April 22, 1969 E. BOCK ET AL 3,439,619

PRACTICE AMMUNITION

Filed July 10, 1967

FIG. 1

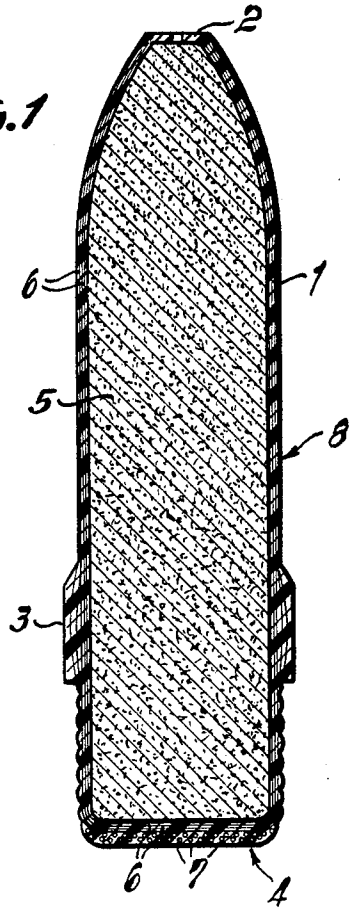


FIG. 2

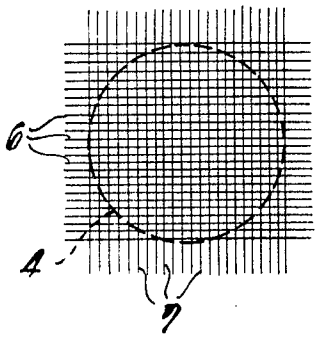
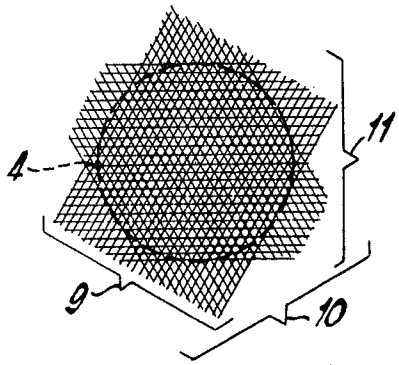


FIG. 3



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PRACTICE AMMUNITION

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U.S. Cl. 102—92.7 2 Claims

ABSTRACT OF THE DISCLOSURE

The present invention relates to practice ammunition which comprises a housing having a relatively long and narrow cylindrical portion with a bottom at one end thereof and with a blunted nose at the opposite end. The bottom is composed of a synthetic material reinforced by glass fibers crossing each other, while the glass fibers in the cylindrical portion are oriented in the longitudinal direction.

The present invention is characterized primarily in that the housing is of synthetic material, preferably a glass fiber reinforced polyester with the glass fibers in said cylindrical portion oriented in the longitudinal direction of the housing and with the glass fibers in the bottom crossing each other.

The present invention relates to practice ammunition for firing from rifled barrels, the disintegration projectile of which comprises a mantle forming a container of synthetic material and also comprises a core of heavy powder, preferably iron powder compressed to a body.

Practice ammunition has to meet the requirement that similar to live ammunition it can be belted or filled into a magazine and when it is mechanically automatically fed, it must be able to be fired in the same quick sequence as live ammunition, but on the other hand, when leaving the mouth of the barrel, it must when being fired not only disintegrate fast but, above all, must disintegrate into non-dangerous particles. These two requirements, however, oppose each other. If a projectile is provided with a relatively thick container wall and, in particular, with a strong bottom in order to withstand high stresses, which bottom alone resists the propulsion charge necessary for a quick firing sequence and automatic feeding, it is difficult to disintegrate these parts into corresponding small particles or, expressed differently, to eliminate any piercing force over a short distance.

It is, therefore, an object of the present invention to provide a projectile container or mantle which will overcome the above mentioned drawbacks.

It is another object of this invention to provide a projectile container or mantle which, on one hand, will have the necessary shock and pressure resistance to withstand the forces occurring with automatic feeding and which, on the other hand, will have a bottom adapted to withstand relatively high stresses caused by the propulsion charge and which will not be deformed so that the pressure will be uniformly distributed over the entire projectile.

It is another object of this invention to provide a projectile container or mantle which following the firing will already over a short distance disintegrate into non-dangerous individual particles.

These and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawing, in which:

FIG. 1 represents a longitudinal section through a practice disintegrating projectile with a mantle according to the present invention.

FIGS. 2 and 3 diagrammatically illustrate a bottom view of the mantle according to FIG. 1 in a pre-manufacturing stage.

The projectile container or mantle according to the present invention is characterized primarily in that it consists of glass fiber reinforced synthetic material, especially a polyester. Furthermore, the glass fiber material is length oriented on the cylindrical wall and the glass fibers at the bottom may be placed so as to cross each other.

Referring now to the drawing in detail, the projectile container or mantle comprises an envelope or casing **1** of synthetic material, as for instance a polyester, which has the shape of a projectile with a blunted nose **2** and an obturator bead **3**, as well as a reinforced bottom **4** and a compressed powder disintegration body **5**. Embedded in the said synthetic material which is preferably a polyester are glass fiber inserts **6**, **7** which are poured or injected into the synthetic material and are longitudinally oriented in the mantle wall **8**. In other words, the said glass fiber inserts extend from the bottom **4** to the tip **2**, whereas in the bottom **4** itself they are transversely oriented and are crosswise or at a different angle arranged in layers.

The overlapping of two glass fiber layers **6**, **7** is evident from FIG. 2, whereas the overlapping of three reinforcing inserts **9**, **10**, **11** is evident from FIG. 3, the bottom **4** to be formed later is indicated by dash lines.

The mantle **8** of the illustrated projectile **1** is in view of the glass fiber inserts **6**, **7**; **9**, **10**, **11** stable in longitudinal direction and is also non-sensitive against shocks acting radially from the outside. The bottom **4** has a great strength so that it will be able to withstand the propelling charge pressure required for a fast firing sequence. The practice ammunition provided with such a projectile is suitable for roughest handling and thus meets the first requirement above referred to.

When firing the projective from a rifled barrel, high centrifugal forces become effective which act from the inside toward the outside. While the projectile is held together within the barrel by means of said barrel, and while the projectile is relatively rigid in axial direction in view of the longitudinal orientation of the glass fiber inserts, it will tear for instance in view of a non-illustrated crosswise weakening of the mantle **1**, **8** from the tip **2**. In this direction, the glass fiber inserts **6**, **7**; **9**, **10**, **11** do not exert a stiffening or holding together effect. The core **5** is freed and disintegrates in a manner known per se into its original ingredients. The torn open relatively light mantle, however, as far as it is not torn into smallest particles or fibers, has such a high air resistance value that it will drop to the ground at a short distance from the barrel mouth.

It may also be mentioned that besides chloric unsaturated polyester dissolved in styrene (known under the trademark Palatal 5 310 of BASF) some other materials could be used, for instance, epoxy resin (known under the trademark Araldite Ly 556).

What we claim is:

1. Practice ammunition for firing from a drawn barrel,

which includes: a projectile shaped housing of synthetic material reinforced by glass fibers, a core of powder within said housing, said housing having a relatively long and narrow cylindrical portion and a blunted nose portion and being closed by a bottom of synthetic material reinforced by glass fibers crossing each other, the glass fibers in said cylindrical portion of said housing being oriented in the longitudinal direction of said cylindrical portion.

2. Practice ammunition for firing from a drawn barrel, which includes: a projectile shaped housing of synthetic material reinforced by glass fibers, a core of powder within said housing, said housing having a relatively long and narrow cylindrical portion with a blunted nose portion, the glass fibers in said cylindrical portion of said housing being oriented in the longitudinal direction of said cylindrical portion.

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