

BLAST DEFLECTOR AND VEHICLE HAVING SUCH A DEFLECTOR

The technical field of the invention is that of the blast deflectors for military vehicle, and the military vehicles
5 equipped with such deflectors.

The military vehicles are often provided with superstructure equipment that are vulnerable to the blast generated by the shot of an on-board gun whose muzzle is located at the vicinity of these equipment.

10 It is known to solve this vulnerability problem by dismounting said equipment during prolonged firing periods using the weapon, and then mounting them again during the movement operations.

It is also known, by patent US6302010, a shield intended
15 to be attached to the roof of a vehicle and comprising three articulated panels. A central panel is articulated on the vehicle roof and two lateral panels are articulated on the central panel. This shield is intended to protect a manhole and not a superstructure equipment. The lateral panels have to
20 be handled by an operator and the installation of said shield remains difficult and requires the presence of an operator to position the lateral panels.

The invention aims to solve this vulnerability problem by providing a blast deflector that protects the equipment when
25 using the weapon and that can be installed easily to ensure the protection of the equipment.

Advantageously, the invention does not encumber the volume for the movements of the equipment outside the gun utilization phases, nor considerably oppose to the advance of the vehicle
30 during the movement phases. Also advantageously, the invention does not affect the operation of the equipment being protected.

Thus, the invention relates to a blast deflector, for a military vehicle, comprising a central panel adjacent to two lateral panels arranged on either side of the central panel, the deflector being characterized in that the panels can be tilted between a raised position capable of deflecting the blast and a lowered position in which the panels are substantially horizontal, the central panel being articulated with respect to the vehicle by means of a joint located on a lower edge of the central panel, each lateral panel being articulated with respect to a lateral edge of the central panel by means of a hinge, wherein an actuator connects the central panel to the vehicle and thus controls the movement for lowering or raising this central panel, each lateral panel being provided with a guiding bar on which a plain bearing is able to slide and pivot, each bearing being connected to the actuator by a connecting rod which thus makes it possible, when the central panel is being lowered, to drivingly lower the lateral panels while moving them apart from the central panel so as to place all the panels, once lowered, inside a same plane that is substantially horizontal, and, conversely, makes it possible to raise all the panels simultaneously while imparting them an angular arrangement with respect to each other to form a blast protecting shell.

Advantageously, the central panel is articulated with respect to a fixed lower part that comprises three adjacent faces having an angular arrangement with respect to each other that is identical to that of the panels in the raised position to form a blast protecting shell.

Advantageously, the actuator is a hydraulic cylinder.

Advantageously, each panel is provided with at least one brace having a nestable shape intended to match with a

corresponding complementary shape located on the vehicle or the lower part so as to transmit the blast forces received by the panels.

5 The invention also relates to a military vehicle comprising an artillery gun, provided with a deflector according to the previously-mentioned characteristics, the deflector being intended to protect a superstructure member of the vehicle that is located at the vicinity of the muzzle of
10 the gun such that, when the artillery is lowered, the panels are placed in a lowered position above the muzzle of the gun, and such that, when the gun is aimed, the protecting shell deflects the blast that is directed to the superstructure member.

15 Advantageously, the superstructure member includes a close-in protection weapon.

20 The invention will become more apparent upon reading the following description, made in reference to the appended drawings, drawings in which:

FIG.1 shows a three-quarter view of a vehicle according to the invention.

25 FIG.2 shows a view of the invention in the raised position.

FIG.3 shows a rear view of the invention in an intermediary position.

FIG.4 shows a view of the invention in the lowered position.

30 FIG.5 shows a side view of the invention in the lowered position.

According to FIG.1, a military vehicle 100 is provided with an artillery gun 101 which is aimed and ready to fire.

The vehicle 100 is also provided with a superstructure equipment 102. Here, this equipment 102 includes a remotely-controlled weapon 102 to ensure the close-in protection of the vehicle 100. This equipment 102 is located in the trajectory
5 of the muzzle wave 103 of the gun after firing. This muzzle wave 103 is formed by the propellant gases exiting the muzzle brake 17 after the projectile. The blast 103 is likely to damage the equipment 102 due to the sudden overpressure. Here, a deflector 1 is in the raised position and protects the
10 equipment 102 from the blast 103, emitted from the artillery when firing, by deflecting the blast on the outer surface of panels 2 and 3 that the deflector 1 comprises.

According to FIG.2, the deflector 1 comprises a central panel 2 adjacent to two lateral panels 3 arranged on either
15 side of the central panel, the lateral panels being also visible in FIG.1. The deflector 1 is in a raised position capable of deflecting the blast thanks to the shell shape partially enveloping the equipment 102 to be protected.

According to a preferred embodiment, visible in FIGS.1-5,
20 the central panel 2 is articulated with respect to a lower part 9 that comprises three adjacent faces 9a,9b,9c having a relative angular arrangement between the faces 9a,9b,9c that is identical to the angular arrangement of the panels 2 and 3 in the raised position, so as to contribute to the formation
25 of a lower part of the blast protecting shell. This lower part 9 makes it possible to increase the height of the deflector 1 and is provided with braces 11 (FIG.3) that are able to take up the forces transmitted by the panels 2 and 3 in the raised position. Taking up the forces between the panels 2 and 3 and
30 the braces 11 is done by means of nestable shapes 14 located at the upper ends of the braces 11 and intended to match with complementary shapes 13 integral with the panels 2 and 3.

As visible in FIG.3, the central panel 2 is articulated with respect to the lower part 9 by means of a joint 4 located on a lower edge of the central panel 2. Each lateral panel 3 is articulated with respect to a lateral edge of the central panel 2 by means of at least one hinge 5. An actuator 6, here an electric or hydraulic cylinder, connects the central panel 2 to the lower part 9 and thus controls the movement for lowering or raising the deflector 1.

Each lateral panel 3 comprises a guiding bar 7 obliquely disposed with respect to the rod exiting direction of the cylinder 6, bar 7 on which a plain bearing 8 is able to slide and pivot. Each bearing 8 is connected to the cylinder 6 by a connecting rod 12 that is pivotally mounted with respect to the cylinder 6 at joints 15 that are parallel to the rod of the cylinder 6.

Thus, when the central panel 2 is being lowered, it drivingly lowers the lateral panels 3 while moving them apart from it.

In the lowered position, the panel 2 is located to the rear of the vehicle, inside a plane P that is substantially horizontal and visible in FIGS.4 and 5 and the lateral panels 3 are arranged on either side of the central panel and substantially inside the same horizontal plane P.

Conversely, in order to switch from the lowered position in FIG.4, the retraction of the rod of the cylinder 6 makes it possible to simultaneously raise all the panels 2 and 3 by sliding the bearings 8 along the bars 7, thereby imparting a relative angular arrangement among the panels 2 and 3 that is suitable to form again a blast protecting shell once the panels have returned to the raised position.

According to FIG.5, lowering the panels 2 and 3 makes it possible for the equipment 102 to have a complete field of fire over 360 degrees and some range of movement in depressing.

Furthermore, switching to the lowered position of the panels 2 and 3 restricts the wind surface area of the deflector 1, thereby reducing the resistances against the vehicle when moving forward during the transport phases.

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In addition, lowering the deflector 1 on a lower part 9 having a height allows the panels 2 and 3 to be positioned above the muzzle of the gun 100 when the latter is lowered at the vicinity of the vehicle cab 16, for example during the transport phases.

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If it is not necessary to lower the gun at the vicinity of the vehicle cab 16, the lower part 9 is not essential and the deflector 1 could be directly made integral with the vehicle cab.

CLAIMS

1 - A blast deflector (1), for a military vehicle (100), comprising a central panel (2) adjacent to two lateral panels (3) arranged on either side of the central panel (2), the deflector (1) being characterized in that the panels (3) can be tilted between a raised position capable of deflecting the blast and a lowered position in which the panels (2, 3) are substantially horizontal, the central panel (2) being articulated with respect to the vehicle (100) by means of a joint (4) located on a lower edge of the central panel (2), each lateral panel (3) being articulated with respect to a lateral edge of the central panel (2) by means of a hinge (5), wherein an actuator (6) connects the central panel (2) to the vehicle (100) and thus controls the movement for lowering or raising this central panel (2), each lateral panel (3) being provided with a guiding bar (7) on which a plain bearing (8) is able to slide and pivot, each bearing (8) being connected to the actuator (6) by a connecting rod (12) which thus makes it possible, when the central panel (2) is being lowered, to drivingly lower the lateral panels (3) while moving them apart from the central panel (2) so as to place all the panels (2,3), once lowered, inside a same plane (P) that is substantially horizontal, and, conversely, makes it possible to raise all the panels (2,3) simultaneously while imparting them an angular arrangement with respect to each other to form a blast protecting shell (103).

2 - The blast deflector (1) according to claim 1, characterized in that the central panel (2) is articulated with respect to a fixed lower part (9) that comprises three adjacent faces (9a,9b,9c) having an angular arrangement with respect to each other that is identical to that of the panels (2,3) in the raised position to form a blast protecting shell.

3 - The blast deflector (1) according to one of the preceding claims, characterized in that the actuator (6) is a hydraulic cylinder (6).

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4 - The blast deflector (1) according to one of the preceding claims, characterized in that each panel (2,3) is provided with at least one brace (11) having a nestable shape (14) intended to match with a corresponding complementary shape (13) located on the vehicle (100) or the lower part (9) so as to transmit the blast forces received by the panels (2,3).

5 - A military vehicle (100) comprising an artillery gun (101), characterized in that it is provided with a deflector (1) according to claim 2, the deflector (1) being intended to protect a superstructure member (102) of the vehicle (100) that is located at the vicinity of the muzzle (17) of the gun (101) such that, when the artillery (100) is lowered, the panels (2,3) are placed in a lowered position above the muzzle (17) of the gun (101), and such that, when the gun (101) is aimed, the protecting shell deflects the blast (103) that is directed to the superstructure member (102).

25 6 - The vehicle (100) according to claim 5, characterized in that the superstructure member (102) includes a close-in protection weapon (102).