

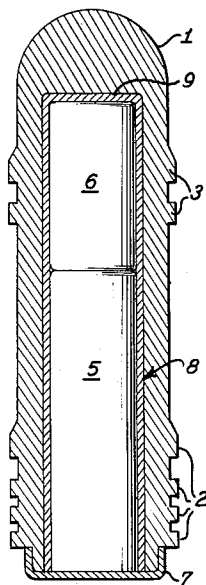
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ARTILLERY SHELL

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ARTILLERY SHELL

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3 Claims. (Cl. 102—92.5)

This invention relates to an artillery shell. The invention more particularly relates to an artillery practice shell.

In artillery practice and training, special training or practice ammunition is generally used rather than the usual combat ammunition. The training ammunition generally has a smaller range and is of a smaller length than the normal combat ammunition. In order to be effective, however, and serve its purpose, the practice ammunition must stimulate the performance of the combat ammunition in many aspects. Thus, for example, practice shells must be provided which will explode on impact, explode on impact with a smoke charge for spotting, etc., be provided with time delay fuses, tracers, incendiary charges, etc. In order to meet the ballistic requirements of accuracy and low wind-sensitivity with the small size of the practice shells, the same must be constructed with a high specific weight, and for this purpose the same are generally constructed of lead or lead alloys, generically referred to herein as lead material. Since, however, the lead material is soft and is not structurally strong, the same deforms easily when fired, thus impairing the ballistic characteristics and accuracy. For practice purposes, however, high accuracy is desirable and the shells can only serve their maximum usefulness if the shell body is sufficiently stable and does not become deformed during firing. From the standpoint of expense it is desirable to construct the shells of lead, and shells constructed of this material will not cause excessive wear of the gun barrels and will adjust to the barrel dimensions.

One object of this invention is an artillery practice shell having a lead jacket which is structurally strong and which will not deform during firing. This and still further objects will become apparent from the following description read in conjunction with the drawing which shows a vertical section of an embodiment of an artillery practice shell in accordance with the invention.

In accordance with the invention it has been found that a lead artillery practice shell may be rendered structurally strong so that the same will not deform during firing without adversely affecting the desirable characteristics of the lead shell, if the same is provided with a reinforcement sleeve of structural material which constitutes a minor portion of the total weight of the shell body.

Referring to the embodiment shown in the drawing, the shell body or jacket 1 is formed of lead and is provided with a conventional shape, or as described in our copending application filed the same day herewith. The jacket is thus provided with the guide or rotating rings 2 and 3 and has a hollow interior. Coaxially positioned within the hollow interior is the reinforcement sleeve 8 which is preferably formed of drawn steel, but which may be constructed of any other structural metal or material. The sleeve 8 may be in the form of an open cylinder but, as shown, is enclosed at the top at 9, forming in effect a cylindrical vessel. The weight of the reinforcement sleeve 8 should only constitute a minor portion of

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the total weight of the shell body and should preferably not exceed 40% of the weight of the total shell body. The reinforcement sleeve, of course, is constructed of a material which has a lower specific gravity than that of the lead jacket, so that if the same were made too thick, the total specific gravity of the shell would be correspondingly decreased, as would its ballistic properties. With such a lower specific weight the shell would also have a higher wind-sensitivity. The thickness of the sleeve should therefore be the minimum required to create the necessary firmness and structural strength for the shell but should not exceed this necessary measure. In connection with a drawn steel shell it has been found that a weight proportion of the reinforcement sleeve of about 25% of the total weight of the shell body produces satisfactory results. If without decreased firmness and loss of the structural reinforcement effect the weight proportion of the sleeve may be still further decreased, this is advantageous.

Within the hollow interior of the sleeve, conventional explosive, incendiary, smoke charges, tracer charges, fuses, etc. may be positioned. Thus, as shown, a hollow interior is provided with the explosive charge 5 and the smoke charge 6. The bottom of the shell may be closed or sealed in the conventional manner, as for instance with the sealing cap 7, which may for example be screwed or pressed in place.

The lead shell jacket 1 may be molded around the reinforcement sleeve 8 or the reinforcement sleeve 8 may be inserted in the already formed jacket provided with a suitable bore. A tight fit between the jacket and the reinforcement sleeve is, however, preferable.

Except for the provision of the reinforcement sleeve, the shell may in all other respects be constructed in any known or conventional manner.

While the invention has been described in detail with reference to the specific embodiments shown, various changes and modifications which fall within the spirit of the invention and scope of the appended claims will become apparent to the skilled artisan. The invention, therefore, is only intended to be limited by the appended claims, or their equivalents wherein we have endeavored to claim all inherent novelty.

We claim:

1. An artillery practice shell having a lead jacket surrounding a cylindrical sleeve of drawn steel extending over a substantial portion of the length of the shell and constituting about 10–40% of the total weight of the shell body.

2. Artillery practice shell according to claim 1 in which said drawn steel sleeve is about 25% of the total weight of the shell body.

3. Artillery practice shell according to claim 1 in which said sleeve is in the form of a cylindrical vessel closed at one end thereof, with a shell charge positioned in the interior thereof.

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