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G. C. SCHOENBORN & C. I. OVERTON.

MACHINE FOR FLUTING METALS.

APPLICATION FILED JULY 10, 1907.

Fig. 1.

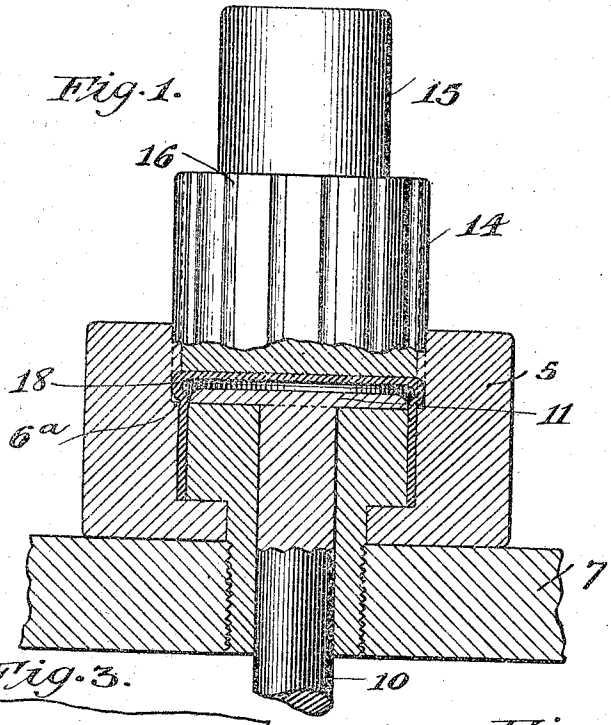


Fig. 3.

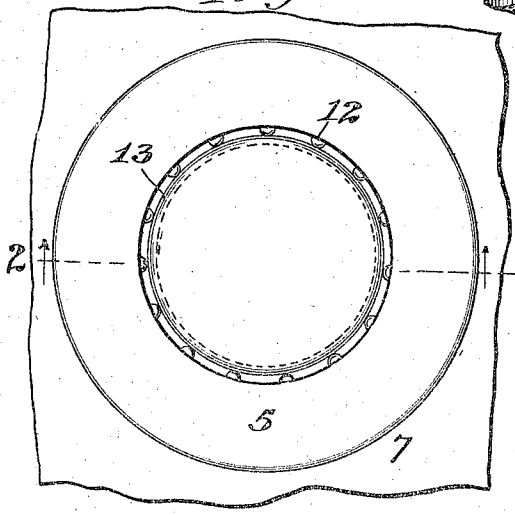
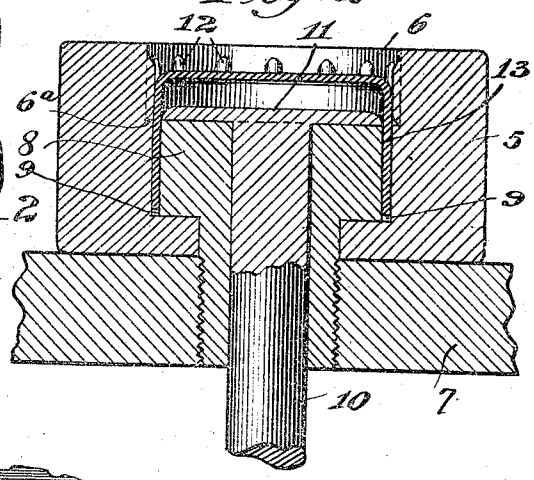


Fig. 2.



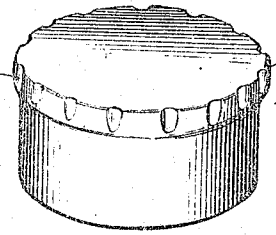


Fig. 4.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR FLUTING METALS.

No. 893,018. Specification of Letters Patent. Patented July 14, 1908.

Application filed July 10, 1907. Serial No. 383,158.

To all whom it may concern:

Be it known that we, GUSTAV C. SCHOENBORN and CARL I. OVERTON, citizens of the United States, both residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Machines for Fluting Metals, of which the following is a specification.

The invention relates in general to a machine for fluting metals, but it pertains more especially to fluting an annular boss formed upon a cap for a grease cup or the like, as well as a machine that forms the annular boss in the same operation that the fluting is accomplished. Heretofore it has been the custom in constructing a cap for a grease cup to first form an annular boss upon the top of the cap, to provide a gripping surface either for the hand or for a tool, and then, to afford a better gripping surface, the annular boss has been provided with vertical grooves, commonly known as flutes, that were formed by a second independent step from the formation of the boss, and it consists generally in cutting grooves in the metal.

The primary object of our invention, therefore, is to provide a machine whereby the annular boss and the flutes thereon are formed in one operation.

In the accompanying drawing, Figure 1 is an elevation partly in vertical section of a die and punch, constituting our invention; Fig. 2 is a vertical section of the die member with the punch removed and a cup-shaped blank within the die, taken on line 2—2 of Fig. 3; Fig. 3 is a top plan view of the die with the punch removed; and Fig. 4 is a perspective elevation of a finished cap for a grease cup.

Referring now more specifically to the drawing, the die consists of a block 5 provided with a recess or socket 6, to receive a punch, and adapted to rest upon a suitable base 7 and to be secured thereto. The upper portion of the socket 6 is of slightly greater diameter than the lower portion thereof, thereby forming an annular ledge or shoulder 6^a between said portions. Secured to the base 7, herein shown by means of a threaded engagement, is an annular block 8 adapted to fit within the socket 6 in the block 5, but of less diameter than the socket 6 so as to leave an annular seat, herein shown at 9. Through the vertical block 8 an aperture is formed, and slidably mounted within it is the stem 10 of a stripping member that is provided with a head 11 of substantially the same diameter as the block 8, and adapted to rest on the top thereof. The socket 6 is provided on the upper part of its vertical wall with a series of vertically disposed ribs or fluting members 12 that are preferably formed integral with the block 5 and are so disposed as to bring the faces of the ribs 12 in substantial vertical alinement with the lower narrower portion of the wall of the socket 6, whereby a cup-shaped blank 13, herein constituting a cap for a grease cup, is adapted to be seated within the annular seat 9, with its side wall in contact with the faces of the ribs, as shown in Fig. 2. Coöperating with the die is a punch 14 connected to a shank 15 that is suitably connected with means for operating the same. The punch may be provided with a series of vertical grooves 16 that register with the ribs 12, to allow the punch to slide within the socket 6.

Having now described the various parts of our invention the operation is as follows:— A cup-shaped blank 13, constituting the cover of a grease cup, is first placed within the annular seat 9, the bottom of the cup being presented to the face of the punch whereby, upon a downward movement of the punch, the metal is forced and spread laterally in the socket 6, between the ribs 12, thereby forming in the head of the cap the flutes or vertical grooves 17, as well as forming the annular boss 18 by reason of the fact that the metal is crowded in between the vertical ribs, and at the same time is permitted to laterally expand within the socket 6. After the punch has been operated it is difficult to remove the cap thus formed from the die, and therefore the stripper or ejector 10 has been provided, that is connected with suitable means for operating the same, and is capable of having a vertical movement whereby the head 11 of the stripper is brought in contact with the under side of the top of the cap and thereby forces the same from the die.

It is not to be understood that the invention is limited to the precise construction shown, as it might operate equally well if the vertical grooves in the punch were omitted, and it is not thought necessary here to show the means for operating the punch, nor for operating the stripper. It is also evident

that the die may be formed in various other ways, and therefore without confining ourselves to the specific details of construction,

We claim:

1. In a machine of the character described, the combination with a die member adapted to receive a cup-shaped blank, of a punch member, and means on said die member for forming an annular boss on said cup-shaped blank, and for fluting the outer edge of said annular boss, substantially as described.

2. In a machine of the character described, the combination with a die member adapted to receive a cup-shaped blank and having an annular ledge or shoulder and a series of vertical ribs above said ledge, of a punch member for forcing said cup-shaped blank within said die, whereby an annular boss is formed on said cup-shaped blank, and vertical grooves are formed in said annular boss, substantially as described.

3. In a machine of the character described, the combination with a die member adapted to receive a cup-shaped blank and having an annular ledge or shoulder and a series of vertical ribs above said ledge, of a punch member coöperating with said die member whereby an annular boss is formed on said cup-shaped blank and flutes are formed on said annular boss, and means for stripping said cup-shaped blank from said die member, substantially as described.

4. In a machine of the character described, the combination with a die member provided with a socket of different diameters to receive a punch member, and an annular groove to receive a cup-shaped blank, of a series of ribs arranged within the socket on the larger diameter of said die member, and a punch member adapted to coöperate with said die member whereby said blank is forced within said die to form an annular boss thereon at one end and a series of flutes on said annular boss, and means for stripping said cup-shaped blank from said die, substantially as described.

5. In a machine of the character described, the combination with a die member provided with a socket of different diameters having a series of vertical ribs arranged therein on the wall of larger diameter, and a block within said socket forming an annular seat to receive a cup-shaped blank, of a stripping member slidably mounted in said block and provided with a head of substantially the same diameter as said block, a punch member adapted to coöperate with said die and having a series of vertical grooves thereon registering with said ribs whereby the bottom of said cup-shaped blank is forced laterally within said socket to form an annular boss thereon and a series of flutes on said annular boss, and means for operating said punch and stripping member, substantially as described.

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