

The invention relates to a loader for small weapons such as, machine pistol, rifle, machine gun, and similar of the type which can be attached to the upper part of the weapon and in the axis of the frame, this loader comprises a first part in
5 tube form which forms the actual magazine of the loader and in which the cartridges are stored with their longitudinal axes perpendicular in relation to the longitudinal axis of the loader, a second part which shows on both sides an oblong vent, one of these vents constituting the connection
10 between the aforementioned parts and the second vent constituting the connection between the aforementioned second part and the weapon with which the loader works together, and means which permit the transport of the cartridges inside the loader.

15 It is known that a weapon provided with its loader must be easily transportable, compact and allow all firing positions in the field, etc...

In order to satisfy these conditions loaders have already be suggested disposed either below the weapon, or on the side
20 of the weapon, or even above the weapon.

In the first two solutions the loader is disposed in such a manner that it forms a quite considerable protruding part of the weapon, through which results the impossibility to satisfy the above mentioned conditions.

25 The loaders of the third type disposed above the weapon and according to the longitudinal direction of this on the contrary satisfy all the required conditions.

The invention relates to loaders of the aforementioned third type.

5 A loader of this type corresponding to the preamble of claim 1 and which shows the characteristics enumerated in the first paragraph is known from US-A-4.286.499. The cartridges being stored with their longitudinal axes perpendicular to the axis of the loader and therefore to the axis of the chamber of the barrel, they must be pivoted by 90 degrees.

10 In US-A-4.286.499 this pivoting is effected inside the weapon and with the assistance of a pusher which is part of this weapon.

15 This solution not only renders the manufacture of the weapon more difficult and increases the cost price, but the necessity of a mobile pusher also increases the risks of blockage through which results a mediocre operational reliability.

20 Other solutions are known from US-A-2.624.241, US-A-2.358.792 and US-A-2.448.081 but they also include the pivoting of the cartridges outside the loader and with the assistance of a mobile element which is part of the weapon, and which therefore present the same disadvantages as the above mentioned solution according to US-A-4.286.499.

25 The object of the present invention is to remedy these disadvantages and to provide a longitudinal loader disposed above the weapon, which permits the pivoting of the cartridges through an angle of 90 degrees without the intervention of mobile elements.

30 For this purpose the second part of the loader comprises an immobile transfer element including the above mentioned vents and which shows two helicoidal slopes turning in

opposite directions through an angle of 90 degrees from the above mentioned first vent, this first vent giving access to the slopes and these slopes opening into the second vent.

5 In this manner a longitudinal loader of great reliability and of efficient operational security is obtained, the number of pieces being minimised, while avoiding the use of mobile pieces and thus permitting the construction of a weapon of reduced size and without the loader protruding in relation to the actual weapon.

10 In a particular embodiment of the invention, the second part of the loader is constituted by a protruding cylindrical wall provided on one of the walls of the aforementioned first part, this wall comprises the transfer element which is cylindrical.

15 For greater clarity, an embodiment of a loader according to the invention is described hereafter as illustration and without any restrictive character, with reference to the attached drawings in which:

20 figure 1 represents a lateral view of a weapon, in this case a machine pistol equipped with a loader according to the invention;

figure 2 represents a lateral view of a loader according to the invention, the loader being partially loaded;

25 figure 3 represents a view according to the arrow F3 in figure 2;

figures 4 and 5 represent sections according to the lines IV and V-V from figure 2;

30 figure 6 represents a section according to the line VI-VI from figure 3;

figure 7 represents an enlarged view of the part indicated by F7 in figure 6, the loader being empty;

figures 8, 9 and 10 represent sections, respectively

according to the lines VIII-VIII, IX-IX and X-X from figure 7;

figure 11 represents a view according to the arrow F11 from figure 7;

5 figure 12 represents a view according to the arrow F12 from figure 11, the wall surrounding the cartridge transfer element being removed;

figure 13 represents a view according to the arrow F13 from figure 12;

10 figures 14, 15 and 16 represent views respectively according to the arrows F14, F15, F16 from figure 13; figures 17 and 18 represent in section two positions of operation of the loader;

15 figure 19 represents, in perspective, and in a very schematic manner, the essential part of the loader according to the invention, certain walls being removed and the loader has been illustrated inverted in order to illustrate better the operation of the loader.

20 Figure 1 represents a weapon, in this case a machine pistol 1, provided with a loader 2 according to the invention.

The loader consists in essence as represented in figures 2 to 6, of two parts 3 and 4. The first part 3 constitutes the actual loader, while the second part 4 is constituted by elements which permit the transfer of the cartridges 5 from
25 the part 3 towards the weapon. The part 3 shows the form of a tube of transverse section at right angles to the walls 6, 7, 8 and 9 while the part 4, which forms one of the extremities 10-11 of the aforementioned tube, is constituted by a cylindrical protruding part.

30 The extremity 10 of the tube 3 is in this case constituted by a U-shaped wall 12, possibly detachable, of which the free extremities 13, 14 are folded over one towards the other in order to be able to work together with ribs, respectively 15 and 16, provided for this purpose on the

walls 6 and 7.

The internal faces 17, 18, 19 and 20 of the walls 6 to 9 in this embodiment show ribs, respectively 21, 22, 23 and 24 which form the guiding elements for the cartridges 5.

- 5 Because of this the rubbing between the walls of the loader
and the cartridges 5 is very small and cavities are obtained
between the ribs which can contain foreign matter such as
grains of sand or similar and it is thus avoided that this
foreign matter detracts from the movement of the cartridges
10 in relation to the body of the loader.

- The internal face 18 of the wall 7 destined to be mounted
against the frame of the weapon, shows towards the part 4 of
the loader a slope 25 of which the free extremity shows an
extension 26. The width of the slope 25 and the extension
15 26 is such that a free space, respectively 29, 30, exists
between their lateral faces 27, 28 and the neighbouring ribs
23, 24. As will be seen from the drawings, the
aforementioned ribs 22 stop at the free extremity of the
extension 26.

- 20 The distance between the ribs 22 provided on the extension
26 and the ribs 21 provided on the internal face 17 of the
wall 6 is slightly greater than the exterior diameter of the
cartridge 5, while the distance between the ribs 21 and 22
provided on the internal faces 16, 17 of the walls 6 and 7
25 is slightly less than twice the aforementioned exterior
diameter of a cartridge 5.

- The internal face 17 of the wall 6, as well as the ribs 21
are extended close to the free extremity of the
aforementioned extension 26 by a curved guiding surface 31
30 made in the part 4 of the loader. The free extremity of
this surface determines one side of an oblong vent 32 of
which the other sides are determined by the internal faces

19, 20 and the walls 8, 9, on the one hand, and a rib 33 provided on a detachable cylindrical element 34 lodged in the cylindrical protruding wall 35 of the part 4 of the loader 2, on the other hand.

- 5 This cylindrical element 34 constitutes the transfer element for cartridges 5 from the actual magazine or the part 3 of the loader to the weapon provided with such a loader. The element 34 can be secured in the wall 35 by whatever means for example by means of an adequate adhesive.
- 10 The rib 33 is mounted against the inclined extremity 36 of the aforementioned extension 26 and is provided with a lip 37 which runs against the grooves 22 provided on the extension 26. Its width is equal to the width of the aforementioned extension 26.
- 15 Under the aforementioned rib 33, the element 34 shows a part 38 of which the form is such that it adapts to the local form of the corresponding part of the slope 25, respectively the extension 26 and of which the width is equal to the width of the aforementioned rib 33.
- 20 The above mentioned vent 32 gives access to two slopes respectively 41 and 42, rotating over an angle of 90 degrees according to the arrows P1, P2 in figure 13, these slopes are each delimited by two similar helicoidal faces, respectively 43 and 44. The free extremities of the upper
- 25 faces 43 each terminate in a curved part 45 which opens into a second oblong vent 46 disposed in the longitudinal axis of the loader.

As has been illustrated, more especially in figure 11, the longitudinal sides of the vent 46 at both extremities show

30 zones closer together, respectively 47, 48 and 49, 50.

The length of the zones 47, 48 is only a few millimetres,

while the length of the zones 49, 50 is of the order of one third of the length of the vent 46.

Finally, the lower face 44 of the slope which houses the front parts or cartridges heads is provided with a deepened zone 51.

In the axis of the vent 46 the wall 34 of the part 4 of the loader, two rectangular notches are provided, respectively 52 and 53.

On the inside of the tube 3 a spring 54 is finally housed of which the rear extremity rests against the above mentioned wall 12 while the front extremity is attached to the end 55 of a transporter or pushing element 56 constituted in this case by a central part 57 and two lateral flanges, respectively 58 and 59, for example in rectangular trapezium form of which the front inclined edge is directed towards the part 4 of the loader, the large base of the trapezium being adjacent to the above mentioned wall 6. The lateral flanges 58 and 59 are disposed in such a manner and have a thickness, such that they can penetrate into the above mentioned spaces 29, 30.

Between the pushing element 56 and the actual cartridges 5, at least two false cartridges are provided, respectively 60 and 61, in this case constituted by cylindrical rods provided in the middle and at both extremities with a cylindrical shoulder, respectively 62, 63, 64 and of which the mutual distances correspond to the mutual distances of the grooves 21, respectively 22.

The operation of the loader as described is simple and as follows.

The loading of the loader 2 can be effected, either by introducing cartridges 5 via the vent 46 of the cylindrical

element 34, or via the back by removing the wall 12 and the spring 54 with the pushing element 56.

5 It is evident that at this time the cartridges 5 are pushed under the action of the spring 54 and through the intervention of the pushing element 56 and the false cartridges 60, 61 towards the part 4 of the loader.

10 Through this action the cartridges 5 arrive, one after the other, in the passage formed between the wall 6 and the extension 26, then through the vent 32 and the slopes 41, 42, in the vicinity of the vent 46, through which results the transfer of the cartridges 5 from the magazine chamber towards the outer part of the loader changing the direction of these cartridges by an angle of 90 degrees.

15 The cartridge at this time in front of the vent 46 is held back in the loader through the presence of the extremities 65, 66 of the zones 49, 50, on the one hand, and the following cartridge, on the other hand, which presses the first cartridge against the aforementioned extremities 65, 66.

20 The first cartridge is thus in the position as represented in figure 17.

25 At this time it is sufficient that the breech of the weapon runs against the rear part of the first cartridge in order to move it towards the barrel of the weapon. During this movement the cartridge will remain in contact with the extremities 65 and 66 of the zones 49 and 50 which results in the fact that the first cartridge, while being pushed towards the outside of the vent 46 through the combined action of the breech and the following cartridge, is moved, 30 at a certain angle, see figure 18 towards and then into the barrel of the weapon.

The total emptying of the loader is ensured through the presence of the false cartridges 60, 61 which permit the last cartridge 5 to be delivered in front of the vent 46.

5 In reality, at this time the last cartridge will be pushed by the false cartridge 61 towards the position as represented in figure 17, all subsequent angular movement of the false cartridge 61 being stopped through the presence of the cavity 51 in the interior face 44 of the slope 42.

10 The constitutive parts of the loader according to the invention, with the exception of the spring 54 and possibly the false cartridges 60, 61 are preferably constructed in a material which resists abrasion and is auto-lubricating, for example shock resistant polycarbonate.



Claims.

1.- Longitudinal loader for small weapons such as, machine
pistol, rifle, machine gun, and similar of the type which
5 can be attached to the upper part of the weapon and in the
axis of the frame, this loader comprises a first part (3) in
tube form which forms the actual magazine of the loader and
in which the cartridges (5) are stored with their
longitudinal axes perpendicular in relation to the
10 longitudinal axis of the loader (2), a second part (4) which
shows on both sides an oblong vent (32, 46), one of these
vents (32) constituting the connection between the
aforementioned parts (3 and 4) and the second vent (46)
constituting the connection between the aforementioned
15 second part (4) and the weapon (1) with which the loader (2)
works together, and means (54) which permit the transport of
the cartridges (5) inside the loader (2), characterised in
that the second part (4) comprises an immobile transfer
element (34) including the above mentioned vents (32 and 46)
20 and which shows two helicoidal slopes (41-42) turning in
opposite directions through an angle of 90 degrees from the
above mentioned first vent (32), to the above mentioned
second vent (46), this first vent (32) giving access to the
slopes (41-42) and these slopes (41-42) opening into the
25 second vent (46).

2.- Loader according to claim 1, characterised in that the
first part (3) is constituted by a tube of transverse
section at right angles to walls (6, 7, 8 and 9), of which
the internal height is slightly less than twice the exterior
30 diameter of a cartridge (5) and of which the internal width
is slightly greater than the length of the cartridge (5),
the rear extremity (10) of the aforementioned part (3) being



constituted by a wall (12) while the other extremity is constituted by the aforementioned part (4).

3.- Loader according to claim 1, characterised in that the first part (3) is constituted by a tube of transverse
5 section at right angles to walls (6, 7, 8 and 9), of which the internal faces (17, 18, 19 and 20) each show at least two ribs, respectively (21, 22, 23 and 24) which form guiding elements for the cartridges (5), the distance
10 between the upper and lower ribs (21-22) of the loader is slightly less than twice the exterior diameter of a cartridge (5) while the distance between the lateral ribs (23-24) of the loader is slightly greater than the length of the cartridge (5), the rear extremity (10) of the
15 aforementioned part (3) being constituted by a wall (12) while the other extremity is constituted by the aforementioned part (4).

4.- Loader according to either of the claims 2 and 3, characterised in that the wall (12) is fixed.

5.- Loader according to either of the claims 2 and 3,
20 characterised in that the wall (12) is detachable.

6.- Loader according to any of the preceding claims, characterised in that the second part (4) of the loader is constituted by a cylindrical protruding wall (35) provided on one of the walls (7) of the aforementioned first part
25 (3), this wall (35) comprises the transfer element (34), which is cylindrical.

7.- Loader according to claim 3, characterised in that the guiding faces (17-18) or the guiding ribs (21-22) are extended up to the vent (32) provided in the transfer
30 element (34).

8.- Loader according to claim 7, characterised in that the



wall (17), respectively the ribs (21), at the proximity of the aforementioned vent (32) show a curved guiding surface (31) of which the free extremity determines one side of the aforementioned vent (32).

- 5 9.- Loader according to claim 7, characterised in that the wall (18) respectively the ribs (22) show towards the extremity (11) of the part (3) of the loader a slope (25) extended by an extension (26) of which the free extremity determines a second side of the aforementioned vent (32).
- 10 10.- Loader according to the preceding claim, characterised in that the perpendicular distance between the wall (17) and the extension (26) respectively between the ribs (21) and (22), at the location of the extension is slightly greater than the exterior diameter of a cartridge (5).
- 15 11.- Loader according to one or more preceding claims, characterised in that the aforementioned vent (32) gives access to two descending slopes (41-42), each delimited by two helicoidal faces, extending at 90 degrees and of which the faces (41-42) each terminate in a curved part (45) which
20 opens into the aforementioned oblong vent (46) disposed in the longitudinal axis of the loader.
- 25 12.- Loader according to any of the preceding claims, characterised in that the aforementioned wall (35) shows, in the axis of the vent (46) two diametrically opposite notches (52-53).
- 13.- Loader according to any of the preceding claims, characterised in that the longitudinal sides of the vent (46) at both extremities show zones closer together (47-48) and (49-50).
- 30 14.- Loader according to claim 13, characterised in that the zones closer together (47-48) are situated at the



extremity of the vent (46) next to the barrel of the weapon (1) their length being only of a few millimetres.

15.- Loader according to claim 13, characterised in that the zones closer together (49-50) are situated at the farther extremity from the barrel of the weapon (1), their length being of the order of a third of the length of the vent (46).

16.- Loader according to claim 3 and claim 9 or 10, characterised in that the width of the slope (25), of the extension (26), of the rib (33) which limits on one side the first vent (32) and of the part (38) of the transfer element (34) situated underneath the rib (33) are such that between their lateral faces and the neighbouring walls or ribs, respectively (8-9) and (23-24), a free space remains, respectively (29) and (30), the bottom of these spaces (29-30) being at the same level as the internal face (18) of the part (7).

17.- Loader according to claim 1, characterised in that the means (54) which permit the transport of the cartridges (5) in the loader (2) are constituted by a spring of which the rear extremity rests against the wall (12) while the front extremity rests against a pushing element (56) for the cartridges (5).

18.- Loader according to claim 17, characterised in that the pushing element (56) is constituted by a central part (57) and two lateral flanges (58, 59) which work together with the cartridges (5) in order to transport them through the loader (2).

19.- Loader according to claim 18, characterised in that the lateral flanges (58, 59) have a thickness less than the width of the spaces (29, 30) such that these flanges can penetrate into these spaces (29-30).



- 20.- Loader according to claim 3 and claim 18 or 19, characterised in that the lateral flanges (58, 59) are in the form of a rectangular trapezium of which the inclined edge is directed towards the cartridges (5), the large base of the trapezium being adjacent to the upper wall (6) and the height of the pusher being slightly less than the distance between the walls (6, 7), respectively the ribs (21-22).
- 21.- Loader according to one or more of the preceding claims, characterised in that at least one false cartridge (60-61) is disposed between the cartridges (5) and the aforementioned pusher (56).
- 22.- Loader according to claim 21, characterised in that each false cartridge is in the form of a cylindrical rod provided with at least two cylindrical shoulders (62-63-64) disposed opposite the ribs (21-22).
- 23.- Loader according to claim 21 or 22, characterised in that the shoulders (62-63-64) show a diameter equal to the exterior diameter of a cartridge (5).
- 24.- Loader according to one or more preceding claims, characterised in that the lower face (44) of the slope which houses the front parts or cartridge heads (5) is provided with a deepened zone (51) with which a false cartridge can work together in order to stop it when the loader (2) is empty.