EUROPEAN PATENT SPECIFICATION

Date of publication and mention of the grant of the patent: 05.07.2006 Bulletin 2006/27

Application number: 01966910.0

Date of filing: 30.08.2001

Int Cl.: F41A 9/54 (2006.01) F41A 33/00 (2006.01)

International application number: PCT/CA2001/001249

International publication number: WO 2002/018863 (07.03.2002 Gazette 2002/10)

Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

Priority: 30.08.2000 CA 2317084

Date of publication of application: 28.05.2003 Bulletin 2003/22

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Description

FIELD OF THE INVENTION

[0001] This Invention relates to the field of firearms and provisions for modifying automatic firearms for training purposes. In particular, it relates to automatic gas-operated weapons adapted to fire reduced-energy ammunition in a blow-back mode and to training ammunition for use therein.

BACKGROUND TO THE INVENTION

Reduced-Energy Ammunition for Training Purposes

[0002] In military and police firearms applications almost all of the ammunition consumed is used for training. For some training purposes, however, standard (service) ammunition is inappropriate. An alternative type of training ammunition, represented by United States Patent No. 5,359,937 fires a low-mass projectile relying on a telescope-scopically-expanding, reduced-energy cartridge designed to provide blow-back cycling of suitable modified, recoil-operated or gas-operated automatic weapons.

[0003] Advantages of the reduced-energy ammunition are that it has a shorter range and lower penetration capacity than standard ammunition. This permits the use of smaller, less secure firing ranges, even improvised ranges, as training facilities. However, if standard ammunition were accidentally employed in such facilities, unexpected dangers would arise from its increased striking power and range.

[0004] Appropriate modifications to certain semi-automatic and automatic weapons allow normal weapon functioning, including recoil, through a pure blow-back action when firing such training ammunition. Such a system, when firing low mass marking cartridges, for example, allows effective close-range, force-on-force training. Tactical scenarios that can be effectively simulated include counter-terrorism, close quarters combat, trench clearing, fighting in wooded areas, urban fighting, room clearing, dynamic entries, and protection of dignitaries.

[0005] Confidence is gained because the training ammunition/conversion kit system allows the trainees to use their own service weapons during stressful exercises that involve shooting and being shot at under realistic tactical situations. The training is safe when properly conducted, but there is a pain penalty for participants who are hit. It is the fear of this penalty that encourages the participants to treat the training scenarios as "the real thing" and to behave as though their lives were at risk.

Modification to Weapon to Permit Firing of Reduced-Energy Ammunition

[0006] When firing standard ammunition with its abundant associated energy, it is necessary in many weapons to lock the barrel to the slide (for pistols) or to the bolt/bolt carrier assembly (for gas-operated rifles or machine-guns) during the beginning of the firing action for a period long enough for the bullet to exit the barrel muzzle while the breech is still closed. This allows the chamber pressure to drop before the breech opens to extract and eject the spent cartridge case. A locking mechanism couples the barrel to the slide or bolt/bolt carrier assembly for the first portion of the discharge, and then releases the slide or bolt/bolt carrier assembly, usually with the aid of a cam. Upon unlocking, the slide or bolt/bolt carrier assembly continues its rearward travel until, after the spent cartridge case has been ejected, it returns under the influence of the recoil spring to receive and chamber the next round from the magazine en route to its in-battery position.

[0007] In a training system such as described above there is not enough energy in the reduced-energy cartridges to precipitate sufficient recoil to unlock the barrel from the slide or bolt/bolt carrier assembly in their standard configurations. It is necessary, therefore, to omit the barrel locking mechanism and, by so doing, the recoil action becomes blow-back of the slide or bolt/bolt carrier assembly only.

[0008] The modifications to a semi-automatic pistol, for example, to permit normal functioning when firing reduced-energy ammunition as represented by United States Patent No. 5,359,937 generally include replacing or modifying the barrel and sometimes replacing or adding one or two other components, depending on the weapon involved. In a gas-operated weapon, the bolt is prevented from rotating so that it will not engage the cam in the barrel extension. In both instances, the modifications result in a pure blow-back action of the weapon upon firing reduced energy ammunition which is sufficient to cycle the weapon in a normal fashion.

Problem of Feeding in Automatic Weapons

[0009] In some instances the external configuration of the reduced-energy ammunition is not identical to that of the equivalent standard ammunition. This is the case with 5.56 mm reduced-energy ammunition as represented by United States Patent No. 5,359,937, which may be shorter and have a different weight than the standard 5.56 mm cartridge, as well as having a head end of smaller diameter.

[0010] In weapons, such as, for example, the 5.56 mm Fabrique Nationale (FN) “Minimi” machinegun or the similar 5.56 mm US M249 Light Support Weapon, linked ammunition is fed into the chamber via a feed tray followed by a feed ramp. Should shorter than normal ammunition, such as the above training ammunition, be fed into the normal feed tray and said feed ramp, chambering of the ammunition may not proceed smoothly. There is the possibility of one or more cartridges skewing in the normal tray or ramp, both of which are too large to ensure the proper feeding of said ammunition.

[0011] This is important in training systems utilizing re-
duced-energy ammunition because the training projectile is often more fragile than the standard one. If the feeding is not true and the cartridge skews slightly prior to entering the chamber, the tip of the projectile is not strong enough to resist being damaged with the result that the weapon may jam. A first objective of the present invention is, therefore, to provide a solution to this problem by allowing the feeding and chambering of reduced-energy ammunition to proceed normally during full automatic firing of a machinegun such as the M249.

Problem of Live-Fire Exclusion

[0012] The conversion of 9 mm pistols to allow them to function normally when firing reduced-energy ammunition generally involves replacing the standard barrel by a training barrel. To ensure that a live service cartridge cannot be chambered in a converted weapon, the caliber of the training projectile and the training barrel are intentionally made smaller than 9 mm. Hence, a live round cannot chamber properly in a weapon converted for training because its projectile is too big to fit into the bore of the training barrel, and the weapon would jam.

[0013] The same approach could be taken for 5.56 mm gas-operated semi-automatic rifles and fully automatic machineguns by changing the barrel in the upper receiver barrel assembly and altering the bolt in the bolt carrier assembly to remove the locking mechanism. While such a design would ensure the exclusion of live service ammunition from being fired from a converted weapon, it would also be costly to implement and awkward for the user due to the excessive number of weapon components involved.

[0014] An alternative approach is to modify only the bolt/bolt carrier assembly, leaving untouched the upper receiver barrel assembly and the lower receiver buttstock assembly. In this way, the weapon can be rapidly and conveniently converted to fire reduced-energy training ammunition by simply exchanging the service bolt/bolt carrier assembly for a training bolt/bolt carrier assembly. This means, however, that live service ammunition would not be excluded from chambering in the standard 5.56 mm barrel. The possibility that a standard round can be fired from a converted weapon is not acceptable from a safety point of view.

[0015] It is, therefore, a second objective of the invention to provide a solution to this safety problem by preventing a live 5.56 mm cartridge from reaching the chamber of the standard barrel in the upper receiver barrel assembly of a machinegun such as the M249. By doing so, safe firing of training ammunition training in a converted weapon of this type can be conducted while positively excluding the firing of a live round of service ammunition should one (or more) be inadvertently inserted into the links feeding the weapon during training or practice sessions.

[0016] The invention in its general form will first be described, and then its implementation in terms of specific embodiments will be detailed with reference to the drawings following hereafter. These embodiments are intended to demonstrate the principal of the invention and the manner of its implementation. The invention in its broadest and more specific forms will be further described and defined in each of the individual claims that conclude the specification.

SUMMARY OF THE INVENTION

[0017] The invention is preferably directed to gas-operated automatic machineguns, as typified by the M249 Light Support Weapon (as described in Field Manual FM23-14, which forms a basis for the preamble of claim 1), that are adapted to fire reduced-training ammunition as represented by United States Patent No. 5,359,937.

[0018] According to the invention a feed tray for supplying belt ammunition cartridges to an automatic firearm is provided that comprises all the features of independent claim 1. Optionally, the feed lip may be carried by an insert that is coupled to the feed tray, as by attachment to the forward ammunition containment side wall. Additional features are presented independent claims 2-6.

[0019] In accordance with dependent claim 3 a training cartridge guide surface is located along the inner side of the forward containment wall to reduce the distance between said containment walls to substantially the length of training ammunition cartridges to be passed through said tray for firing, which cartridges are shorter that standard ammunition in their length. This training cartridge guide surface may be provided by a thickened forward ammunition containment wall as an integral part of such wall; or it may be provided by an insert coupled to such wall, as by fasteners, welding or an interfitting shape that allows the insert to engage with such wall.

[0020] As an example of an interfitting shape the insert may include a wall portion with a groove positioned and dimensioned to receive and interfit with the upper edge of the forward containment wall to fix the insert in place on the feed tray.

[0021] Optionally, such insert may carry the feed lip for positioning above the loading port orifice along the forward containment wall, outwardly from the tray support surface, whereby ammunition being fed through such tray and outwardly through the loading port orifice will be guided in its advancement through said orifice by the feed lip.

[0022] The foregoing summarizes the principal features of the invention and some of its optional aspects. The invention may be further understood by the description of the preferred embodiments, in conjunction with the drawings, which now follow.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023]
DESCRIPTION OF THE PREFERRED EMBODIMENT

[0024] Figure 1 is the top view of a service feed tray 1 normally mounted on an FN Minimi machinegun or US M249 Light Support Weapon with a belt of service 5.56 mm ball ammunition 2 being fed through it over the tray support surface 1A, by service links 3. Forward 4B and rearward 4C ammunition containment side walls are mounted along opposite sides of the tray support surface 1A. When each cartridge 2 arrives above loading port 4 it is removed from its link 3 by the weapon’s bolt (not shown) and pulled downwards through loading port 4. Links 3 are discarded to the right of the feed tray 1. For clarity, there is no round of ammunition in the loading port, nor are empty links shown to extend over and beyond the loading port as they would normally do during firing. Figure 2 illustrates the structure of service feed tray 1 in a three-dimensional view highlighting loading port 4, exist orifice 4A and side wall 4B.

[0025] Figure 3 is a side view cross-section of service feed tray 1 in a three-dimensional view highlighting loading port 4, exist orifice 4A and side wall 4B.
feed tray 1 of Figures 1 and 2 as assembled in a service Minimi or M249 machinegun (not shown) with a service cartridge 2 positioned directly above loading port 4 (better seen in Figures 1 and 2). Service bolt/bolt carrier assembly 8, service bolt carrier 9, a service 5.56 mm cartridge 2 in said service feed tray 1, service barrel extension 6 containing feed ramp 5 and service barrel 7 complete the assembly. Service cartridge 2 is shown in feed tray 1 occupying substantially the distance between containment walls 4B, 4C just before being picked up by service bolt 10 after the weapon has been fired.

[0026]  Figure 4 is the same as Figure 3 except that service cartridge 2 has now been moved slightly forward by service bolt 10, as the firing cycle progresses. Service projectile 2A of service cartridge 2 has cleanly passed through exit orifice 4A of service feed tray 1 to enter feed ramp 5 of service barrel extension 6. Figures 4 through 6 depict the continued progress of service cartridge 2 through feed ramp 5 and service barrel extension 6 until properly chambered in service barrel with service bolt 10 in its forward most position ready for firing.

[0027]  Figure 7 is the same as Figure 3 except that service cartridge 2 has been replaced in service feed tray 1 by a 5.56 mm reduced energy training cartridge 11, as represented by United States Patent No. 5,359,937. In order to fire such training ammunition in weapons such as the FN Minimi or the US M249 machineguns, it is necessary to convert the weapon to pure blow back action. This is done by uncoupling the locking mechanism that holds the service bolt/bolt carrier assembly 8 to the service barrel 7 and disconnecting the gas recoil system (not shown). Thus, the assembly of Figure 7 comprises training bolt/bolt carrier assembly 14, training bolt carrier 15, training bolt 16 and training pin 17.

[0028]  In this configuration, however, the distance "A" between the tip of training projectile 12 and side wall 5B of service feed tray 1 is appreciably greater than the similar distance "B" between the tip of the service projectile 2A and said side wall 4B of said feed tray 1 in Figure 3. There is, therefore, freedom for training cartridge 11 to skew somewhat after being removed from service link 3. As a result, when training bolt 16 picks up training cartridge 11, said training cartridge 11 frequently does not pass cleanly through exit orifice 4A, but rather catches on its edge 4B as depicted in Figure 8. This results in a weapon jam, as illustrated in Figure 9.

[0029]  Figure 10- shows a training insert 18 of the invention comprising feed lip 18A, curved wall 18B and straight wall 18C, the tray-side portion of which serves as a training cartridge guide surface 18D. The shape of said training insert 18 is such that curved wall 18B and straight wall 18C fit snugly against the inside of side wall 4B of service feed tray 1 and feed lip 18A extends outwardly and downwardly through exit orifice 4A as depicted in Figure 10A. Training insert 18 may be permanently attached to service feed tray 1 in a variety of mechanical ways to form training feed tray 19, eg as by screws, bolts or the like. The preferred method of this invention is to weld the two pieces together. Insert 18 may also be extended forwardly along a portion of its top surface and be slotted on the underside of the extension to fit over containment wall 4B as described further below. Or it may be integrally formed with the feed tray 1 to provide the training cartridge guide surface 18D. Figure 11 is the same as Figure 1 except that service cartridges 2 have been replaced by training cartridges 11 and service feed tray 1 has been replaced by training feed tray 19. In this configuration, there is no longer any space between the tip of training projectile 12 and side wall 18C of training insert 18 for training cartridge 11 to move unduly. In addition, feed lip 18A offsets the difficulty of the shorter training cartridge 11 to reach feed ramp 5 by bridging the gap between exist orifice 4A and the entrance to said feed ramp 5, as illustrated in Figure 12.

[0030]  Figure 12 is the same as Figure 7 except that training feed tray 19 has replaced service feed tray 1. The presence of training insert 18 eliminates the possibility of excess movement of training cartridge by reducing the distance between the tip of training projectile 12 and straight side wall 18C of training insert 18 to the minimum required for proper feeding of the linked ammunition. That is, distance "C" of Figure 12 for the firing of training ammunition is essentially the same as distance "B" of Figure 3 for the firing of service ammunition. This means that training cartridge 11 will pass unimpeded through exit orifice 4A of training feed tray 19.

[0031]  Once safely through exit orifice 4A, however, the tip of training projectile 12 is too far away from the entrance to feed ramp 5 of service barrel extension 6 to ensure reliable chambering without the presence of feed lip 18A of training insert 18. As shown in Figure 13, said feed lip 18A guides training cartridge 11 so that training projectile 12 cleanly enters feed ramp 5. Figures 14 and 15 depict the continued progress of training cartridge 11 through feed ramp 5 and service barrel extension 6 until properly chambered in service barrel 7 with training bolt 19 in its forward most position ready for firing.

[0032]  It is, therefore, an objective of this invention to encourage normal feeding of training cartridges 11 when fired in FN Minimi or US M249 machineguns by using training feed tray 19 in place of service feed tray 1. Preferably, said training feed tray 19 becomes an integral part of the conversion kit that permits said training cartridges to be fired reliably from said Minimi and M249 machineguns. Other components of the conversion kit include, but are not restricted to, training bolt/bolt carrier assembly 14, training bolt carrier 15, training bolt 16 and training pin 17.

[0033]  Figure 16 is similar to Figure 11 except the linked ammunition, which should consist only of training cartridges 11, inadvertently also contains one service cartridge 2. If service cartridge 2 were to chamber and be fired during a force-on-force training session, for example, it could inflict serious damage on unsuspecting targets, including human beings. As can be seen in Figure 16, this cannot occur because the presence of train-
ing insert 18 in training feed tray 19 blocks passage of service cartridge 2, such blockage leading to subsequent jamming of the weapon. Such a blockage will alert the user to the possibility of other service cartridges being present as well as demanding a review of the safety procedures associated with the preparation of ammunition belts containing training ammunition.

[0034] It is, therefore, a second objective of this invention to provide a live-fire exclusion mechanism during training operations with reduced-energy cartridges 11. The presence of the training feed tray 19 positively prevents a service cartridge 2 from even commencing the chambering process, hence rendering the converted Minimi or M249 machineguns safe to use during training sessions.

[0035] Figure 12 is the same as Figure 7 except that training feed tray 19 has replaced service feed tray 1. The presence of training insert 18 eliminates the possibility of excess movement of training cartridge by reducing the distance between the tip of training projectile 12 and straight side wall 18C of training insert 18 to the minimum required for proper feeding of the linked ammunition. That is, distance "C" of Figure 12 for the firing of training ammunition is essentially the same as distance "B" of Figure 3 for the firing of service ammunition. This means that training cartridge 11 will pass unimpeded through exit orifice 4A of training feed tray 19.

[0036] Once safely through exit orifice 4A, however, the tip of training projectile 12 is too far away from the entrance to feed ramp 3 of service barrel extension 6 to ensure reliable chambering without the presence of feed lip 18A of training insert 18. As shown in Figure 13, said feed lip 18A guides training cartridge 11 so that training projectile 12 cleanly enters feed ramp 5. Figures 14 and 15 depict the continued progress of training cartridge 11 through feed ramp 5 and service barrel extension 6 until properly chambered in service barrel 7 with training bolt 19 in its forward most position ready for firing.

[0037] It is, therefore, an objective of this invention to encourage normal feeding of training cartridges 11 when fired in FN Minimi or US M249 machineguns by using training feed tray 19 in place of service feed tray 1. Thus, said training feed tray 19 becomes an integral part of the conversion kit that permits said training cartridges to be fired reliably from said Minimi and M249 machineguns. Other components of the conversion kit include, but are not restricted to, training bolt/bolt carrier assembly 14, training bolt carrier 15, training bolt 16 and training pin 17.

[0038] Figure 16 is a similar to Figure 11 except the linked ammunition, which should consist only of training cartridges 11, inadvertently also contains one service cartridge 2. If service cartridge 2 were to chamber and be fired during a force-on-force training session, for example, it could inflict serious damage on unsuspecting targets, including human beings. As can be seen in Figure 16, this cannot occur because the presence of training insert 18 in training feed tray 19 blocks passage of service cartridge 2, such blockage leading to subsequent jamming of the weapon. Such a blockage will alert the user to the possibility of other service cartridges being present as well as demanding a review of the safety procedures associated with the preparation of ammunition belts containing training ammunition.

[0039] It is, therefore, a second objective of this invention to provide a live-fire exclusion mechanism during training operations with reduced-energy cartridges 11. The presence of the training feed tray 19 positively prevents a service cartridge 2 from even commencing the chambering process, hence rendering the converted Minimi or M249 machineguns safe to use during training sessions.

[0040] Figures 17 and 18 depict a further variant of the invention wherein the insert 18 has a widened curved portion 18B which has a slot 20 on its underside surface. This slot 20 fits over the curved portion 21 of the front containment wall 4B and holds the insert 18 in place.

[0041] Figure 19 shows a monolithic training tray 22 with the training cartridge guide surface 18D formed as part of the tray 22 itself.

[0042] Training feed tray 19 of Figure 16 has been tested successfully many times in an M249 machinegun converted to fire reduced-energy training cartridges as represented by U.S. Patent No. 5,359,937. It is also adaptable to other similar weapons, including the FN Minimi.

Claims

1. A feed tray (19) for supplying belt ammunition training cartridges (11) to an automatic firearm suited to fire standard cartridges of standard length comprising:

(a) a tray support surface
(b) forward (4B) and rearward ammunition containment side walls mounted along opposite sides of said tray support surface
(c) a loading port orifice (4A) at the end of the forward containment wall through which cartridges may be advanced

characterized by a feed lip (18A) with a guide surface positioned above the loading port orifice along the forward containment wall which feed lip protrudes outwardly from the forward containment wall to downwardly guide training ammunition passing through the loading port orifice, whereby training ammunition of shorter length than standard length ammunition being fed through such tray and outwardly through the loading port orifice is guided in its advancement through said orifice by the feed lip.

2. A feed tray as in claim 1 wherein the forward containment wall (4B) has an outer side characterized in that the guide surface of the feed lip (18A) extends from the outer side of the forward containment wall
to provide an extended guide surface.

3. A feed tray as in claims 1 or 2 characterized by a training cartridge guide surface (18D) located along the inner side of the forward containment wall (4B) to reduce the distance between said containment walls to substantially the length of training ammunition cartridges to be passed through said tray for firing and thereby exclude the loading of standard length cartridges.

4. A tray as in claim 3 characterized in that the training cartridge guide surface is provided by an insert (18) that is detachably attached in place on the tray.

5. A tray as in claim 4 characterized by the forward ammunition containment side wall having an upper edge and by the insert comprising a groove (20) positioned and dimensioned to receive the upper edge of said containment side wall to fix the insert in place on the feed tray.

6. A tray as in Claim 5 characterized by the feed lip being carried by and supported in its position by the insert.

Patentansprüche

1. Lieferträger (19) für Gürtelmunitions-Übungshülsen (11) zur Abgabe an eine automatische Schußwaffe, die geeignet ist, Standardgeschosshülsen üblicher Länge zu verschießen, mit

   a) einer Lieferträgeroberfläche,
   b) vorderen (48) und hinteren Munitionskammer-Seitenwänden, die längs entgegengesetzter Seiten der Lieferträgeroberfläche angeordnet sind,
   c) eine Ladekanalöffnung (41) am Ende der vorderen Kammerwand, durch die hindurch die Geschosshülsen vorrücken können,

gekennzeichnet durch eine Lieferlippe (18A) mit einer Führungsoberfläche, die über der Ladekanalöffnung längs der vorderen Kammerwand angeordnet sind und von der vorderen Kammerwand nach außen ragt, um die Übungsmunition nach unten zu führen, die durch die Ladekanalöffnung läuft, wodurch Übungsmunition kürzerer Länge als Übungsmunition mit Standardlängen-Geschosshülsen auszuschließen.

2. Lieferträger nach Anspruch 1, wobei die vordere Kammerwand (48) eine Außenseite aufweist, durch gekennzeichnet, daß die Führungsoberfläche der Lieferlippe (18A) sich von der Außenseite der vorderen Kammerwand zu einer verlängerten Führungsoberfläche erstreckt.

3. Lieferträger nach Anspruch 1 oder 2, gekennzeichnet durch eine Übungsgeschosß-Führungsoberfläche (18D), die entlang der Innenseite der vorderen Kammerwand (48) angeordnet ist, um den Abstand zwischen den Kammerwänden auf im wesentlichen die Länge der Übungsmunitions-Geschosshülsen zu verringern, die durch den Träger zum Abschießen laufen und dadurch das Laden der Standardlängen-Geschosshülsen auszuschließen.

4. Träger nach Anspruch 3, dadurch gekennzeichnet, daß die Übungsgeschosshülsen-Führungsoberfläche mit einem Einsatz (18) versehen ist, der auf dem Träger entfernt angebracht ist.

5. Träger nach Anspruch 4, dadurch gekennzeichnet, daß die vorderen Munitionskammer-Seitenwand einen oberen Rand aufweist und daß der Einsatz mit einer Nut (20) versehen und so angeordnet und bemessen ist, daß er den oberen Rand der Kammerseitenwand aufnimmt, um den Einsatz an Ort und Stelle auf dem Lieferträger zu fixieren.

6. Träger nach Anspruch 5, dadurch gekennzeichnet, daß die Lieferlippe in ihrer Stellung durch den Einsatz getragen und gestützt wird.

Revendications

1. Plateau d’alimentation (19) pour alimenter en cartouches (11) de munitions d’entraînement sur bande, une arme à feu automate appropriée pour tirer des cartouches standards de longueur standard, comprenant :

   (a) une surface de support de plateau ;
   (b) des parois latérales de confinement de munitions, avant (4B) et arrière, montées le long de côtés opposés de ladite surface de support de plateau ;
   (c) un orifice (4A) d’ouverture de chargement à l’extrémité de la paroi de confinement avant à travers lequel les cartouches peuvent être avancées ;

   caractérisé par une lèvre d’alimentation (18A) ayant une surface de guidage positionnée au-dessus de l’orifice d’ouverture de chargement le long de la paroi de confinement avant, laquelle lèvre d’alimentation fait saillie vers l’extérieur à partir de la paroi de confinement avant pour guider vers le bas les munitions d’entraînement passant à travers l’orifice d’ouverture de chargement, ce par quoi des muni-
tions d’entraînement de longueur plus courte que les munitions de longueur standard qui sont introduites à travers un tel plateau et vers l’extérieur à travers l’orifice d’ouverture de chargement sont guidées dans leur avance à travers ledit orifice par la lèvre d’alimentation.

2. Plateau d’alimentation selon la revendication 1, dans lequel la paroi de confinement avant (4B) a un côté externe, caractérisé par le fait que la surface de guidage de la lèvre d’alimentation (18A) s’étend à partir du côté externe de la paroi de confinement avant pour fournir une surface de guidage étendue.

3. Plateau d’alimentation selon l’une des revendications 1 ou 2, caractérisé par une surface de guidage (18D) de cartouches d’entraînement, située le long du côté interne de la paroi de confinement avant (4B) pour réduire la distance entre lesdites parois de confinement à sensiblement la longueur de cartouches de munitions d’entraînement devant être amenées à passer à travers ledit plateau pour la mise à feu et par là exclure le chargement de cartouches de longueur standard.

4. Plateau selon la revendication 3, caractérisé par le fait que la surface de guidage des cartouches d’entraînement est fournie par un insert (18) qui est attaché de manière détachable en place sur le plateau.

5. Plateau selon le revendication 4, caractérisé par le fait que la paroi latérale avant de confinement des munitions a une bordure supérieure et par le fait que l’insert comprend une rainure (20) positionnée et dimensionnée pour recevoir la bordure supérieure de ladite paroi latérale de confinement pour fixer l’insert en place sur le plateau d’alimentation.

6. Plateau selon la revendication 5, caractérisé par le fait que la lèvre d’alimentation est portée par et supportée dans sa position par l’insert.