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(54) **Ammunition retainer apparatus for an ammunition box or magazine for linked ammunition**

Munitionshaltevorrichtung für eine Munitionskiste oder ein Munitionsmagazin für verbundene Munition

Appareil de rétention de munitions pour boîte ou chargeur de munitions pour munitions liées

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Description

Technical field

[0001] The invention relates to an apparatus for keeping linked ammunitions deposited in a box or magazine with bays separated by divider walls from flowing from one bay to another to reduce or avoid the risk of possible entangling or jamming of the ammunition.

Background of the invention

[0002] Ammunition boxes are used to store large quantities of ammunition to supply machine guns and other firearms with ammunition. The ammunition is usually individual bullets that are joined together with links forming a continuous belt of ammunition and then folded into ammunition boxes from where the linked ammunition is fed to the weapon.

[0003] A conventional ammunition box is most often box-shaped where the width is narrow compared to the length and height. The ammunition box may also be divided into several smaller chambers or bays by divider walls, the divider walls herein referred to as partitions or baffles, where each chamber stores a certain amount of the total linked ammunition. The width of the ammunition box or chambers is wide enough to receive the width of the linked ammunition. In this patent application it is referred to ammunition boxes with divider walls, baffles or partitions, and chambers or bays.

[0004] When pulling linked ammunition out of a horizontally leveled and/or stationary ammunition box during firing the conventional ammunition boxes usually work as intended. But once the ammunition box is tilted or exposed to vibration, which are two common scenarios when mounted on a moving vehicle, unless a means for retaining the ammunition in the box where it was placed on filling of the box, the linked ammunition starts to move from one chamber to another within the ammunition box causing interlocking and jamming of ammunition and subsequent loss of weapons fire. The reason for the interlocking and jamming is the non-symmetric design of the bullets. The bullets have a pointed projectile end and a wider powder cartridge base. When the linked ammunition starts to move from one chamber to another within the ammunition box the pointed projectile end has a tendency to get entangled between the bullets in the linked ammunition belt that is being fed to the weapon or fall down on top of the other ammunition already in the chamber in such a way that it causes interlocking and jamming.

[0005] This problem is especially apparent when the ammunition box is tilted causing a negative or positive pitch. During pitch the linked ammunition has a tendency to fall towards the lowest point in the ammunition box due to gravity, thereby falling from one chamber to another which can cause the already mentioned interlocking and ammunition jamming. Another problem is the siphon effect that will occur when one chamber is emptied during

firing and the level of linked ammunition gets below the neighboring chamber's level. When this occurs the linked ammunition will start to move from one chamber to the next due to the siphon effect which causes interlocking and ammunition jamming, unless a means for retaining the ammunition in the box in such a way as to preventing the siphon effect to occur. The siphon effect problem is also present on horizontally leveled and/or stationary ammunition boxes.

[0006] The main goal of the invention has been to stop the undesired effect of linked ammunition moving from one chamber to another within the ammunition box and keep it in place like it was originally loaded into an ammunition box which does not include a means for retaining the ammunition in the box to prevent it from moving from one chamber to another.

[0007] European patent EP0430655B1 discloses a magazine for storing a belt of ammunition, the magazine comprising a box like container having a plurality of spaced partitions to subdivide the interior of the container into bays, each partition having an upper edge, and an anti-siphon member supported on the upper edge of each of the spaced partitions. Each anti-siphon member is supported on said upper edge of its respective partition for limited pivotal movement. Each member has an integral projecting finger movable between retracted and extended positions relative to the peripheral surface of rollers mounted in positions above the edges. Upon withdrawal of an ammunition belt loaded in the container with multiply folded serpentine portions thereof deposited in each bay and with interconnecting loop portions thereof draped over the rollers from one bay to an adjacent bay, the fingers assume the retracted positions to permit movement of the belt out of the bays directly to an exit port of the container and assume the extended positions engaging the interconnecting loop portions of the ammunition belt to prevent syphoning movements thereof into the bays as the serpentine belt portions are being withdrawn therefrom to the exit port.

[0008] US patent no. 2,710,561 discloses in an ammunition box having partitions forming a series of open compartments wherein a cartridge belt may be stored by looping the belt into the compartments over the partitions, a pawl connected to an upper end of the partition for preventing retrograde movement of the belt with respect to the compartment. The pawl is pivotally connected to the partition so as to allow limited pivotal movement of the pawl from a rearwardly projected position to a generally in-line position with respect to the partition wall for allowing the belt to pass thereover, towards an outlet.

[0009] US 4,974,490 discloses a magazine arranged for bidirectional withdrawal of an ammunition belt stored therein. The magazine is provided with anti-syphon members, pivotally mounted in pairs for limited pivotal movement atop upper edges of partitions of a multibay magazine, which operate in conjunction with drag-reducing rollers to prevent spurious syphoning movements of an ammunition belt from one bay to an adjacent bay as the

belt is being withdrawn from the latter to a magazine exit port. Each anti-syphon member has an integral projecting finger pivotally movable between retracted and extended positions relative to a peripheral surface of an adjacent one of the rollers.

[0010] US 2,811,084 discloses an ammunition magazine for storing a continuous belt of rounds interconnected by metal clips in open-topped cells established in the magazine space by pairs of separator ribs attached to facing side walls of the magazine. The belt runs from one cell, over an upper end of a pair of separator ribs, and into an adjacent cell. To prevent rounds forming the respective crest portion of the belt from sliding in train either upwardly over the pair of separator ribs towards the outlet or laterally, the upper end of each separator rib has a belt-engaging means comprising a fixed projection extending generally vertically as a continuation of the separator rib, and an arcuate guide member connected with said projection and spaced laterally therefrom, said guide member extending arcuately from a point beyond the end of that side of the separator ribs further from the outlet, then over said projection and in the direction of said outlet.

[0011] Other ammunition boxes or magazines with partitions or means for controlling the position or deployment of ammunition are disclosed in US4009638, US4610191, US4393746, US3461774, US2874615, US4213376, US4972758, US2452545, US6164180, US4433609 and US3580131.

[0012] By designing ammunition boxes with divider walls and baffles, thereby dividing the ammunition box into several smaller chambers or bays, and then placing a simpler and more robust ammunition retainer device on top of each baffle, the present invention provides a further solution to the problems related to linked ammunition moving from one chamber to another within the ammunition box, thereby reducing ammunition jamming often caused by tilt and vibration of the ammunition box. The siphon effect problem has also been solved.

[0013] Brief description of the invention.

[0014] The invention provides an ammunition retainer apparatus for reducing the risk of jamming or wedging of ammunition in an ammunition box or magazine having spaced partitions to subdivide its interior into a plurality of bays, the features of which are recited in the accompanying patent claims 1.

[0015] Further advantageous features of the ammunition retainer apparatus of the invention are recited in the accompanying patent claims 2 through 9.

[0016] The invention provides an ammunition box or magazine comprising the ammunition retainer, the features of which ammunition box or magazine are recited in the accompanying patent claim 10.

[0017] The invention provides a loaded ammunition box or magazine comprising the ammunition retainer, the features of which loaded ammunition box or magazine are recited in the accompanying patent claim 11.

[0018] Further advantageous features of the loaded

ammunition box or magazine comprising the ammunition retainer are recited in the accompanying patent claims 12 through 15.

5 Detailed description of the invention.

[0019] The invention will now be explained in detail, by way of example and with reference to the accompanying drawings, wherein

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fig. 1 is a front view illustration of linked ammunition, fig. 2 is a schematic cross section view illustration of an ammunition box or magazine filled with linked ammunition,

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fig. 3 is a first perspective view illustration of an apparatus according to the present invention, fig. 4 is a second perspective view illustration of the apparatus according to the present invention illustrated in figure 2,

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fig. 5 is a perspective view of linked ammunition positioned on a retainer bracket according to the invention,

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fig. 6 is a schematic cross section view illustration of an exemplary filled ammunition box or magazine comprising the apparatus of the invention illustrated in figures 3 and 4,

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fig. 7 is a top view illustration of linked ammunition positioned on a retainer bracket according to the invention in an ammunition box or magazine comprising the apparatus of the invention illustrated in figures 3 and 4,

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fig. 8 is a side view schematic detailed illustration of the operation of the apparatus of the invention comprised in the exemplary ammunition box or magazine illustrated in figure 4,

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fig. 9 is a first perspective view illustration of an exemplary ammunition box or magazine, fig. 10 is a detailed view of the first perspective view illustration of figure 9 of an exemplary ammunition box or magazine,

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fig. 11 is a second perspective view illustration of an exemplary ammunition box or magazine, and fig. 12 is a detailed view of the second perspective view illustration of figure 11 of an exemplary ammunition box or magazine,

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[0020] Figure 1 illustrates front in a view drawing, a short section of linked ammunition, hereinafter referred to as ammunition 6. The ammunition 6 comprises a plurality of cartridges linked together, such as for example by way of a plurality of clips 5. Each clip has first grip part and a wider second grip part. In the second grip part is an opening, adapted to the outer shape of the first grip part. The first grip part is adapted to clip onto and hold a central part of a first cartridge, while the second grip part is adapted to clip onto and hold parts of a corresponding second cartridge located to the sides of the central part. Thus, the central part of the second cartridge is left free

for it to be held by a first grip part of a corresponding next clip, to form a belt of linked cartridges.

[0021] Figure 2 is an illustrates in a schematic cross section view a typical well-known ammunition box or magazine filled with linked ammunition 6, the linked ammunition 6 forming a continuous belt located in bays in the ammunition box or magazine container formed by baffles 3. The linked ammunition is available to be pulled out of the container at an exit of the ammunition box or magazine container, illustrated by the arrow on the right hand side of the drawing. For continuity of the belt between bays, the linked ammunition is run over upper edges 1 of the baffles 3. The typical well-known ammunition box or magazine illustrated in figure 2 does not include means to restrict or impede movement or sliding of the belt of linked ammunition 6 over the upper edges 1 of the baffles 3.

[0022] In figures 3 and 4 is illustrated an advantageous ammunition retainer bracket 10 embodiment of the apparatus of the invention. The retainer bracket 10 comprises an elongated body having first and second ends 11 and 13, respectively. The retainer bracket 10 comprises sets of spaced tabs. The sets of tabs are a first set of central tabs 12a and 12b, located at a first position between the first and second ends, and a second set of end tabs 14a and 14b, located at the second end. Central tab 12a and end tab 14a are located on a first side of the elongated body to constitute a first pair of tabs, and central tab 12b and end tab 14b are located on a second side of the elongated body to constitute a second pair of tabs. The spacing of the central tabs 12 and the end tabs 14 is adapted so as to allow the second grip part of clips 5 to be accommodated between them, while, as illustrated in part in figures 5 and 7, allowing parts of cartridges located outside the second grip part of clips 5 to rest on the tabs when the belt of linked ammunition 6 is placed over the retainer bracket, and the tabs are dimensioned for extending into a space between adjacent ones of the cartridges forming the belt of linked ammunition 6.

[0023] In an advantageous embodiment of the invention, tabs 12a, 12b, 14a, and 14b are curved or shaped in conformity with a curvature of a circular cross section of the part of the cartridges of the belt of linked ammunition 6 that the tabs are to provide a rest for. The curved shape, however, could be replaced by other shapes, provided that the shape allows the belt of linked ammunition to be pulled off the upper edge 1 of the baffle 3 of the ammunition box or magazine container, as illustrated schematically in figure 8.

[0024] Figure 6 illustrates in a cross section view schematically the ammunition box or magazine container of figure 2 provided with retainer brackets 10 according to the invention at the upper edges 1 of the baffles 3, and a belt of linked ammunition filled into the bays between the baffles in the shape of a serpentine, and run over the upper edges 1 to form continuity of the belt as it runs from one bay to the next.

[0025] Advantageously, the part of the elongated body

of the retainer bracket keeping the first pair of tabs on one side spaced from the second pair of tabs, would generally be shaped as a half-pipe, and the tabs extending from the body of the retainer bracket 10 such that the end of the tabs are at a distance of approximately between one half and two thirds of the diameter of the cartridge away from the body. Accordingly, in an embodiment of the invention designed to be employed in an ammunition box or magazine container with baffles adapted for 7.62mm (0.30 cal) linked ammunition using clips 5 that link the cartridges with spacings of about 3mm, the diameter of the half-pipe body should be about 18mm, the first pair of tabs should have a separation from the other pair of tabs of about 38mm measured on the circumference of the body, the tabs should protrude on respective radii of the half pipe shape to a distance of about 5mm, the tabs of each pair of tabs should have a separation of about 28mm, and the tabs should have a cross section of about 2mm by 6mm. For other types of linked ammunition, such as for example for 5.56mm (0.22 cal) linked ammunition, the dimensions of the retainer bracket are scaled accordingly.

[0026] In an advantageous embodiment of the invention, the tabs are located on the circumference of the body, and also shaped and dimensioned such that when the belt of linked ammunition is placed onto and partly folded around the retainer bracket, a group of three cartridges are accommodated above and between the first and second pairs of tabs, while the tabs are brought into close contact with the next cartridges on either side of the group. The close contact will insure an improved stability of the linked ammunition. In the aforementioned close contact arrangement, one could take advantage of the resilience of the clips 5, to obtain a "soft" locking of the cartridges to the protruding tabs of the retainer bracket of the invention. The illustration of figure 7 shows a first pair of tabs 12a and 14a dimensioned to closely fit the spacing between the cartridges of the belt of linked ammunition, and also spaced from the second pair of tabs 12b and 14b (not visible) along the circumference of the body, and also angled away from a radius of the body, such that a slight force is applied to the cartridge located below the tab to keep the cartridge in place as shown. The same is illustrated in the schematic side view of figure 8, which also illustrates how the linked ammunition would be pulled of the retainer bracket 10 by the pull symbolized by the arrow, in a rolling movement about the adjacent cartridge next to the cartridge located immediately below the tab, as one bay is about to be emptied and ammunition is about to be supplied from the neighbouring bay.

[0027] To optimize the performance of the retainer bracket 10 of the invention, filling of an ammunition box or magazine container 2 employing the retainer brackets 10 of the invention at the upper edges of partitions 3 should be as illustrated in figure 6, with the belt of linked ammunition 6 filling the bays in a serpentine fashion with start from the bottom of the bay, the uppermost layer of

the serpentine ending next to and below the upper edge 1 of the partition 3 to which the retainer bracket is attached, and then to continue over the retainer bracket, along the partition 3 and down to the bottom of the next bay into which the belt of linked ammunition is further disposed to fill that next bay in a serpentine like fashion.

[0028] The apparatus of invention can be seen as employed in the exemplary ammunition boxes depicted in figures 9, 10, 11 and 12. The ammunition boxes include at least one section including the ammunition retainer bracket of the invention, adapted for a 7.62mm (0.30 cal) bullet, such as illustrated initially in figure 1, although that caliber is employed in this disclosure for illustration purpose only, as the ammunition retainer of the invention can be adapted for use on different calibers.

[0029] The ammunition retainer of the invention stops the linked ammunition from moving from one chamber to another when the ammunition box is exposed to tilt and/or vibration, and also eliminates the siphon effect. This is done by actually locking the linked ammunition belt in place at the top of each baffle with the ammunition retainer of the invention, and still be able to freely pull the linked ammunition out of the ammunition box, as the ammunition retainer of the invention is not hampering the ammunition feeding or flow. The typical ammunition boxes depicted in figures 9, 10, 11 and 12 are particularly well suited for being provided with the ammunition retainer of the invention. In the illustrations of figures 9, 10, 11 and 12, ammunition retainers 10 according to the invention are shown on top of baffles 3, which combined with a further divider wall, shown as the vertical divider wall 7, divides the ammunition box into ten chambers 4, where chambers on one side of the divider wall 7 is reserved for 7.62mm (0.30 cal) linked ammunition, and chambers on the other side of the divider wall 7 is reserved for 5.56mm (0.22 cal) linked ammunition. The ammunition retainer according to the invention is present on top of the baffles in both sides of the ammunition box.

[0030] There are two significant aspects to consider in respect embodiments of the present invention, although also in respect of the general inventive concept of the present invention. These aspects have to some extent been indicated in the disclosure above, and will now be further elucidated by the following discussion.

[0031] A first aspect to be discussed herein, is that the ammunition is linked. The linking member, herein also referred to as the clip 5, that keeps the individual cartridges joined together is designed in such a manner that the cartridges have a little gap between them, as can be seen from the illustrations of figures 1, 5 and 7. This gap is taken into consideration in the design of the ammunition retainer apparatus of the invention. The second aspect to be discussed, is the way in which the ammunition box is to filled or loaded to take further advantage of the stabilizing properties of the ammunition retainer apparatus of the present invention.

[0032] In respect of the first aspect, when the ammunition belt is folded over a baffle provided with the am-

munition retainer of the invention, it gets locked in place at the top of the baffle. This is accomplished by the design of the inventive ammunition retainer apparatus proposed herein, where four tabs, two on each side, are located such that each of two on the same side will come into place between two adjacent cartridges in the linked ammunition belt. In respect of this first aspect, reference is made to figures 7 and 8, teaching how these tabs are designed such that they fit into the space between two adjacent cartridges, while not interfering with the linking member that joins adjacent cartridges together. In this way, the linked ammunition belt is allowed to rest on the tabs of the ammunition retainer of the invention, regardless of tilt or vibration on the ammunition box, or the siphon effect. The ammunition belt is not allowed to move, and the ammunition will stay in the chamber into which it was originally loaded, until it is pulled out of the box in a normal fashion. Thereby, the apparatus of the invention is eliminating the possibility of ammunition moving from one chamber to another, which is known to causing interlinking and, hence, ammunition jamming.

[0033] In respect of the second aspect, to optimize the exploitation of the advantageous effect of employing the ammunition retainer apparatus of the invention in an ammunition box or magazine with internal baffles, the ammunition box should be loaded or filled in a certain way. With regard to this second aspect, particular reference is made to figure 6, for an illustration of an example of an advantageous loading pattern. The linked ammunition should to be loaded in such a way that one chamber is filled at a time, then the ammunition belt is folded over the baffle which is provided with an ammunition retainer of the invention on top for "locking" the ammunition belt in place. In the ammunition box fully loaded or filled as illustrated in figure 6, the continuation of the belt of linked ammunition is brought back over the ammunition resting of the ammunition retainers on top of the baffles and to an ammunition box exit which should be located over or in the vicinity of the upper part of the first bay, thus allowing the belt to continue to be fed to the weapon. With the ammunition box or magazine container loaded as described herein, when the belt of linked ammunition is pulled out of the container, it is pulled over the underlying layer of ammunition, to eventually roll over the ammunition retainer of the invention when a bay is about to be emptied, thereby staying clear of the tabs. The operation is illustrated in further detail in the schematic side view drawing of figure 8, where the "tail" cartridge 6, that is, the last cartridge of the ammunition belt in the bay to the left of the baffle 3, gets lifted away from the tabs on the left hand side of the ammunition retainers 10 tabs, to eventually roll over the baffle 3. The rolling movement is achieved by retention of the cartridges to the right hand side of the "tail" cartridge 6 provided by the tabs on the right hand side or the ammunition retainer 10, which tabs provide a rest for the neighbouring cartridges. Thus, the "tail" 6 of the linked ammunition belt will follow the path indicated by the curved arrow line, to be lifted, upwards

and to the left, and clear of underlying ammunition as well as clear of the tabs of the ammunition retainer of the invention.

[0034] As discussed herein, for optimization of the performance of the ammunition retainer apparatus of the invention, attention should be paid to obtain the best interaction between the ammunition retainer and dimensional characteristics of the belt of linked cartridges, to ensure good "locking" of the belt as it is in place over the ammunition retainer, while balancing the retention force applied to the belt by the ammunition retainer of the invention to the force provided by the weapon or its associated ammunition drive means for pulling the ammunition from the ammunition box or magazine. In particular, the angle at which tabs protrude from the body, the length, width and thickness of the tabs, as well as the shapes of tabs are parameters that may be varied in the optimization of the ammunition retainer of the invention for different types of linked ammunition, different designs of ammunition boxes or magazines, and different types of weapons.

[0035] It should be noted, that although the invention has been disclosed herein by way of examples, of which some have proven to be highly advantageous for the specific types of ammunition used to illustrate the invention, the tabs on one side of the elongated body may be shaped differently from the tabs on the other side of the body. Different shaping of the various tabs may be found to be advantageous depending on the way or pattern in which the belt of linked ammunition is loaded in the ammunition box or magazine. As an example, when considering the loading pattern illustrated in figure 6, in conjunction with the unloading patterns indicated in figure 6 by the line towards the exit and the arrow indicating where and how the belt is pulled from the magazine to unload the ammunition, and the detail of operation depicted in figure 8 and explained above, the tabs on the side towards the bay which is first emptied could advantageously be angled, shaped and dimensioned in consideration of the direction in which the belt is running along the divider wall 3 to the bottom of the bay to the left of the wall and the direction of the lifting force applied to the "tail" for "unlocking" the belt from the ammunition retainer. The tabs on the right hand side of the body could be angled, shaped and dimensioned differently from the tabs on the opposite side of the body, as the ammunition belt to the right hand side of the ammunition retainer as illustrated by the example of figure 6 could approach the retainer from a different angle, and it should be taken into consideration that the belt of linked ammunition would be pulled more or less straight off the tabs without the rolling movement of the linked ammunition that is seen on the other side of the retainer.

[0036] In the illustrations and pictures ammunition with a 7.62mm (0.30 cal) caliber has been used for illustration purpose, but the Ammunition Retainer can be adapted to most ammunition calibers, link types and ammunition boxes where found suitable.

[0037] The ammunition retainer of the invention could be provided as a plurality of member, to be assembled to form the ammunition retainer disclosed herein. However, in an advantageous embodiment of the present invention, the ammunition retainer of the invention is produced as a single, unitary member, in that it may be cost effectively stamped from a sheet of metal, and even shaped during the stamping operation, or cast or molded in a single piece, thus requiring no further machining or other operation for it to be ready to be applied to or mounted on the ammunition box or magazine or to other element forming part of the ammunition box or magazine. The inventive ammunition retainer disclosed herein by way of example in the form of a separate bracket unit 10 to be mounted on the ammunition box or magazine or a part of an ammunition box or magazine is considered an advantageous embodiment in particular for applications for retrofitting existing designs of ammunition boxes or magazines, although the ammunition retainer of the invention is capable of being provided as an integral part of the ammunition box or magazine, or as an integral part of a baffle or other means of the ammunition box or magazine, such as means for providing the chambers or bays into which the linked ammunition could be loaded for loading of the ammunition container.

[0038] In an embodiment of the ammunition retainer of the invention, in case the ammunition retainer is adapted for retaining a plurality of cartridges between the first and second pairs of tabs, additional tabs are provided, such as for example a third set of tabs protruding from the body and located at a position along the circumference of the body between the first and second pairs of tabs. Conversely, in case the ammunition retainer is adapted for retaining one cartridge between the first and second pairs of tabs, further tabs may be arranged to at least one side of the first or second pairs of tabs.

[0039] In yet a further advantageous embodiment of the ammunition retainer apparatus of the invention, the tabs of a pair of tabs are positioned along the longitudinal direction of the elongated body so as to maintain cartridges "locked" in place by the ammunition retainer with the percussion cap proximal to a first side wall of the linked ammunition container, while maintaining a space between the pointed bullet end of the ammunition and a second side wall of the ammunition container located opposite to the first side wall of the ammunition container. Maintaining the "locked" ammunition in place by positioning the tabs as indicated herein, is effectively achieved by positioning the tabs as illustrated in figure 7, wherein the elongated body is fitable across the interior of the container in which the first and second side walls are separated by a distance that exceeds that overall length of the ammunition unit as measured from the percussion cap end to the bullet tip by about ten percent or more, thus allowing some free space between the bullet tip and its adjacent second container side wall, the end tab 14a to "lock" the cartridge at the percussion cap end is positioned at the end of the body to be located proximal to

the first container side wall, and the corresponding central tab 12a is positioned to have a side facing the end tab 14a located at the position of the "upper edge" of the clip 5 when the cartridge is in place on the ammunition retainer with the percussion cap immediately next to the second container side wall.

[0040] It should be noted that in an embodiment wherein the elongated body is shortened while the positions of the tabs are maintained, also the central tabs 12a, 12b could be termed "end tabs" 12a, 12b, as being located at a different end of the body, opposite to the end at which the end tabs 14a, 14b are located.

[0041] The tabs of the ammunition retainer of the invention may be provided resilience as suitable for maintaining the linked ammunition "locked" in position at the ammunition retainer, such as for example by use of a material having inherent resilient properties for the tab itself, or by attaching the tab to the body of the ammunition retainer by a section of resilient material. Optionally, one or more tabs may be shaped to provide resilience for advantageously locking the belt to the tab by way of the gap between adjacent ones of two cartridges of the belt of linked ammunition cartridges, such as for example by making the tab longer than shown in the accompanying drawings and then folding back an outer part of the tab to a shape and dimension that will allow it to be fit by some force into the gap between adjacent cartridges and in that position exerting by spring action of the folded back portion counteracting forces on both cartridges to increase friction for holding the cartridges "locked" to the tab, also in case of a belt of linked ammunition cartridges with considerable variations of dimensions of the gaps between cartridges.

[0042] The invention disclosed herein may be performed in a first method of providing an ammunition box or magazine with the functionality of the ammunition retainer disclosed above, in a second method of loading an ammunition box or magazine having the ammunition retainer disclosed above with a belt of linked ammunition starting from the bottom of a first bay via and over the ammunition retainer apparatus and on to a next bay adjacent to the first bay including loading the first and bays with linked ammunition in a serpentine like pattern and on to an exit of the box or magazine, or in a third method for unloading linked ammunition from a loaded magazine wherein ammunition is obtained by pulling linked ammunition from the loaded box or magazine via a path corresponding to the one taught by the illustrating arrow and its associated line in figure 6 and over the inventive ammunition retainer as taught by the illustration of figure 8 as the next bay is being emptied and ammunition then is supplied from the first bay.

Claims

1. An ammunition retainer bracket apparatus (10), placeable at a top of a divider wall (3) dividing an

interior space of an ammunition box or magazine (2) into first and second adjacently located bays, for carrying a part of a belt of linked ammunition cartridges (6) loaded into said first and second bays and continuously over the top of the divider wall (3), and for preventing the belt of linked ammunition from being siphoned by the belt itself between said first and second adjacently located bays, the ammunition retainer bracket apparatus (10) comprising, an elongated body having

- a) on a first side, a first pair of tabs (12a, 14a) rigidly attached to the body and protruding from the body in a first direction and
- b) on a second side, a second pair of tabs (12b, 14b) rigidly attached to the body and protruding from the body in a second direction.

2. The apparatus of claim 1, wherein the first and second tabs of the first pair of tabs (12a, 14a) are aligned in a longitudinal direction of the body.
3. The apparatus of claim 1 or 2, wherein the first and second tabs of the second pair of tabs (12b, 14b) are aligned in a longitudinal direction of the body.
4. The apparatus of claim 1, 2 or 3, wherein the first and second tabs of the first pair of tabs (12a, 14a) or of the second pair of tabs (12b, 14b) are spaced in a longitudinal direction of the elongated body by a distance corresponding to a width of a largest clip part of a cartridge linking member (5).
5. The apparatus of claim 1, 2, 3 or 4, the first (12a, 14a) and second (12b, 14b) pair of tabs being separated by a distance along a circumference of the body corresponding to one linking interval of the belt of linked ammunition cartridges (6).
6. The apparatus of claim 1, 2, 3 or 4, the first (12a, 14a) and second (12b, 14b) pair of tabs being separated by a distance along a circumference of the body corresponding to a multiple of one linking interval of the belt of linked ammunition cartridges (6).
7. The apparatus of any one of the previous claims, wherein at least the first and second tabs of the first pair of tabs (12a, 14a) or of the second pair of tabs (12b, 14b) are dimensioned for a force fit of tabs in a gap between any two adjacent ones of cartridges constituting the continuous belt of linked ammunition cartridges (6).
8. The apparatus of any one of the previous claims, wherein at least one tab is resiliently arranged with respect to the body or with respect to a corresponding tab located on a different side of the body.

9. The apparatus of any one of the previous claims, wherein at least one tab is resilient for resiliently force fitting of the tab in a gap between any two adjacent ones of cartridges constituting the continuous belt of linked ammunition cartridges (6).

10. An ammunition box or magazine (2) having divider walls (3) dividing the interior the box or magazine (2) into bays (4) for storing a continuous belt of linked ammunition cartridges (6) starting in a first bay and running over a top of a divider wall (3) and into a second bay adjacent to the first bay, wherein the box or magazine (2) includes an ammunition retainer bracket apparatus (10) according to any one of claims 1 through 9 arranged at the top of the divider wall (3).

11. A loaded ammunition box or magazine (2) having divider walls (3) dividing the interior of the box or magazine into bays (4) and a continuous belt of linked ammunition cartridges (6) starting in a first bay and running over a top of a divider wall (3) and into a next bay adjacent to the first bay, wherein the box or magazine (2) includes an ammunition retainer bracket apparatus (10) according to any one of claims 1 through 9 arranged at the top the divider wall (3).

12. The loaded ammunition box or magazine of claim 11, the ammunition box or magazine (2) having an exit located immediately above the first bay or above and to a side of the first bay facing away from the next bay, and wherein the belt of linked ammunition (6) is deposited in the first bay in a serpentine like pattern and runs in continuity from the top of the first bay and over the ammunition retainer and into the bottom of the next bay along the divider wall (3) and in continuity from the bottom of the (3) next bay is deposited in a serpentine like pattern from the bottom of the next bay to the top of the next bay and runs in continuity from the top of the next bay to the exit.

13. The loaded ammunition box or magazine of claim 11 or 12, wherein a tab of the ammunition retainer bracket apparatus is force fitted in a gap between any two adjacent ones of constituting the continuous belt of linked ammunition cartridges (6).

14. The loaded ammunition box or magazine of claim 11 or 12, wherein a plurality of cartridges of the belt of linked ammunition cartridges (6) are fit and locked onto the ammunition retainer bracket apparatus (10) between the first and second pairs of tabs by

a) a first force exerted by the first pair of tabs (12a, 14a) on a first cartridge located to a first side of the plurality of cartridges, the first force having a component directed towards the bot-

tom of the first bay, and

b) a second force exerted by the second pair of tabs (12b, 14b) on a first cartridge located to a second side of the plurality of cartridges, the second force having a component directed towards the bottom of the second bay.

15. The loaded ammunition box or magazine of claim 14, wherein the first force or second force is provided by resilience of a tab or by resilience of a linking member (5).

Patentansprüche

1. Munitionshalteträgervorrichtung (10), die an einer Spitze einer Trennwand (3) anbringbar ist, welche einen Innenraum einer Munitionskiste oder eines Munitionsmagazins (2) in ein erstes und zweites benachbart befindliches Fach trennt, zum Tragen eines Teils eines Gurts von verbundenen Munitionspatronen (6), die in das erste und zweite Fach und kontinuierlich über die Spitze der Trennwand (3) eingelegt sind, und zur Verhinderung, dass der Gurt von verbundener Munition vom Gurt selbst zwischen dem ersten und zweiten benachbart befindlichen Fach entleert wird, welche Munitionshalteträgervorrichtung (10) einen länglichen Körper umfasst, aufweisend

a) auf einer ersten Seite ein erstes Paar von am Körper starr befestigten und aus dem Körper in einer ersten Richtung hervorstehenden Laschen (12a, 14a) und

b) auf einer zweiten Seite ein zweites Paar von am Körper starr befestigten und aus dem Körper in einer zweiten Richtung hervorstehenden Laschen (12b, 14b).

2. Vorrichtung nach Anspruch 1, wobei die erste und zweite Lasche des ersten Paares von Laschen (12a, 14a) in einer Längsrichtung des Körpers ausgerichtet sind.

3. Vorrichtung nach Anspruch 1 oder 2, wobei die erste und zweite Lasche des zweiten Paares von Laschen (12b, 14b) in einer Längsrichtung des Körpers ausgerichtet sind.

4. Vorrichtung nach Anspruch 1, 2 oder 3, wobei die erste und zweite Lasche des ersten Paares von Laschen (12a, 14a) oder des zweiten Paares von Laschen (12b, 14b) in einer Längsrichtung des länglichen Körpers um einen einer Breite eines größten Clipteils eines Patronen-Verbindungselements (5) entsprechenden Abstand beabstandet sind.

5. Vorrichtung nach Anspruch 1, 2, 3 oder 4, wobei das

- erste (12a, 14a) und zweite (12b, 14b) Paar von Laschen entlang eines Umfangs des Körpers um einen einem Verbindungsintervall des Gurts von verbundenen Munitionspatronen (6) entsprechenden Abstand getrennt sind.
6. Vorrichtung nach Anspruch 1, 2, 3 oder 4, wobei das erste (12a, 14a) und zweite (12b, 14b) Paar von Laschen entlang eines Umfangs des Körpers um einen einem Vielfachen eines Verbindungsintervalls des Gurts von verbundenen Munitionspatronen (6) entsprechenden Abstand getrennt sind.
7. Vorrichtung nach irgendeinem der vorhergehenden Ansprüche, wobei die zumindest eine und zweite Lasche des ersten Paares von Laschen (12a, 14a) oder des zweiten Paares von Laschen (12b, 14b) für einen Presssitz von Laschen in einer Spalte zwischen irgend zwei benachbarten von den kontinuierlichen Gurt von verbundenen Munitionspatronen (6) bildenden Patronen dimensioniert sind.
8. Vorrichtung nach irgendeinem der vorhergehenden Ansprüche, wobei zumindest eine Lasche in Bezug auf den Körper oder in Bezug auf eine entsprechende an einer anderen Seite des Körpers befindliche Lasche elastisch angebracht ist.
9. Vorrichtung nach irgendeinem der vorhergehenden Ansprüche, wobei zumindest eine Lasche bezüglich eines elastischen Presssitzes der Lasche in einer Spalte zwischen irgend zwei benachbarten von den kontinuierlichen Gurt von verbundenen Munitionspatronen (6) bildenden Patronen elastisch ist.
10. Munitionskiste oder Munitionsmagazin (2), aufweisend Trennwände (3), die das Innere der Kiste oder des Magazins (2) in Fächer (4) zur Aufbewahrung eines kontinuierlichen Gurts von verbundenen Munitionspatronen (6) trennen, die in einem ersten Fach beginnen und über eine Spitze einer Trennwand (3) und in ein zweites dem ersten Fach benachbartes Fach hineinlaufen, wobei die Kiste oder das Magazin (2) eine an der Spitze der Trennwand (3) angebrachte Munitionshalteträgervorrichtung (10) nach irgendeinem der Ansprüche 1 bis 9 enthält.
11. Eingelegte Munitionskiste oder eingelegtes Munitionsmagazin (2), aufweisend das Innere der Kiste oder des Magazins in Fächer (4) trennende Trennwände (3) und einen kontinuierlichen Gurt von verbundenen Munitionspatronen (6), die in einem ersten Fach beginnen und über eine Spitze einer Trennwand (3) und in ein nächstes dem ersten Fach benachbartes Fach hineinlaufen, wobei die Kiste oder das Magazin (2) eine an der Spitze der Trennwand (3) angebrachte Munitionshalteträgervorrichtung (10) nach irgendeinem der Ansprüche 1 bis 9
- enthält.
12. Eingelegte Munitionskiste oder eingelegtes Munitionsmagazin nach Anspruch 11, wobei die Munitionskiste oder das Munitionsmagazin (2) einen Ausgang aufweist, der sich unmittelbar über dem ersten Fach oder oben und auf einer dem nächsten Fach abgewandten Seite des ersten Fachs befindet, und wobei der Gurt von verbundener Munition (6) in einem schlangenartigen Muster im ersten Fach angeordnet ist und in einer Kontinuität von der Spitze des ersten Fachs und über die Munitionshalterung und in den Boden des nächsten Fachs entlang der Trennwand (3) hineinläuft und in einer Kontinuität vom Boden des nächsten Fachs in einem schlangenartigen Muster vom Boden des nächsten Fachs zur Spitze des nächsten Fachs angeordnet ist und in einer Kontinuität von der Spitze des nächsten Fachs zum Ausgang läuft.
13. Eingelegte Munitionskiste oder eingelegtes Munitionsmagazin nach Anspruch 11 oder 12, wobei eine Lasche der Munitionshalteträgervorrichtung in eine Spalte zwischen irgend zwei benachbarten von den kontinuierlichen Gurt von verbundenen Munitionspatronen (6) bildenden Patronen eingepresst ist.
14. Eingelegte Munitionskiste oder eingelegtes Munitionsmagazin nach Anspruch 11 oder 12, wobei eine Vielzahl von Patronen des Gurts von verbundenen Munitionspatronen (6) an der Munitionshalteträgervorrichtung (10) zwischen dem ersten und zweiten Paar von Laschen durch
- a) eine vom ersten Paar von Laschen (12a, 14a) auf eine erste an einer ersten Seite der Vielzahl von Patronen befindliche Patrone ausgeübte erste Kraft, wobei die erste Kraft eine zum Boden des ersten Fachs geführte Komponente aufweist, und
- b) eine vom zweiten Paar von Laschen (12b, 14b) auf eine erste an einer zweiten Seite der Vielzahl von Patronen befindliche Patrone ausgeübte zweite Kraft, wobei die zweite Kraft eine zum Boden des zweiten Fachs geführte Komponente aufweist,
- angebracht und verriegelt ist.
15. Eingelegte Munitionskiste oder eingelegtes Munitionsmagazin nach Anspruch 14, wobei die erste Kraft oder zweite Kraft durch Elastizität einer Lasche oder durch Elastizität eines Verbindungselements (5) bereitgestellt ist.

Revendications

1. Appareil pour le support de rétention de munitions (10) à placer à la partie supérieure d'une paroi de division (3) divisant un espace intérieur d'une boîte ou d'un chargeur de munitions (2) dans un premier compartiment et un deuxième compartiment l'un arrangé de manière adjacente à l'autre, pour supporter une partie d'une chaîne de cartouches de munitions liées (6) chargées dans ledit premier compartiment et ledit deuxième compartiment et sans interruption au-dessus de la partie supérieure de la paroi de division (3) et pour empêcher la chaîne de munitions liées d'être détournée par la chaîne en soi entre le premier compartiment et le deuxième compartiment l'un arrangé de manière adjacente à l'autre, l'appareil pour le support de rétention de munitions (10) comprenant un corps allongé présentant
 - a) sur un premier côté, une première paire de pattes (12a, 14a) fixées de manière rigide au corps et faisant saillie du corps dans une première direction, et
 - b) sur un deuxième côté, une deuxième paire de pattes (12b, 14b) fixées de manière rigide au corps et faisant saillie du corps dans une deuxième direction.
2. Appareil selon la revendication 1, dans lequel la première patte et la deuxième patte de la première paire de pattes (12a, 14a) sont alignées dans une direction longitudinale du corps.
3. Appareil selon la revendication 1 ou 2, dans lequel la première patte et la deuxième patte de la deuxième paire de pattes (12b, 14b) sont alignées dans une direction longitudinale du corps.
4. Appareil selon la revendication 1, 2 ou 3, dans lequel la première patte et la deuxième patte de la première paire de pattes (12a, 14a) ou de la deuxième paire de pattes (12b, 14b) sont espacées l'une de l'autre dans une direction longitudinale du corps allongé par une distance correspondant à une largeur de la plus grande pièce de pince d'un élément de liaison de cartouches (5).
5. Appareil selon la revendication 1, 2, 3 ou 4, la première paire (12a, 14a) et la deuxième paire (12b, 14b) de pattes étant séparées l'une de l'autre par une distance le long d'une circonférence du corps correspondant à un intervalle de liaison de la chaîne de cartouches de munitions liées (6).
6. Appareil selon la revendication 1, 2, 3 ou 4, la première paire (12a, 14a) et la deuxième paire (12b, 14b) de pattes étant séparées l'une de l'autre par une distance le long d'une circonférence du corps correspondant à un multiple d'un intervalle de liaison de la chaîne de cartouches de munitions liées (6).
7. Appareil selon l'une quelconque des revendications précédentes, dans lequel au moins la première patte et la deuxième patte de la première paire de pattes (12a, 14a) ou de la deuxième paire de pattes (12b, 14b) sont dimensionnées à un ajustement serré de pattes dans un interstice entre deux quelconques des cartouches adjacentes constituant la chaîne continue de cartouches de munitions liées (6).
8. Appareil selon l'une quelconque des revendications précédentes, dans lequel au moins une patte est arrangée de façon résiliente par rapport au corps ou par rapport à une patte correspondante située sur un côté différent du corps.
9. Appareil selon l'une quelconque des revendications précédentes, dans lequel au moins une patte est élastique pour un ajustement serré de façon résiliente de la patte dans un interstice entre deux quelconques des cartouches adjacentes constituant la chaîne continue de cartouches de munitions liées (6).
10. Boîte ou chargeur de munitions (2) présentant des parois de division (3) divisant l'intérieur de la boîte ou du chargeur (2) en compartiments (4) pour stocker une chaîne continue de cartouches de munitions liées (6) prenant le départ dans un premier compartiment et s'étendant au-dessus d'une partie supérieure d'une paroi de division (3) et dans un deuxième compartiment arrangé de manière adjacente au premier compartiment, dans lequel la boîte ou le chargeur (2) comprend un appareil pour le support de rétention de munitions (10) selon l'une quelconque des revendications 1 à 9, arrangé à la partie supérieure de la paroi de division (3).
11. Boîte ou chargeur de munitions (2) chargé présentant des parois de division (3) divisant l'intérieur de la boîte ou du chargeur en compartiments (4) et une chaîne continue de cartouches de munitions liées (6) prenant le départ dans un premier compartiment et s'étendant au-dessus d'une partie supérieure d'une paroi de division (3) et dans un prochain compartiment arrangé de manière adjacente au premier compartiment, dans lequel la boîte ou le chargeur (2) comprend un appareil pour le support de rétention de munitions (10) selon l'une quelconque des revendications 1 à 9, arrangé à la partie supérieure de la paroi de division (3).
12. Boîte ou chargeur de munitions chargé selon la revendication 11, la boîte ou chargeur de munitions (2) présentant une sortie arrangée immédiatement au-dessus du premier compartiment ou au-dessus du et à un côté du premier compartiment détourné

du prochain compartiment, et où la chaîne de munitions liées (6) est déposée dans le premier compartiment selon une forme sinueuse et s'étend sans interruption depuis la partie supérieure du premier compartiment et au-dessus de la rétention de munitions et dans la partie inférieure du prochain compartiment le long de la paroi de division (3) et sans interruption depuis la partie inférieure du prochain compartiment est déposée selon une forme sinueuse depuis la partie inférieure du prochain compartiment jusqu'à la partie supérieure du prochain compartiment et s'étend sans interruption depuis la partie supérieure du prochain compartiment jusqu'à la sortie.

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- 13.** Boîte ou chargeur de munitions chargé selon la revendication 11 ou 12, dans lequel une patte de l'appareil pour le support de rétention de munitions (10) est ajustée de manière serrée dans un interstice entre deux quelconques des cartouches adjacentes constituant la chaîne continue de cartouches de munitions liées (6).

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- 14.** Boîte ou chargeur de munitions chargé selon la revendication 11 ou 12, dans lequel une pluralité de cartouches de la chaîne de cartouches de munitions liées (6) est ajustée et bloquée sur l'appareil pour le support de rétention de munitions (10) entre la première paire et le deuxième paire de pattes par

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a) une première force exercée par la première paire de pattes (12a, 14a) sur une première cartouche arrangée à un premier côté de la pluralité de cartouches, la première force présentant un composant dirigé vers la partie inférieure du premier compartiment, et

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b) une deuxième force exercée par la deuxième paire de pattes (12b, 14b) sur une première cartouche arrangée à un deuxième côté de la pluralité de cartouches, la deuxième force présentant un composant dirigée vers la partie inférieure du deuxième compartiment.

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- 15.** Boîte ou chargeur de munitions chargé selon la revendication 14, dans lequel une première force ou une deuxième force est pourvue par la résilience d'une patte ou par la résilience un élément de liaison (5).

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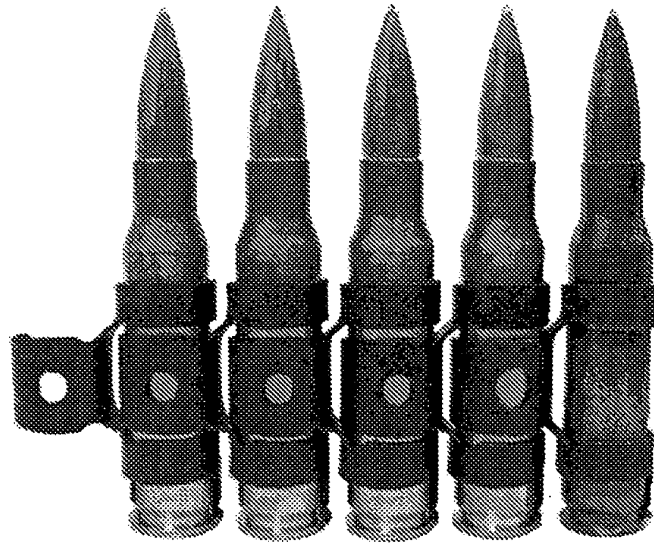


Fig. 1

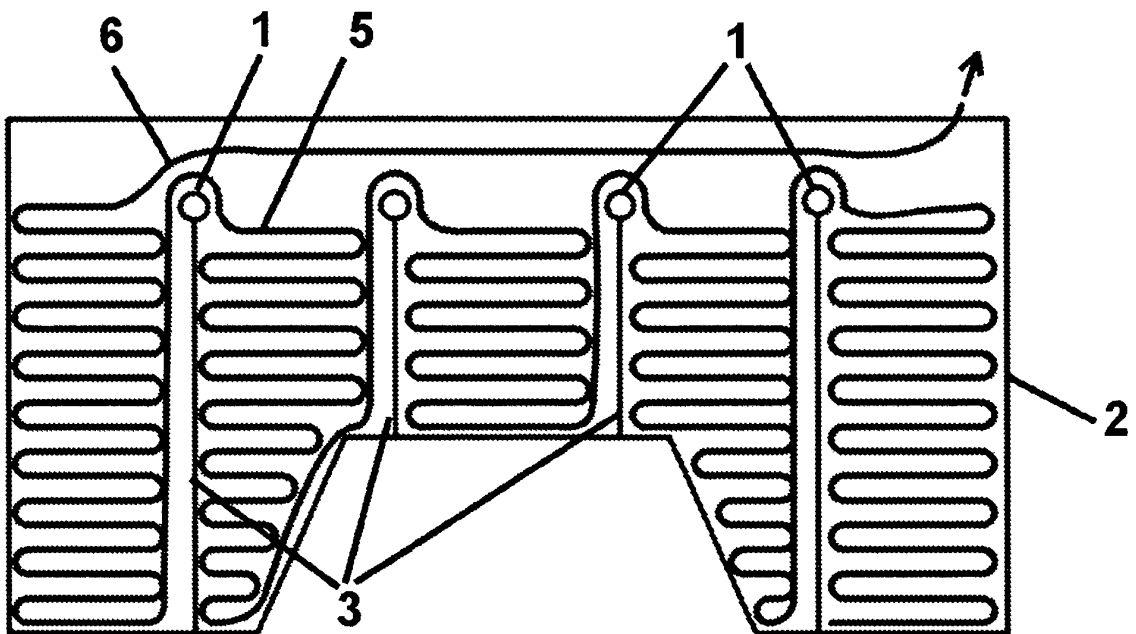


Fig. 2

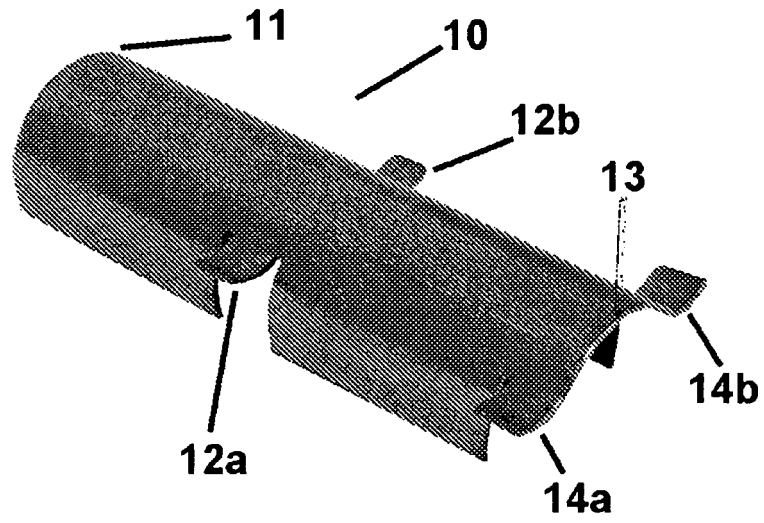


Fig. 3

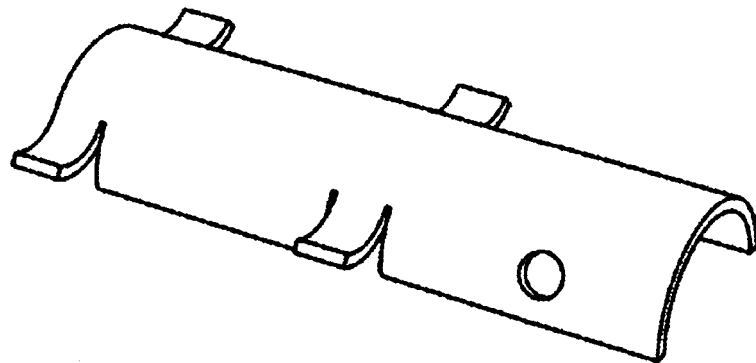


Fig. 4

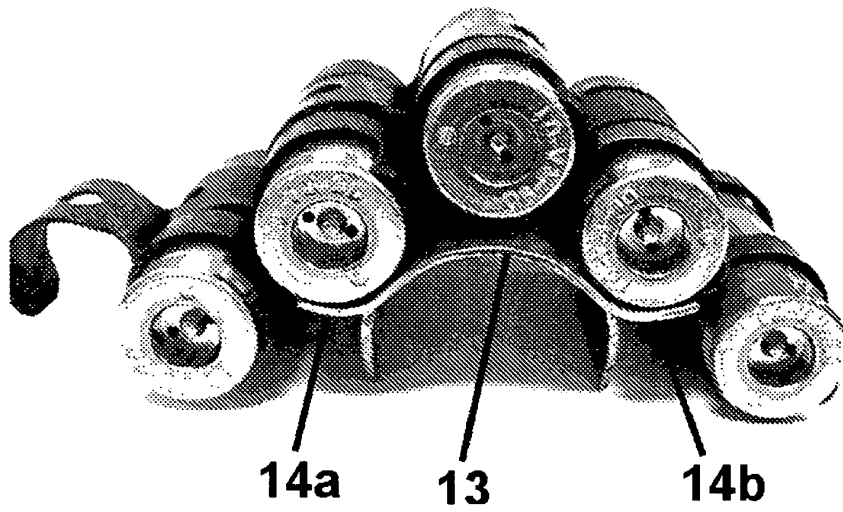


Fig. 5

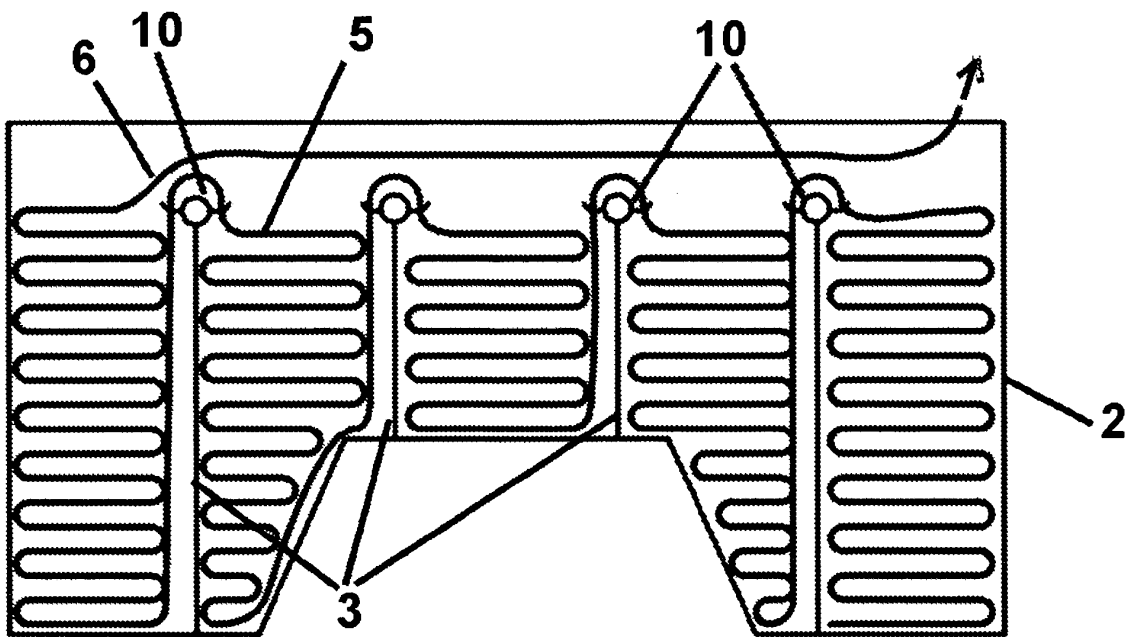


Fig. 6

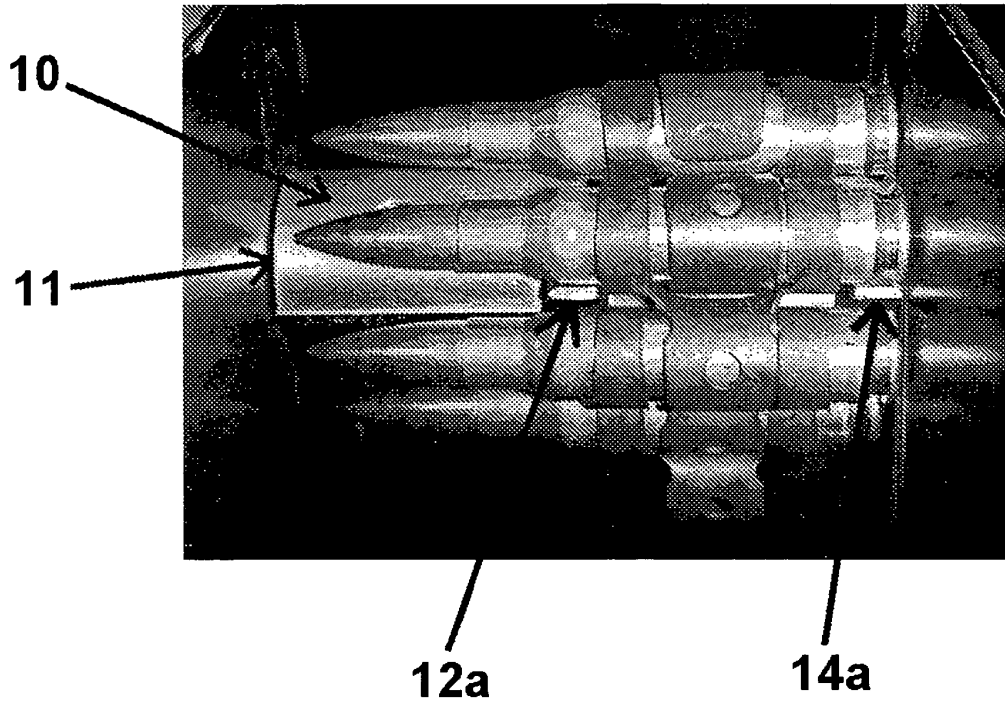


Fig. 7

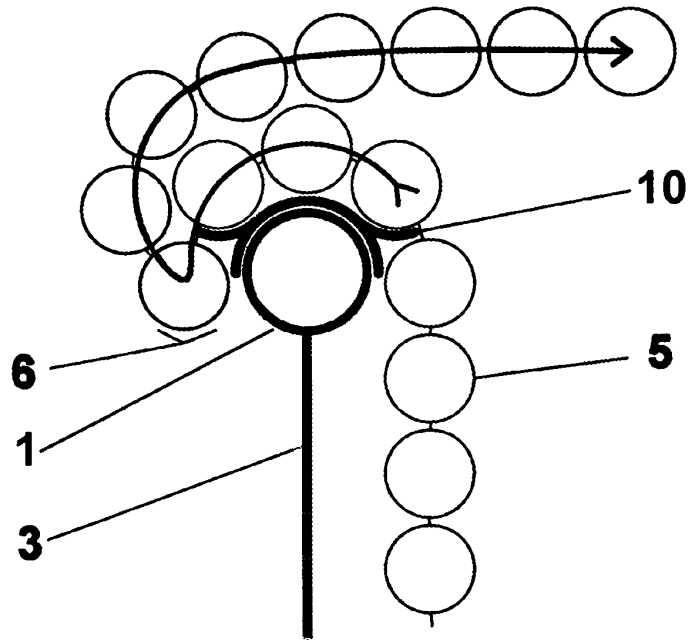


Fig. 8

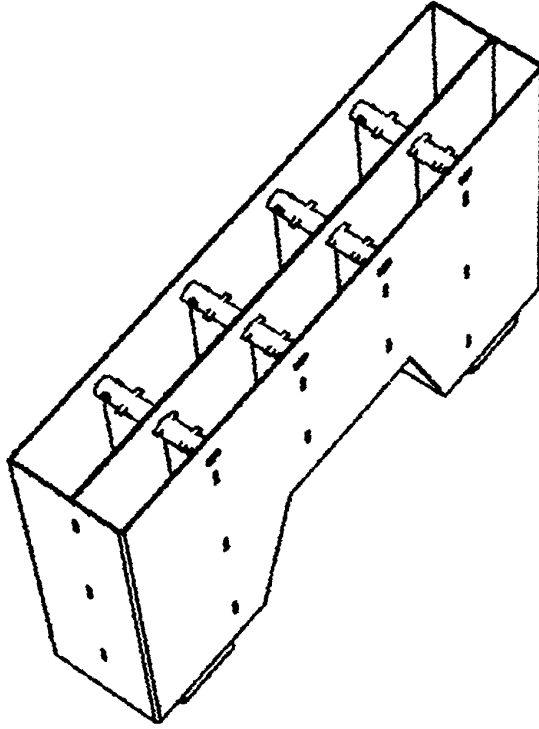


Fig. 9

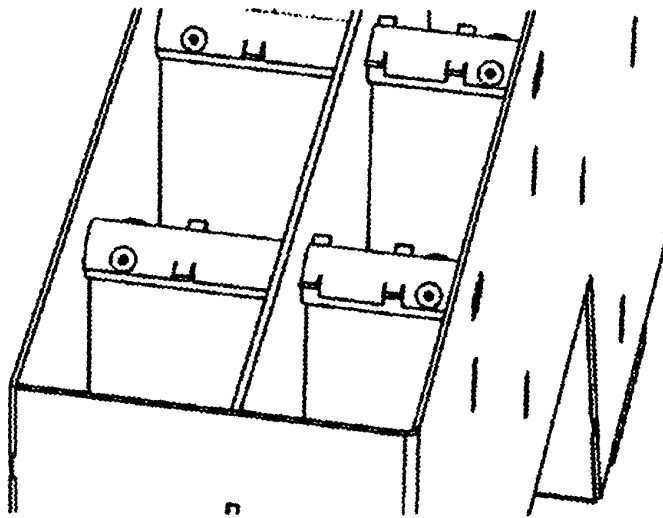


Fig. 10

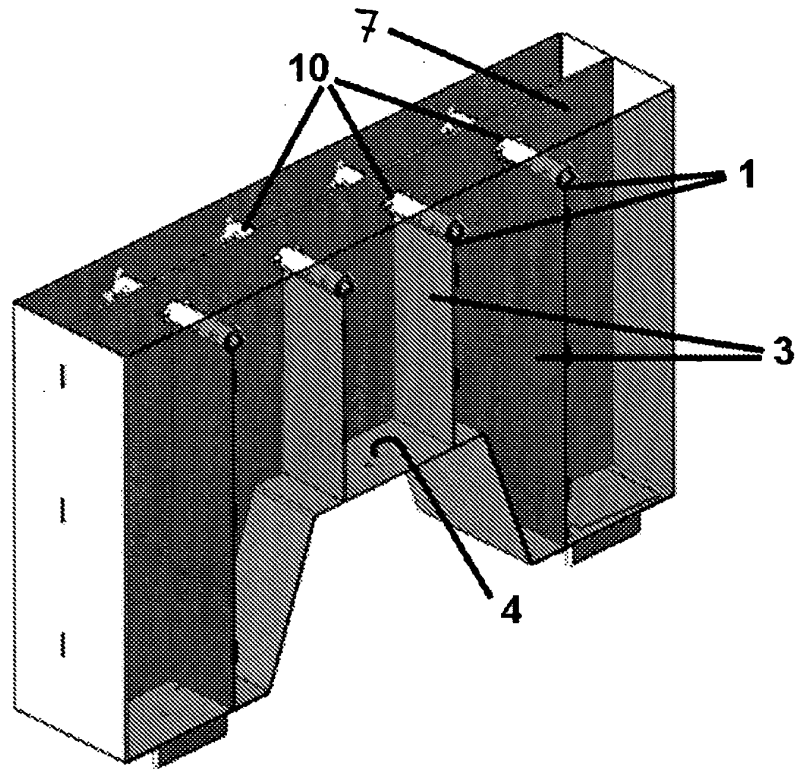


Fig. 11

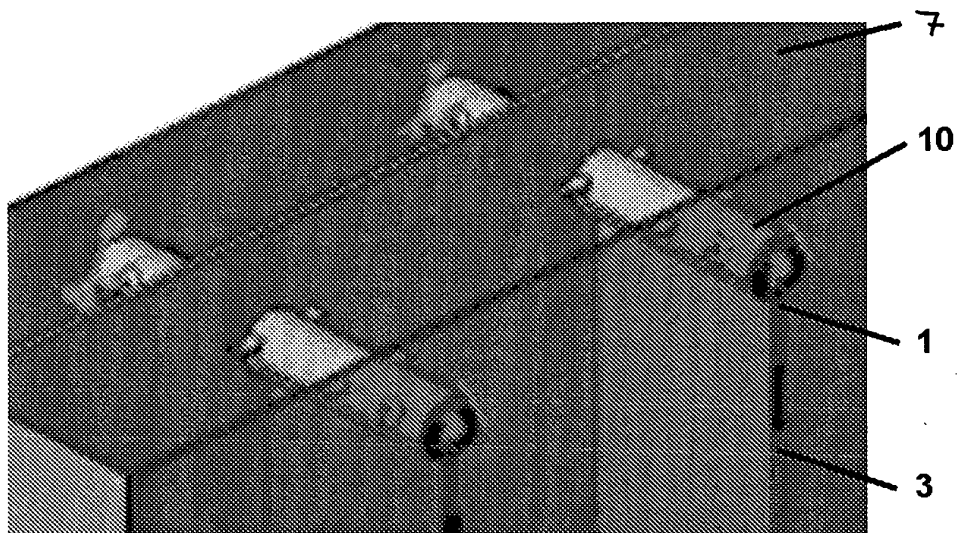


Fig. 12

REFERENCES CITED IN THE DESCRIPTION

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