

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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COMPLETE SPECIFICATION.

Explosive Projectile Head.

I, LOUIS DESSART, a Belgian subject, of 27, rue de Cheratte, a Vivegnis lez-Liege, Belgium, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

Various kinds of depression in the surface of the body of a projectile for antipersonnel use have already been proposed for encouraging splinter-formation. Thus, a hollow metallic body is known in which grooves are provided in the interior surface, and these grooves, intended to receive explosive, encourage regular fragmentation. Such an arrangement can provide for the shape, the quantity, and even the direction of movement of the fragments, for a given projectile shape. But such grooves demand the use of special and expensive material and machines and thus considerably increase the difficulties of manufacture.

An object of this invention is to simplify the production of such grooves, so that they can be produced on standard machines, presses and rolling machines.

According to this invention a process for fabricating an explosive projectile head for antipersonnel use, comprises a hollow metallic body provided with grooves, comprising stamping out a metallic blank; forming, by pressing or rolling, one or both faces of the blank with a set of impressions determining the grooves; and swaging the blank to the desired shape. The projectile head may be produced by the superposition of two shaped blanks, the free edges of which are joined, for example by soldering.

The invention will now be described by way of example, with reference to the accompanying drawings, in which:—

Figure 1 is a plan of a stamped-out blank;

[Price 4s. 6d.]

Figure 2 is a plan of the blank of Figure 1 after marking and impression of one surface;

Figure 3 is a section of the blank after swaging to hemispherical shape;

Figure 4 is a section of the blank of Figure 3, provided with a flanged hole, for example for mounting a fuse;

Figure 5 is similar to Figure 4 but with the flange directed inwardly;

Figure 6 is an elevation, partially cut away and in section, of a projectile formed by the union of the two hemispheres of Figures 3 and 4;

Figure 7 is an enlarged part section of a blank showing the form of the grooves before swaging; and

Figure 8 is analogous to Figure 7, but after swaging.

Referring to the drawing, an antipersonnel projectile can be spherical and comprise two joined hemispheres. It is seen in Figure 1 that one starts from a metallic blank stamped out in the form of a disc 1. This disc 1 is then formed with concentric grooves 2 and with radial grooves 3, the radial grooves 3 being rarely aligned between adjacent pairs of grooves 2. The grooved disc is then swaged to the form of a hemisphere 1 (Figure 3). A second metallic disc is stamped out and grooved like that in Figures 1 and 2 and then swaged to present an hemispherical form 1¹ comprising an orifice 5, obtained by pressing, and directed towards the outside (Figure 4). Instead of this hemisphere 1¹, one can obtain a hemisphere 1¹¹ (Figure 5) comprising an orifice 6 obtained by pressing and directed inwardly. The two hemispheres 1 and 1¹ or 1 and 1¹¹, are joined by soldering (Figure 6) (the explosive not being shown) to constitute the head of the projectile.

It is essential that the form and the depth of the grooves are such that the swaging finally regularizes their outline so that they can, after loading, contain the same quantity of explosive. On loading, the explosive enters the grooves produced and faithfully assumes their pattern and their outline. The width of the grooves, their depth, the angle and width of apex of each groove, should be carefully calculated to provide for the correction on swaging. In this connection may be seen, in Figures 7 and 8, the outlines of grooves *a*, *b* before swaging and *a'*, *b'* after swaging, the opposite being produced when external grooves are provided.

During explosion, separation takes place according to the prefragmentation design, stresses taking place not only in the bottom but also laterally in the profile of the grooves and tending to separate the segments. There is thus realised a desired fragmentation which allows provision for the weight and number of splinters with regularity and precision.

In the embodiment described above, the head of the projectile only has internal grooves, but it would be within the scope of the invention to produce, according to the same method, a projectile head with grooves on both faces. The circular or radial grooves on the two faces of the blank would then be situated exactly opposite to one another, producing at apices the desired break-initiators. The head shown is a sphere, but it can take other forms, for example, oval.

WHAT I CLAIM IS:—

1. Process for fabricating an explosive projectile head for antipersonnel use comprising a hollow metallic body provided with

grooves, comprising stamping out a metallic blank; forming, by pressing or rolling, one or both faces of the blank with a set of impressions determining the grooves; and swaging the blank to the desired shape.

2. Process according to claim 1, wherein the grooves are formed on that surface of the blank which is concave when swaged, the width of each groove being less after swaging than that of the formed groove.

3. Process according to claim 1 or claim 2 wherein the grooves are of V cross section.

4. Process according to any preceding claim wherein grooves of the stamped-out blank are arranged concentrically and radially.

5. Process according to any preceding claim wherein grooves on opposite faces of the blank are situated opposite one another, creating at their apices the desired break-initiators.

6. Process according to any preceding claim wherein an orifice is pressed outwardly or inwardly of the hollow body.

7. Process according to any preceding claim wherein two shaped blanks are superposed and their free edges joined, for example by soldering.

8. Process for fabricating an explosive head substantially as herein described, with reference to the accompanying drawing.

9. Projectile head for antipersonnel use when made by a method according to any preceding claim.

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