

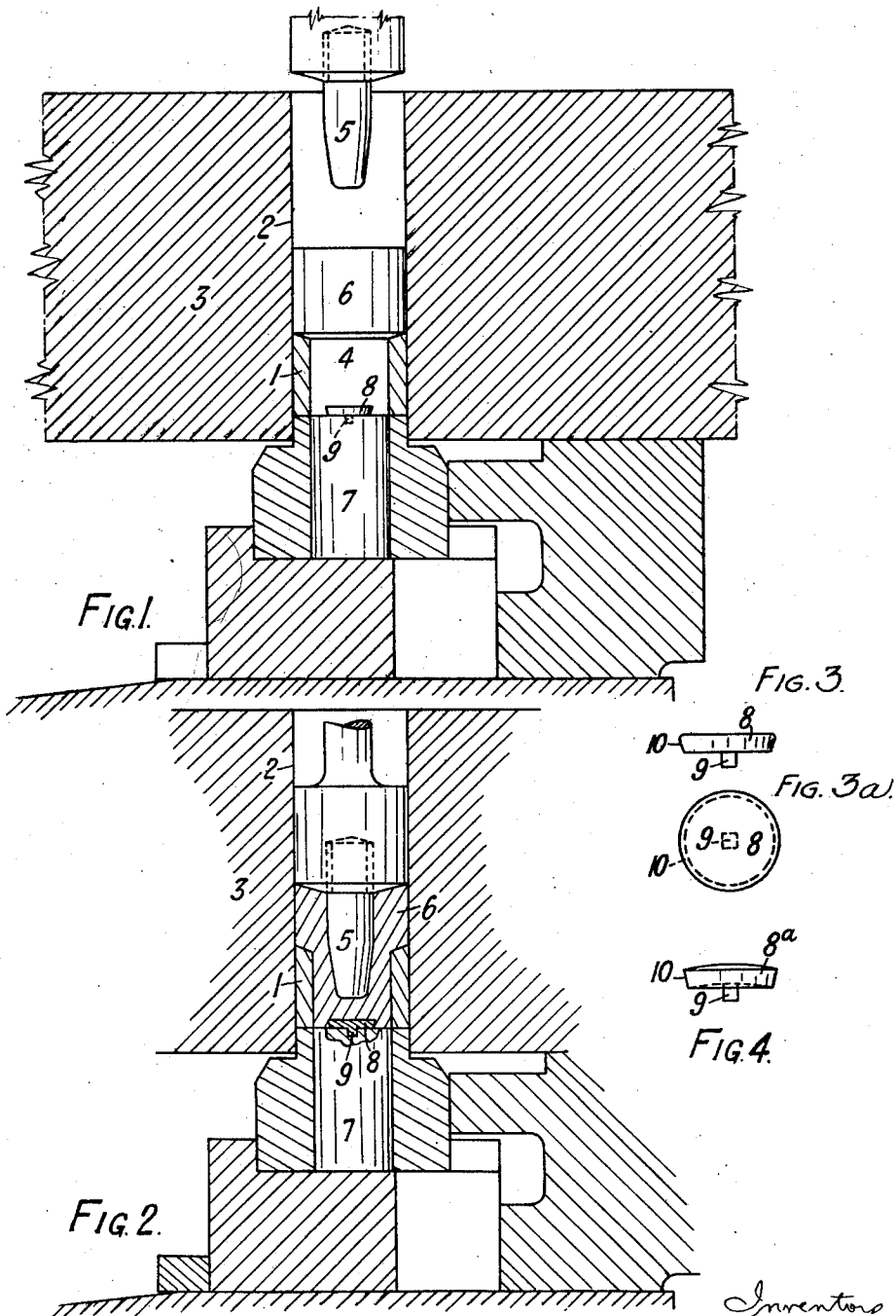
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METHOD OF PRODUCING AMMUNITION SHELL AND LIKE CASES

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METHOD OF PRODUCING AMMUNITION
SHELL AND LIKE CASESJohn Burrell Talbot-Crosbie and Arthur Penrhyn
Stanley Macquisten, Glasgow, ScotlandApplication May 11, 1937, Serial No. 141,898
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2 Claims. (Cl. 29—1.3)

This invention relates to an improved method of production of hollow cases or vessels, particularly ammunition shell or like cases.

For forming a hollow case having one imperforate end in a continuous operation there may be employed a punch and a die-ring of which the inner end is temporarily closed by a plug or abutment to form a die-chamber in which the closed end portion of the case is consolidated by a forging process which is followed by extrusion.

According to the present invention there is centered on the crown of the plug or abutment a loose base-plate-forming member which in the first stage of the operation is embedded in the case or the like whereby the so-called grain of the metal of the base-plate is transverse to that of the metal of the case.

The base-plate-forming member may be formed or provided with a centering stud engaging a socket in the plug or abutment or may be otherwise positioned relatively to the plug or abutment and may be provided with an undercut edge or formed with a thread or grooves or so shaped as to enter into mechanical interlocking engagement with the metal of the case.

The base-plate-forming member may have a flat bottom and the hot metal of the case may be allowed or caused to shrink on to or forged into the base-plate; or the base-plate may be domed or arched or otherwise formed so as to be flattened under the pressure applied in the first stage of the extruding operation.

The base-plate may be coated with a suitable flux or suitable metal, and may be of the same metal as the case or of different metal.

The invention is illustrated in the accompanying drawing in which Fig. 1 is a vertical section showing the punch ready to operate on a billet, and Fig. 2 a similar view showing the billet partially forged or extruded to form the imperforate end or base of a shell case. Fig. 3 shows to a larger scale in side elevation the base-plate-forming member shown in Figs. 1 and 2. Fig. 3* is a plan of Fig. 3. Fig. 4 is a side elevation of a modified form of base-plate-forming member.

As shown in the drawing, 1 denotes the die ring which is accommodated in the lower end of a bore 2 in a member 3 and which presents a die chamber 4 through which a billet 6 is to be extruded by a reciprocating punch 5, the billet 6 being positioned within the bore 2 on top of the die ring 1. The lower end of the die chamber 4 is temporarily closed in the initial or forging operation by a plug 7 whereby to permit the formation

within the chamber 4 of the imperforate end or base of the shell case, as shown in Fig. 2.

Centered on the crown of the plug 7 is a base-plate-forming member 8 which, while the imperforate end or base of the shell case is being consolidated within the die chamber 4, as shown in Fig. 2, is embedded in said imperforate end or base, whereby the so-called grain of the metal of the base-plate member 8 is disposed transversely of that of the shell case.

The member 8 is centered on the crown of the plug 7 by providing on the member 8 a depending central stud 9 which enters a socket or recess in the crown of the plug 7, the stud 9 being cut from the member 8 after completion of the extruding operation.

As shown, the member 8 is formed with an undercut peripheral surface 10 (Fig. 3) so that the member 8 will be securely keyed into the base of the shell case.

The modified form of base-plate member 8* shown in Fig. 4 is of slightly domed formation so that, in the base-forging operation, the member 8* will flatten and spread laterally into secure interlocking engagement with its recess in the shell base.

We claim:

1. The method of producing an ammunition shell in a continuous operation, comprising first forming a shell having an imperforate base by a forging process and simultaneously embedding in said imperforate base a metal base-plate-forming member of less diameter than said base and then completing the operation by an extrusion process.

2. The method of producing an ammunition shell which comprises supporting a base-plate-forming member of less diameter than the base of the shell to be formed within a die ring, at one end thereof, supporting a metal billet on the other end of the die ring, applying pressure to the center portion only of said metal billet until a portion thereof has been forced into said die ring and the shell partially formed, continuing the pressure upon said billet until the metal thereof has been caused to flow around the outside of said base-plate-forming member and the same has been embodied in the center portion of the base of the partially formed shell, and continuing the pressure on said billet until all of it has been forced into and extruded from said die ring.

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