

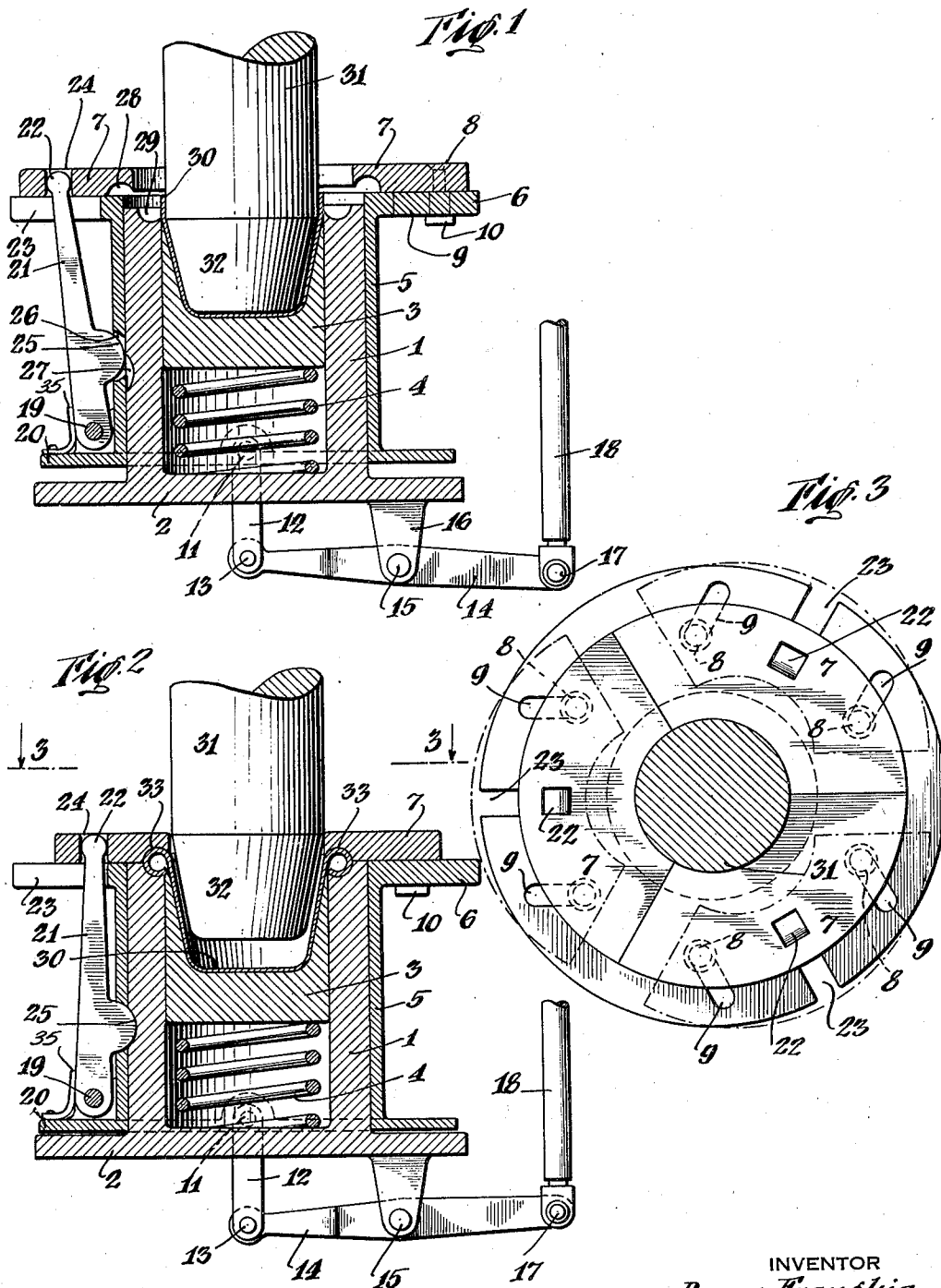
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MECHANISM FOR FASHIONING HOLLOW BODIES

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## MECHANISM FOR FASHIONING HOLLOW BODIES

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6 Claims. (Cl. 113—43)

This invention relates in general to the working of thin sheet material and more particularly to an improved means for forming a bead on such material.

5 In the fabrication of hollow bodies comprising one or more thicknesses of thin material of various types, designed for various purposes such as packings, it is essential to eliminate the sharp edge of the blank, previously cut and stamped  
10 out, and to give it the form of a bead in order to increase the resistance of the article and improve its appearance.

15 An object of the invention is to provide a simple and efficient means for providing such blanks with beads.

To this end it is proposed to displace a stamped out blank along a groove, in the form of a bead and disposed perpendicularly to the direction of the displacement and concentrically to the piece  
20 to be worked, in such a manner that the edge may be introduced into the slot of the groove and that the sheet will necessarily be beaded in the recess.

25 The invention will become more apparent upon an examination of the following specification and appended claims, certain embodiments being illustrated in the accompanying drawing, in which:

30 Figure 1 is a view in vertical section through a part of the device showing the relationship of the parts prior to the beading operation.

Figure 2 is a similar view showing the beading members in operative position.

Figure 3 is a view in section, taken along line 3—3 of Figure 2.

35 Referring more particularly to the drawing, the device may include a fixed cylinder 1 with a closed flanged base 2. Inside the cylinder is a slidable matrix 3 normally urged upwardly by the compression coil spring 4 extending between the  
40 matrix and the base 2. Slidably arranged about the cylinder is a sleeve 5 with a peripheral flange 6. Superimposed on the flange 6 are arranged three sectors 7 each of which is provided with bolts 8 extending through elongated non-radial  
45 slots 9 in flange 6, the bolts being provided with enlarged heads 10 of greater diameter than the width of the slots 9. Thus the sectors 7 held against vertical movement with respect to flange  
50 6, but are slidably movable on the flange 6 so that the sector assembly is radially expandible and contractible concentrically.

55 The sleeve 5 has pivotally connected thereto at 11 a link 12. To the opposite end 13 of the link is pivotally connected a lever 14, which is

pivotally connected at 15 to a stationary bracket 16 on the base. To the other end of lever 14 is pivotally connected at 17 an operating rod 18. This operating rod is operated so as to be moved  
5 upwardly and downwardly to a predetermined extent and at predetermined intervals by any suitable means such as a cam actuating drive from a suitable power source.

Pivotally connected at 19 to the flange 20 of the sleeve 5 are levers 21 urged inwardly or in a clockwise direction as viewed in Figures 1 and 2 by any  
10 suitable means such as a leaf spring 35. The upper extremities of levers 21 are rounded at 22 which extend upwardly through radially elongated slots 23 in flange 6 of the sleeve 5 and upwardly so as to fit reasonably snugly but rotat-  
15 ably in holes 24 in each sector 7. The levers 21 are each formed with a rounded cam portion 25 which fit in a hole 26 in sleeve 5 and extend therethrough into a recess 27 in the outer wall  
20 of the cylinder 1. As stated before, there is no relative vertical movement between the flange 6 and the sectors 7. Thus, as the rod 18 is moved downwardly the sleeve 5 is moved upwardly the sectors are accordingly moved upwardly. In doing  
25 so the cams 25 ride out of the recesses 27. This forces levers 21 to move in a counterclockwise direction about their pivots 19 against the action of spring 35, causing the rounded lever  
30 ends 22 to move the sectors outwardly to spread the sector assembly.

The sectors are each provided near the inner edges with a semicircular groove 28 arcuate in length on the under side of the sectors. A complementary groove 29 is formed in the upper edge  
35 of the cylinder 1. A reciprocating stamping punch 31 is shown in Figure 1 as having forced a blank 32 of material, to be worked, in its downward position in the correspondingly countersunk  
40 portion of the matrix to receive the lower frusto-conical extremity 32 of the punch.

In operation, the punch 31 moves downwardly punching the sheet into the matrix 3 and forming a cup-shaped member. The matrix 3 is displaced downwardly compressing the spring 4.  
45 During downward movement of the punch 31, the rod 18 is in its lower-most position with the sleeve 5 raised and the sectors 7 spread apart. When the punch 31 reaches its lowest position, the rod 18 moves upwardly lowering the sleeve 5  
50 until the cams 25 enter the grooves 27, causing the sectors 7 to move inwardly toward the punch 31 and overlie the free edge of the blank. Upon upward movement of the punch 31, the spring 4  
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urges the matrix 3 upwardly forcing the free edge of the blank into the grooves 28 and 29 and curling them to form a bead.

It will be understood that the stamping punch and the operating rod may be operated by any suitable mechanism in such a manner that the operations of the punch and rod take place in a predetermined relationship and sequence. It will also be seen that there has, by means of the above described apparatus, been provided a simple and efficient means of providing the blank with a bead.

I claim:

1. In a device for forming a bead on a blank of sheet material, a cylinder, a matrix reciprocable therein, a stamping punch reciprocable in said matrix and also adapted to move the latter downwardly to engage said blank therebetween and means including two elements having complementary semicircular grooves and relatively movable with respect to said matrix so as to bring said grooves into alignment with each other and to engage said blank for forming a bead around the periphery of said blank.

2. In a device for forming a bead on a blank of sheet material, a cylinder, a matrix reciprocable therein, a stamping punch reciprocable in said matrix and also adapted to move the latter downwardly to engage said blank therebetween, a slidable sleeve arranged about said cylinder, said cylinder being formed with a groove in its upper edge, sectors carried by said sleeve provided with complementary grooves to engage the edge of said blank.

3. In a device for forming a bead on a blank of sheet material, a cylinder, a matrix reciprocable therein, a stamping punch reciprocable in said matrix and also adapted to move the latter downwardly to engage said blank therebetween, a slidable sleeve arranged about said cylinder, said cylinder being formed with a groove in its upper edge, sectors carried by said sleeve provided with complementary grooves to engage the edge of said blank, an operating rod for reciprocating said outer sleeve, and means for causing said sectors to move outwardly and inwardly to engage the edge of said blank and compress the same in said grooves to form a bead on said edge.

4. In a device for forming a bead on a blank of sheet material, a cylinder, a matrix reciprocable therein, a stamping punch reciprocable in said matrix and also adapted to move the latter down-

wardly to engage said blank therebetween, a slidable sleeve arranged about said cylinder, said cylinder being formed with a groove in its upper edge, sectors carried by said sleeve provided with complementary grooves to engage the edge of said blank, an operating rod for reciprocating said outer sleeve, and means for causing said sectors to move outwardly and inwardly to engage the edge of said blank and compress the same in said grooves to form a bead on said edge, said means comprising pivoted levers connected to said outer sleeve and to said sectors and provided with cam faces engaging recesses in said cylinder to move said levers and sectors inwardly and outwardly during predetermined portions of the reciprocations of said sleeve and sectors together.

5. In a device for forming a bead on a blank of sheet material, a cylinder, a matrix reciprocable therein, a stamping punch reciprocable in said matrix and also adapted to move the latter downwardly to engage said blank therebetween, a slidable sleeve arranged about said cylinder, said cylinder being formed with a groove and its upper edge, sectors carried by said sleeve provided with complementary grooves to engage the edge of said blank, an operating rod for reciprocating said outer sleeve, and means for causing said sectors to move outwardly and inwardly to engage the edge of said blank and compress the same in said grooves to form a bead on said edge, said means comprising pivoted levers connected to said outer sleeve and to said sectors and provided with cam faces engaging recesses in said cylinder to move said levers and sectors inwardly and outwardly during predetermined portions of the reciprocations of said sleeve and sectors together and cooperating bolts and slots for guiding the movements of said sectors concentrically inwardly and outwardly.

6. In a device for forming a bead on a blank of sheet material, the combination of cooperating means for shaping a blank, said cooperating means being shiftable in one direction during the shaping operation, bead forming means shiftable toward the said cooperating means to engage the edge of the blank at the conclusion of a shaping operation, and means for moving the said cooperating means in the opposite direction to force the edge of the blank into the bead forming means to form a beaded edge on the blank.

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