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Amended claims in accordance with Rule 137(2) EPC.

(54) **SUPPORT FOR BALLISTIC TARGET**

(57) A support (1) for a ballistic target comprising a bulletproof wall configured to absorb the impact of at least one projectile.

The bulletproof wall has a central portion (2), at least two lateral portions (3) extending from opposite sides of the central portion (2) and diverging away from it (2), and a cover portion (4) extending above the central portion (2) and the lateral portions (3) and diverging away from the central portion (2). The central portion (2), the lateral portions (3) and the cover portion (4) define, in mutual collaboration, a compartment for collecting the projectile.

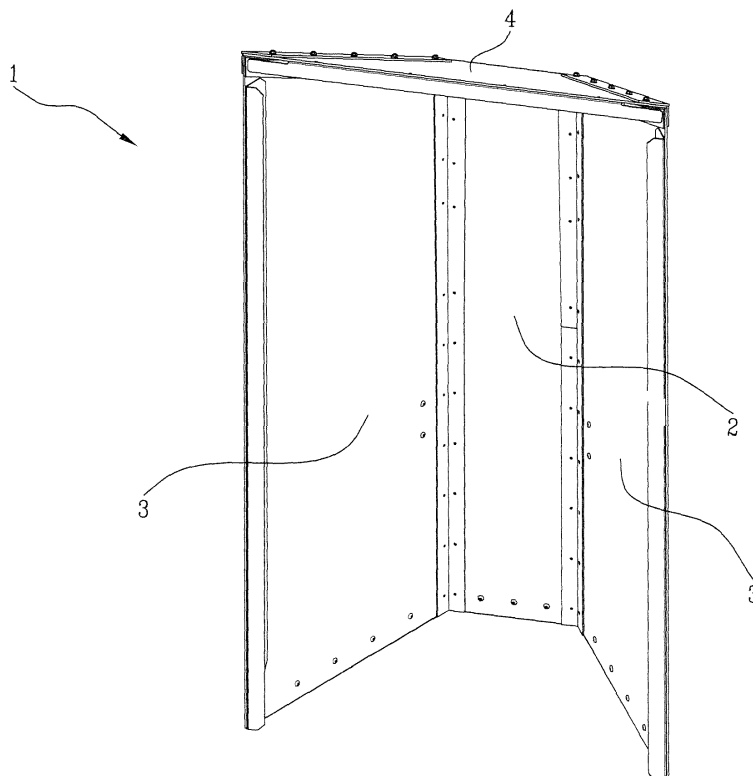


Fig.1A

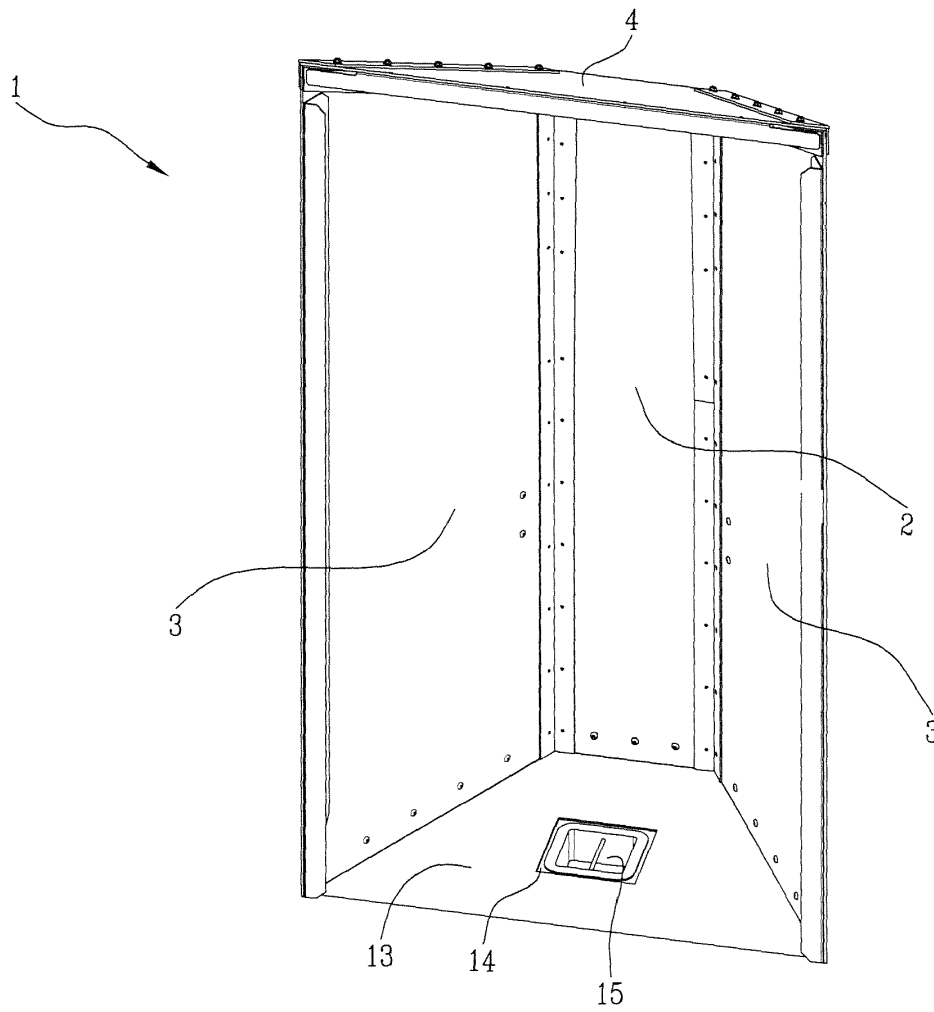


Fig.1B

Description

[0001] The present invention relates to the field of equipment for military use, especially that for training activities.

[0002] In particular, the present invention relates to a ballistic target for shooting training.

[0003] The use of a firearm requires a high degree of preparation and confidence, in fact, it is immediately apparent that in the hands of an inexperienced, or not sufficiently trained person, a weapon can be extremely dangerous and cause potentially lethal damage, both to the user and to whom is close.

[0004] What has just been said is particularly true in the military sphere, where firearm use may be necessary in extremely awkward conditions, in which only a great familiarity with the weapon allows it to be used lucidly, consciously and as safely as possible.

[0005] In order to accustom the user to shoot at best, in particular to ensure confidence when the use in the field becomes necessary, a training activity is needed during which he/she can practice shooting against appropriate targets.

[0006] To meet this need, dedicated facilities exist, such as shooting ranges, where users can practice using firearms in a safe and controlled environment, firing from given positions against targets positioned at a suitable distance, depending on the type of exercise to be performed or the training activity to be carried out.

[0007] A terreplein or other structure is usually located behind the targets, which performs the function of blocking the projectile once it has perforated the target, so as to stop it and thereby avoid the risk that the projectile ricochets, taking trajectories potentially dangerous for the users of the shooting range.

[0008] However, this type of configuration has disadvantages that make the use of targets of the known type very expensive and inefficient for the manager of the shooting range.

[0009] Over time, in fact, an increasing accumulation of bullets inevitably occurs in the structure devised for the blocking thereof, thus making it necessary to carry out burdensome and complex periodic reclamation operations on soils contaminated from lead, plastic or other materials of which bullets may be composed.

[0010] Breakable ammunition that can be made of, for example, polymeric material and copper is also known, this type of ammunition being configured to fragment or pulverize when it collides with the structure located behind the target.

[0011] This type of ammunition can reduce the environmental impact in terms of pollutants, mainly due to the absence of lead among its constituent materials, however it suffers from a greater problem with regard to the cleaning of the shooting area, as the ammunition crumbles into a myriad of fragments; in the specific case of breakable ammunition made of polymeric material and copper, a real pulverization takes place, thus making the

collection of the residual fragments and/or dust an extremely complex operation.

[0012] Furthermore, another problem arises from the extreme rigidity of the structure of the shooting range: in order to be able to withstand the impact with the projectile, the targets of the known type are firmly secured to the ground on which they stand so as to be as stable as possible; however, this characteristic makes the shooting ranges of the known type scarcely versatile and hardly adaptable if the user has different needs, in particular in terms of positioning of the targets and of the distance of the targets from the shooting area.

[0013] In this context, the technical task underlying the present invention is to propose a support for a ballistic target, which overcomes at least some of the above-mentioned drawbacks of the prior art.

[0014] In particular, the object of the present invention is to provide a support for a ballistic target, which minimises the environmental impact of the shooting activity by facilitating the reclamation and cleaning operations and at the same time can be easily transported according to the requirements of the shooting activity and the type of training to be performed.

[0015] The specified technical task and objects are substantially achieved by means of a support for a ballistic target comprising the technical features set forth in one or more of the accompanying claims.

[0016] According to the present invention, a support for a ballistic target is shown, which comprises a bulletproof wall configured to absorb the impact of at least one projectile.

[0017] The bulletproof wall has a central portion, at least two lateral portions extending from opposite sides of the central portion and diverging away from the central portion, and a cover portion extending above the central portion and the lateral portions and diverging away from the central portion.

[0018] The central portion and the lateral portions define, in mutual collaboration, a compartment for collecting the projectile.

[0019] A further object of the present invention is a movable support for a ballistic target, which comprises a trailer and a support for a ballistic target reversibly bonded to the trailer.

[0020] The support for a ballistic target comprises a bulletproof wall which has a central portion, at least two lateral portions extending from opposite sides of the central portion and diverging away from the central portion, and a cover portion extending above the central portion and the lateral portions and diverging away from the central portion.

[0021] Further features and advantages of the present invention will become more apparent from the indicative, and therefore non-limiting description of a preferred, but not exclusive, embodiment of a support for a ballistic target, as illustrated in the accompanying drawings wherein:

- Figure 1A shows a perspective view of the support

for a ballistic target according to the present invention;

- Figure 1B shows a support for a ballistic target according to a further possible embodiment;
- Figure 2 shows a support for a ballistic target equipped with a movable stand;
- Figure 3 shows a further possible embodiment of a support for a ballistic target;
- Figure 4 shows a support for a ballistic target in a possible configuration of use.

[0022] In Fig. 1, reference numeral 1 indicates a support for a ballistic target according to the present invention.

[0023] The support 1 comprises a bulletproof wall configured to absorb the impact of at least one projectile.

[0024] The term bulletproof is intended to mean that the wall can withstand and absorb the impact of a projectile fired from a portable firearm, blocking its advance.

[0025] The support 1 is particularly suitable to operate with breakable ammunition having a calibre ranging from 5.56 mm to 12.7 mm.

[0026] More precisely, the support is particularly suitable to operate with breakable ammunition having a calibre ranging from 5.56 mm to 12.7 mm and made of polymeric material and copper.

[0027] According to a preferred embodiment herein described by way of example and not of limitation, the support 1 is particularly suitable to operate with breakable ammunition, of the type used, for example, during military training.

[0028] This special type of ammunition has the peculiarity of crumbling, after hitting the surface of the bulletproof wall, into a myriad of fragments that must subsequently be collected and disposed of.

[0029] The bulletproof wall comprises a central portion 2, at least two lateral portions 3, and a cover portion 4.

[0030] The lateral portions 3 extend from opposite sides of the central portion 2 and diverge away from said central portion 2.

[0031] Preferably, the lateral portions 3 diverge symmetrically from the central portion 2 with an angle comprised between 25° and 35°, advantageously equal to 30°.

[0032] The cover portion 4 extends above the central portion 2 and the lateral portions 3, diverging away from the central portion, so as to define a roofing that covers the volume enclosed by the central portion 2 together with the lateral portions 3.

[0033] Furthermore, the aforementioned portions cooperate with each other to define a collection compartment inside which the residues of the projectiles are collected after they have hit the target during a shooting activity.

[0034] In other words, the target 1 of the present invention provides a collection compartment configured to be positioned behind a ballistic target 16, so as to facilitate the collection of the fired bullets or their residual frag-

ments.

[0035] According to a further possible embodiment, shown more in detail in Fig. 2, the support 1 comprises a movable stand 5, preferably a towable or self-propelled trailer, which can be reversibly bonded to a lower portion of the support 1.

[0036] Advantageously, in order to protect the wheels 6 of the movable stand 5, protection means 7 are provided to prevent the fired bullets from hitting the wheels.

[0037] For example, a bulletproof plate can be positioned such that it is interposed, along any possible firing line, between the position point of a shooter and the wheels 6.

[0038] In order to ensure that, especially following a bullet's impact on the bulletproof wall, the support 1 remains in place and does not move or lose balance, the movable stand 5 comprises stabilising means 8, such as for example a plurality of stabilizers equipped with support bases located at peripheral points of the movable stand 5 in order to provide stable resting points which guarantee the non-mobility of the stand 5, and hence of the support 1, during the shooting activity.

[0039] The support 1 preferably comprises a lower section 10 and an upper section 11.

[0040] The upper section 11 is hinged to the lower section 10 along a hinge axis "X" and is rotatable around it.

[0041] Specifically, the lower section 10 comprises a first part of the central portion 2 and a first part of each of the lateral portions 3, while, instead, the upper section 11 comprises a second part of the central portion 2, a second part of each of the lateral portions 3 and the cover portion 4.

[0042] The support 1 is configured to take a configuration of use, shown for example in Fig. 2, in which the upper section 11 is arranged in abutment against the lower section 10, and a transport configuration, shown for example in Fig. 3, in which the upper section 11 is not in abutment against the lower section 10.

[0043] In other words, when the support 1 needs to be transported, it is sufficient to load it on the movable stand 5 and rotate the upper section 11 so as to divide each central 2 and lateral 3 portion into two parts and bring the upper section 11 side by side to the lower portion 10.

[0044] More in detail, the upper section 11 is positioned behind the lower section 10 relative to the direction of movement of a projectile fired against the support 1.

[0045] In this way, the structure, and consequently also the centre of gravity of the support 1 loaded on the movable stand 5, are lowered, making the transport more stable and secure.

[0046] In order to restore the operation of the support 1, it is sufficient to bring it back into the configuration of use by rotating the upper section 11 about the hinge axis "X" until it abuts against the lower section 10.

[0047] It follows that in the configuration of use the upper section 11 is positioned above the lower section 10.

[0048] Advantageously, damping means 9 are provided, such as for example pistons, configured to dampen

the rotatory motion of the upper section 11 when the latter is rotated about the hinge axis "X".

[0049] In other words, the damping means 9 prevent that during the rotation of the upper section 11 the weight of the latter makes the manoeuvring difficult, with the risk of too fast and hardly controllable movements.

[0050] In order to further optimize the conversion process from the configuration of use to the transport one and vice versa, the support 1 comprises at least one lever 12 reversibly attachable to the upper section 11 so as to facilitate the rotation of the upper section 11 itself around the hinge axis "X".

[0051] Preferably, as shown in particular in Fig. 3, there are two levers 12, each reversibly attachable to a respective second part of the lateral portion 3 belonging to the upper section 11, so as to allow for a more homogeneous distribution of the load and the effort in the step of converting the support 1 from the configuration of use to the transport one and vice versa.

[0052] Advantageously, the support 1 may comprise a support base 13, shown in detail in Fig. 1B, having a discharge opening 14 placed in communication with the collection compartment to facilitate the discharge of at least a part of a projectile from the collection compartment.

[0053] In other words, the base 13 comprises an opening 14 through which the parts of the projectile collected in the compartment during the shooting activity can be cleared away, quickly removing in a highly efficient manner the waste of the activity, without the need to undertake long and costly interventions for the reclamation of the soil surrounding the shooting area.

[0054] Even more advantageously, the support 1 comprises a drawer 15 configured to be inserted in the discharge opening 14 and adapted to collect and contain at least one part of a projectile when the latter is discharged from the collection compartment.

[0055] In other words, once the training is finished, it is sufficient to discharge the projectile residues through the discharge opening 14 into the drawer 15 and then remove the drawer and proceed with the proper disposal of the materials contained therein, without the need for the intervention of specialized personnel or the use of dedicated equipment.

[0056] Fig. 4 shows a possible embodiment of a support 1 for a ballistic target 16 under an operative condition, once the ballistic target 16 has been mounted.

[0057] In order to optimize the mounting of the ballistic target 16 on the support 1, the lateral portions 3 comprise, preferably at one of their free end edges, fastening means 17 that allow the ballistic target 16 to be bonded in a stable, though reversible manner to the support 1.

[0058] Preferably, the ballistic target 16, once fixed to the support 1, defines, together with the bulletproof wall, a closed compartment for the collection of at least one projectile.

[0059] In other words, in use, the ballistic target 16 with the support 1 forms a closed containment chamber inside

which the projectiles are conveniently and efficiently collected after they have struck and crossed the ballistic target 16 itself.

[0060] By way of example and not limitation, the fastening means 17 may comprise a plurality of magnetic members, or a plurality of clamping screws.

[0061] In order to improve the stability of the ballistic target 16 even under conditions of, for example, strong wind, the fastening means 17 further comprise a sheet, which is preferably made of plastic material and can be reversibly bonded to the support 1, in particular to the lateral portions 3, so as to provide a support surface that improves the stability of the ballistic target 16 and prevents it from being torn by strong gusts of wind.

[0062] A further object of the present invention is a movable support for a ballistic target 16 which comprises a trailer and a support 1 for a ballistic target 16 reversibly bonded to the trailer, wherein the support 1 comprises a bulletproof wall which has a central portion 2, at least two lateral portions 3 extending from opposite sides of the central portion 2 and diverging away from the central portion 2, and a cover portion 4 extending above the central portion 2 and the lateral portions 3 and diverging away from the central portion 2.

[0063] The central portion 2, the lateral portions 3 and the cover portion 4 define, in mutual collaboration, a compartment for collecting at least one projectile.

[0064] The support 1 is divided into a lower portion 10 and an upper portion 11 hinged to the lower portion 10 along a hinge axis "X" around which the upper portion 11 is rotatable.

[0065] Advantageously, a support 1 for a ballistic target 16 according to the present invention allows for overcoming the drawbacks encountered in the prior art.

[0066] In particular, a support 1 according to the present invention eliminates the need to carry out costly and complex operations for the reclamation of the land used for the shooting activity, since all the constituent elements of the projectile are stopped and collected into the collection compartment, without being dispersed in the area surrounding the target 16.

[0067] Moreover, the support 1 of the present invention is particularly versatile and efficient in that it provides for the presence of a movable stand 5, which allows the support to be conveniently moved if it needs to be moved to a different shooting area.

[0068] In addition, the presence of the movable stand 5 makes the transport operation particularly convenient and secure, whilst at the same time guaranteeing a high stability thanks to the possibility of rotating the upper section 11 of the support 1 in such a way as to reduce the height of the centre of gravity of the whole support 1.

Claims

1. A support (1) for a ballistic target comprising a bulletproof wall configured to absorb the impact of at

- least one projectile, **characterized in that** said bulletproof wall has a central portion (2), at least two lateral portions (3) extending from opposite sides of the central portion (2) and diverging away from said central portion (2) and a cover portion (4) extending above the central portion (2) and the lateral portions (3) and diverging away from said central portion (2); said central portion (2), lateral portions (3) and cover portion (4) defining, in mutual collaboration, a compartment for collecting said at least one projectile.
2. The support for a ballistic target according to claim 1 comprising a movable stand (5) reversibly attachable to a lower portion of the support for a ballistic target (16).
 3. The support for a ballistic target according to claim 2, wherein the movable stand (5) comprises a plurality of wheels (6) and bulletproof protection means (7) adapted to shield the plurality of wheels (6).
 4. A support for a ballistic target according to claim 2 or 3, wherein the movable stand (5) comprises stabilising means (8) suitable to prevent it from moving during a shooting activity.
 5. A support for a ballistic target according to one or more of claims 2 to 4 comprising a lower section (10) and an upper section (11) hinged to said lower section (10) along a hinge axis (X) and rotatable around it.
 6. The support for a ballistic target according to claim 5, wherein the lower section (10) comprises a first part of said central portion (2) and a first part of each of said at least two lateral portions (3), and wherein the upper section (11) comprises a second part of said central portion (2), a second part of each of said at least two lateral portions (3), and the cover portion (4).
 7. The support for a ballistic target according to claim 6 configured to take a configuration of use in which the upper section (11) is arranged in abutment against the lower section (10), and a transport configuration, in which the upper section (11) is not in abutment against the lower section (10).
 8. A support for a ballistic target according to one or more of claims 5 to 7 comprising damping means (9) adapted to dampen the rotatory motion of the upper section (11) when rotated around the hinge axis (X).
 9. A support for a ballistic target according to one or more of claims 5 to 8 comprising at least one lever (12) reversibly attachable to the upper section (11), adapted to promote the rotation of the upper section (11) about the hinge axis (X).
 10. A support for a ballistic target according to one or more of the preceding claims comprising a support base (13) having a discharge opening (14) in communication with the collection compartment to facilitate the discharge of at least a part of a projectile from the collection compartment.
 11. The support for a ballistic target according to claim 10 comprising a drawer (15) configured to be inserted in the discharge opening (14) and adapted to collect and contain said at least one part of a projectile discharged from the collection compartment.
 12. A support for a ballistic target according to one or more of the preceding claims, wherein the lateral portions (3) comprise, preferably at one of their free end edges, fastening means (17) configured to reversibly attach a ballistic target (16) to the support.
 13. The support for a ballistic target according to claim 12, wherein said fastening means (17) comprise a plurality of magnetic members, or a plurality of clamping screws.
 14. A support for a ballistic target according to claim 12 or 13, wherein said fastening means (17) further comprise a sheet, preferably of plastic material, reversibly attachable to the lateral portions (3) and adapted to provide a support surface for the ballistic target (16).
 15. A support for a ballistic target according to one or more of the preceding claims, wherein the at least two lateral portions (3) are inclined with respect to the central portion (2) by an angle comprised between 25° and 35°.
 16. A movable support for a ballistic target **characterised in that** it comprises a trailer and a support for a ballistic target (16) reversibly bonded to the trailer, wherein said support for a ballistic target (16) comprises a bulletproof wall configured to absorb the impact of at least one projectile, which has a central portion (2), at least two lateral portions (3) extending from opposite sides of the central portion (2) and diverging away from said central portion (2) and a cover portion (4) extending above the central portion (2) and the lateral portions (3) and diverging away from said central portion (2); said central portion (2), lateral portions (3) and cover portion (4) defining, in mutual collaboration, a compartment for collecting said at least one projectile.
 17. A movable support for a ballistic target according to claim 16, wherein said support for a ballistic target (16) is divided into a lower portion and an upper portion which is hinged to said lower portion along a hinge axis (X) and is rotatable around it.

Amended claims in accordance with Rule 137(2) EPC.

1. A support (1) for a ballistic target comprising a bulletproof wall configured to absorb the impact of at least one projectile, said bulletproof wall comprising a central portion (2), at least two lateral portions (3) extending from opposite sides of the central portion (2) and diverging away from said central portion (2) and a cover portion (4) extending above the central portion (2) and the lateral portions (3) and diverging away from said central portion (2); said central portion (2), lateral portions (3) and cover portion (4) defining, in mutual collaboration, a compartment for collecting said at least one projectile;
characterized in that it comprises:
 - a support base (13) having a discharge opening (14) in communication with the collection compartment to facilitate the discharge of at least a part of a projectile from the collection compartment.
 - a drawer (15) configured to be inserted in the discharge opening (14) and adapted to collect and contain said at least one part of a projectile discharged from the collection compartment.
2. The support for a ballistic target according to claim 1 comprising a movable stand (5) reversibly attachable to a lower portion of the support for a ballistic target (16).
3. The support for a ballistic target according to claim 2, wherein the movable stand (5) comprises a plurality of wheels (6) and bulletproof protection means (7) adapted to shield the plurality of wheels (6).
4. A support for a ballistic target according to claim 2 or 3, wherein the movable stand (5) comprises stabilising means (8) suitable to prevent it from moving during a shooting activity.
5. A support for a ballistic target according to one or more of claims 2 to 4 comprising a lower section (10) and an upper section (11) hinged to said lower section (10) along a hinge axis (X) and rotatable around it.
6. The support for a ballistic target according to claim 5, wherein the lower section (10) comprises a first part of said central portion (2) and a first part of each of said at least two lateral portions (3), and wherein the upper section (11) comprises a second part of said central portion (2), a second part of each of said at least two lateral portions (3), and the cover portion (4).
7. The support for a ballistic target according to claim 6 configured to take a configuration of use in which the upper section (11) is arranged in abutment against the lower section (10), and a transport configuration, in which the upper section (11) is not in abutment against the lower section (10).
8. A support for a ballistic target according to one or more of claims 5 to 7 comprising damping means (9) adapted to dampen the rotatory motion of the upper section (11) when rotated around the hinge axis (X).
9. A support for a ballistic target according to one or more of claims 5 to 8 comprising at least one lever (12) reversibly attachable to the upper section (11), adapted to promote the rotation of the upper section (11) about the hinge axis (X).
10. A support for a ballistic target according to one or more of the preceding claims, wherein the lateral portions (3) comprise, preferably at one of their free end edges, fastening means (17) configured to reversibly attach a ballistic target (16) to the support.
11. The support for a ballistic target according to claim 10, wherein said fastening means (17) comprise a plurality of magnetic members, or a plurality of clamping screws.
12. A support for a ballistic target according to claim 10 or 11, wherein said fastening means (17) further comprise a sheet, preferably of plastic material, reversibly attachable to the lateral portions (3) and adapted to provide a support surface for the ballistic target (16).
13. A support for a ballistic target according to one or more of the preceding claims, wherein the at least two lateral portions (3) are inclined with respect to the central portion (2) by an angle comprised between 25° and 35°.
14. A movable support for a ballistic target **characterised in that** it comprises a trailer and a support for a ballistic target (16) reversibly bonded to the trailer, said support for a ballistic target (16) comprising:
 - a bulletproof wall configured to absorb the impact of at least one projectile, which has a central portion (2), at least two lateral portions (3) extending from opposite sides of the central portion (2) and diverging away from said central portion (2) and a cover portion (4) extending above the central portion (2) and the lateral portions (3) and diverging away from said central portion (2); said central portion (2), lateral portions (3) and cover portion (4) defining, in mutual collaboration, a compartment for collecting said at least one projectile;

characterized in that it comprises:

- a support base (13) having a discharge opening (14) in communication with the collection compartment to facilitate the discharge of at least a part of a projectile from the collection compartment. 5
- a drawer (15) configured to be inserted in the discharge opening (14) and adapted to collect and contain said at least one part of a projectile discharged from the collection compartment. 10

- 15.** A movable support for a ballistic target according to claim 14, wherein said support for a ballistic target (16) is divided into a lower portion and an upper portion which is hinged to said lower portion along a hinge axis (X) and is rotatable around it. 15

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Fig. 1A

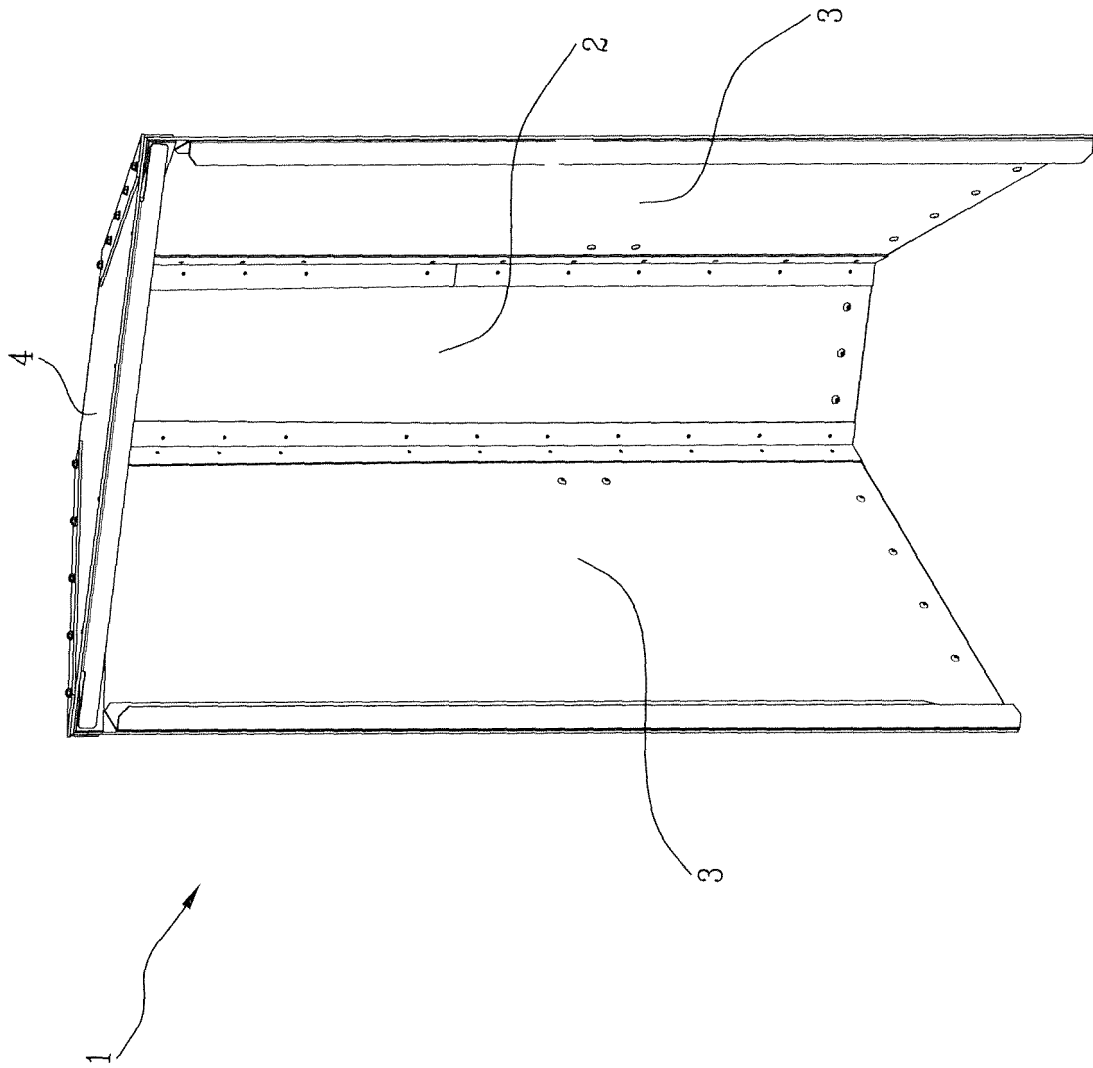
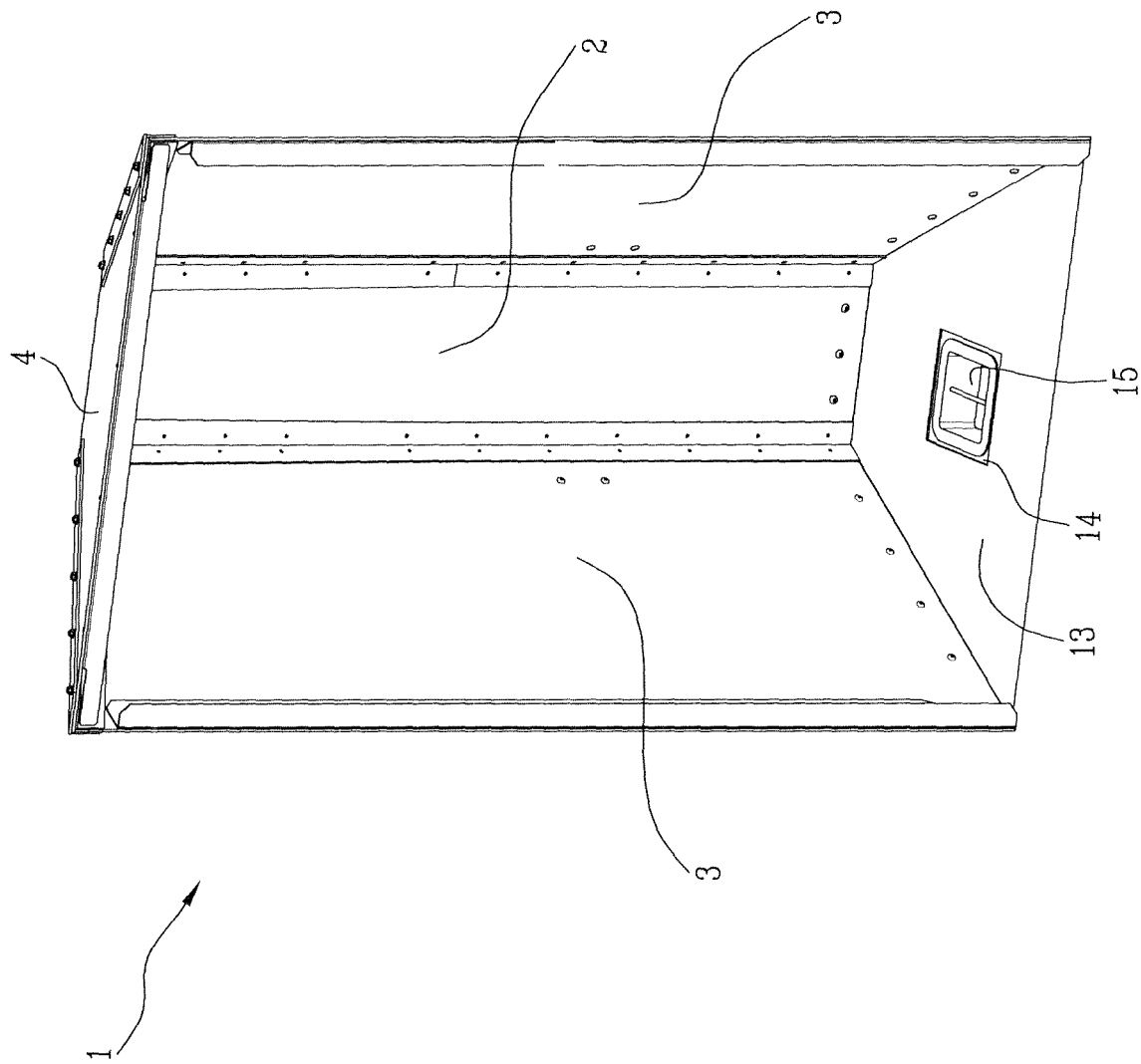


Fig.1B



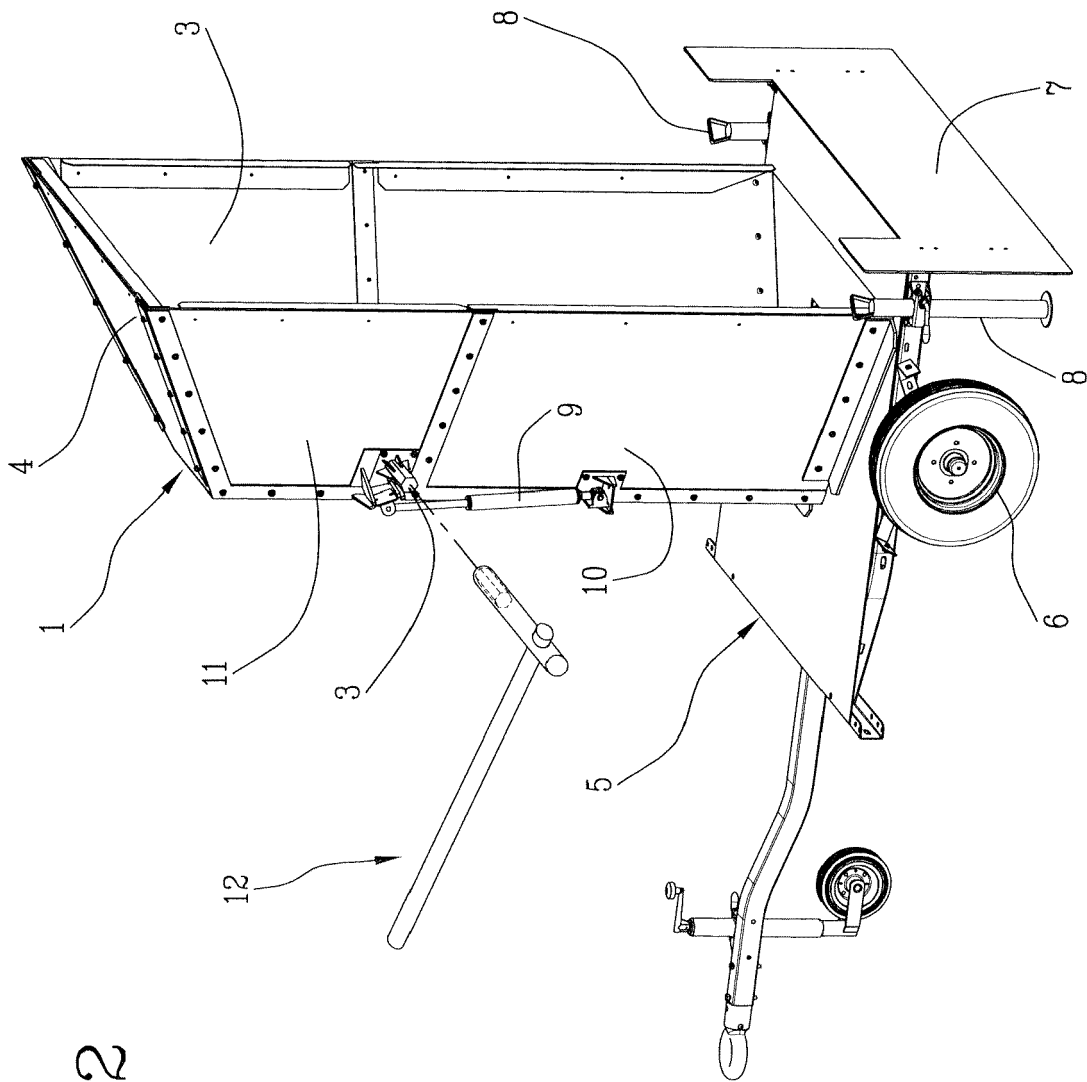


Fig.2

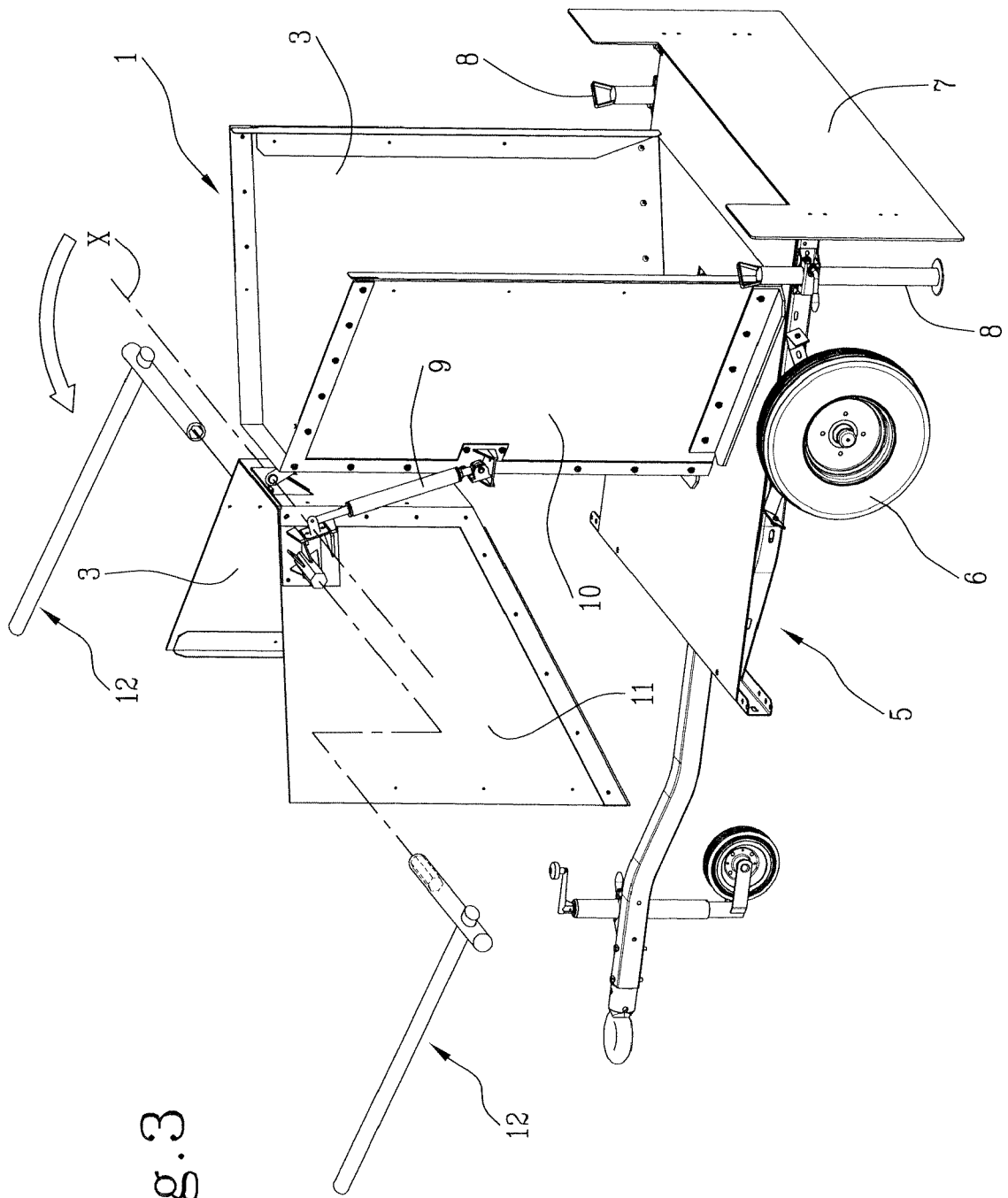


Fig. 3

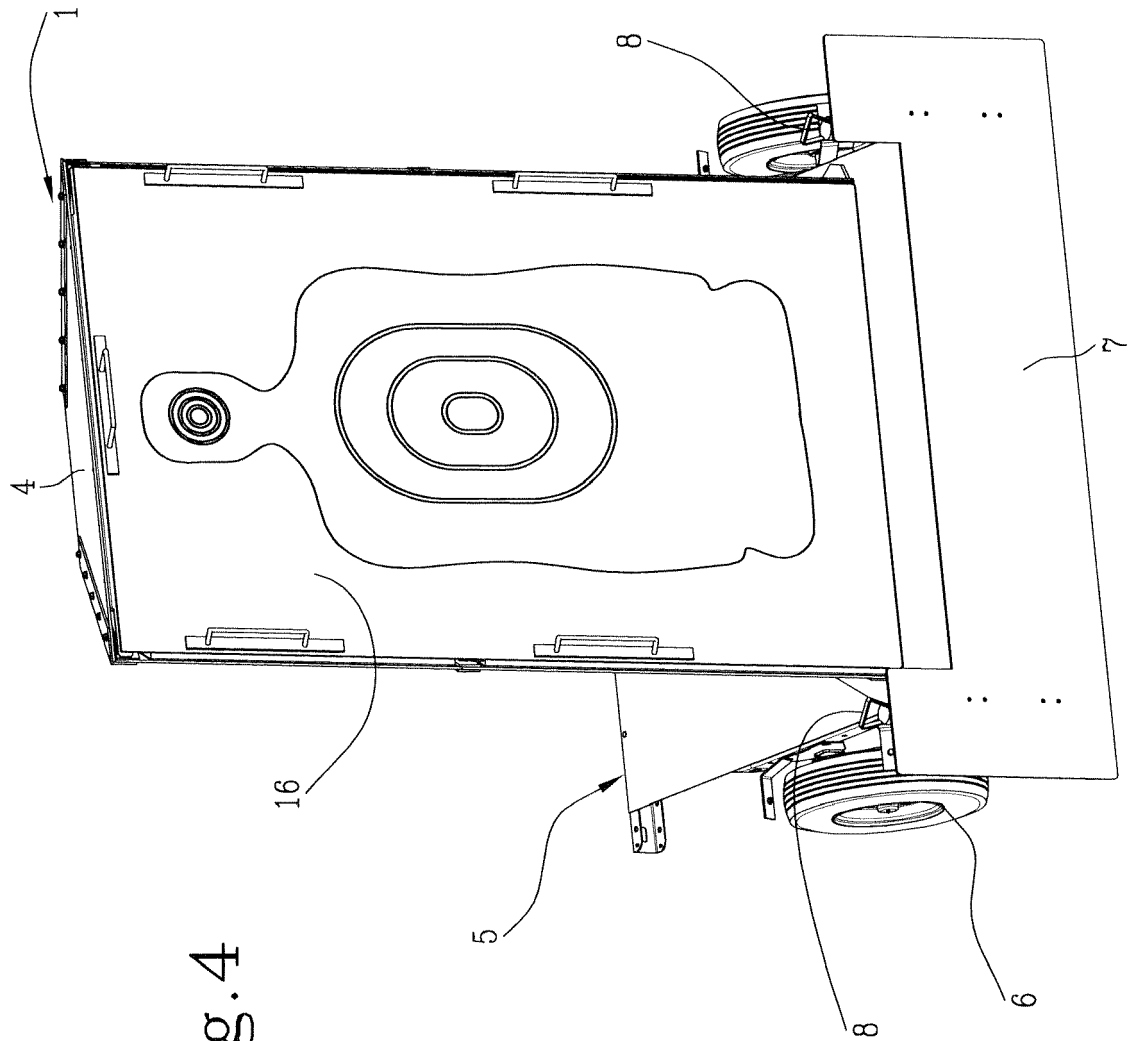


Fig. 4

Application Number
EP 17 42 5041

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	Anonymous: "Bullet Trap USA", , 15 April 2013 (2013-04-15), XP002773104, Retrieved from the Internet: URL: http://web.archive.org/web/20130415114838/http://www.bullettrapusa.com/ [retrieved on 2017-08-22]	1-4, 10-16	INV. F41J1/10 F41J13/02 F41J1/00
Y	* the whole document *	5,17	
A	-----	6-9	
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A	* column 3, line 4 - line 36 * * figures *	6-9	

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X	US 2016/003584 A1 (DURYSKI ERIC [US] ET AL) 7 January 2016 (2016-01-07) * abstract * * paragraphs [0019], [0020] * * figures *	1,16	
	----- -/--		
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 22 August 2017	Examiner Vermander, Wim
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	



EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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X	DE 93 13 702 U1 (MEY KLAUS PETER DIPL ING DIPL [DE]) 18 November 1993 (1993-11-18) * page 5 * * figures *	1,16	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
Place of search The Hague		Date of completion of the search 22 August 2017	Examiner Vermander, Wim
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			

3 EPO FORM 1503 03.82 (P04C01)

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

EP 17 42 5041

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

22-08-2017

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