A gun stock for a shoulder mounted firearm has a rear face with an upper portion extending downward from the heel of the stock at a first angle from about 0° to 10°, and a lower portion extending downward from the upper portion to the toe of the stock and forming a second angle greater than the first angle, preferably about 35° from vertical. The rear face may be part of a butt plate arranged as a door to cover a storage compartment in the stock, attached to the stock with a hinge at the toe and a latch at the heel. This configuration reduces the likelihood that the toe of the stock will catch on the shooter's armor or uniform, and places the hinge forward of the toe such that the butt plate may swing under the stock and out of the way when the storage compartment is opened.
BUTT STOCK WITH ANGLED REAR FACE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the priority of U.S. Provisional Application No. 61/431,096, filed on Jan. 10, 2011, which is incorporated by reference herein in its entirety.

FIELD

[0002] The present disclosure relates to a butt stock for a firearm, and particularly to a stock with an improved rear face contour and an internal storage compartment.

BACKGROUND

[0003] In the discussion of the background that follows, reference may be made to various structures and/or methods. However, the inclusion of such references should not be construed as an admission that all or any of these structures and/or methods constitute prior art. Applicant expressly reserves the right to contest whether any of such structures and/or methods qualify as prior art.

[0004] The discussion in this background section and in the descriptions of the invention may use terms that correspond to the more common uses of the items being described, without intending to exclude other less common usage. For example, the term “rifle” is used because the butt stocks are described in relation to their more common usage on tactical rifles, but there is no intent to exclude the use of the same butt stock on a smooth bore weapon or other types of firearm. Likewise, the butt stocks are described in relationship to the more common usage on a weapon with adjustable length extender/buffer tubes, without intending to exclude their use on a solid or fixed length gun stock.

[0005] With the above qualification in mind, a variety of rifle butt stocks are known for use with an extender tube to adjust the length of pull (LOP), and are available as a replacement stock or as an original equipment stock, such as, for example, the Colt M4 sliding stock. The extender tube connects to a buffer tube (which may include internal recoil attenuating buffers) connected to the receiver, and has position locking holes spaced along the tube to move the butt stock toward or away from the receiver to select the LOP.

[0006] In most butt stocks, the rear face (or butt plate) of the stock is typically shaped in a shallow concave configuration common to most sporting rifle stocks, or in a straight configuration as found on many tactical rifles. However, both such configurations have a sharp bottom corner toe that can snag on armor webbing when a rifleman is wearing body armor, which tends to pull the butt plate away from shoulder contact. In recognition of the snagging problem, some recent stocks have used a rounded toe at the bottom corner.

[0007] Most often the butt stock used with extender/buffer tubes is a molded plastic piece with hollow interior portions that can be used to store cleaning supplies, batteries or other small items. The usual method of access to such storage areas is by removable butt plates, or by trapdoor type covers that pivot away from the stock to expose the storage compartment. There is, however, ample opportunity for improvement in storage compartment access.

[0008] There has also been a recognition that handheld electronic devices such as a GPS, cellular phone, or a combination of navigation and communications device would be better secured in tactical situations if they can be attached to the weapon, rather than kept in a belt holster or uniform pocket. If the rifleman is using the handheld device when a situation requires immediate shouldering of the weapon, wasting time to place the device back into its holster, or trying to hold the device while mounting the weapon, detracts from the attention that should be directed to evaluating and neutralizing the threat. Taping the device along the stock is a make-shift solution. A short accessory rail along the stock would be an improvement over taping, as would a waterproof pocket attached to or embedded into the stock. There is, however, ample opportunity for improvement in attaching handheld devices to a weapon.

SUMMARY

[0009] A butt stock is described with an improved rear face configuration. Another aspect of the described butt stock includes improved storage compartment access.

[0010] An embodiment of the stock has a heel, a toe, and a rear face comprising an upper straight portion extending downward from the heel and forming a first angle in the range of 0 degrees to 10 degrees from vertical, and a lower straight portion extending downward from the upper flat portion to the toe and forming a second angle in the range of 10 degrees to 40 degrees from vertical. In disclosed embodiments, at least a portion of the rear face comprises an elastomeric surface. The rear face may comprise a surface material having a high coefficient of friction when pressed against clothing or body armor. Moreover, at least a portion of the rear face may include a plurality of transverse ridges.

[0011] The rear face of the stock may form part of a butt plate attached to the stock. The butt plate may be arranged to form a door covering a storage compartment in the body of the stock. Such a butt plate can include a hinge on its bottom pivotally coupling the butt plate to the stock body, thereby enabling the butt plate to pivot away from the stock body to expose the storage compartment. A latch on the top of such a butt plate secures the top of the butt plate to the top of the stock body to close the door to cover the storage compartment. The hinge may comprise a pivot pin, and the latch may comprise a spring-loaded bolt. A button actuator may be recessed into the stock body and used to depress the spring loaded bolt to open the latch. Further, a gasket along an inside edge of the butt plate may be included to create a watertight seal when the butt plate is closed and latched. The stock body may comprise a foam block in the storage compartment having at least one cutout for receiving at least one item for storage, and at least one quick access tab for removing the stored item.

[0012] In addition, the butt plate may cover an open end of one or more slots on the stock body that form part of a bracket support structure. When the butt plate is pivoted away from the stock body to expose the open ends of the slots, a bracket with flanges can be installed onto or removed from the stock body by sliding the flanges through the open ends of the slots. Such a bracket may form part of an accessory mounting system to receive an accessory such as a handheld electronic device. The accessory may be received by clipping it to the bracket.

[0013] It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The following detailed description can be read in connection with the accompanying drawings in which like numerals designate like elements and in which:
FIGS. 1A and 1B are a side and rear view, respectively, of an embodiment of a butt stock.

FIGS. 2A and 2B are a side and rear view, respectively, of another embodiment of a butt stock.

FIG. 3 is a perspective view of an embodiment of a bracket for mounting an accessory to a butt stock as in one of FIGS. 1A and 2A.

FIG. 4 is a perspective view of an accessory mounted in the bracket of FIG. 3.

FIG. 5 is a perspective view of an embodiment of a bracket for mounting an accessory to a butt stock as in FIG. 2A.

FIG. 6 is a perspective view of an accessory mounted in the bracket of FIG. 5.

FIGS. 7A and 7B are a side and perspective view, respectively, of an embodiment of a butt stock showing a hinged butt plate and storage compartment.

DETAILED DESCRIPTION

FIGS. 1A, 1B, 2A, and 2B show two similar but different embodiments of a butt stock 10 having a body 15 and a tube cylinder 12 at the top of the body 15 to receive the extender tube of a rifle (not shown) and a trigger latch 20 for engaging and disengaging the latch with position holes in the extender tube that are common to adjustable length stocks of this type. In the depicted embodiments, the body 15 of the butt stock 10 includes dual sling attachment bushings 22. The butt stock 10 is preferably made from a light-weight molded plastic, as commonly used in this type of adjustable stock, although other materials may be used.

The butt stock 10 further includes a butt plate 14 located at the rear of the butt stock 10. The butt plate 14 may function as a trap door covering a rear-opening storage compartment in the butt stock 10 that can be used to hold replacement batteries or other items. The butt plate 14 has a dual sloped shape, with a lesser slope above an inflection point 40 and a greater slope below the inflection point 40. The inflection point 40 is positioned below the main body of the butt stock 10. More particularly, the butt plate 14 includes an upper generally straight portion 44 that may slope slightly forward from its upper edge heel 45 to the inflection point 40, and a lower generally straight portion 42 at a greater forward slope from the inflection point 40 to its lower edge toe 43.

The slope angle of the lower portion 42 is greater than the slope angle of the upper portion 44 with respect to a vertical plane from the heel 45. The slope of the upper portion 44 may range from about 0° to about 10°, preferably about 4°. The slope of the lower portion 42 may range from about 25° to about 45°, preferably about 35°.

This dual sloped profile of the butt plate 14 enables a smooth and rapid mount to the aiming position even when a riflemans is wearing body armor. Instead of a sharp bottom corner toe that can snap on the armor webbing and pull the butt plate away from shoulder contact, as may occur with a conventionally shaped butt stock, the forward angled lower portion 42 of the butt plate 14 allows the riflemans to raise the weapon and draw it back into shoulder contact without snagging. If the toe 42 of the butt plate 14 contacts the armor padding, the forward angle of the lower portion 42 causes the butt stock 10 to rotate into shoulder contact rather than pull away.

The butt plate 14 is preferably made from a plastic piece over-molded with a synthetic rubber cover. The cover may include a pattern of horizontal grooves to provide a non-slip surface.

A hinge plate 46 extends forwardly from the toe 43 on each side of the butt stock 10. The hinge plates 46 support the ends of a hinge pin 18 that extends through a lower end of the body 15, thereby enabling the butt plate 14 to pivot with respect to the body 15 of the butt stock 10.

As illustrated in FIGS. 7A and 7B, a spring loaded latch bolt 80 secures the butt plate 14 to a strike plate 82 in the butt stock 10 when the butt plate 14 is in a closed position, concealing a storage compartment cavity 84 within the butt stock 10. A button actuator 16 on a side of the butt plate 14 is provided to release the spring loaded latch bolt 80 to allow the butt plate 14 to pivot open on pivot pin 18. In the depicted embodiment, the button actuator 16 is recessed into the butt plate 14, and requires the button actuator 16 to be pushed in and downward to prevent accidental unlatching.

A gasket 86 may be provided on an inside surface of the butt plate 14 disposed to engage an outer edge of the storage compartment 84 to create a watertight seal when the butt plate 14 is closed and latched. The storage compartment may also contain a foam block 87 with a quick access tab 88 attached. The block may, for example, have cutouts 89 for batteries, such as 123A size lithium batteries, although other or additional cutout patterns can be used. The foam keeps items stored in the storage compartment from rattling, and the tab allows the foam block or the part itself to be extracted quickly.

When the latch is released by the button actuator 16, the butt plate 14 pivots downward and forward under the force of gravity. The forward slope of the lower portion 42 of the butt plate 14, combined with the forward extending hinge plates 46, place the hinge point 18 well in front of the heel 45 of the butt plate 14. This configuration enables the butt plate 14 to swing below the body 15 of the butt stock 10 and well out of the way when inserting or removing batteries or other small items in the storage compartment.

The body 15 of the butt stock 10 may also include an accessory attachment groove or slot 24, for example, a slot on each side of the body 15 having one end 27 that terminates in the body 15 and another end that opens onto a rear face 25 of the body 15. When the butt plate 14 is closed, the slot 24 extends slightly beyond a front face 47 of the butt plate 14 and terminates in the butt plate 14. In the depicted embodiment, the slot 24 is positioned near the top of the body 15, just below the tube cylinder 12 for the extender tube. Identical slots 24 are located on both sides of the body 15. The slots 24 can be used to attach an accessory bracket for holding a communication/navigation device to the butt stock 10, as described below, or to attach an adjustable position cheek rest or other accessory.

An exemplary accessory bracket 70 is shown in FIG. 3. The bracket 70 may be made from a resilient plastic material. The bracket 70 includes a curved body 72, a mounting flange 74 extending inwardly at each end of the curved body 72 toward the concave side of the curved body 72, and a lower accessory mounting tab 76 and an upper accessory mounting tab 78 extending outwardly from the convex side of body 72. Each mounting flange 74 may include an enlarged end 75.

To mount the bracket 70, the butt plate 14 is released and swung open to expose the open ends of the slots 24. The flanges 74 are slid into the slots 24 so that the mounting tabs...
76, 78 extend over the cheek weld on one side or the other of the butt stock 10, as desired. The bracket 70 can be installed with the mounting tabs 76, 78 on either side of the butt stock 10. The butt plate 14 is then closed to prevent the bracket 70 from sliding back out of the slots 24. The optional enlarged ends 75 on the mounting flanges 74 increase the security of the mounting. Once the bracket 70 is installed, a device such as a communication/navigation device 100 can be mounted between the mounting tabs 76, 78, as shown in FIG. 4.

[0034] The butt stock 10 of the embodiment shown in FIG. 2A includes an integrally molded mounting cage 26 below the body 15. The cage 26 has a generally rectangular construction, including an upper member 58, a front member 54, a lower member 50, and a rear member 62 that together bound an opening 64. The cage 26 has slots for bolt and nut attachment of an accessory holder. In particular, the upper member 58 includes a slot 60, the front member 54 includes a slot 56, and the lower member 50 includes a slot 52.

[0035] FIG. 5 shows a bracket 30 configured to be mounted to the cage 26. The bracket is preferably made from a resilient plastic material, although other materials may be used. The bracket 30 includes a body 38. A straight flange 34 and an L-shaped flange 36 each extend outwardly from one side of the body 38, the L-shaped flange 36 having a leg 37 extending generally parallel to the body 38. Two accessory mounting tabs 31 extend outwardly from an opposite side of the body 38, each accessory mounting tab being located at or near the ends of the body 38. The body 38 also includes a threaded bushing 32 configured to receive the threaded barrel of an attachment bolt.

[0036] The flanges 34, 36 are spaced apart along the body 38 by a distance approximately equal to the size of the opening 64 between the upper member 58 and the lower member 50 of the cage 26. When the bracket 30 is mounted to the cage 26, an outer edge of the straight flange 34 rests on an inner edge of one of the members 50, 58, while an outer edge of the L-shaped flange 36 rests on an inner edge of the other of the members 50, 58 with the leg 37 extending over the other member 50, 58. The bracket 30 may be secured by a bolt through the slot 52, 60 that corresponds to the bushing 32 in the mounted orientation.

[0037] For example, as shown in FIG. 6, the L-shaped flange 36 is hooked over the lower member 50 and the straight flange 34 abuts the upper member 58. A bolt 80 is inserted through the slot 60 and threaded into the bushing 32. Once the bracket 30 is installed on the cage 26, an accessory device 100 such as a handheld GPS, cellular phone, or similar electronic accessory can be mounted using the mounting tabs 31, as shown.

[0038] Although described in connection with preferred embodiments thereof, it will be appreciated by those skilled in the art that additions, deletions, modifications, and substitutions not specifically described may be made without departing from the spirit and scope of the invention as defined in the appended claims.

What is claimed is:

1. A firearm butt stock having a body, a heel, a toe, and a rear face, the rear face comprising an upper generally straight portion extending downward from the heel and forming a first angle in the range of 0 degrees to 10 degrees from a vertical plane at the heel, and a lower generally straight portion extending from the upper portion downward to the toe and forming a second angle that is greater than the first angle.

2. The stock of claim 1, wherein the upper portion of the rear face comprises from 60% to 80% of the vertical distance from the heel to the toe.

3. The stock of claim 2, wherein the first angle is about 4 degrees, and the second angle is about 35 degrees, and the upper portion comprises about 70% of the distance from the heel to the toe.

4. The stock of claim 1 wherein at least a portion of the rear face comprises an elastomeric surface.

5. The stock of claim 1 wherein the rear face comprises a surface material having a high coefficient of friction when pressed against clothing or body armor.

6. The stock of claim 1 wherein at least a portion of the rear face includes a plurality of transverse ridges.

7. The stock of claim 1 wherein the rear face is part of a butt plate attached to the stock.

8. The stock of claim 7 wherein the butt plate is configured to form a door covering at least one interior cavity formed in the body of the stock as a storage compartment, the stock further comprising: a hinge adjacent the bottom of the butt plate pivotally coupling the butt plate to the stock body thereby enabling the butt plate to pivot away from the stock body to expose the storage compartment; and a latch adjacent the top of the butt plate to secure the butt plate to the top of the stock body thereby covering the storage compartment.

9. The stock of claim 8 wherein the hinge comprises a pivot pin on the bottom of the butt plate, and the latch comprises a spring-loaded bolt disposed on the top of the butt plate and a strike plate disposed on the stock body.

10. The stock of claim 9, further comprising a button actuator recessed into the butt plate for depressing the spring loaded bolt to open the latch.

11. The stock of claim 8, further comprising a gasket along an inside edge of the butt plate to create a watertight seal when the butt plate is closed and latched.

12. The stock of claim 8, further comprising a foam block disposed within the storage compartment having at least one cutout for receiving at least one item for storage, and at least one quick access tab for removing the stored item.

13. The stock of claim 7, further comprising a slot in the stock body, wherein the butt plate is configured to form a door covering an open end of the slot on the side of the stock body, with the opposite end of the slot being disposed away from the butt plate.

14. The stock of claim 13, wherein the slot is adapted to receive an accessory support bracket whereby, when the butt plate is pivoted away from the stock body to expose the open end of the slot, a bracket with at least one flange can be installed onto the stock body by sliding the flange through the open end of the slot.

15. The stock of claim 14, wherein there are two such slots, one on each side of the stock body, and the support bracket has a first flange adapted to engage in the slot on one side of the stock body, and a second flange adapted to engage in the slot on the opposite side of the stock body.

16. The stock of claim 15, wherein accessory support bracket includes at least one mounting tab arranged to receive an accessory such as a handheld electronic device.

17. The stock of claim 14, wherein accessory support bracket includes at least one mounting tab arranged to receive an accessory such as a handheld electronic device.