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(54) **HAND GRENADES**

(57) A hand grenade includes a main body (10), a receiver (3) holding a cartridge chamber (2), a firing pin (6) that acts in the manner of a pendulum and a ball (7) located between facing conical surfaces on the firing pin (6) and on a wall (8) of the main body.

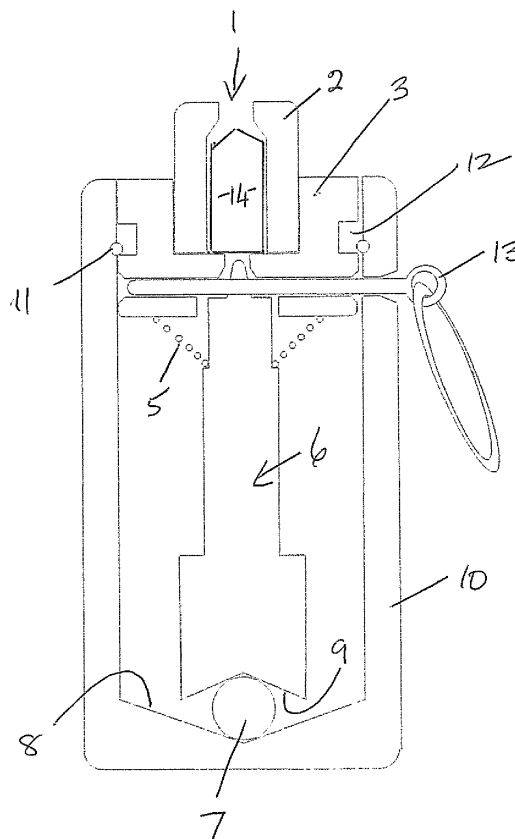


FIG. 1

Description

Field of the Invention

[0001] This invention relates to hand grenades and is concerned with the provision of a novel form of blank-firing hand grenade.

[0002] More specifically, the invention is concerned with the provision of a blank-firing hand grenade which is reusable and can be used for training purposes in the carrying out of "Airsoft" or "Paintball" games.

[0003] Normal hand grenades with safety levers are unsuitable for these games as the levers can easily be lost. In addition, many hand grenades are too heavy and dangerous to use against civilian players.

[0004] Hand grenades with a pyrotechnic delay are usually expensive to use and inappropriate in that the delay gives the opposing players time to kick the grenade away before detonation occurs.

Summary of the Invention

[0005] According to the present invention there is provided a hand grenade that includes a main body, a receiver holding a cartridge chamber, a firing pin that acts in the manner of a pendulum and a ball located between facing conical surfaces on the firing pin and on a wall of the main body.

[0006] The diameter of the lower portion of the firing pin is preferably substantially greater than the diameters of the upper and central parts of the firing pin. The firing pin thus has a relatively low centre of gravity.

[0007] One end of the firing pin is preferably positioned in a hole in the receiver with a spring acting between the receiver and the firing pin.

[0008] The arrangement is such that a safety ring-pin can be inserted in the hole in the receiver to prevent inadvertent movement of the receiver relative to the main body, the safety ring-pin being removed before throwing of the grenade.

[0009] The arrangement is preferably such that the receiver is free to move vertically within limits and to rotate when the safety ring-pin is removed.

Brief Description of the Drawings

[0010]

Figure 1 is a sectional view of a hand grenade, and

Figure 2 is another sectional view of the hand grenade, taken at right angles to Figure 1.

Description of the Preferred Embodiment

[0011] The hand grenade shown in the drawings includes a generally cylindrical main body 10 made from, for example, a relatively light-weight polymeric material.

The inner surface 8 of the base of the main body 10 is of conical form and a ball 7 rests on the conical surface 8, being trapped between the conical surface 8 and the inverted conical surface 9 of the base of a pendulum type firing pin 6 contained within the cylindrical interior of the main body 10. As can be seen from Figure 1, the diameter of the lower part of the firing pin 6 is substantially greater than the diameters of the upper and central parts of the firing pin 6, which thus has a relatively low centre of gravity.

[0012] A receiver 3 made from, for example, aluminium is positioned within the open end of the main body 10 and has an outwardly facing annular channel within which is located a wire ring 11 secured to the inner surface of the main body 10. Movement of the receiver 3 is prevented when a safety ring-pin 13 is in place. The safety ring-pin 13 is fitted in a hole in the wall of the main body 10. The receiver 3 is formed with a cylindrical recess in which a cartridge chamber 2 is located and the cartridge chamber 2 has a flash ejection hole 1. The safety ring-pin 13 (when inserted in the hole) rests on a shoulder of the firing pin 3 and serves to prevent the firing pin 6 from reaching the cartridge 14 within the chamber 2. It also prevents the receiver 3 from moving downwards and from revolving when the cartridge chamber 2 is being screwed into position or unscrewed.

[0013] A spring 5, of generally conical configuration as shown in the drawing, acts between the underside of the receiver 3 and a shoulder of the firing pin 6 to hold the firing pin 6 down and the receiver 3 up, thus urging the firing pin 6 away from the primer of the blank cartridge 14 positioned within the chamber 2. As the firing pin 6 is supported on the ball 7, which is positioned between two facing conical surfaces 8 and 9, and as the diameter of the lower portion of the firing pin 6 is substantially greater than the upper portion of the firing pin 6, the firing pin 6 will operate in a manner corresponding to a pendulum.

[0014] Before the grenade is thrown, the ring pin 13 is removed from the hole.

[0015] If the throwing of the grenade results in its base striking a hard surface, the receiver 3 will move downwards under the action of gravity so that the blank cartridge 14 in the cartridge chamber 2 will be thrust against the top of the firing pin 6 and the cartridge 14 will be fired.

[0016] If the grenade lands the other way up, the receiver 3 will move inwardly against the action of the spring 5 and the cartridge 14 will again be fired.

[0017] If, however, the grenade lands on its side, the pendulum action firing pin 6 will move towards the side of the body 10 that has engaged the ground but, because the firing pin 6 is engaged with the ball 7, the effect of the ball 7 rolling in engagement with the two conical surfaces 8 and 9 will result in the firing pin 6 moving towards the blank cartridge 14 and firing it.

[0018] Thus, whatever the orientation of the grenade when it strikes the ground, the cartridge will be fired. The grenade can thus be used for training purposes or in "Airsoft" or "Paintball" games.

Claims

1. A hand grenade that includes a main body, a receiver holding a cartridge chamber, a firing pin that acts in the manner of a pendulum and a ball located between facing conical surfaces on the firing pin and on a wall of the main body. 5
2. A hand grenade as claimed in Claim 1, in which the diameter of the lower portion of the firing pin is substantially greater than the diameters of the upper and central parts of the firing pin. 10
3. A hand grenade as claimed in Claim 1, in which one end of the firing pin is positioned in a hole in the receiver with a spring acting between the receiver and the firing pin. 15
4. A hand grenade as claimed in Claim 1, in which a safety ring-pin is inserted in a hole in the receiver to prevent inadvertent movement of the receiver relative to the main body. 20
5. A hand grenade as claimed in Claim 4, in which the receiver is free to move vertically and to rotate when the safety ring-pin is removed. 25

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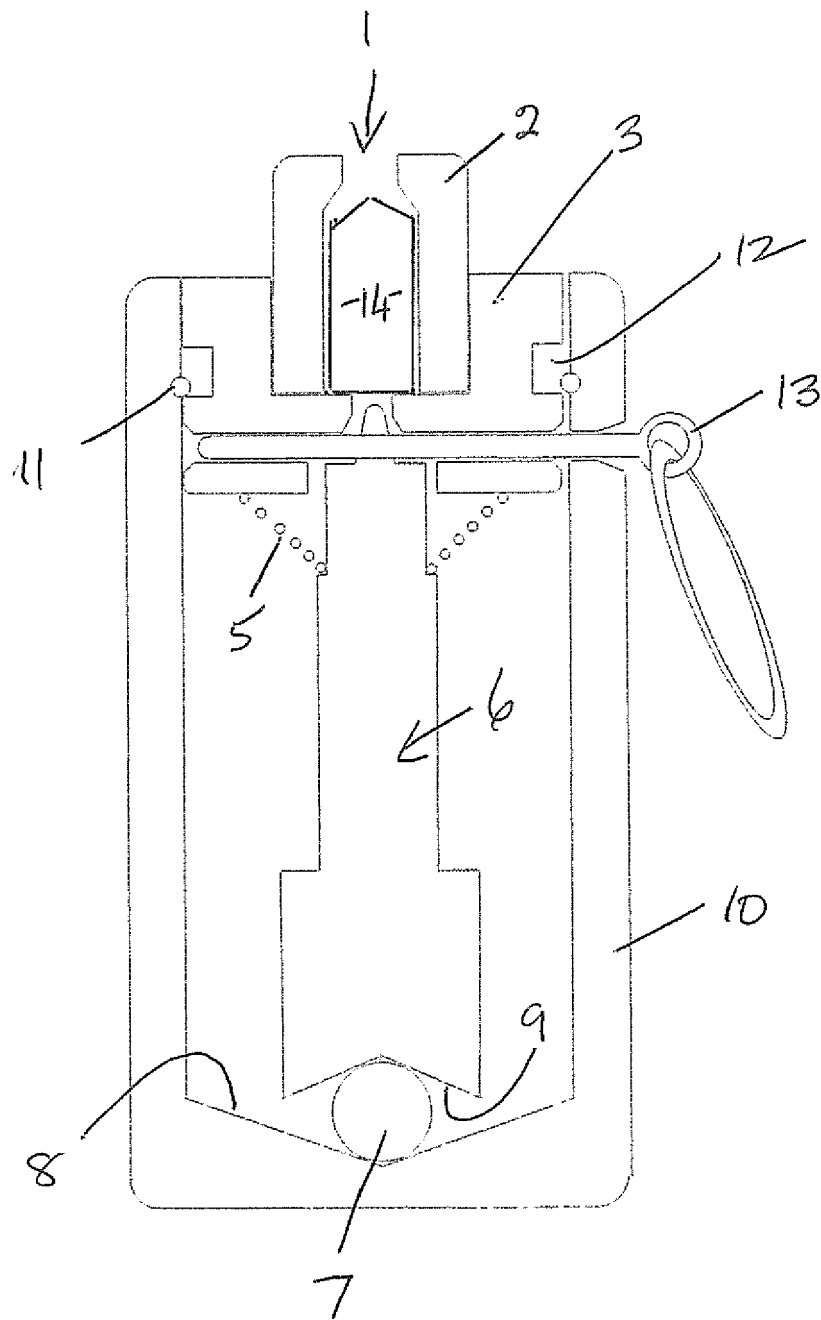


FIG. 1

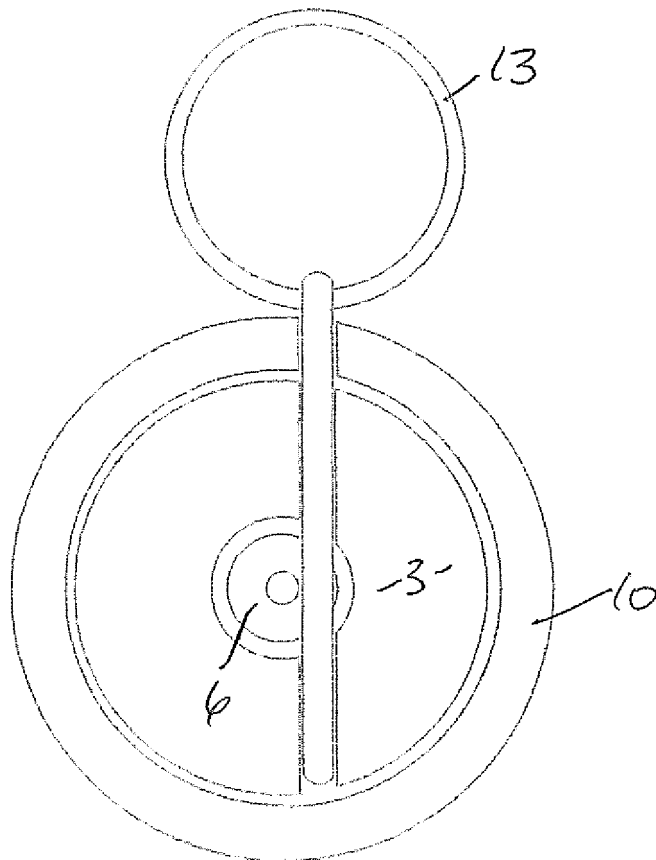


FIG. 2.



EUROPEAN SEARCH REPORT

Application Number
EP 16 15 5847

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A	----- EP 1 705 454 A1 (ELLIS JOHN WILLIAM GEORGE [GB]) 27 September 2006 (2006-09-27) * paragraphs [0017] - [0018] * * figures 1-3 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			F42B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 27 June 2016	Examiner Menier, Renan
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 16 15 5847

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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