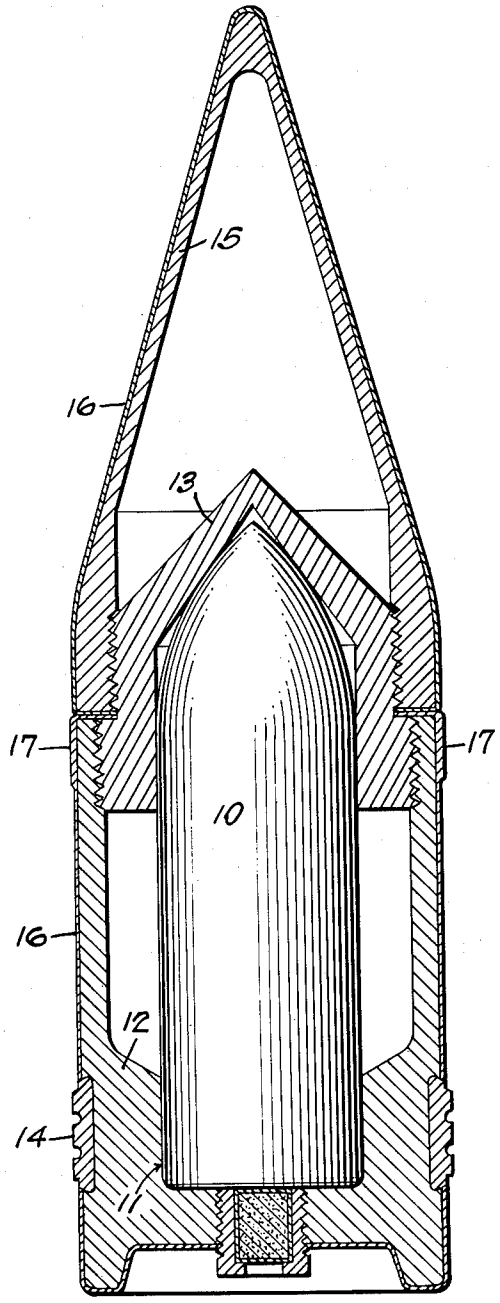
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HIGH VELOCITY ARMOR PIERCING SHOT

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HIGH VELOCITY ARMOR PIERCING SHOT

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1 Claim. (Cl. 102—52)

(Granted under Title 35, U. S. Code (1952), sec. 266)

The invention described in the specification and claims may be used by or for the Government for governmental purposes without the payment of any royalty thereon.

This invention relates primarily to high velocity armor piercing shot.

The principal object of this invention is to treat those components of high velocity armor piercing shot which make it possible to obtain the highest ratio of armor piercing core weight to total weight of the shot so as to minimize the degradation thereof through corrosion in storage and melting and erosion in firing.

The specific nature of the invention as well as other objects and advantages thereof will clearly appear from a description of the embodiment shown in the accompanying drawing in which:

The single longitudinal sectional view of a typical high velocity armor piercing shot shows the manner in which this invention is utilized to safeguard certain of the components against corrosion and melting or erosion in firing.

Referring now to the drawing by characters of reference there is shown a typical high velocity armor piercing shot comprised of an armor piercing core 10 of tungsten-carbide or similar material seated in the retaining well 11 of a body member 12 formed of aluminum or some material of like character and retained in the seated position, as shown, by a core retaining ring or caps 13 formed of magnesium or equivalent material. The body member 12 is appropriately grooved adjacent the base for the application of a rotating band 14 of gilding metal and an aluminum or similar alloy windshield 15 may be affixed in any convenient manner to the body 12 or core retaining ring 13 as indicated.

By selecting the combinations of materials noted for the several components the highest practical ratio of weight of core to total weight of the shot is attainable with the geometrical form and composition of core desired, however, the core carrier parts, especially the body 12, when formed of such materials as aluminum or magnesium are subject to serious degradation by the erosive action of the gases generated by the burning propellant powder in firing, thereby reducing or destroying the inherent stability with which the shot is designed and consequentially permitting "blow-by" of gases in the gun tube resulting in deleterious effects upon the tube. Also aluminum, magnesium and like materials are subject to corrosion in storage.

To retain the advantages of weight ratio of core to total weight of projectile made possible by using materials such as aluminum and magnesium as above pointed out, and at the same time eliminate the disadvantages mentioned we have found it possible to proof aluminum, magnesium and the like against the erosive action of propellant gases and corrosion by spraying the same with a suitable metallic coating of steel, stainless steel, iron, silicon-aluminum, bronze or any other substance which will provide a surface having the desired properties of hardness, corrosion resistance, resistance to heat and abrasion, continuity and

adaptability to application or bonding to a base metal in a homogeneous and uniform layer or coating.

The surfaces to be sprayed may be prepared in any appropriate manner as by knurling and a metallic coating 16 applied to all surfaces which may be affected by the erosive action of the propellant gases or exposed to a corrosive atmosphere or other influence in storage. As shown in the drawing, the exterior surfaces of body member 12 exclusive of those portions underlying the rotating band 14 are sprayed with a steel coating some .020 or so inch in thickness. The windshield 15 is also shown as being provided with an exterior steel coating deposited thereon by spraying for protective purposes. In other situations it might be desirable to spray the portion of body member 12 underlying the rotating band 14 with a coating so as to completely enclose the member in a metal sheath. Other combinations of the application of the deposited coating are apparent; for example, the core retaining ring 13 might in some cases be sprayed with a coating and the coating omitted from windshield 15, or parts of the light metals of the carrier elements contacting the core 10 or other metals of a dissimilar nature capable of causing deterioration through electrolytic decomposition may be coated to obviate direct contact of the dissimilar metals.

Another advantage of this invention exists in the fact that the bourrelet 17 may be integrally built up of desired form and dimension from the spraying material used to form the coating 16.

As an added precaution against deterioration in storage, the coating may be impregnated with wax or a substitute of some similar character or the carrier members 12, 13, 15 may be wax impregnated prior to application of the coating 16.

We claim:

An article of manufacture comprising, a hollow cylindrical body member having a closed thickened rear end and an open internally threaded forward end, said closed end having a coaxial internally bored core well, an armor piercing core having its rearward end fitting the well in said body member and projecting forwardly past said open end, a retaining cap having coaxial rearward and forward threaded portions of greater and lesser diameters respectively, and a rearwardly opening bore, said rearward threaded portion engaging the internal threaded forward end of said body member to fit about and enclose the forward end of said core and confine the same in said body member, a hollow ogival windshield internally threaded at its rear end and engaging the forward threaded portion of said cap to form a circumferential seal with the forward edge of said body member, said body member and windshield conjointly defining a smooth surfaced housing, a protective coating extending over said housing integral therewith and including a composite thickened bourrelet extending circumferentially about said body member at its junction with said windshield, said member, cap, and windshield being composed of metal selected from the group consisting of aluminum and magnesium.

References Cited in the file of this patent

UNITED STATES PATENTS

622,773	Lisle	Apr. 11, 1899
1,502,925	Stone	July 29, 1924
1,892,759	Woodford	Jan. 3, 1933
2,283,224	Nichols	May 19, 1942

FOREIGN PATENTS

19,318	Great Britain	1914
826,922	France	Jan. 18, 1938
542,630	Great Britain	Jan. 20, 1942
573,914	Great Britain	Dec. 12, 1945