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(54) **Device for a toy gun for projecting a light beam to an impact point of a projectile fired from the gun**

(57) A device for a toy gun is adapted for connection to the front end of the barrel (3) of a toy gun. The device comprises a laser unit (14) including a sighting means (140) and a firing means (142), so that the firing accuracy of the toy gun can be increased. Also, the device can

measure the speed of a projectile fired from the toy gun, the total number of projectiles that have been fired from the toy gun, so that a player can adjust the toy gun or replace the magazine of projectiles at an appropriate time.

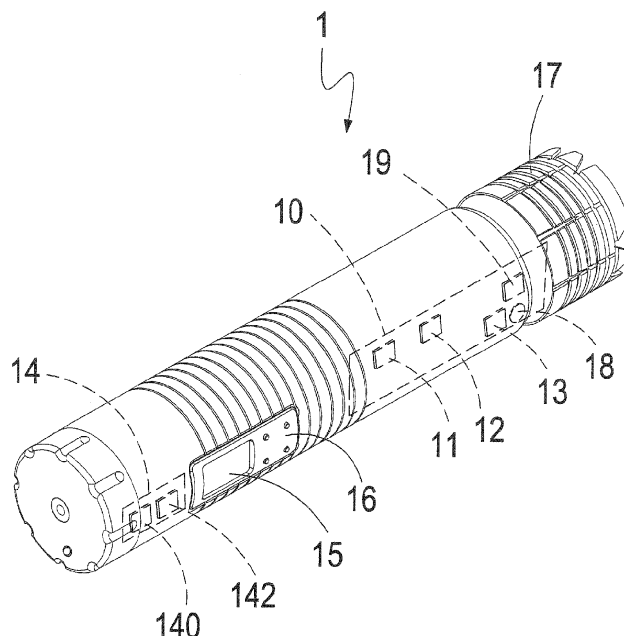


FIG.1

Description

(a) Technical Field of the Invention

[0001] The present invention relates to a device for a toy gun for projecting a light beam to an impact point of a projectile fired from the gun, and more particularly to a device that contains a laser unit including a sighting means and a firing means, and various functions.

(b) Description of the Prior Art

[0002] Combat games have become a popular recreation activity, in which people are teamed and toy guns are employed to simulate a real war. The game can foster mutual understanding among people and achieve an effect of entertainment.

[0003] To have a good result in a combat game, every player should practice shooting before the game to increase the accuracy of firing a target. For increasing the firing accuracy, a toy gun may be mounted with an infrared sight device. The firing accuracy can be improved through the sight device. However, a player often forget the number of projectiles remained in the gun, and thus the player would be at an awkward situation when the projectiles remained in the gun is insufficient. Besides, the infrared sight device cannot have an effect of saving electrical power, although it can be recharged. Regarding various auxiliary devices for toy guns, they are only with the function of sighting a target and do not contain other advanced functions, such as the speed measurement for projectiles, the counting of the number of projectiles being fired, laser weapon simulation. Thus, there is a need to develop a device having more functions to assist the toy guns in playing a combat game or practicing a shooting.

SUMMARY OF THE INVENTION

[0004] The primary object of the present invention is to provide a device for a toy gun, which can project a light beam to an impact point of a projectile fired from the gun and contains various functions.

[0005] To achieve the above object, the device comprises a control circuit board, a speed measuring means, a counting means, a memory means, and a laser unit. The speed measuring means is electrically connected with the control circuit board for measuring the speed of a projectile fired from the toy gun. The counting means is electrically connected with the control circuit board for counting the total number of projectiles that have been fired from the toy gun. The memory means is connected with the speed measuring means and the counting means for storing data. The laser unit is electrically connected with the control circuit board. The laser unit includes a sighting means and a firing means. The sighting means is capable of projecting a laser beam to a target. The firing means is capable of sensing a projectile fired

from the toy gun and thereafter projecting a coded laser beam to the target.

[0006] Another object of the present invention is to provide a device for a toy gun, which further comprises a power supply unit and a power saving means, in which the power supply unit is used for supplying all of the components of the device with suitable powers to allow each to have a normal operation; the power saving means is electrically connected to the power supply unit for controlling electrical output of the power supply unit so that electrical power can be used electively

[0007] A further object of the present invention is to provide a device for a toy gun, which allow players to know the projectiles remained in the gun and the speeds of the projectiles fired from the gun, so that they can replace the magazine of projectiles or adjust the toy gun in time.

[0008] A still further object of the present invention is to provide a device for a toy gun, which further contains a laser unit to increase the firing accuracy of the gun and increase the fun of the game.

[0009] A still further object of the present invention is to provide a device for a toy gun, which is simple in structure and can be easily mounted to the gun.

[0010] Other objects, advantages, and novel features of the present invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011]

FIG. 1 schematically shows a 3-diemsional view of a preferred embodiment of the present invention. FIG 2 schematically shows a plan view of the embodiment that is being coupled to a toy gun.

FIG 3 schematically shows a plan view of the embodiment that can measure the speed of a projectile fired from a toy gun.

FIG 3A is a plan view of the embodiment, in which the display thereof is showing the speed of a projectile fired from a toy gun.

FIG 4 schematically shows a plan view of the embodiment that can count the number of projectiles that have been fired from a toy gun.

FIG 4A is a plan view of the embodiment, in which the display thereof is showing the total number of projectiles that have been fired from a toy gun.

FIG 5 schematically shows an operating state of the embodiment, in which the sighting means of the laser unit is projecting a light beam to a target

FIG. 5A schematically shows a partially enlarged view of the operating state of the embodiment shown in FIG 5.

FIG. 5B schematically shows a partially enlarged view of the sighting means of the laser unit of the embodiment.

FIG. 6 schematically shows an operating state of the embodiment, in which the firing means of the laser unit is projecting a light beam to a target

FIG 6A schematically shows a partially enlarged view of the operating state of the embodiment shown in FIG 6.

FIG. 6B schematically shows a partially enlarged view of the firing means of the laser unit of the embodiment

FIG 7 shows an operating state of the embodiment, in which the power saving means can control electrical output of the power supply unit.

FIG 7A schematically shows an operating state of the embodiment when the power saving means is used with the power supply unit.

FIG 7B schematically shows a partially enlarged view of the power saving means of the embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0012] Turning now to FIGS. 1, 2, 3, 3A, 4, and 4A, one embodiment of a device for a toy gun for projecting a light beam to an impact point of a projectile fired from the gun is illustrated. The device is indicated at reference numeral 1. The device 1 can be mounted to the front end of the barrel 3 of the toy gun. The device 1 generally comprises a control circuit 10, a speed measuring means 11, a counting means 12, a memory means 13, and a laser unit 14. The speed measuring means 11 is electrically connected with the control circuit board 10 for measuring the speed of a projectile 2 fired from the toy gun. The counting means 12 is electrically connected with the control circuit board 10 for counting the total number of projectiles 2 that have been fired from the toy gun. The memory means 13 is connected with the measuring means 11 and the counting means 12 for storing data. The laser unit 14 is electrically connected with the control circuit board 10. The laser unit 14 includes a sighting means 140 and a firing means 142. The sighting means 140 is capable of projecting a laser beam to a target. The firing means 142 is capable of sensing a projectile fired from the toy gun and thereafter projecting a coded laser beam to the target. The device 1 may further comprise a display 15 for showing data and an operational panel 16 electrically connected with the control circuit board 10 for setting data. Furthermore, the device 1 is provided with a coupling member 17 adapted for connection to the front end of the barrel 3 of the toy gun (see FIG 2).

[0013] In use, the device 1 can be coupled to the front end of the barrel 3 of the toy gun by using the coupling member 17 (see FIG 2). When a player fires the toy gun, as shown in FIG 1, the speed measuring means 11 and the counting means 12 will sense a projectile 2 from the barrel 3. The sensed signals will be sent to the control board 10 for data operations, so that the speed of the projectile 2 can be measured and stored in the memory means 13 via the circuit board 10, and the total number

of projectiles that have been fired from the toy gun can be stored in the memory means 13 via the circuit board 10. In addition, the speed of the projectile and the total number of the projectiles will be shown on the display 15 so that the player may know the status of the toy gun (see FIG 3A and 4A).

[0014] Additionally, as shown in FIGS. 5, 5A and 5 B, through the sighting means 140 of the laser unit 14, a player can project a light beam 4, such as an infrared laser beam, to a target to allow a light spot to be appeared on the target, so that the accuracy of the firing may be increased.

[0015] As shown in FIGS. 6, 6A and 6B, at the moment of the projectile 2 entering the device 1, the firing means 142 of the laser unit 14 can project a coded light beam, such as an infrared laser beam, to a point of the target that the projectile 2 would impact. The firing means 142 of the laser unit 14 will stop the projection of the light beam after the firing is completed and the projectile 2 has passed the device 1. The number of the projections of light beam will be the same as the total number of projectiles 2 that have been fired from the barrel 3. Such manner of projecting a light beam to a target can simulate an operating condition of laser ammunition, and can be employed as a way for a long-range or middle-range shooting training. Furthermore, through the operational panel 16g various configurations of data may be set for the device 1, so that the device 1 can be applied with a variety of modes.

[0016] As shown in FIGS. 7, 7A and 7B, the device 1 is provided with a power supply unit 18 and a power saving means 19. The power supply unit 18 can supply all the components of the device 1 with suitable powers to allow each to have a normal operation. The power saving means 19 is electrically connected to the power supply unit 18 for controlling electrical output of the power supply unit 18, so that electrical power can be used effectively. When the toy gun is in use, the power required for the device 1 can be supplied from the power supply unit 18. The power supply unit 18 can supply sufficient power for each component of device 1, so that the measurements and operations for projectile 2 can be conducted by respective components of the device 1 to allow the associated data to be shown on the display 15. When the toy gun is in idle for more than a predetermined time, the power supply unit 18 will be automatically turned off by the power saving means 19 to save electrical power. The player need not pay attention to whether the power is turned off.

[0017] Although the present invention has been described with a certain degree of particularity, it is understood that the present disclosure is made by way of example only and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention hereinafter claimed.

Claims

1. A device for a toy gun for projecting a light beam to an impact point of a projectile fired from the toy gun, the device comprising:

a control circuit board (10);

a speed measuring means (11) electrically connected with said control circuit board (10) for measuring the speed of a projectile fired from the toy gun;

a counting means (12) electrically connected with said control circuit board (10) for counting the total number of projectiles that have been fired from the toy gun;

a memory means (13) connected with said speed measuring means (11) and said counting means (12) for storing data; and

a laser unit (14) electrically connected with said control circuit board (10), said laser unit (14) including :

a sighting means (140) capable of projecting a laser beam to a target; and

a firing means (142) capable of sensing a projectile fired from the toy gun and thereafter projecting a coded laser beam to the target.
2. A device for a toy gun as claimed in claim 1, further comprising a display (15) for showing data.
3. A device for a toy gun as claimed in claim 1, further comprising an operational panel (16) electrically connected with said control circuit board (10) for setting data.
4. A device for a toy gun as claimed in claim 1, further comprising a coupling member (17) adapted for connection to the front end of the barrel (3) of the toy gun.
5. A device for a toy gun for projecting a light beam to an impact point of a projectile fired from the toy gun, the device comprising:

a control circuit board (10);

a speed measuring means (11) electrically connected with said control circuit board (10) for measuring the speed of a projectile fired from the toy gun;

a counting means (12) electrically connected with said control circuit board (10) for counting the total number of projectiles that have been fired from the toy gun;

a memory means (13) connected with said speed measuring means (11) and said counting means (12) for storing data;

a laser unit (14) electrically connected with said
- control circuit board (10), said laser unit including a sighting means (140) and a firing means (142), wherein said sighting means (140) is capable of projecting a laser beam to a target, said firing means (142) is capable of sensing a projectile fired from the toy gun and thereafter projecting a coded laser beam to the target;
- a power supply unit (18) for supplying all of the above components with suitable powers to allow each to have a normal operation; and
- a power saving means (19) electrically connected to said power supply unit (18) for controlling electrical output of said power supply unit (18) so that electrical power can be used effectively.
6. A device for a toy gun as claimed in claim 5, further comprising a display (15) for showing data.
7. A device for a toy gun as claimed in claim 5, further comprising an operational panel (16) electrically connected with said control circuit board (10) for setting data.
8. A device for a toy gun as claimed in claim 5, further comprising a coupling member (17) adapted for connection to the front end of the barrel (3) of the toy gun.

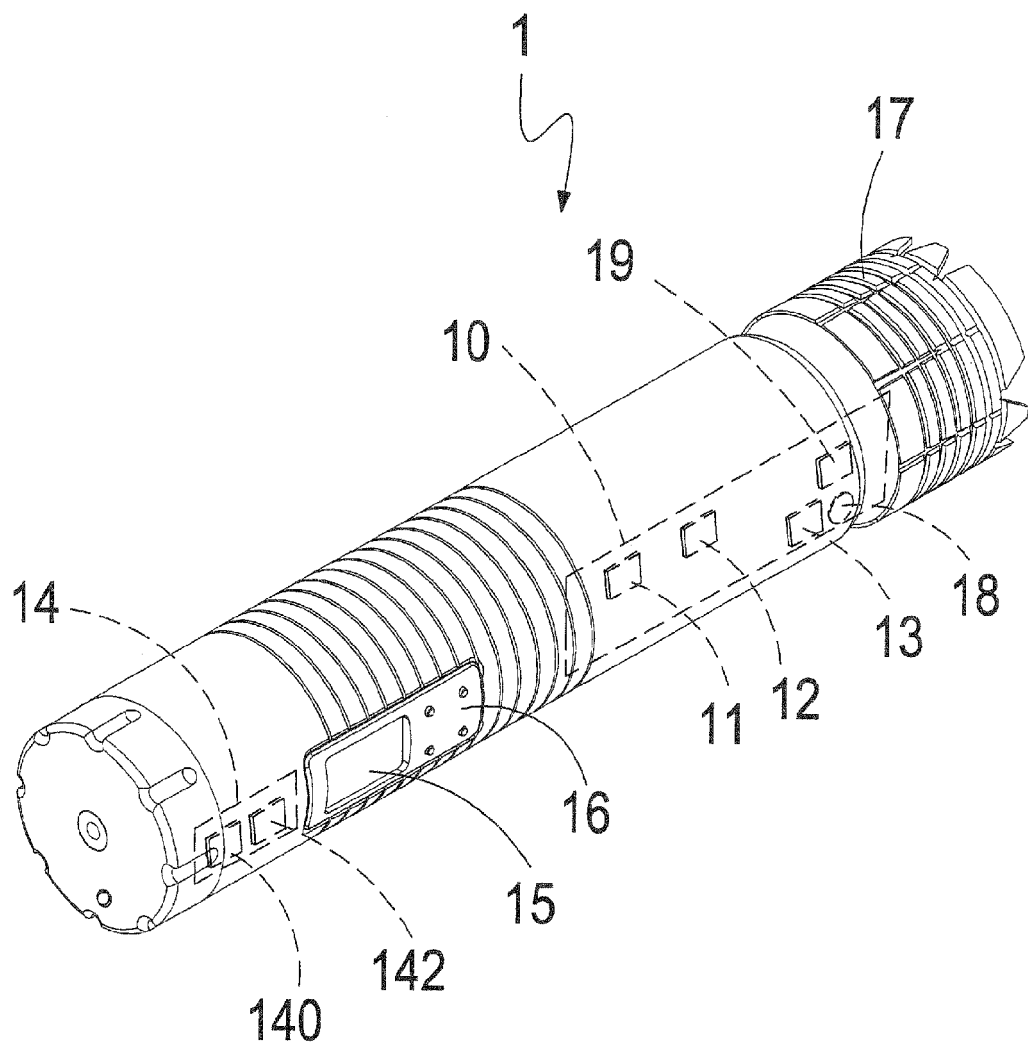


FIG.1

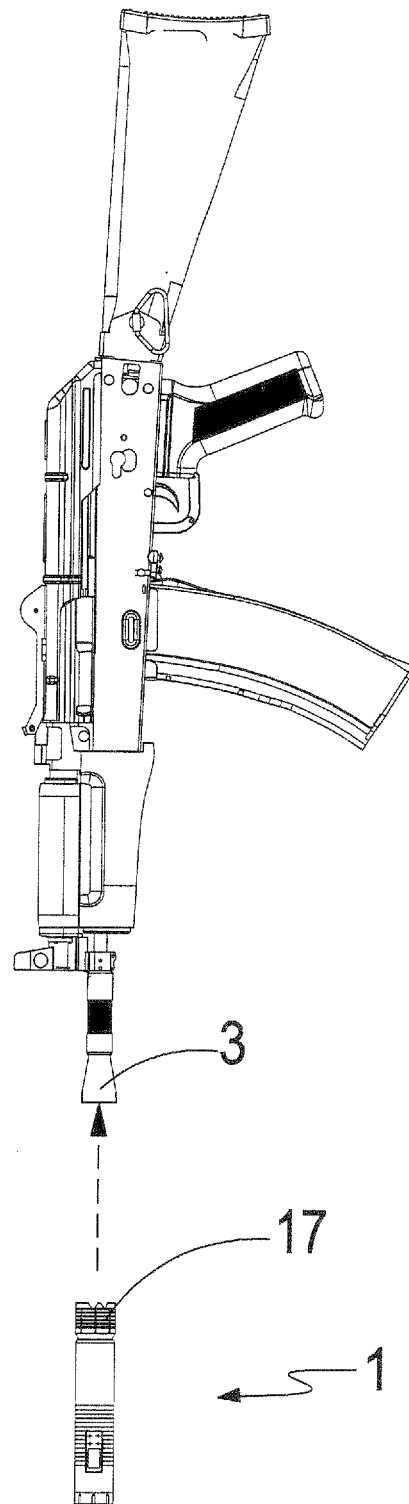


FIG.2

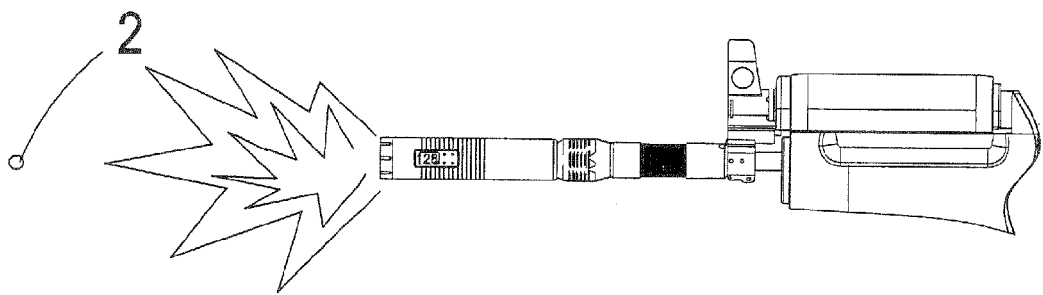


FIG.3

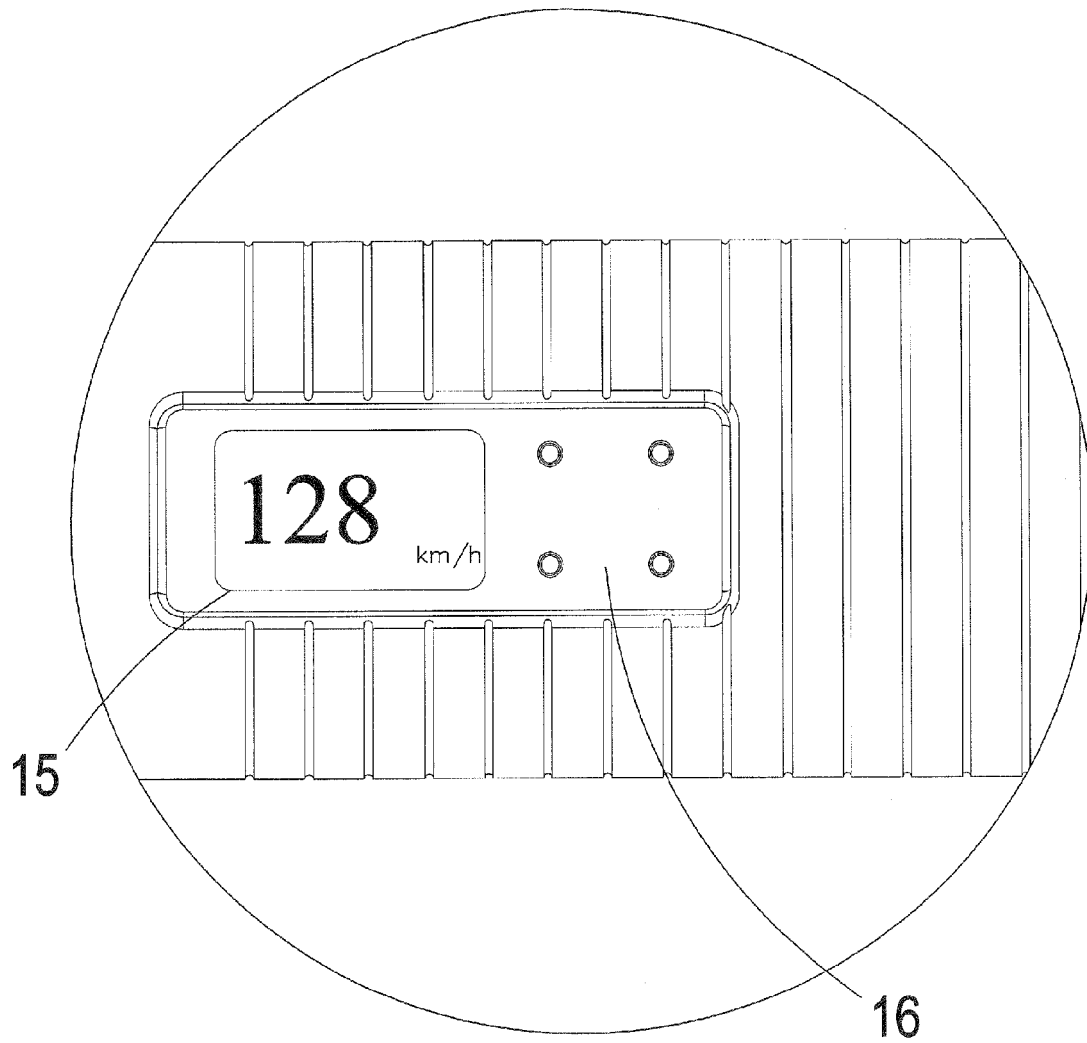


FIG.3A

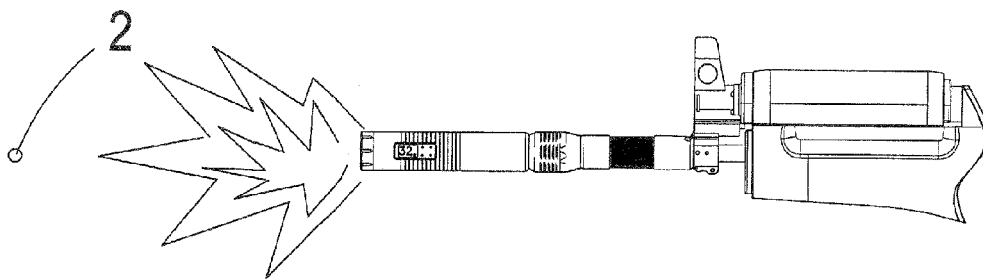


FIG.4

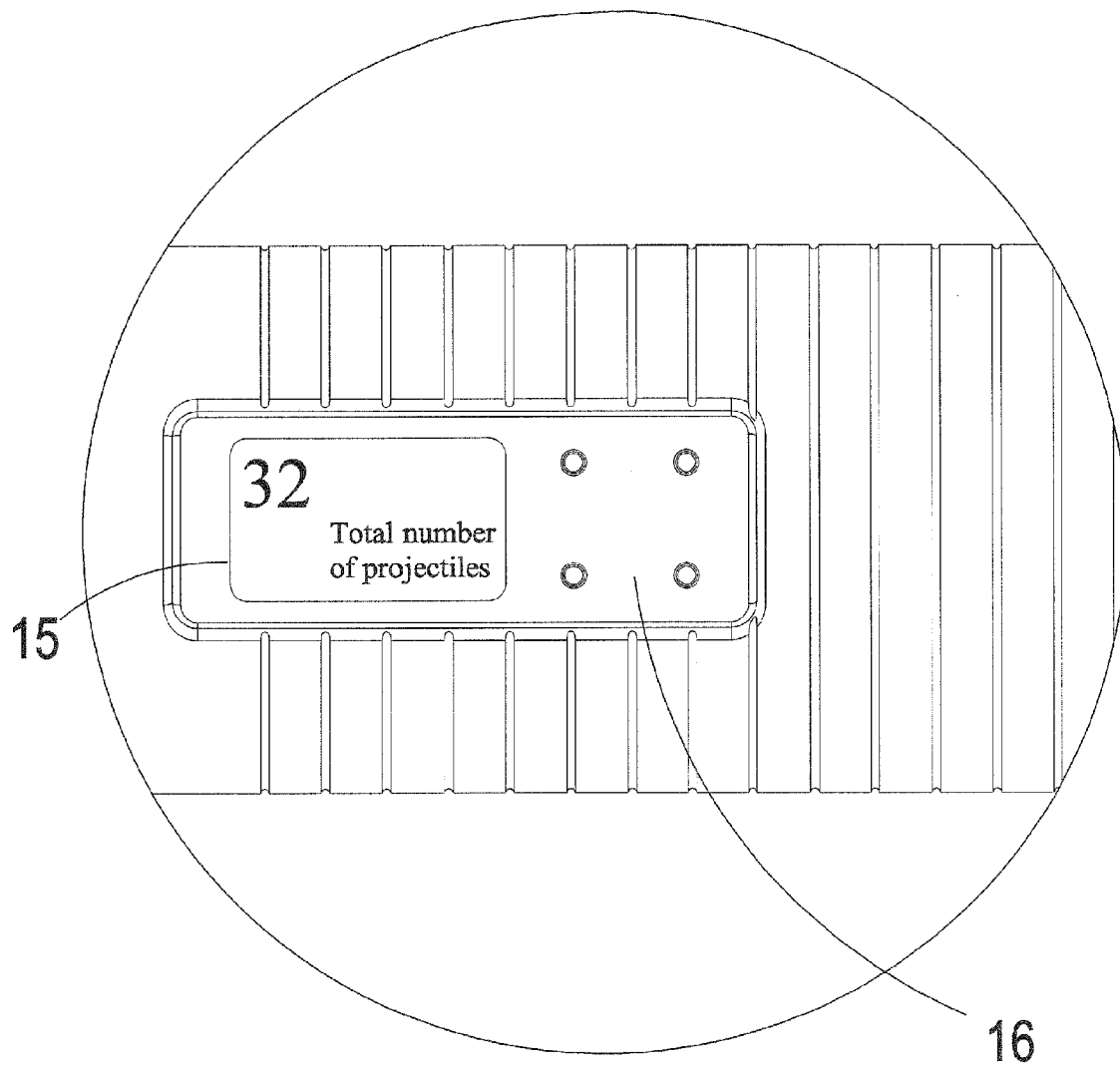


FIG.4A

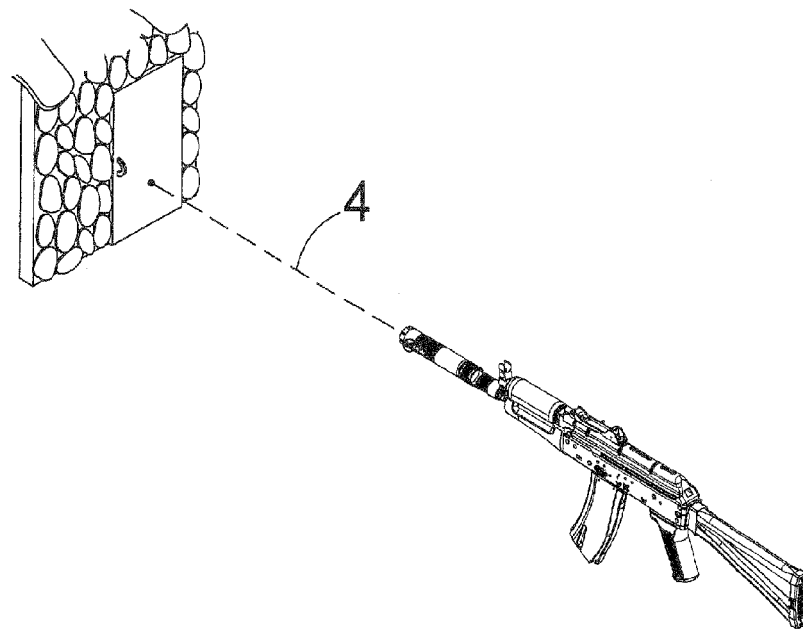


FIG.5

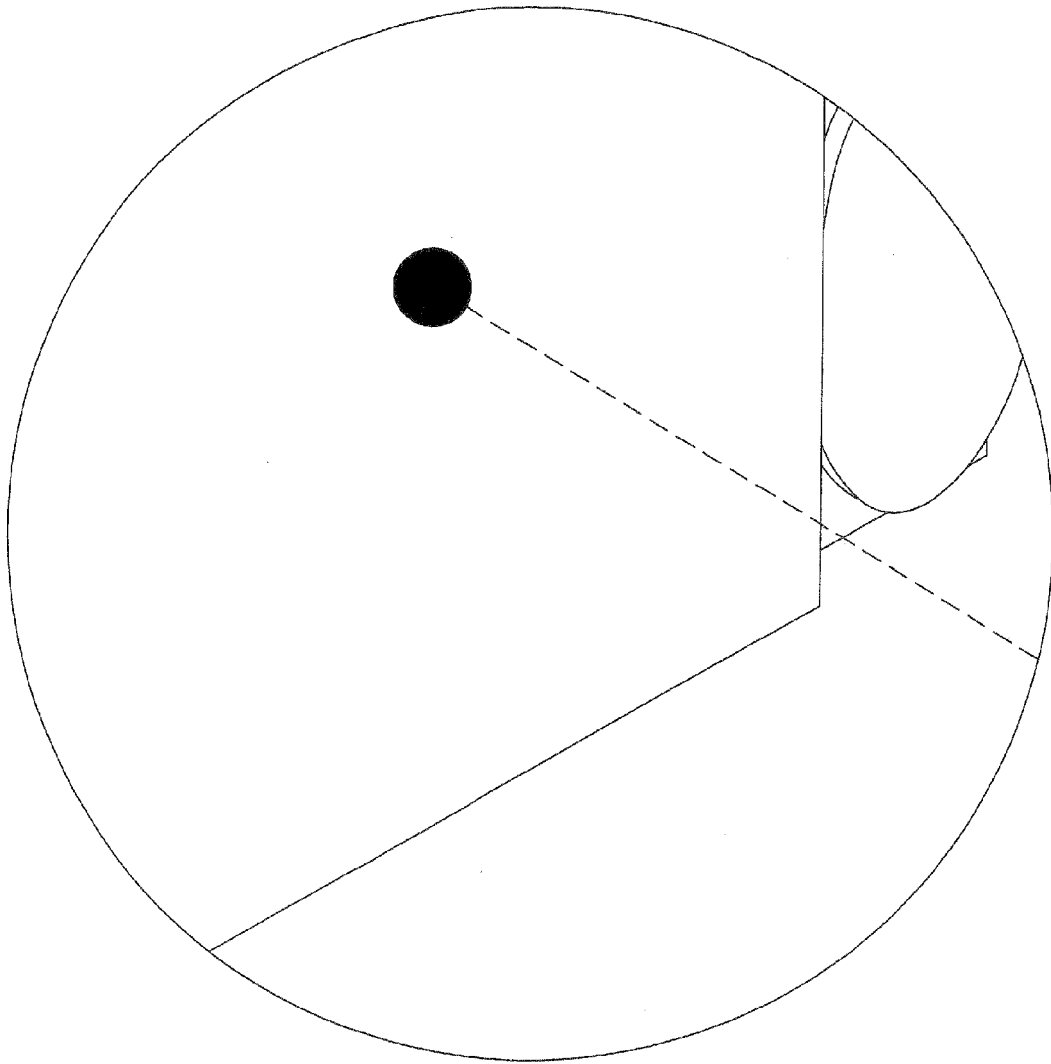


FIG.5A

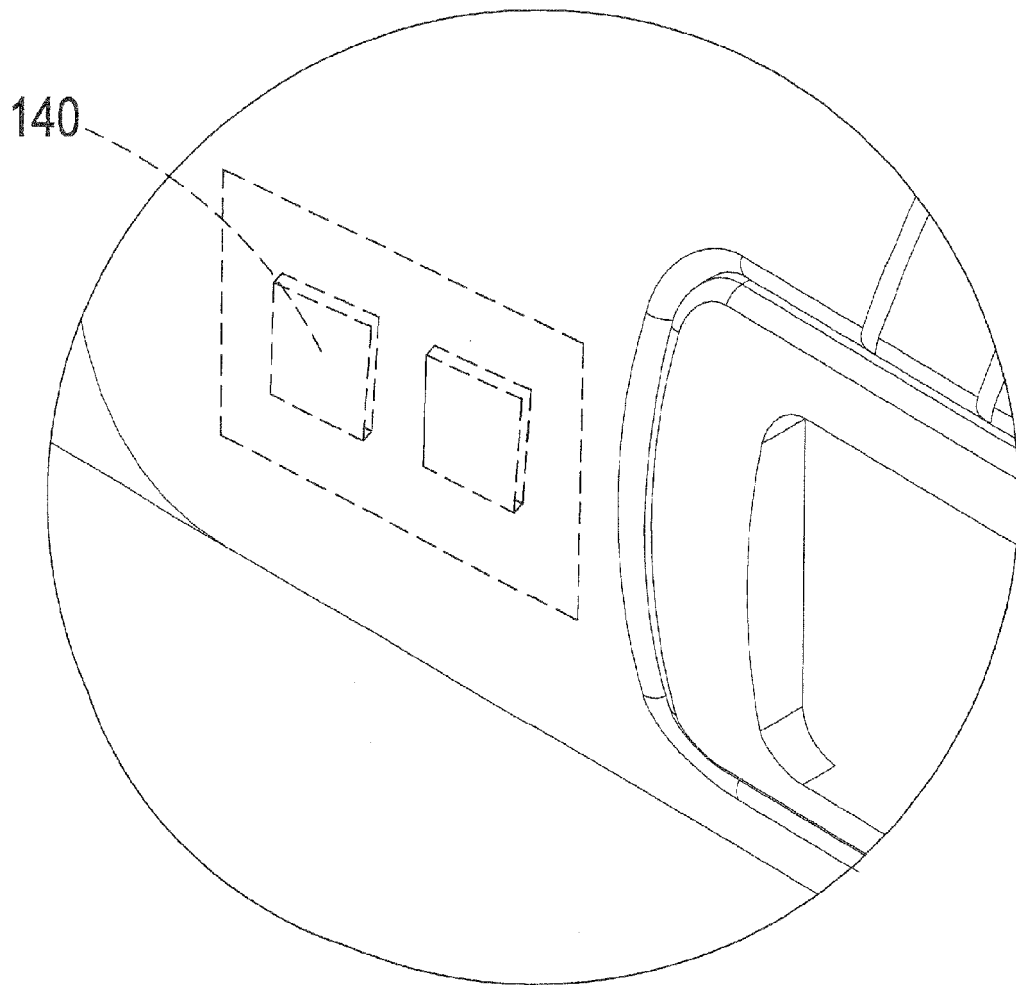


FIG.5B

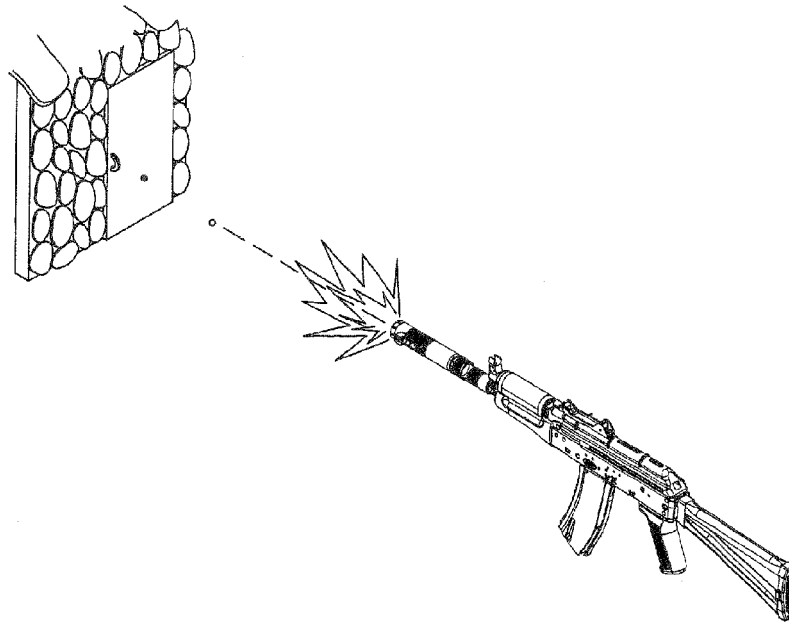


FIG.6

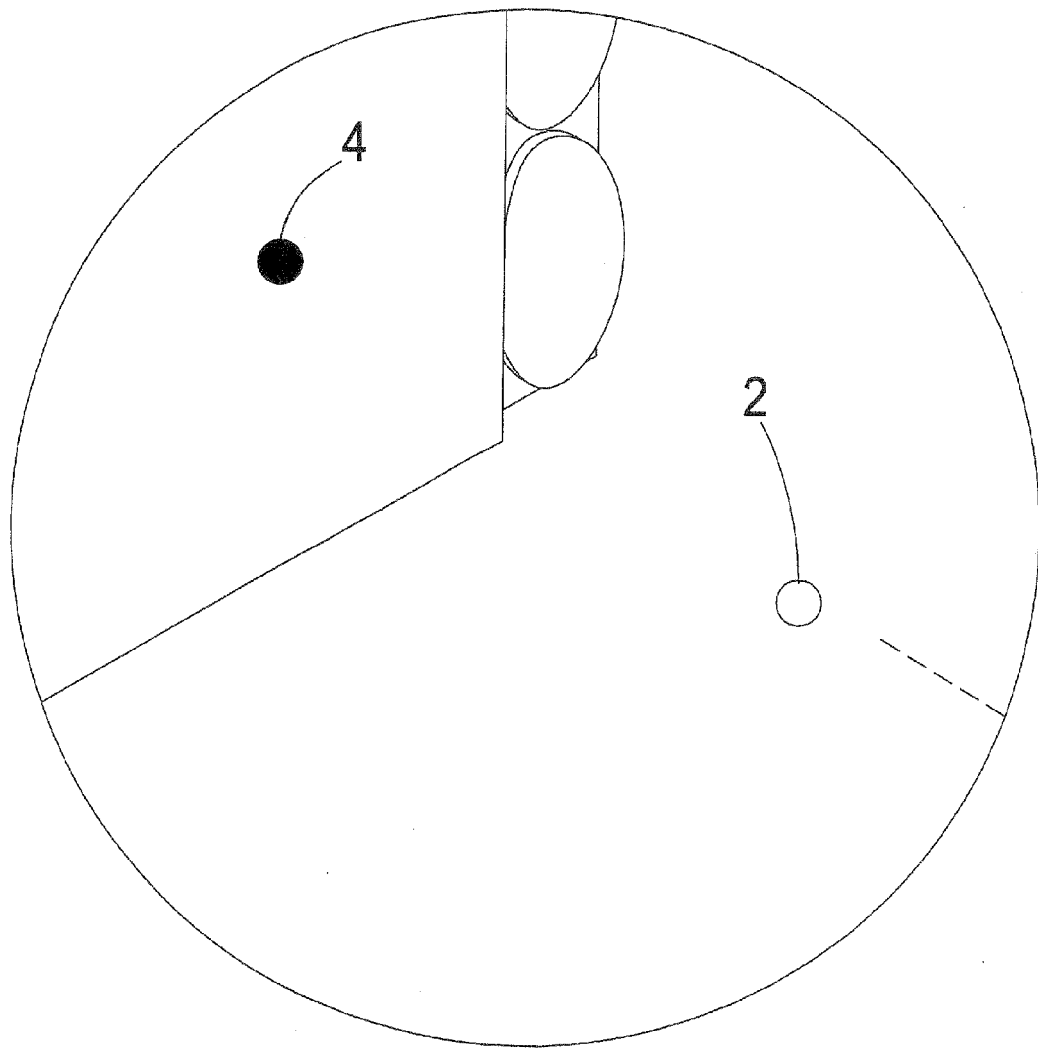


FIG. 6A

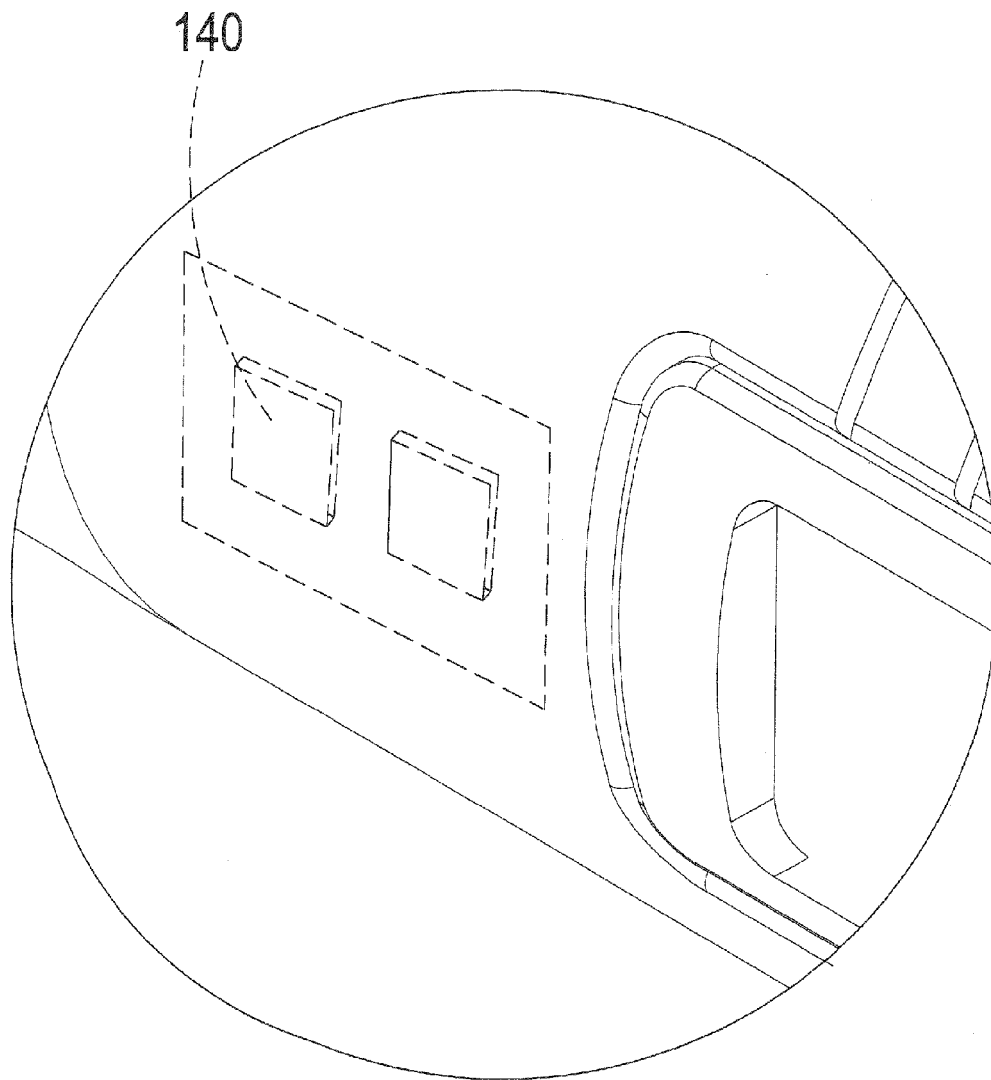


FIG. 6B

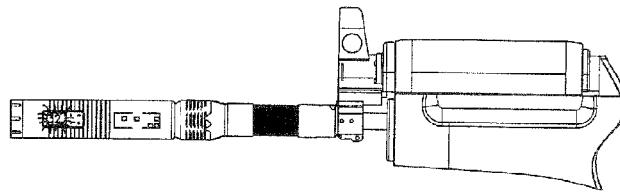


FIG.7

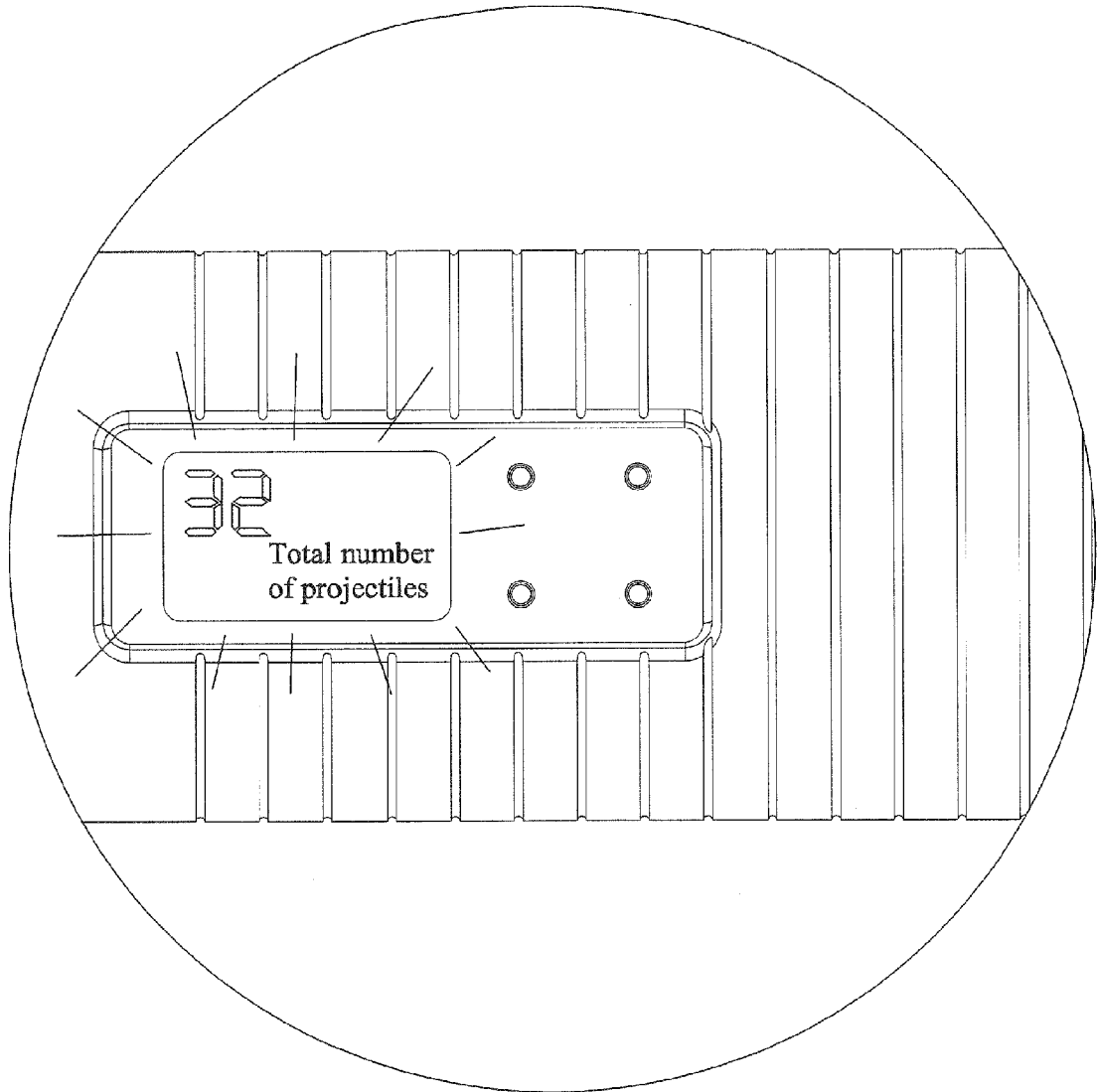


FIG.7A

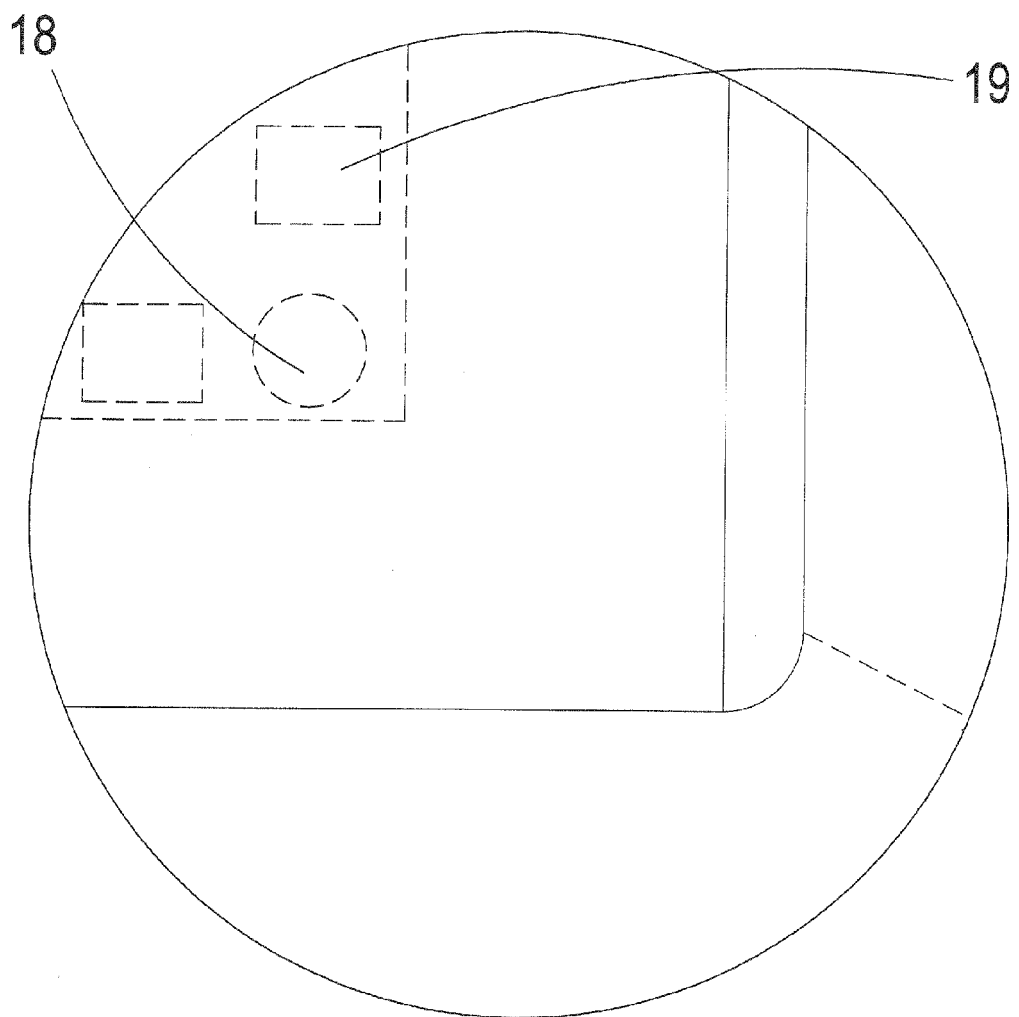


FIG. 7B



EUROPEAN SEARCH REPORT

Application Number
EP 11 18 8756

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 2011/252681 A1 (HOUDE-WALTER WILLIAM R [US] ET AL) 20 October 2011 (2011-10-20) * paragraph [0010] * * paragraph [0018] * * paragraph [0019] * * paragraph [0029] * * figures 1,2,5 *	1-8	INV. F41A33/02
Y	US 6 590 386 B1 (WILLIAMS BENJAMIN M [US]) 8 July 2003 (2003-07-08) * column 1, line 51 - line 54 * * column 1, line 62 - line 64 * * column 2, line 6 - line 8 * * column 2, line 13 - line 16 * * column 2, line 46 - line 49 * * column 2, line 37 - line 42 * * column 3, line 58 - line 62 * * column 3, line 62 - line 65 * * column 4, line 26 - line 32 * * column 5, line 31 - line 45 * * column 5, line 61 - column 6, line 2 * * abstract * * figures 1,2,5,6 *	1-8	TECHNICAL FIELDS SEARCHED (IPC) F41A F41G G01P A63F F41J
A	US 5 425 299 A (TEETZEL JAMES W [US]) 20 June 1995 (1995-06-20) * the whole document *	1	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 12 April 2012	Examiner Lahousse, Alexandre
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			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 18 8756

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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12-04-2012

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US 2011252681	A1	20-10-2011	NONE	

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			US 5481819 A	09-01-1996

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82