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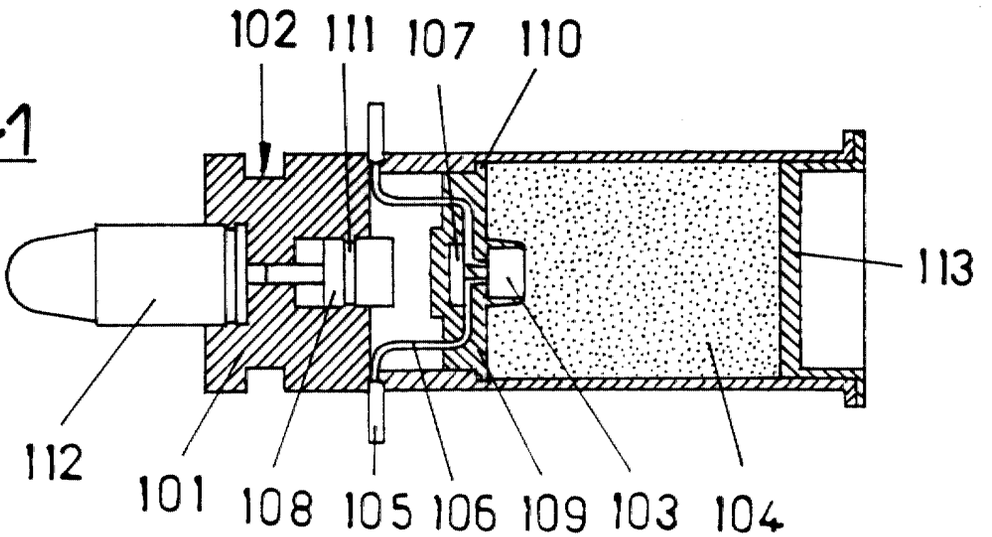
(54) Back-blast weapon training cartridge

(57) The object of this invention is an originally conceived back-blast weapon training cartridge consisting of a gas generator with an ignition device, a gas-operated striker device and a conventional bullet cartridge.

This back-blast weapon training cartridge provides improvements and original elements over known training devices, particularly because it makes up a single member, to be inserted in the weapon in a single step, thereby reducing the risk of incidents in the use of training weapons of this kind, and contemporaneously expediting the storage and logistics of that ammunition.

FIG·1



EP 1 164 350 A2

Description

Object of the Invention.

[0001] The object of this invention is an originally conceived back-blast weapon training cartridge consisting of a gas generator with an ignition device, a gas-operated striker device and a conventional bullet cartridge.

Prior Art and Summary of the Invention.

[0002] One of the most usual means for training marksmen using medium-calibre weapons is the use of ammunition of smaller calibre than the arm itself.

[0003] In the case of tense firing weapons, the use of a barrel capable of firing a generally tracer bullet is very widespread. This barrel can either be housed in a specific weapon or be concealed, looking like a projectile loaded in a real arm.

[0004] In the case of weapons producing a back-blast (rocket launchers, Davis or countershot barrels, ...) this type of training equipment has a significant drawback, because the back-blast effect is not reproduced. The learner can mistakenly come to believe that the rear area of the weapon is safe, potentially resulting in an accident when a real weapon is actually used.

[0005] The arrangement described in Spanish letters patent no. 540577-0 for a "Device for firing training ammunition" solves this drawback by using a gas-generating cartridge, inserted in a chamber located halfway along the weapon, and a projectile which is inserted through the muzzle of the weapon. In this equipment, the gases produced by the cartridge are forked within the weapon and projected forwards to propel the projectile towards the target, and backwards to balance recoil and simulate a back-blast effect.

[0006] The only drawbacks of this arrangement is that the weapon must be loaded in two different steps, involving the cartridge and projectile, the risk being forgetting one of them and that two different elements must be stored and handled, with the logistic problems this may entail.

[0007] The back-blast weapon training cartridge described in the instant application for letters patent successfully overcomes all of the above drawbacks, moreover allowing a conventional tracer or other bullet cartridge to be use in order to achieve a lower cost in use.

[0008] This training cartridge makes up an only object and is therefore loaded in a single step. It is based on the use of a gas generator with an appropriate electric or pyrotechnic ignition, the gases first pushing the striker and causing the bullet cartridge to be fired and then continuing to expand simulating a back-blast effect.

Description of the Figures.

[0009]

Figure 1: A back-blast weapon training cartridge.
Figure 2: Obvious alternatives.
Figure 3: A back-blast weapon training cartridge, loaded in the'relevant weapon.
Figure 4: Operation of the back-blast weapon training cartridge.

Description of the preferred embodiment.

[0010] The back-blast weapon training cartridge subject of this application for letters patent is described, without limitation, for use in a rocket or Davis (countershot) launcher type weapon, with an electric type firing signal.
It comprises:

- A body (101) housing and supporting the remaining components.
  On the outside it has the necessary means (102), for instance thread, bayonet, slots, etc., for the back-blast weapon training cartridge to be arranged and fixed in the relevant weapon.
- Primer (103), consisting of an electric pyrotechnic device starting the deflagration of the gas-generating charge (104).
- External connections (105) and leads (106) conveying the electric firing signal from the weapon to the primer (103).
- Fuse-switch (107) short-circuiting the primer (103) and preventing it from accidentally operating until a real shot is made.
- Gas-generating charge (104) consisting of energetic material capable of deflagrating, generating sufficient gases to operate the striker (108) and to simulate the back-blast of a real weapon.
- Piston (109) with a ledge (110) which when idle prevents it from moving towards the striker (108). It conveys the thrust of the gases generated to the striker (108).
- Striker (108) which when idle is checked within the body (101) by a ledge/slot system (111). Upon being pushed by the piston (109) it strikes the bullet cartridge (112) primer.
- Bullet cartridge (112) with a tracer or other projectile allowing the accuracy of the shot to be assessed.
- Cap (113) firmly attached to the body (102) protecting and confining the gas-generating charge (104).

Reference can be made to the following obvious alternatives to this solution:

- Striker comprising a single part with the piston (201), which reduces the amount of movement of the striker albeit reducing the number of parts.
- For non-electrically operated weapons, use of a striker pyrotechnic primer (202).

[0011] Operation takes place as follows:

[0012] Upon inserting the back-blast weapon training cartridge (100) in the relevant weapon (300), the fixing means (201) fit in the weapon and fix the cartridge.

[0013] In that position, the bullet cartridge (112) is fitted in the weapon chamber (301). Furthermore, the external connections (105) of the cartridge are electrically connected to the weapon connections (302).

[0014] Upon firing (see figure 4-1), the electric firing signal is conveyed from the weapon connections (302) to the external connections (105), reaching the fuse-switch (107) through the leads (106).

[0015] The intensity of the firing stimulus exceeds the value of the fuse-switch (107) which fuses breaking the short-circuit inhibiting the primer (103), which then receives the stimulus.

[0016] The primer (103) operates upon receiving the stimulus, starting the deflagration (401) of the gas-generating charge (104).

[0017] This deflagration (401) causes a large quantity of gases (see Figure 4-2), and the pressure within the chamber (402) of the body (101) increases.

[0018] Since the cap (113) is firmly attached to the body (101), whereas the piston (109) is only held by the ledge (110), the first thing that happens is that the piston (109) moves and picks up a certain velocity until it hits the striker (108).

[0019] This releases the ledge/slot (111) hold on the striker, which is launched against the bullet cartridge (112) primer.

[0020] Upon the striker (108) hitting (see figure 4-3) the bullet cartridge (112) primer, it is ignited and the bullet (404) is therefore fired through the bore (405) of the weapon (300) towards the target.

[0021] The mounting pressure (see figure 4-3) produced in the chamber (402) of the body (101) results in the gases (403) exhausting backwards upon overcoming the cap (113) resistance, simulating the effect of a real weapon back-blast.

[0022] After firing (see figure 4-4) only the cartridge (100) remains need to be cleared for the weapon (300) to be once again ready to be used.

Claims

1. Back-blast weapon training cartridge **characterised in that** it fires a projectile forwards enabling the accuracy of the shot to be assessed, and gases backwards simulating the back-blast of a real weapon.

2. Back-blast weapon training cartridge in accordance with claim 1, **characterised in that** it has a weapon fixing system, such as a thread, bayonet or lateral guide, enabling a quick and easy insertion and in turn housing the bullet cartridge in the chamber of the weapon and ensuring a proper positioning in order for its electric connections to meet those of the weapon, or that its striker primer lie facing the weapon striker, as the case may be.

3. Back-blast weapon training cartridge in accordance with claims 1 and 2, **characterised in that** the device launching the projectile is a conventional type bullet cartridge with a tracer or other bullet.

4. Back-blast weapon training cartridge in accordance with claims 1 to 3, **characterised in that** it has a charge of energetic material capable upon deflagrating of generating gases simulating a back-blast and moreover capable of operating a piston.

5. Back-blast weapon training cartridge in accordance with claims 1 to 4, **characterised in that** the device launching the projectile and the gas-generating device make up a single object.

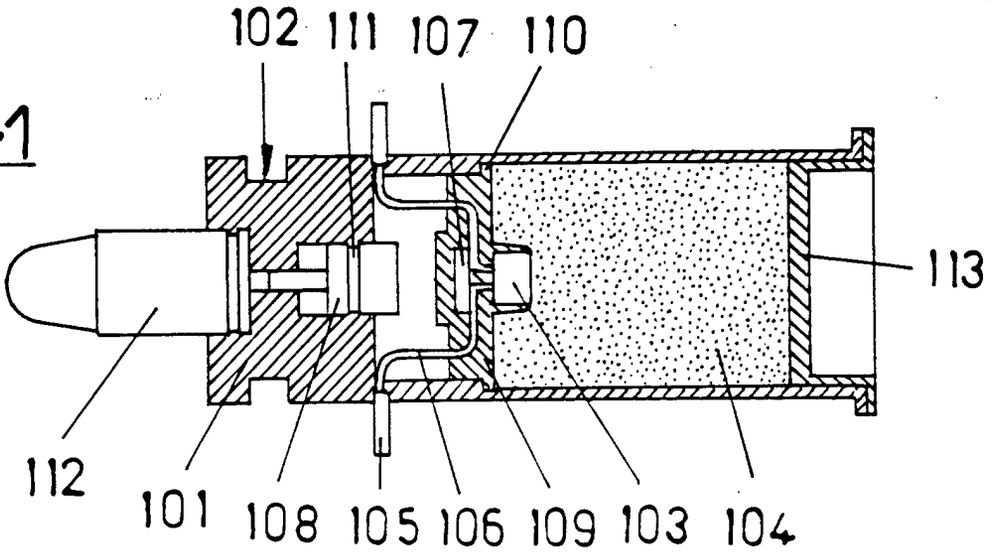
6. Back-blast weapon training cartridge in accordance with claims 1 to 5, **characterised in that** its primer is an electric pyrotechnic primer or a striker primer.

7. Back-blast weapon training cartridge in accordance with claims 1 to 6, **characterised in that** it has a weapon fixing system, such as a thread, bayonet or lateral guide, enabling a quick and easy insertion and in turn housing the bullet cartridge in the chamber of the weapon and ensuring a proper positioning in order for its electric connections to meet those of the weapon, or that its striker primer lie facing the weapon striker, as the case may be.

8. Back-blast weapon training cartridge in accordance with claims 1 to 7, **characterised in that** the striker firing the bullet cartridge is operated by a piston pushed by the gases generated by the energetic material charge.

9. Back-blast weapon training cartridge in accordance with claims 1 to 7, **characterised in that** the striker firing the bullet cartridge is solidly attached to a piston propelled by the gases generated by the energetic material charge.

FIG·1



FIG·2

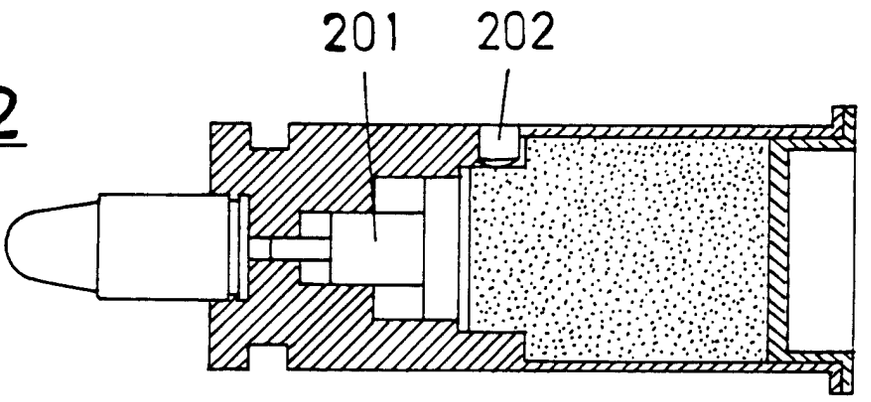


FIG-3

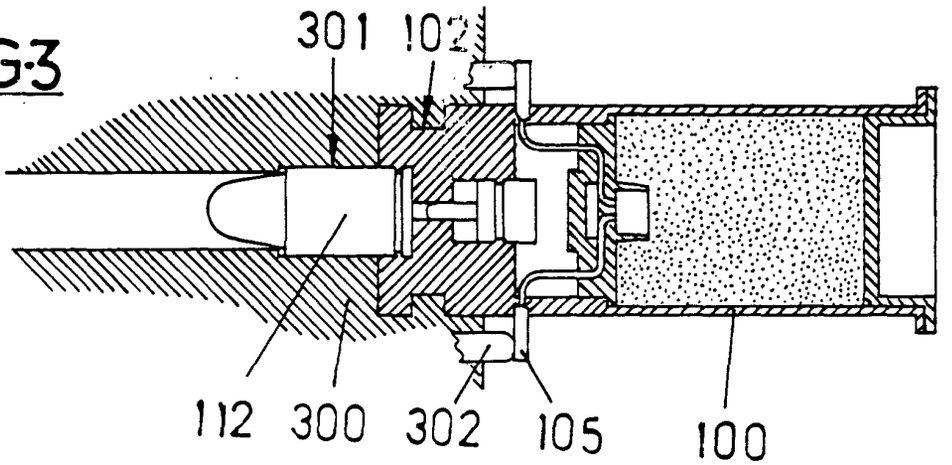


FIG-4-1

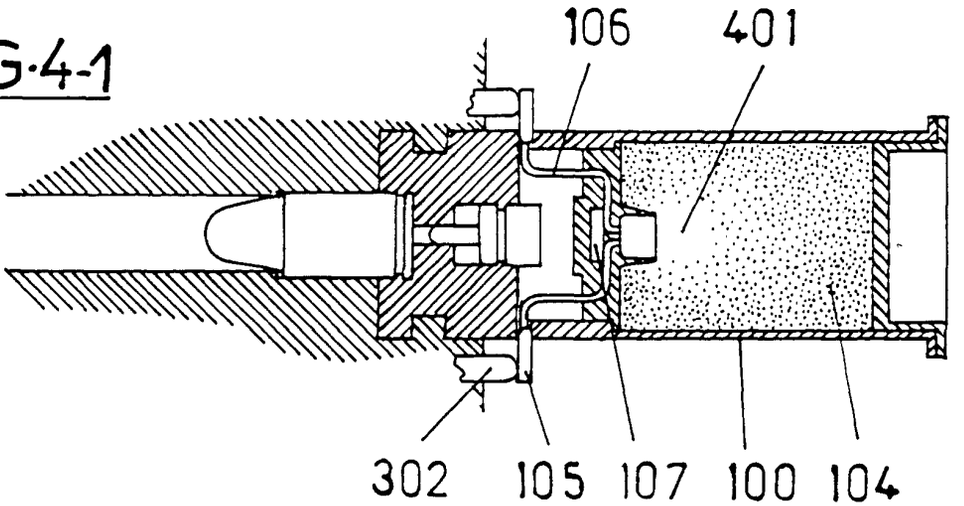
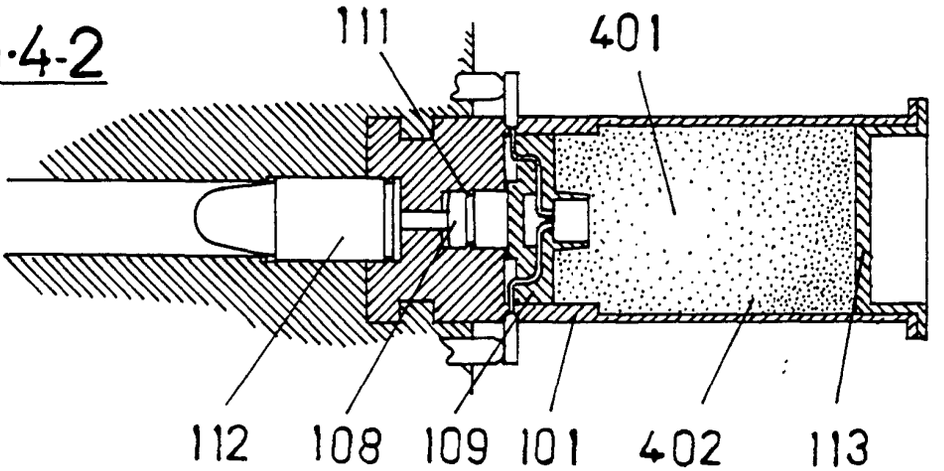
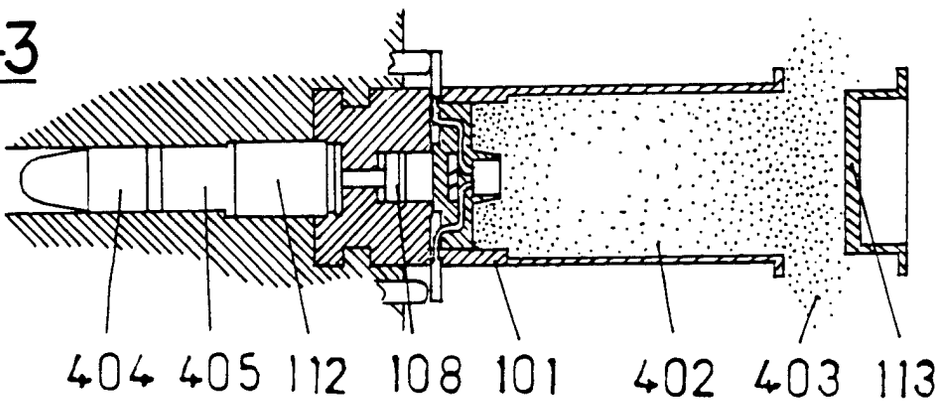


FIG-4-2



FIG·4-3



FIG·4-4