

Weapon with a Mounting Rail

The invention relates to a sliding rail that can be placed upon or removed from the top side of a handgun, at whose rear end a sight arrangement is mounted that can be lowered into the sliding rail and at whose front end a front sight arrangement is mounted. Further the invention relates to a kit made up of an automatic pistol with a removable carrying strap. Finally the invention also relates to a handgun with such a sliding rail.

Positional terms used in the following, such as "above", "front", etc. always refer to the weapon held ready to fire in normal firing position with horizontal barrel, which is pointing to the "front", i.e. towards the target.

From documents US 20030127085, 5 590 484, 1 142 806, 6 499 245 and DE 199 05 405 a rail can be inferred in which the front sight and rear sight are retractable.

In the field of hunting drop barrel weapons manufactured usually using expensive manual labor it is known to provide expensive three-barreled guns with a rear sight which folds down and which usually automatically unfolds in the case of switching to rounds of bullets. If it is set back to rounds of buckshot then the rear sight folds down and offers a continuous surface with the sliding rail. Further such weapons often also have a hinged, rough shotgun sight which covers the rigidly mounted rifle sight in the case of rounds of buckshot. However, a front sight remains visible under all circumstances and protrudes over the front end of the sliding rail.

This sliding rail, which is constructed as a straight sliding rail or as a hollow rail, first and foremost serves the purpose of facilitating the aiming in the case of fleeting rounds of bullets or in particular in the case of rounds of buckshot.

In an entirely different field of weapons usually produced by machine a modern automatic pistol has as a rule a carrying strap mounted on the top side of the weapon, which protects the operating elements of the weapon from above and forms a carrying handle in which an optical or mechanical sight is embedded or to which it is mounted. Since namely the axis of the bore (center axis of the barrel) as a rule runs through the base plate of the shoulder support in order to minimize the action of the recoil, the sight must be attached at a considerable distance above the barrel so that the marksman occupies a natural position in the case of firing. This distance is produced by the sight embedded in the carrying strap in such a way that the line of sight is at an ideal distance above the weapon. This sight forms the standard sight of the weapon.

If now a special aiming device (sniper scope, telescopic sight, laser sight etc.) is to be additionally mounted to the weapon, the result is often an inaccurate location of the sighting line since its ideal location is already being occupied by the standard sight.

For the purpose of holding a special aiming device it would of course be possible to use said special aiming device in place of the carrying strap, which in the case of most automatic pistols can be removed. In this case however, the standard sight would be omitted. This is disadvantageous since the special aiming device usually cannot be used as universally as the standard sight can.

In other respects, particularly in the case of repeating weapons, but also in the case of pistols, machine guns and automatic pistols, it is known to remove additional prismatic rails upon which the named special aiming devices, but also other

devices (e.g. search lights) can be detachably mounted in such a way that they do not block the line of sight.

In the case of weapons for snipers, guns and hunting rifles it is customary to either leave the standard sight off **in** the first place or to cover it up with the telescopic sight so that it can only be used when the telescopic sight has been taken off. In addition there are telescopic assemblies for hunting weapons under which one can see through the standard sight; however the same applies here that has already been said in the case of automatic pistols: the two lines of sight lie on top of one another so that at best only one can be optimal.

A hunting rifle with a narrow prism rail for holding the telescopic sight must be tested again each time the telescopic sight is taken off and put back on. In the case of wider sight rails this is not necessary, in particular in the case of the so-called "Picatinny rail". Thus in this case it is expedient to remove the special aiming device, in particular in military action, each time (e.g. after the action) when it is not required in order to protect it from damage. This means that a standard weapon as a rule is equipped with its standard sight.

However, also in the case of a change of the conditions it is practical to remove the special aiming device whenever it has become impractical (e.g., a night sight during the daytime). Then it is necessary that the standard sight is tested (i.e., adjusted) and that its line of sight is at the correct height if at all possible.

This also holds true for pistols: a laser sight that is practical during twilight is senseless for example in the case of empty batteries or on a sunny day in the open.

The invention is meant to intervene here and find a solution for handguns, in particular government issue weapons, quite specially for automatic pistols, wherein the most optimum assembly of special aiming devices should be possible without the standard sight suffering losses in its most optimum possible position.

This problem is solved according to the invention by the fact that the front sight arrangement can also be lowered into the sliding rail and that the entire sliding rail is constructed as an assembly rail for the mounting of an add-on unit and exhibits a width which exceeds that of the front sight and rear sight arrangement which can be lowered.

An add-on unit can be slipped onto this assembly rail both from the front as well as from the rear when the front sight and rear sight are lowered because the lowered parts of the aiming device are at best and preferably flush to the upper surface of the assembly rail and the width of the assembly rail exceeds that of the aiming devices so that said aiming devices in lowered state in no way impair the movement of an add-on unit on the assembly rail.

The lowering of front sight and rear sight is to be understood most easily and therefore preferably by the folding down of the parts that can be lowered around a horizontal, transverse axis.

In other respects it is already known to construct the top part of a super heavy automatic pistol as a wide rail ("Desert Eagle" by IMI, Israel), but even in the case of this weapon the standard sight the front and rear side of the assembly rail so that add-on units cannot be slipped onto the rail be from the front or the rear or be removed from said

said rail. These known pistols always require assemblies for the add-on units which can be expanded far enough to be placed upon the assembly rail from above. In addition the standard sight hinders the vision through an add-on unit whose line of sight coincides or collides with that of the standard sight.

The assembly rail can, as in the case of the aforementioned, known pistols be integrated into the weapon, but preferably can be slipped on and removed so that in the production with simple resources several designs of a weapon can be produced and offered in cost effective modular construction, moreover the front sight and or rear sight arrangement of the assembly rail be adjustable in its lateral position in order to customize the standard sight as precisely as possible to each weapon.

Since the invention with simple resources for the standard sight and add-on unit offers practically the same line of sight, the invention can in principle be used in the case of handguns of all manner without restricting its usability, thus in the case of weapons for snipers, automatic pistols, machine guns and pistols, but also for example in the case of a bazooka, a portable grenade launcher for direct or quasi-direct shooting and much more. However, this requires that the interface match the weapons case.

However, the invention is particularly well suited for automatic pistols whose top side is covered and protected by a handle-like sight. As initially mentioned, the construction of such a protective covering as a handle has the purpose of making sighting possible with a line of sight lying far above the weapon. Due to the more favourable recoil, the weapon is namely to be provided with a shoulder support which lies about at the height of the axis of the bore (center axis of the barrel).

In the case of such weapons it is customary to construct the front sight and rear sight to be fold-down (e.g., with the Swiss automatic rifle 57) whenever one does not require any protective covering. However, as soon as parts must be protected from rough contact with the environment, such as for example the cocking slide of the French automatic pistol FA MAS F3, one uses a protective or carrying strap on the top side of the weapon which carries the standard sight above and which therefore must be fastened backlash free to the weapon.

Here it is particularly difficult to mount an additional, backlash-free holder for the add-on units which in cases of need permits the view above the standard sight but also arranges the line of sight of the add-on unit as anatomically favorable as that of the standard sight.

To solve this problem the invention proposes a kit made up of an automatic pistol with a detachable carrying strap and an assembly rail for holding add-on units which can be built on the rifle in place of the previous carrying strap and which exhibits a retractable front sight arrangement on its front side and a retractable rear sight arrangement on its rear side.

Since the carrying strap must be mounted backlash free in transverse direction and vertical direction of the weapon, it is easily possible to mount an assembly rail that is also backlash free which on the one hand serves as a protective covering for movable parts and on the other hand can run lower over the weapon than the carrying handle, since the line of sight in the case of an active standard sight, that is folded up, is anywhere above the assembly rail. Inversely the line of sight of add-on units is not too high, as was the case previously, since the add-on unit can be mounted above the

assembly rail at precisely the ideal height. The position of the assembly rail namely influences that of the line of sight of the standard sight only indirectly.

In addition add-on units can be provided with an assembly which permits a quick and easy slipping on and removal, since the cheek pieces of the assembly must only tension the rail or release it and do not, as has been the case up to now, have to be expanded so far that a removal upward is possible.

The invention also relates to a handgun with an assembly rail that can be mounted on the top side, in which a retractable front sight arrangement is constructed on the front side of the assembly rail and a retractable rear sight arrangement is constructed on the rear side, neither of which hinders the slipping on and removal of an assembly in closed state, but which in opened state exhibits a nearly ideal vertical position above the assembly rail.

In this connection the parts of the rear sight arrangement are easy to fold down. Other possibilities for lowering the rear sight were abandoned.

The assembly rail can be randomly shaped, provided its cross section does not change to the extent that the slipping on of an assembly from the front or from the rear becomes impossible.

However, especially preferred is an arrangement in which the assembly rail exhibits a symmetrical cross section that tapers down. Hence it is similar to a dovetail.

In this connection the upper longitudinal edges of the assembly rail are preferably beveled so that no sharp corners are formed on which the marksman could injure himself.

Assembly rails of this type are already well-known, which if necessary exhibit transverse slots on the top side, into which a bolt of the assembly can penetrate in order to fix the add-on unit in longitudinal direction of the weapon. The rail that is best known and preferred within the scope of the invention is the so-called "Picatinny" rail. Such a rail is, compared to the dovetail of classical slip-on assemblies, relatively wide and under circumstances can even be designed of plastic.

Within the framework of the present invention it is however preferred that the assembly rail consist of metal, in particular of aluminum alloy. In this connection metal ensures the resistance against surface pressures, but on the basis of the large dimensions of a Picatinny rail a light metal is completely sufficient, in order to securely carry even heavy devices such as for example distance meters which are equipped with electronics for calculation of elevation. Within this framework it is also pointed out that even heavier, more durable designs of add-on unit can be used than could be mounted on the carrying handle up to now since the height of the assembly rail above the weapon can be much less.

The sight that can be lowered in the assembly rail can be an open sight as is known from hunting rifles and most military rifles of the early 20th century. However, it is preferred that the sight be a diopter sight.

While the diopter sight is inferior to the open sight in luminous intensity and immunity to dirt and moisture, it has quite significant advantages as far as the accommodation capacity of the eye and the experience of the marksman are concerned. However, it is especially preferred that this diopter sight can be arranged close to the eye of the marksman, so that the length of the assembly rail can be fully exploited for the standard sight. The assembly rail should namely be able to be brought as close as possible up to below the eye of the marksman in order to permit even small optical sights of all types.

If the assembly rail is mounted to a handgun, in particular to an automatic pistol, then it is fixed in vertical and transverse direction, but exhibits as it were a movable bearing in longitudinal direction in order to accept tolerances, thermal expansions or the like of the weapon without generating tensions. Therefore the assembly rail can also exhibit a considerable length compared to usual military slip-on assemblies. The positional precision related to the sight arrangement is as a result improved even more.

For this reason according to the invention it is additionally proposed that the front sight and or rear sight arrangement of the assembly rail be adjustable in its lateral position in order to customize the standard sight as precisely as possible to each weapon.

If the assembly rail for an automatic pistol is kept together with said automatic pistol, it is also possible to exchange the assembly rail with the carrying handle depending on choice and situation without it being necessary to test the respective standard sight again.

Of course it is often the case that several add-on units are mounted to a weapon, such as

an infrared night aiming device and its associated search lights. Formerly it was usually customary to arrange these devices on top of one another which resulted in considerable overall heights for the equipped weapon.

According to the invention it is therefore proposed that at least one second assembly rail, which extends parallel to the named assembly rail, can be mounted laterally and at an angle. For this reason the add-on units are arranged in collar-like fashion around the weapon, which therefore becomes more compact. By mounting of the second assembly rail(s) to the rear side of the first assembly rail it is also possible to arrange several sighting devices which lie in the range of the eye of the marksman.

Provided no other devices of the weapon are disturbed, it is possible to work the assembly rail from the weapon or place it directly on the weapon. However, in general it is preferred that one holder each for mounting to the handgun or the automatic pistol be mounted to the front and rear side of the assembly rail.

This has the unexpected advantage that the individual holders can be designed as a fixed bearing and a movable bearing, as is present for example in the case of a steel bridge, so that relative thermal expansions between the weapon and the assembly rail are permitted and do not have any effect on these.

The object of the invention will be explained in greater detail with the help of a non-restricting embodiment shown in the drawing, in which:

Figure 1 is the view of an automatic pistol in oblique projection which is equipped with the inventive assembly rail,

Figures 2a and 2b are views of a completed assembly rail with rear sight and front sight, in oblique projection, toward the front (Figure 2a) and toward the rear (Figure 2b), and

Figure 3 is a view of a completed assembly rail with retracted rear sight and front sight in oblique projection.

In all of the figures the same embodiment is shown and accordingly the same reference symbols are used throughout.

In Figure 1 an automatic pistol 1 is shown whose carrying handle has been replaced by a Picatinny rail 3, which is at a distance above the axis of the bore (not shown) and is arranged roughly parallel to it. In this connection the distance between the weapon 1 and the rail 3 is less than the distance was earlier between the weapon 1 and the carrying handle (not shown).

The rear end of the rail 3 exhibits a rear holder 7 which is slipped onto a rail-like longitudinal formation at the top and rear side of the weapon case and has the effect of a movable bearing, while the front end 5 is fastened by bolts or the like to the top side of the front shaft with a front holder 5 and has the effect of a fixed bearing.

In transverse direction of the center of the rail and running into its front or rear side there is a front recess 19 and a rear recess 21, both of which are open to the top. At the rear side of the front recess 19 a front sight 11 is seated which can be folded to the front, and at the

front side of the rear recess 21 there is a diopter sight 13 which can be folded to the rear (see Figures 2a, 2b and 3)

The front sight 11 and the diopter sight 13 can be stood up (Figures 2a, 2b) so that they serve as the standard sight of the automatic pistol 1, or can be folded to the front or the back (Figure 3), wherein then the rail 3 has essentially an even upper surface which is only interrupted by transverse slots. Laterally the flat folded front sight 11 and diopter sight 13 do not project above the contour of the rail 3 so that - in the case of the folded front sight 11 and diopter sight 13 - an add-on unit can be effortlessly slipped onto the rail 3 from the front or the rear or can be removed from it.

On the front sight 11 a pair of transverse running screws 17 is arranged which are used for lateral adjustment of the front sight 11.

On the rear side the rail 3 exhibits a lateral rail assembly 15 on each side at the rear holder 7, to which a lateral rail 9 can be mounted which is similar to the rail 3, but which is shorter, is offset and is tilted by 90° to the outside.

The rail 3 with its holders 5 and 7 as well as lateral rail(s) 9 are made of aluminum alloy and preferably provided with a coating or anodic treatment, as a result of which not even the ocean air is able to damage the aluminum.

Claims

1. Sliding rail (3) that can be placed upon or removed from the top side of a handgun (1), at whose front side a retractable front sight arrangement (11) and at whose rear end a rear sight arrangement (13) is constructed, wherein the entire sliding rail is constructed as an assembly rail (3) for the mounting of an add-on unit and exhibits a width which exceeds that of the front sight and rear sight arrangement (11, 13) which can be lowered, so that an assembly can be slipped on from the front or from the rear, wherein the front sight arrangement (11) and/or the rear sight arrangement (13) of the assembly rail (3) is adjustable in lateral position (screws 17).
2. Arrangement according to any one of Claims 1 through 3, characterized in that the assembly rail (1) exhibits a symmetrical cross section that tapers down.
3. Arrangement according to any one of Claims 1 through 2, characterized in that the upper longitudinal edges of the assembly rail (3) are beveled.
4. Arrangement according to any one of Claims 1 through 3, characterized in that the assembly rail (3) consists of metal, in particular of aluminum alloy.

5. Arrangement according to any one of Claims 1 through 4, characterized in that the sight arrangement is a diopter sight.
6. Arrangement according to any one of Claims 1 through 5, characterized in that at least one second assembly rail (9), which extends parallel to the named assembly rail (3), can be mounted laterally and at an angle.
7. Arrangement according to any one of Claims 1 through 6, characterized in that one holder each (5, 7) for mounting to the handgun or the automatic pistol (1) is mounted to the front and rear side of the assembly rail (3).
8. Handgun (1) with an arrangement according to any one of Claims 1 through 7.
9. A kit made up of an automatic pistol (1) with a detachable carrying strap and an assembly rail (3) for holding add-on units which can be built on the rifle (1) in place of the carrying strap and which exhibits a retractable front sight (11) on its front side and a retractable rear sight arrangement (13) on its rear side, so that an assembly can be slipped on from the front or from the rear. wherein the front sight arrangement (11) and/or the rear sight arrangement (13) of the assembly rail (3) is adjustable in lateral position (screws 17).