

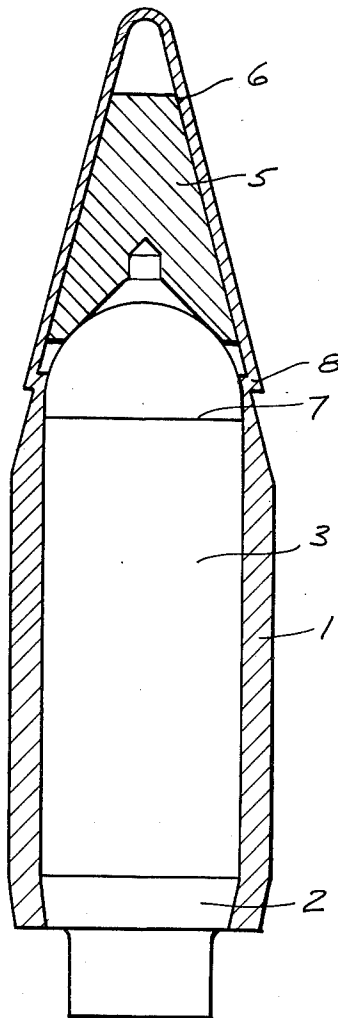
Oct. 26, 1965

P. G. R. G. GRELANDER ETAL

3,213,792

ARMOR-PIERCING PROJECTILE WITH HARD CORE

Filed Nov. 5, 1963



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**ARMOR-PIERCING PROJECTILE WITH  
HARD CORE**

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Filed Nov. 5, 1963, Ser. No. 321,451  
Claims priority, application Sweden, Nov. 20, 1962,  
12,462/62

4 Claims. (Cl. 102—52)

The present invention relates to an armour-piercing projectile, consisting of a case or a sleeve, containing among other things a core made of a harder material, preferably tungsten carbide.

The purpose of the invention is to create a projectile which has a greater armour-piercing capability at oblique angles of impact than previously known projectiles of a similar design.

The invention and its advantages will be described in more detail in conjunction with the attached drawing, which illustrates a design of a projectile according to the invention which has been chosen as an example. The case of the projectile body, which in the design shown is described in more detail in the Swedish Patent No. 164,467, consists of an outer case 1, which encloses a core 3. The case 1 is moreover provided with a bottom member 2. In front of the core there is a core-supporting member 5, appropriately made of heavy metal. The front end of the core 3 has the form of a hemisphere, with a radius equal to one-half of the diameter of the core. The hemisphere fits articulately directly in a conical or spherical cavity in the end of the core-supporting member 5 which is directed towards the core.

At an oblique angle of impact, the projectile hits the armour plate, not only with the front part of the outer case, but also with the front part 6 of the core-supporting member, and the front part of the core-supporting member 5 is then given a rotating movement around its center of gravity, directed away from the armour plate. In this way, the rear part is given a movement which is directed towards the armour plate, which owing to the design mentioned is transmitted to the front part of the core 3. At the impact, the front part of the core 3 is thereby turned towards the armour plate, in a favourable direction, which gives it a better grip and a shorter way through the armour plate. As the front part of the core has been given the form of a hemisphere, as described above, in addition to obtaining an articulated joint, the internal volume of the projectile case is utilized in the best possible way. The projectile can thus be filled with the greatest possible quantity of metal, while the articulation is retained.

A pre-requisite for a good effect is, further, that the outer surface of the core-supporting member, which in the design shown is conical, mainly has one-half of its cone angle smaller than the angle of impact of the projectile against the armour plate. The point angle should appropriately be less than 35°, in order to insure good armour-piercing capability at angles of impact of less than 30°.

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The core 3 can also very well be divided up transversally into one or more parts, e.g., along the dividing line 7, which counteracts the propagation of cracks from the front part to the rear part at the impact. Such a division also production-technically facilitates a design of the core in which the different parts can consist of different metal compositions. It is thereby possible, for instance, to obtain a suitable balance between the hardness, toughness and specific gravity of the different parts.

In order to facilitate the articulation, the outer case 1 can also be provided with one or more notches, on the inside or outside, e.g. according to 8. This also counteracts the propagation of cracks from the front part, when ruptured, to the rear part of the outer case 1.

The projectile according to the invention has proved to have excellent armour-piercing properties, which, in addition to the design described above, also seems to be due to the fact that the pre-stressing according to the Swedish Patent No. 164,467 contributes towards preventing the core from being broken up too soon.

We claim:

1. An armor-piercing projectile comprising a casing having a rear portion and a forward portion, the outer wall of the casing including at least one weakened area between the rear portion and the forward portion to weaken the casing at the transverse plane of said area, a hard core fitted in said rear casing portion, said core having at its forward end a semi-spherical portion protruding past the transverse plane of said area and into said forward portion, and a hard core support in said forward portion disposed above the transverse plane of said area, said support having in its side facing the rear portion of the casing a conical cavity, said semi-spherical core portion protruding into said cavity, the inner wall of the support defining said conical cavity being a pivot bearing for the core portion protruding into the cavity to provide a fulcrum for the forward portion upon fracturing of the casing at said area.

2. A projectile according to claim 1 wherein said core is composed of two portions, one being said semi-spherical portion and the other being substantially cylindrical, the diameters of both portions being equal.

3. A projectile according to claim 1 wherein the forward portion of said casing is a conical nose cone, the apex angle of said cone being less than 35°.

4. A projectile according to claim 1 wherein said core is made of tungsten carbide.

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