ABSTRACT OF THE DISCLOSURE

In a grenade launching firearm, an auxiliary sight assembly comprising a sight mounting subassembly removably attachable in clamping engagement to a carrying handle of the firearm and incorporating shock absorbing stabilizing means, a plate fixed to the sight mounting subassembly and having a cam surface, a sight bar having a pivot member rotatably supported on the plate and a series of open slots laterally extending completely through the sight bar, a detent subassembly slidably mounted on the sight bar for establishing different range settings and having a guide member, and a helical torsion spring biasing the guide member into continuous engagement with the cam surface of the plate.

This invention generally relates to sighting devices for firearms and particularly concerns an auxiliary sight assembly useful with a rifle equipped for launching grenades. A primary object of this invention is to provide an improved auxiliary sight particularly suited for quick and easy attachment to and removal from a carrying handle of a rifle equipped for launching a grenade. Another object of this invention is to provide a grenade launcher sight of significantly improved stability for maintaining an accurate sight line at different range settings. A further object of this invention is to provide an improved grenade launcher sight of the above type which is readily usable with either new or existing weapons. Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth and the scope of the application which will be indicated in the appended claims.

In the drawings:

FIG. 1 is a side elevational view of a grenade launcher sight incorporating the present invention shown in full lines as being mounted on a carrying handle of a rifle partly shown in broken lines;

FIG. 2 is a top plan view, partly in section and partly broken away, of the sight of FIG. 1; and

FIG. 3 is an exploded isometric view, partly broken away, showing the sight on an enlarged scale.

Referring now to the drawings in detail, a preferred embodiment of a sight assembly 10 is shown mounted on a left hand side of a rifle 12 for use by a right handed person. It will be understood that the rifle 12 is provided with a grenade launcher, not shown, for firing a high trajectory grenade wherein an auxiliary sight such as that of the present invention is required for establishing a relatively high angle of elevation of the rifle relative to a sight line to a target.

To provide facile assembly and disassembly of the sight 10 in relation to the rifle 12, a sight mounting subassembly is provided including a mounting bracket 14 removably attached to a pair of clamping members 16, 18 nested in an apertured rear portion of a carrying handle 20 of the rifle 12 with the clamping members 16, 18 tightly secured upon the rifle 12 by suitable fasteners 22, 24. The clamping members 16, 18 are respectively dimensioned and configured to be located in abutting engagement against projecting portions of the carrying handle 20 to prevent any movement relative to the rifle 12.

In the specific illustrated embodiment, the mounting bracket 14 is a generally L-shaped member with a pair of spaced opposed legs 26, 28 having aligned openings (only one shown at 30) formed in an upper portion of the mounting bracket 14. A headless pin 32 extends through the openings 30 and is readily seated within a U slot 34 at the top of a vertical rib 36 projecting laterally outwardly of the left hand clamping member 16 upon fitting the mounting bracket 14 over the vertical rib 36 and pressing it down into assembled position with the mounting bracket legs 26, 28 engaging the clamping member 16. To effect closely controlled accurate sighting, it is imperative that the sight 10 be firmly secured relative to the rifle 12, and for this reason a pair of O rings 38, 40 formed of a tough, resilient elastomeric material of suitable durometer hardness are retained in a pair of circumferentially extending grooves 42, 44 in the headless pin 32 and are snugly engaged with confronting surfaces 46, 48 of the mounting bracket legs 26, 28. Upon lowering the mounting bracket 14 onto rib 36, the O rings 38, 40 are resiliently fitted onto portions of the vertical rib 36 surrounding opposite axial ends of its U slot 34, thereby minimizing any tendency of the sight mounting bracket 14 to move relative to the rifle 12 while additionally serving to absorb shock imparted to the rifle 12 and which would otherwise be transmitted to the sight 10.

To lock the mounting bracket 14 in position on the rib 36 of the clamping member 16, a takedown pin 50 is inserted through a pair of aligned holes (only one shown at 52) formed in a lower portion of the mounting bracket 14 and through an opening 54 provided in the rib 36. An elongated compartment, not shown, is provided in the mounting bracket leg 28 for receiving a coil compression spring 56 and a detent pin 58 having a tapered end 60 engageable within a pair of recesses 62, 64 at opposite longitudinal ends of a groove 66 provided in the shank of the takedown pin 50.

During assembly the takedown pin 50 is pressed forward to seat the detent pin 58 in the recess 64 adjacent the head of the takedown pin 50. While recess 64 is suitably dimensioned to enable the pin 58 to automatically retain the tapered end 60 of the spring biased detent pin 58 against inadvertent movement, the takedown pin 50 can be forcibly retracted upon pulling it rearwardly to seat the detent pin 58 within the other recess 62 to maintain the takedown pin 50 against unintended removal from the mounting bracket 14 while yet permitting the mounting bracket 14 to be unlatched from the clamping member 16. An access hole 67 (FIG. 3) is desirably provided in the lower portion of mounting bracket leg 28 to facilitate ready insertion and removal of the detent pin 58 and its biasing spring 56.

Fastened to a side wall 68 of the mounting bracket 14 is a generally flat, elongated plate 70 having an arcuate slot 72 defining an elevational cam surface 74. Suitable countersunk holes 76, 78 are provided in a rear portion of the plate 70 whereby heads of a pair of machine screws 80, 82, shown as being of a flat socket head type, can be driven home flush with the outer surface of the plate 70 to fix it to its mounting bracket 14 to project forwardly thereof in a vertical plane substantially parallel to a longitudinal axis X—X of the rifle 12.

The mounting bracket 14 is shown having an annular recess 86 formed in its side wall 68 for receiving an enlarged head 88 of a pivot screw 90 which extends outwardly through an opening 92, formed in an upper rear
corner portion of the plate 70, and is threadably connected in perpendicular relation to a rear portion of a sight bar 94 for rotation relative to the plate 70. A compression spring 96 is coiled about the shank of the pivot screw 90 (FIG. 2) with one end of the spring 96 seated against a rear surface 74 of the plate 70 and the opposite end of the spring 96 being seated against an inside face of the sight bar 94.

To actuate the sight bar 94 relative to the plate 70, a detenting subassembly 98 is provided having a guide screw 100 disposed and secured in a blind opening 72 and the rear end of the guide screw 100 being secured to an elevational indicator 104 which is supported by the guide screw 100 for sliding movement along the sight bar 94.

The elevational indicator 104 has an upright spacer 106 integrally formed thereon and defining a channel 108 for receiving the sight bar 94 with the spacer 106, which is desirably "Teflon" coated, being closely fitted between the plate 70 and sight bar 94. To continuously effect a resilient force against the head of the guide screw 108, its head is preferably seated upon a disk spring washer 110 applying a biasing upwardly and smoothly sliding movement along an inside surface of the plate 70, and the side wall 68 of the mounting bracket 14 is shown having a suitable recess 112 for receiving the head of the guide screw 100 upon moving the elevational indicator 104 to the rear of the sight bar 94.

In accordance with another aspect of this invention, an open rack is provided on the bottom edge of the sight bar 94 comprising a series of index slots such as at 114 with each slot 114 laterally extending completely through the sight bar 94. The slots 114 are spaced apart at preselected distances and are provided corresponding indicia such as the illustrated numbers and markings on the outside face and top edge of the sight bar 94 which are respectively calibrated for use in temperate and arctic zones. The elevational indicator 104 is normally locked to the sight bar 94 by engagement of a lug 116 on a lock pin 118 within one of the index slots 114 with the lock pin 118 being maintained in selected position by a compression spring 120 coiled about its shank with the spring being seated against the head 122 of the lock pin 118 and a shoulder 124 provided in a counterbored opening 126 in the elevational indicator 104 through which the lock pin 118 extends. To release the elevational indicator 104 for adjusting the range setting, a pawl 128 engaging the head 122 of the lock pin 118 is depressed to pivot about a vertical roller pin 130 secured between a pair of ears 132, 134 on the elevational indicator 104 and to move the lock pin 118 inwardly to disengage its lug 116 whereby the entire detenting subassembly 98 is free to slide along the sight bar 94 which thereby is actuated to rotate about its pivot screw 90 to an extent controlled by the guide screw 100 within the cam slot 72.

By virtue of the disclosed open rack on the bottom edge of the sight bar 94 featuring index slots 114 extending completely through the sight bar 94, ease of manufacture is ensured while also effectively minimizing any possibility of the index slots 114 being impacted by the dried mud, etc., and resulting in potentially dangerous slippage of the elevational indicator 104 from an indexed setting.

To further ensure proper accuracy limits in a vertical plane, a helical torsion spring 136 is coiled about the compression spring 96 in concentric relation to the pivot screw 90 with the ends 138 and 140 of the spring 136 extending in opposite axial directions and respectively secured within a hole 142, provided in the outside surface of the plate 70, and in a slot 144 formed in the rear end of the sight bar 94 wherein a forwardly extending flange 146 of a rear peep sight 148 serves to retain the end 140 of the helical torsion spring 136, the rear peep sight 148 being secured by a suitable fastener 150 to the sight bar 94. Upon moving the elevational indicator 104 rearwardly toward higher range settings, the helical torsion spring 136 applies a biasing force upwardly of the rear end portion of the sight bar 94 to urge its forward end downwardly and thereby continuously retain the guide screw 100 in engagement with the cam surface 74 of the plate 70 and to firmly maintain a proper sight line corresponding to a selected range setting.

A front post sight 151 is shown mounted on the forward end of the sight bar 94, and proper zeroing of the sight 10 is provided for in accordance with conventional techniques.

The auxiliary sight 10 of this invention is particularly suited for facile assembly and disassembly and is capable of maintaining a closely controlled accurate sight line for varying range settings. In addition to being easily mounted on a carrying handle 20 of a rifle 12 such that any transmission of shock from the rifle 12 to the sight 10 is minimized, high accuracy performance throughout a series of different range settings is further ensured by the disclosed torsion spring 136 while the open rack construction of the sight bar 94 provides an added safety feature to ensure positive engagement of the elevational indicator 104 in each selected range setting.

As will be apparent to persons skilled in the art, various modifications and adaptations of the structure above described will become readily apparent without departure from the spirit and scope of the invention, the scope of which is defined in the appended claims.

We claim:

1. An adjustable sight assembly usable with a firearm and comprising a plate having a slot therein defining a cam surface, said plate being attachable to a firearm generally parallel to a longitudinal axis thereof, a sight bar supported for rotation relative to said plate, said sight bar having a rack formed on a bottom edge thereof of constituting a series of slots laterally extending completely through said sight bar, and a detenting subassembly slidably mounted on said sight bar for selective engagement therewith in a series of detented range settings and having a guide member received in said slot of said plate for movement along said cam surface providing controlled rotary movement of said sight bar relative to said plate, said detenting subassembly being selectively engageable with said series of slots for establishing different range settings.

2. An adjustable sight assembly usable with a firearm and comprising a plate having a slot therein defining a cam surface, said plate being attachable to a firearm generally parallel to a longitudinal axis thereof, a sight bar supported for rotation relative to said plate, a detenting subassembly slidably mounted on said sight bar for selective engagement therewith in a series of detented range settings and having a guide member received in said slot of said plate for movement along said cam surface providing controlled rotary movement of said sight bar relative to said plate, and a torsion spring disposed between said plate and said sight bar and having opposite ends respectively secured to said plate and said sight bar for biasing the latter and maintaining said guide member in continuous engagement with said cam surface of said plate.

3. An auxiliary sight assembly usable with a firearm equipped for firing an auxiliary projectile, an improvement comprising a sight mounting subassembly including removable clamping means attachable to the firearm and having a rib projecting outwardly thereof with a U slot formed in an upper portion of said rib, a generally U-shaped sight mounting bracket having a pair of spaced opposed legs for embracing said rib, and a pin extending through said legs for receipt within said U slot, said pin having a pair of O-rings secured thereto snugly engaging confronting surfaces of said legs upon fitting said mounting bracket onto said rib.

4. The assembly of claim 3 wherein the firearm is provided with an apertured carrying handle, and wherein
said clamping means is attachable to the carrying handle of the firearm.

5. The improvement of claim 3 wherein said sight mounting subassembly further comprises quick-disconnect locking means for securing said mounting bracket to said rib.

6. The improvement of claim 3 further comprising a takedown pin extendible through aligned openings in said rib and said mounting bracket, said takedown pin having a shank and recess means formed therein, and resiliently biased detent means received in said mounting bracket and releasably engageable with said recess means to permit rapid locking and unlocking of said mounting bracket on said rib.

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