

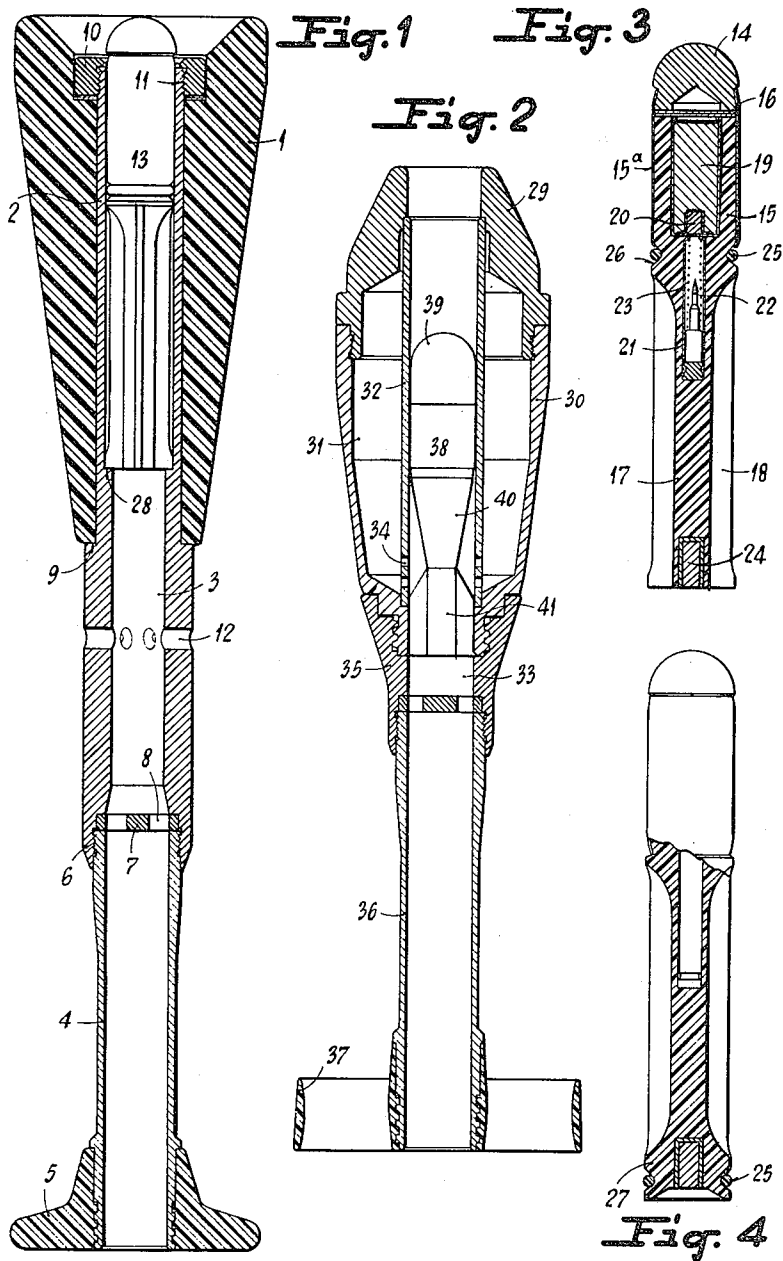
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E. W. BRANDT

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PRACTICE GRENADE

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INVENTOR.
 EDGAR WILLIAM BRANDT, DECEASED
 BY PAUL EMILE DENOIX, ADMINISTRATRIX
 BY
Mason, Porter, Miller & Stewart
 Attorneys

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PRACTICE GRENADE

Edgar William Brandt, deceased, late of Geneva, Switzerland, by Paul Emile Denoix, executor, Geneva, Switzerland, assignor to Anstalt für die Entwicklung von Erfindungen und gewerblichen Anwendungen ENERGA, Vaduz, Liechtenstein

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This invention relates to practice grenades for use in instruction and training in the firing of rifle grenades.

The firing of rifle grenades requires a methodical training in order to render the marksman proficient in progressively aiming at and hitting a fixed or movable target.

For this purpose, imitation grenades are presently used and are fired by the rifle under the same conditions as active grenades. However, the equipment of infantry troops with practice grenades involves considerable expense, in view of the number of practice grenades which must be fired by each soldier during his instruction. There is also the problem that the trainee marksman who is generally affected by the recoil effect on the arm, only concentrates his attention with difficulty on the target.

Furthermore, conventional targets which simulate a real target such as model vehicles, or outlines of combatants, are rapidly damaged by the projectiles which, although imitation, possess a substantial kinetic energy.

There are also known projectiles of reduced range, that is to say projectiles which are fired a shorter distance and at a reduced speed compared with active grenades, and of which the handling, the dimensions and the trajectory are different from those of the corresponding active grenades.

It is an object of the present invention to overcome the aforementioned disadvantages, to provide for trainee marksmen a practice grenade which is economical and rational, and which seeks to attain the desired practical results.

According to the invention there is provided a practice grenade for use in instruction and training in the firing of rifle grenades, comprising a dummy and recoverable grenade, having an exterior form similar to that of an active grenade and provided with a tube for accommodating a projectile of reduced calibre having ballistic characteristics equivalent to those of an active grenade, and means adapted to cause, under the action of cartridge gases upon firing of the practice grenade, the firing of the projectile of reduced calibre at the speed of an active grenade and the ejection of the dummy grenade forwards and for a small distance from the marksman.

With the present practice grenade, a trainee marksman can gain experience in the manipulation, charging and firing under the same angle of aim, of a grenade of the same weight and similar to an active grenade. However, only the projectile of reduced weight and calibre is fired to reach the target. The dummy part of the practice grenade can be rapidly recovered without damage for an indefinite number of times, since after the start of the shot, the dummy part is ejected at such a low speed that it falls only a very short distance from the marksman (1 to 2 metres). The projectile of reduced weight and calibre is made to have the same ballistic coefficient as an active grenade, so that, at equal speed, the trajectory of the projectile of reduced calibre is identical to that of the active grenade, whatever the angle of firing. Furthermore the trainee marksman can be in-

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troduced to the firing of rifle grenades without being affected by the effect of the recoil on his arm, since the recoil energy produced by the projectile of reduced calibre is very small. With the present practice grenade, an important saving in the instruction and training time can be obtained, since each soldier may be allowed to fire, in the same time and for the same cost, a much greater number of projectiles, so that the most proficient marksmen may readily be selected for further training.

The reduced calibre projectile may be used for various purposes such as tracers, or marker projectiles.

In one embodiment of the invention, the barrel is arranged axially of the dummy grenade, and communicates, through the intermediary of an element provided with orifices, with the tail of the grenade, this element causing, under the effect of the propulsion gases, the ejection of the grenade and its fall close-by, after firing of the projectile of reduced calibre. Preferably, the said element plays the role of the stop against which the end of the grenade sleeve comes to rest during the charging of the grenade on the rifle.

The body of the dummy grenade can be made of an elastic or synthetic plastic material capable of supporting shocks and wear and may be made of wood, rubber, or synthetic plastic material.

The projectile of reduced calibre may be charged through the muzzle into the forward part of the grenade-tube and stop means are provided for limiting its passage backwards in the barrel. In this case, the ogival head of the projectile of reduced calibre may protrude beyond the forward edge of the tube, and this arrangement permits easy and rapid loading so that the marksman can, if he so wishes, draw out the projectile which he has introduced into the tube.

In another embodiment of the invention, the projectile of reduced calibre is housed, before the firing, in the rear part of the tube where it is introduced after unscrewing an intermediate piece connecting the body to the tail of the grenade. The latter preferably comprises a chamber for the expansion of the gases, the dimensions of which chamber are determined so as to communicate to the projectile of reduced calibre the speed of an active grenade, whilst utilising a standard blank cartridge normally intended for the firing of said active grenade. This chamber can be provided at the rear of the projectile of reduced calibre.

In yet another embodiment, and with a view to increasing the effect of the expansion of the gases from the cartridge, a supplementary chamber for the expansion of gases may annularly surround the barrel, and communicate therewith. The expansion chamber can likewise be formed with a series of orifices opening to the outside of the barrel.

The projectile of reduced calibre is stabilised by finning, and can comprise a tracing charge or a marking charge. The firing of the marking charge is preferably effected under the action of a base fuse operating by inertia of impact.

The body and the finning of the projectile may be constructed in a single piece of a light material (such as synthetic plastic material, or hardened rubber), whilst its head, which is of ogival shape, may be made of heavy metal (for example, lead). Thus a simple, robust and efficient assembly is obtained, of which the very forward position of the centre of gravity ensures the stability of the projectile in its trajectory.

The projectile of reduced calibre can also include behind the finning a cylindrical calibre base provided with a sealing band.

Preferably, the length of the finning is at least equal to half the total length of the projectile.

However, in another embodiment only the body of

the projectile of reduced calibre is made of heavy metal, the head and finning being formed in a plastic or elastic material.

In order to enable the invention to be more readily understood, reference will now be made to the accompanying drawings, which illustrate diagrammatically and by way of example some embodiments thereof, and in which:

FIG. 1 is a sectional elevation of a practice grenade;

FIG. 2 is a sectional elevation of a modification of the practice grenade shown in FIG. 1;

FIG. 3 is an axial section to an enlarged scale of a part of the practice grenade shown in FIG. 1, and

FIG. 4 is a view partly in axial section of a modification of the part shown in FIG. 3.

Referring now to FIGS. 1 and 3, there is shown a practice grenade useful for the purposes of instruction and training in the firing of grenades. The grenade comprises a body 1 of rubber surrounding a tube 2 which merges at its rear into an expansion chamber 3. A tubular tail 4, which is provided with an empennage 5, is screwed at 6 to the end of the chamber 3, a circular partition 7 provided with apertures 8 being inserted between the tail 4 and the chamber 3. The rear end of the body 1 is retained on a shoulder 9 whilst the front end of the body is retained by a threaded collar 10 screwed at 11 onto the muzzle of the tube 2. Orifices 12 may be formed in the wall of the expansion chamber 3, but could also be formed in the wall of the tail 4. The assembly 1 to 12 constitutes a dummy grenade, acting as a barrel for a finned projectile 13 of reduced weight and calibre.

The projectile 13, which is shown in axial section in FIG. 3, comprises an ogival shaped head 14 of heavy metal, such as lead, fixed on a body 15 of light material (such as a synthetic plastic material) by a cylindrical envelope 15a, crimped at its two ends and partially enclosing the head 14 and the body 15 between which there is inserted a fibre disc 16. The finned tail 17 of the projectile 13, similarly made of light material, is constructed as a single piece with the body 15 and comprises four stabilising fins 18. A marking charge 19, provided at the rear with a detonator 20, is housed in the body 15, and a recess, formed in the rear of the body 15, contains a base fuse intended to actuate the detonator 20 by impact. The base fuse comprises, in the interior of a casing 21, a needle 22, retained at a suitable distance from the detonator by a spring 23. A tracer 24 is fixed axially in the rear end of the projectile.

The projectile of reduced calibre can further comprise, between the body 15 and the tail 17, a sealing band 25, housed in an annular groove 26. The band 25 may, however, be provided at the rear of the projectile, as shown in FIG. 4, where the finning is terminated by a cylindrical calibre base 27, carrying said band.

The projectile according to FIG. 3 or FIG. 4 is introduced through the muzzle into the tube 2 of the inert grenade represented in FIG. 1, its rear end coming to rest on an annular bearing ledge 28 of said barrel.

In the modification of the grenade shown in FIG. 2, the body of the imitation grenade is formed of two parts 29 and 30. The part 30 is hollowed out and the peripheral space 31 between the internal wall of the part 30 and a barrel 32, serves as a supplementary expansion chamber, which communicates with an expansion chamber 33 through a series of orifices 34 formed in the rear end of the barrel 32. An intermediate piece 35 connects the part 30 to a tail 36 which is provided at its rear end with an empennage 37.

A projectile of reduced calibre 38 is introduced into the grenade through the rear of the barrel 32, after unscrewing the piece 35. This projectile, contrary to those shown in FIGS. 3 and 4 comprises a head 39 of rubber,

fixed on a body 40 of heavy material (for example brass) to which there is connected a finned tail of resistant synthetic plastic material 41.

The practice grenades described above are used for instruction and training in the firing of grenades and function in the following manner:

After the projectile of reduced calibre has been placed in the tube of the dummy grenade, to occupy the position shown in FIG. 1 or 2, the tail of the grenade is fitted onto the grenade-sleeve of a rifle (not shown), the latter striking, at the end of its travel, the element 7. The firing is effected with the aid of a standard blank cartridge intended for firing active grenades.

At the beginning of the shot, the gases from the cartridge pass through the orifices 8 (FIG. 1), expanding into the chamber 3 and impart to the projectile of reduced weight and calibre the speed of the active grenade. This result is obtained by suitably adjusting the path of the projectile in the barrel and the dimensions of the expansion chamber.

The action of the gases is also exerted on the element 7, so that the dummy grenade is ejected from the grenade-sleeve after firing of the projectile of reduced calibre. The area of the element 7 is determined in such a manner that the speed attained by said grenade on the sleeve is extremely small and such that it falls close-by.

In the example of FIG. 2, the gases from the cartridge, pass through the orifices 34, expanding into the supplementary chamber 31.

The present invention has only been described and illustrated by way of example and it will be appreciated that different modifications thereof can be made.

What is claimed is:

1. A practice grenade to be fitted on the barrel of a rifle for use with a blank cartridge in instruction and training, comprising a recoverable dummy grenade, having a forward body and a tail to be fitted loosely on said rifle barrel, an axial tube in said body, an annular bearing ledge in said axial tube, an expansion chamber between said body and said tail, a series of orifices through the wall of said expansion chamber, said expansion chamber having a wall defining a hollow interior in communication with both said axial tube and said tail, a circular apertured partition between said chamber and said tail, a projectile in said axial tube, the rear part of said projectile bearing on the ledge in front of said expansion chamber, the launching of said projectile through said axial tube and the ejection of said recoverable dummy grenade from in front of said rifle barrel being effected by the firing of a blank cartridge in the rifle.

2. A practice grenade for mounting loosely on the barrel of a rifle, said grenade having an annular forward body, an elongated expansion chamber having a wall defining a hollow interior, and a tail affixed to one end of said chamber wall, said expansion chamber having an axial tubular extension connected to the other end of said wall and extending forwardly through and secured to said annular body, a projectile within said tubular extension, said chamber having radial orifices extending through said wall, and an apertured partition extending transverse across the hollow interior of said chamber between the chamber and the tail, said partition and said tail cooperating to loosely support the grenade on the rifle barrel.

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