

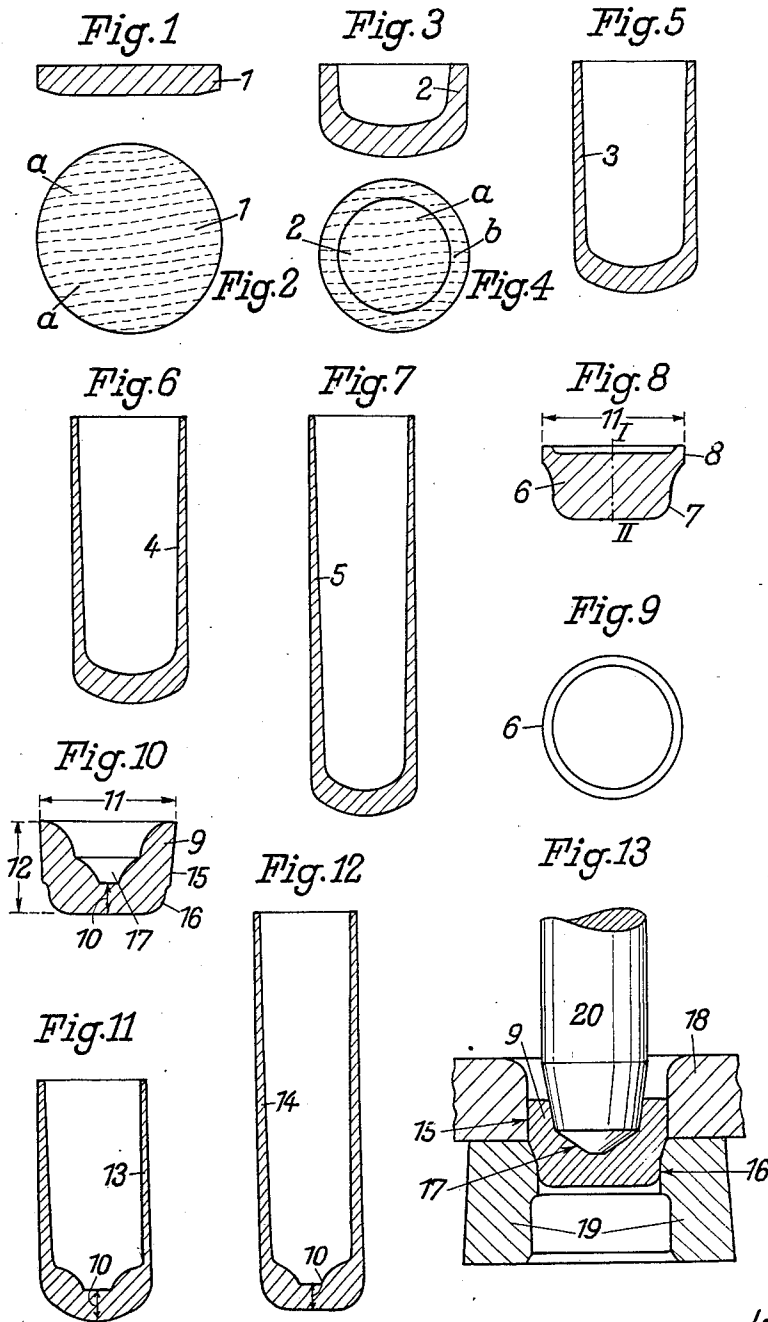
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MANUFACTURE OF CARTRIDGE CASE CUPS

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MANUFACTURE OF CARTRIDGE CASE CUPS

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1 Claim. (Cl. 29—1.3)

The invention relates to methods of manufacturing cartridge cases and the like.

Cartridge cases and the like of brass or other metal alloys have hitherto usually been manufactured from discs which were stamped out of precision sheeting. The manufacture of this precision sheeting is expensive and, since the cases must be drawn out very thin, the material must be very pure and particularly uniform. In order to manufacture these discs a block produced by a press must first be planed at both ends. A sheet is then rolled hot from the block, the edges are cut off, scraped and planed and the sheet is then rolled within quite small limits to necessary thickness. Finally the sheet is pickled, neutralized and rolled cold and discs are then stamped from the sheet so obtained and shaped into the form of cups which are then drawn to form the cartridge cases. The thickness of these discs must be correct to 0,025 mm.

In order the better to explain the present invention, this known method of manufacture is illustrated in Figures 1 to 7 of the accompanying drawing.

In these figures the disc 1 which is stamped from sheet metal is illustrated in Figure 1 in cross-section, and in Figure 2 in plan.

Figures 3 and 4 illustrate in cross-section and plan respectively the result of the first working operation on the disc whereby the cup 2 is formed.

The Figures 5, 6 and 7 show in cross-section the results of further operations whereby the cases 3, 4, 5 are drawn from the cup 2.

The fibres *a* of the disc 1 stamped from the sheet metal run transversely through the disc, as will be seen from Figures 2 and 4. This is a disadvantage because on drawing the cup 2 there are formed at the places indicated by *b* in Figure 4 danger zones which on further fabrication can give rise to the formation of cracks if the material is not quite perfect and consequently can be the cause of much waste. A further disadvantage of this known method is that there is considerable wastage when the discs 1 are stamped from the sheets.

In order to obviate these disadvantages, it has previously been proposed to cut the discs from round bars and to form these discs into cups of smaller diameter than the discs in the same manner as the discs stamped from sheet metal.

Both the known methods of manufacture, however, had the disadvantage that, in order to be able to form the disc into a cup, it was necessary to use discs of which the thickness was

less than that of the thickness of the bottom of the final cartridge case, so that material for the bottom had to be displaced from the sides.

Both mentioned methods had the disadvantage that they were not well adapted for manufacturing cartridges having heavy bottoms such as are needed for guns with heavy charges.

According to the present invention the block is first laterally sheared off from the bar and then shaped in a die without being heated while maintaining its solid form and is then pressed in a second operating stage and also without being heated into the form of a cup, of substantially the same diameter as the block sheared from the bar, the thickness of the bottom of the cup being at the same time pressed to be equal to the thickness of the bottom of the final cartridge case.

The new method of manufacture will now be explained, by way of example, with the aid of Figures 8 to 13 of the accompanying drawing, in which:—

Figures 8 and 9 illustrate in cross-section and plan respectively, the block which has been sheared off after shaping in a die;

Figure 10 illustrates in cross-section the cup-like body into which the block is pressed;

Figure 11 is a similar view showing the result of the first drawing, and

Figure 12 is a cross-section of the case after the final drawing.

Figure 13 shows the position of the cups in the tool at the beginning of the drawing operation.

Referring to Figures 8 to 13 in the method according to the invention, pieces are first sheared off laterally in exact lengths from round bars and are then shaped in a die to form solid blocks 6, as illustrated in Figure 8.

The solid block 6 is provided with a lower centering collar 7 and with an upper centering collar 8 which act as guides when the block is pressed into a cup.

The cup 9 which has the same diameter as the piece from which the block 6 was formed is then pressed from the block 6 in one operation and is shown in Figure 10.

This pressing operation has the advantage that the thickness 10 of the bottom of the cup 9 can be regulated as desired, which is impossible with the known methods which have been described. The cup 9 can be pressed in such a way that the thickness 10 of its bottom is pressed at the same time to the thickness 10 of the bottom of the final case 13.

In the known methods, owing to the height

of the cup 2 which is first formed, it is necessary to use a disc which is thinner than the thickness which the bottom is to have. Then the material for forming the bottom thickness must be displaced from the sides, which causes bad zones of material in the bottom and which is not necessary according to the new method. In general the bottom was hitherto pressed so as become about 25% thicker than the original disc. This causes abnormal friction on further drawing the thin-walled case so that the individual drawing processes must be carried out in gradual stages.

These disadvantages are eliminated by the new method since the bottom thickness 10 of the final cartridge case (Figure 13) is simultaneously pressed and calibrated to the correct height when the cup 9 is pressed.

In a second operation the cup 9 is cold pressed without altering the upper diameter 11 and its lower diameter so as to be of such a height 12 and so shaped that it is well prepared for the following drawing operations. Thus its upper col-

lar 15 forms a guide for a prefixed ring 18 for centering the die 19 or matrix and the lower part 16 acts as a guide for the die 19 and the lower part 17 in its interior acts as a guide for the punch 20. Consequently, for drawing the cases 13 and 14 from the cup 9, the drawing of the finished cases from the cups 9 can be carried out in fewer stages than with the known method and with less waste and using normal drawing angles.

What I claim as new and desire to secure by Letters Patent is:—

Method of making cartridge cases and the like which comprises shearing a blank laterally from a round bar, pressing said blank in a die without being heated to form a solid block presenting an upper cylindrical collar and a lower rounded shoulder, this block being then pressed in a second operating stage and also without being heated into the form of a cup having a more elongated form than the pressed block and the same upper diameter as the pressed block.

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