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Rifle grenade

The present invention relates to a rifle grenade destined for being launched by means of a rifle or the like, preferably by means of a conventional service cartridge.

Projectiles have been proposed, e.g. grenades, that can be launched by means of a rifle. Such projectiles generally comprise a head containing an explosive charge, said head extending by a tubular tail destined for being attached around the barrel of a rifle, which for this purpose is mostly equipped with a grenade sleeve.

Originally, this launching mode required the use of special propulsive cartridges without bullet. This gave rise to difficulties in regard to the intendancy, a lack of operational efficiency upon passing from normal rifle-firing to grenade-launching and a serious danger for the user when making a mistake upon choosing the ammunition or the condition of the arm at the moment of grenade-launching.

In order to avoid these disadvantages a relatively important number of bullet-traps have been proposed that are arranged in said tubular tail that allow the launching of a grenade by means of a normal service cartridge such as used in rifle-firing.

The manufacture of such bullet-traps generally is delicate and expensive because they must catch and maintain the bullet at firing with a maximum of safety without baneful deformation or even rupture of said tubular tail.

So, traps have been proposed constituted by a series of screens destined for braking and immobilising the bullet. It has also been proposed to use metal masses with carefully studied shapes and dimensions in order to absorb the kinetic energy of the bullet as well as the heat resulting from its catching without producing any deformation of the tail of the projectile.

In addition, these solutions have the disadvantage of a weight and a bulkiness not to be neglected.

Therefore, grenades have been proposed having an axial bore from one end to the other allowing the bullet to cross the projectile and to escape outside.

Realizations of this type have been described in French Patent 1,599,491 and in the published German Patent Application 25 54 049.

This tempting concept has the disadvantage of involvolving a loss of efficiency which is due to the fact that the propellant gases can also escape from said bore reserving providing - as in the above-mentioned German Patent Application 25 54 049 - a complex sealing mechanism destined to seal said bore immediately after the passage of the bullet. From the ecomical point of view such a sealing arrangement is probably not less expensive than a bullet-trap. Moreover, as said seal only starts functioning as a result of a mechanic effect exerted by the bullet during its passage, a grenade equipped in this way can only be shot with propulsive cartridges without bullet reserving allowing a very low efficiency or a profound modification of the firing conditions.

It has also been proposed (CH-A-225,806) to launch a projectile with axial bore by means of a grenade-sleeve fixed at the end of a rifle barrel and of a usual service cartridge, of providing a bullet passage distinct from the projectile, constituted by a metal cap of the caliber of the grenade-sleeve and supporting a rubber mass. Said known bullet passage is destined for being slided into said grenade-sleeve before the projectile. The disadvantages of such a system are obvious : additional piece to be manipulated by the firer, possible troubles during stretched firing, uncertain and hence dangerous ballistics of the bullet passage, etc.

It is the object of the present invention to avoid these disadvantages by providing a particularly simple, economic and efficient solution of the problems described above.

For this purpose, a rifle grenade according to the present invention of the axial-bore type is characterised thereby that in said bore a bullet passage is placed made of a material whose hardness is comprised between about 30 Shore A and about 70 Shore D.

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Such a bullet passage has the particular feature of being easily crossed by the bullet while it is closing behind itself so as to practically inhibit any passage of the propulsive gases.

For clarity's sake the invention is described more detailedly hereinafter with reference to the accompanying diagrammatic drawings wherein :

figure 1 represents an axial section of a rifle grenade according to the invention;

figure 2 represents an enlarged view of the part indicated in F2 in figure 1; and

figures 3 and 4 represent two other embodiments of the bullet passage according to the invention, viz. an transversal and an axial section respectively.

The grenade illustrated in figure 1 comprises a head 1 containing an explosive charge 2 equipped with any suitable firing means, e.g. a tubular fuse 3.

In its rear part the head 1 extends by a finned tubular tail 4. The bore 6 of the tail 4 allows to receive the extremity of the barrel of a rifle, said extremity in general being a launching grenade-sleeve.

The bore 6 is extended by a bore 7 axially traversing the head 1, said bore having a diameter slightly exceeding the caliber of the rifle used for launching.

In principle, all the above arrangements are known.

According to the invention, a bullet passage 8, made of a flexible or elastic material, is placed in the bore 6, preferably against a collar 9 provided therefor, e.g. at the junction of the bores 6 and 7.

A large number of natural and synthetic materials can be used for making the bullet passage 8 provided that its hardness is comprised between about 30 Shore A and about 70 Shore D. So, natural and synthetic rubbers have given good results.

Tests have proved that the passage of the bullet through such a bullet passage resulted in practically no loss of material, either by tearing, by fusion or by combustion, on the condition of shaping said bullet passage in such a way that it is allowed to expand sufficiently during the passage of the bullet. In addition

thereto it is desirable that said expansion does not produce any sensible deformation of the wall delimiting the bore wherein the bullet passage is placed. So, in the example of figure 2 the bullet passage has a cylindrical shape, its diameter being smaller than that of said bore 6. Under the circumstances said bullet passage is adhered to said collar 9.

Instead of being cylindrical the bullet passage could have a square section with rounded corners whose diameter would be equal to or would slightly exceed the diameter of said bore 6 (figure 3).

In the example of figure 4 the body of the bullet passage 8 has a cylindrical part provided with a large groove 10 and ends into a truncated part 11 so that two supporting zones 12 and 13 of the same diameter slightly exceeding that of the bore 6 are obtained.

The truncated part 11 also offers the advantage of even better assuring the shutting of the passage cut by the bullet when it traverses the body by the action of the pressure of the gases in the barrel of the launching rifle.



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C L A I M S

1. Rifle grenade of the type consisting of a head (1) extended by a tubular tail (4), said head being traversed by an axial bore (7) debouching into the axial bore (6) of said tubular tail, characterized thereby that a bullet passage (8) is placed in one of said bores (6, 7), this bullet passage (8) being made of a material whose hardness is situated between about 30 Shore A and about 70 Shore D.

2. Rifle grenade according to claim 1, characterized thereby that said bullet passage (8) is supported by a collar (9) provided therefore in said bore (6, 7).

3. Rifle grenade according to claim 2, characterized thereby that said collar (9) is situated at the junction of the two aforesaid bores (6, 7).

4. Rifle grenade according to claim 2, characterized thereby that the shape of said bullet passage (8) is determined by the diameter of said bore (6, 7) so as to allow expansion of the bullet passage (8) in the directions perpendicular to the axis of the bore.