wall adjacent to the bottom of the cup; severing the bottom from the cup at the line of juncture between its cylindrical and beveled portions, to provide a disk of less diameter than the cup; turning the beveled edge of the severed disk to provide a flange; spinning the cylindrical remains of the cup to provide an inturned flange at one end thereof; and assembling the disk within the cup to provide a two-piece cap, substantially as described.

2. The process of forming a two-piece receptacle cap consisting in: blanking out a circular disk; punching the disk in the form of a cup; beveling inwardly the portions of the cylindrical walls adjacent to the bottom of the cup for a distance approximating the thickness of the cup walls themselves; severing the bottom from the cup at the line of juncture between its cylindrical and beveled portions to provide a disk whose diameter is substantially equal to the inside diameter of the cup; turning the beveled edge of the severed disk to provide a flange in substantially right-angular relation thereto; spinning the cylindrical remains of the cup to provide an inturned flange at one end thereof; and assembling the disk within the cup to provide a two-piece cap, substantially as described.

3. The process of forming a two-piece receptacle cap consisting in: blanking out a circular disk; punching the disk in the form of a cup; beveling inwardly the portions of the cylindrical walls adjacent to the bottom of the cup; severing the bottom from the cup to provide a disk of less diameter than the cup; spinning the cylindrical remains of the cup to provide an inturned flange at one end thereof; and assembling the disk within the cup to provide a two-piece cap, substantially as described.

CHARLES R. KEERAN.

Witness:
EPHRAIM BANNING.