

O. ZERK.  
 PROCESS OF MAKING METAL CAPS.  
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1,027,457.

Patented May 28, 1912.

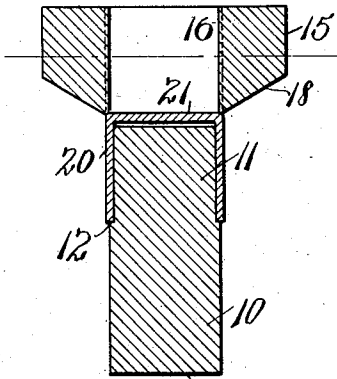


FIG. 1.

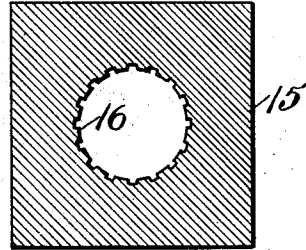


FIG. 2.

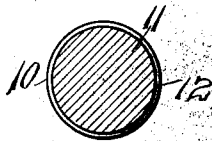


FIG. 3.

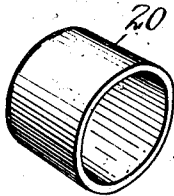


FIG. 4.

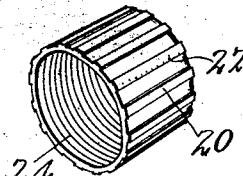


FIG. 5.

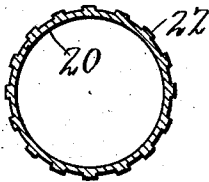


FIG. 6.

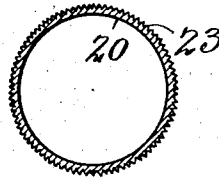


FIG. 7.

Witnesses.

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# UNITED STATES PATENT OFFICE.

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## PROCESS OF MAKING METAL CAPS.

1,027,457.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, OSCAR ZERK, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Processes of Making Metal Caps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of this invention is to provide a very cheap and effective method for giving to the exterior of metal caps a suitable gripping surface, and the process consists of certain steps by which the cap is held and broached without liability of tearing, so that a thin metal cap may be given my treatment.

The drawing shows suitable dies for broaching the cap and thereby illustrates my process.

In the drawings, Figure 1 is a central section through the male and female die and a cap in position to be broached; Fig. 2 is a cross section of the female die; Fig. 3 is a cross section of the male die; Fig. 4 is a perspective view of the blank cap shown in vertical section in Fig. 1; Fig. 5 is a perspective of the cap complete; Fig. 6 is a cross section of the cap completed, and Fig. 7 is a cross section of a completed cap having a modified form of exterior gripping surface.

As shown in the drawings, 10 represents the male die, which is shown as a cylindrical member having a reduced cylindrical portion 11 on the same axis, an abrupt annular shoulder 12 connecting the two cylindrical surfaces. The female die is indicated by 15. It is an annular member having a fluted interior provided by suitable parallel ribs 16 about its interior surface, which ribs are parallel with the axis of the opening. The smallest diameter of the opening, that is the distance between the faces of ribs which are diametrically opposite, is preferably slightly greater than the diameter of the male die. The face of the annular portion of the female die which comes adjacent to the cap may be chamfered, as shown at 18, a sharp cutting edge being thus provided at the beginning of the flutes or projections.

20, in the drawing, indicates a thin metal

cap having a cylindrical wall and an integral top, designated 21. Before treatment with my dies, the exterior of this cap may be smooth, and the cylindrical wall of the cap may be of substantially the same thickness or somewhat greater than the top portion. Accordingly, the blank which I use may be, itself, stamped from a disk of sheet metal.

Fig. 1 shows the blank cap 20 on the male die ready for the female die to be forced down thereon to broach the exterior surface. It will be seen that there is some space between the extreme end of the portion 11 of the male die and the top 21 of the cap, so that the thrust resulting from the broaching action is taken on the annular shoulder 12 by the cylindrical wall of the cap. This relieves the shoulder of the cap where the top joins the cylindrical wall from any tension, which might otherwise tear it. With such a cap in such position, the female die is simply forced downward over the cap, broaching the surface thereof to produce the cap as shown in Figs. 5 and 6 or 7.

An essential feature of the process is to hold the cap, or the portion of the cap being broached, under compression during the broaching. This enables me to operate on a thin metal, which might otherwise tear, and it insures a uniform finished product.

The cap blank shown in Fig. 4 is adapted to be made by stamping a sheet metal disk, in a manner well understood. This stamping operation naturally thickens the cylindrical wall and, though the disk is thin, there is, accordingly, sufficient metal on the cylindrical wall to provide, not only for the broached exterior of this process, but for the internal threads which are afterward turned into the cap, as shown at 24 in Fig. 5. The ribs of the female die which determine the character of the broaching may have faces of some extent or may come to a line, so that the resulting gripping surface on the cap is of the character shown in Figs. 5 and 6, having parallel sided ribs 22, or of the form shown in Fig. 7, where the ribs 23 are V-shaped.

Having thus described my invention, what I claim is:—

1. The process of treating a metal cap

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having a top and side wall consisting of broaching an exterior portion of the wall of the cap while the metal adjoining such portion is held under compression against a support and with pressure off of the top.

5 2. The process of treating metal caps consisting of holding a blank, having a cylindrical wall and a top portion, with the base of the wall against a support, and broach-

ing the exterior surface of the wall by pressure directed toward said shoulder. 10

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

OSCAR ZERK.

Witnesses:

B. M. ASCH,  
ALEX. FORSTEIN.