UNDER FOLDING STOCK ASSEMBLY FOR THE RUGER® 10/22 TAKEDOWN® AUTOLOADING RIFLE

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ABSTRACT

An under folding firearm stock assembly includes an elongated main body having a longitudinal channel and a firing mechanism opening. A stock and butt stock are positioned along the back of the main body, and a pivot assembly transitions the stock between an open and closed position. The barreled front stock assembly can separate from the back receiver stock assembly.
UNDER FOLDING STOCK ASSEMBLY FOR
THE RUGER® 10/22 TAKEDOWN®
AUTOLOADING RIFLE

TECHNICAL FIELD

[0001] The present invention relates generally to firearms and specifically to an under folding stock assembly for the use with the RUGER® 10/22 TAKEDOWN® AUTOLOADING RIFLE.

BACKGROUND

[0002] The statements in this section provide background information related to the present disclosure and may not constitute prior art.

[0003] Many firearm owners routinely modify their weapons to suit an interest or desired look and to this end, it is common practice to have the ability to modify firearms to suit a particular need or desired look. Accordingly, there are a seemingly infinite number of after-market apparatuses and/or devices available to individuals in furtherance of this goal.

[0004] The Ruger® 10/22 is a popular rifle company since the 1960's that has presents in gaming, law enforcement, military, and private security. The Ruger® 10/22 semi-automatic 22 caliber rifles are most popular for individual customization. The newest rifle released by Ruger® is the RUGER® 10/22 TAKEDOWN® AUTOLOADING RIFLE that does not include a folding stock and no known device exists. The advantage of this invention provides a new look and feel from standard to tactical, compact for carry and storage, and light weight.

[0005] Accordingly, there remains a need for an under folding firearm stock assembly which can function in an after-market/third party capacity to provide this feature to a RUGER® 10/22 TAKEDOWN® AUTOLOADING RIFLE.

SUMMARY OF THE INVENTION

[0006] The present invention is directed to an under folding stock firearm assembly. One embodiment of the present invention can be separated into two parts and include an elongated main body having a longitudinal channel and opening to receive and engage a conventional takedown rifle firing mechanism. A pivotally mounted stock and butt stock are positioned along the back of the main body. The stock can transition from an open position extending away from the main body, and in closed position beneath and alongside the main body.

[0007] The RUGER® 10/22 TAKEDOWN® AUTOLOADING RIFLE separates at the barrel face and at the receiver for ease of compact and storage. The under folding stock in this invention will also come apart at the same points of the barrel face and the receiver.

[0008] This summary is provided to simply introduce certain concepts and not to identify key or essential features of the claimed subject matter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Presently preferred embodiments are shown in the drawings. It should be appreciated, however, that the invention is not limited to the precise arrangements and instrumentality shown.

[0010] FIG. 1a is an exploded parts view of the under folding stock firearm stock assembly, in accordance with one embodiment invention.

[0011] FIG. 1b is a perspective view of the under folding firearm stock assembly, in accordance with one embodiment of the invention.

[0012] FIG. 2 is a top view of the under folding firearm stock assembly, in accordance with one embodiment of the invention.

[0013] FIG. 3 is an exploded parts view of the pivot assembly for use with the under folding firearm stock assembly, in accordance with one embodiment of the invention.

[0014] FIG. 4 is a perspective view of the under folding firearm stock assembly, in accordance with another embodiment of the invention.

[0015] FIG. 5 is a perspective view of the under folding firearm stock assembly in operation, in accordance with one embodiment of the invention.

[0016] FIG. 6 is a side view of the under folding firearm stock assembly in operation, in accordance with one embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0017] While the specification concludes with claims defining features of the invention that are regarded as novel, it is believed that the invention will be better understood from a consideration of the description in conjunction with the drawings. As required, detailed embodiments of the present invention are disclosed herein; however, it is to be understood that the disclosed embodiments are merely exemplary of the invention which can be embodied in the various forms. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims and representative basis for teaching one skilled in the art to variously employ the inventive arrangements in virtually any appropriated detailed structure. Further, the terms and phrases used herein are not intended to be limiting but rather to provide an understandable description of the invention.

[0018] Identical reference numerals are used for like elements of the invention or elements of like function. For the sake of clarity, only those reference numerals are shown in the individual figures which are necessary for the description of the respective figure. For purposes of this description, the terms "upper," "bottom," "right," "left," "front," "vertical," "horizontal," and derivatives thereof shall relate to the invention as oriented in FIG. 1.

[0019] As will be described below, the present invention includes an under folding firearm stock assembly that designed to replace the butt stock, hand grip, and forearm grip of a Factory Ruger® 10/22® Takedown Autoloading semi-automatic 22 caliber rifle (herein described as “rifle”). To this end, the assembly will include dimensions for receiving the firing mechanism of the rifle and positioning the same into the assembly without requiring modification to the rifle firing mechanisms.

[0020] Although illustrated herein as for use with a particular rifle, those of skill in the art will recognize that other embodiments can be utilized with other firearm without departing from the invention claimed.

[0021] FIG. 1a illustrates one embodiment of the under fold firearm stock assembly 10, which is useful for understanding the inventive concepts disclosed herein. As shown, the assembly 10 can include a main body 11 having a removable hand grip 15 and a pivotally mounted stock 20.

[0022] The main body 11 can act to receive a rifle firing mechanism 1 (see FIG. 1b), and to function as a forearm stock.
for providing a safe grip for the forward hand of a user when operating the rifle. In the embodiment (both parts), the main body can include an elongated member having a front end 11a, a back end 11b, and a pair of opposing generally parallel side walls 11d (FIG. 16) and 11c (FIG. 2) that are joined together by a bottom wall 11e (FIG. 1b) to form a generally U-shaped longitudinal channel along the main body.

0023] A pivot housing can be disposed along the back end of the main body 11 and can be defined by an upper surface 11f (FIG. 2) blending into the top end of the side walls, the upper portion of the removable grip 15 (FIG. 1b) and walls 11c, 11d, 11b, and 11f (FIG. 2). Each of these surfaces forming a generally cavernous space into which the pivot assembly 30 can be located.

0024] The top surface of the bottom wall 11e (FIG. 1b) can include a plurality of raised sections relative to the upper portions of the side walls 11c (FIGS. 6) and 11d (FIG. 1b). In one embodiment, the upper side of the bottom wall can include a first raised section 11e1 (FIG. 5) for receiving a rifle barrel, a second raised section 11e2 (FIG. 2) extending below a received rifle barrel, and a third raised section 11e3 (FIG. 5) for receiving the connector of the firing mechanism. A bolt opening 11e4 (FIG. 4) can be positioned within the third raised section 11e3 of the bottom wall and positioned so as to receive a bolt for securing the main body into the connector of the firing mechanism.

0025] As shown in FIG. 2, a firing mechanism opening 12 extends from the edge of the third raised section 11e3 to the forward wall of the pivot housing 11f. Opening 12 can also include a ridge 12a having a shape that is complementary to the ridge of the firing mechanism (see FIG. 5), so as to provide a shelf onto which the firing mechanism can be secured.

0026] As shown in FIG. 1a, a removable hand grip 15 can be positioned along the bottom of the main body 11 at a location beneath the pivot housing. As shown, the grip can be secured to the main body via a bolt 15a and bolt receiver 15b, and can further include a rough surface area for increasing traction with the hand of a user, and a plurality of finger ridges 15c. An opening 15d along the bottom of the grip allows the bolt to be accessed at all times to enable a user to quickly change the grip.

0027] Each of the main body 11 and the hand grip 15 can be constructed from any number of strong, impact resistant materials such as wood, metals or plastic, for example, capable of withstanding the rigors of weapon usage. In one preferred embodiment, the ridge 12a can be integrated into the construction of the opening 12, in accordance with known construction methodologies (see FIG. 1b).

0028] As shown in FIG. 2, the elongated stock 20 can include a pair of laterally spaced elongated arms 21 and 22, each having a first end 21a and 22a and a second end 21b and 22b, respectively. A generally U-shaped butt stock 23 can be secured to the second end of each arm via a pair of axle pins 24 to allow the butt stock to pivot, see arrow a, between a generally vertical open position and a generally horizontal closed position.

0029] In one embodiment, the elongated stock 20 can be secured to the back end of the main body so as to pivot from an open position to a closed position. In one preferred embodiment, the locking pivot assembly 30 described below can be utilized; however it is to be understood that any suitable device capable of transitioning the elongated stock between an open position and a closed position can be utilized herein.

0030] As shown in FIG. 3, illustrates one embodiment of a pivot assembly for use herein. As shown, the pivot assembly 30 can include an axle 31, a button spring 32, a button 33, a split pin 34, a lock pin 35, a washer 36, and a retaining ring 37.

0031] As shown in FIG. 3, shows that axle 31 can include an elongated hollow shaft having an outside dimension suitable for being inserted through the hole 21a1 of the stock arm 21, and a hollow inside dimension suitable for receiving the button spring 32 and button 33. The button spring 32 can be positioned within the hollow portion of the axle and can receive the button 33 on one end.

0032] As shown in FIG. 3, the split pin 34 can be inserted through openings 31a and 33a of the axle and button respectively, to prevent separation of the components. As such, the upper portion of the split pin 34 can be positioned flush with the upper portion of the axle, and the lower portion of the split pin can extend from the bottom of the axle. The extended portion of the split pin being configured to be inserted into the opening 35a of the locking pin 35.

0033] As shown in FIG. 3, the main body 11 can include a generally circular hollow channel 19 having a suitable inside dimension for receiving the axle 21. A second hollow channel 19a is blended into the lowermost portion of the channel 19 and includes a dimension suitable for receiving the locking pin 35. To this end, the axle 31 having the spring 32, the button 33 and the split pin 34 are inserted through the opening 21a1 of the stock arm 21 and into the opening 19. Likewise, the locking pin 35 is inserted into the opening 19a. As the axle includes a first end having an enlarged faceplate 31b with a dimension that is greater than opening 21a1, the axle remains within the opening 19.

0034] As shown in FIG. 3, when so positioned, the second end of the axle 31c will extend out of the channel 19 and through opening 22a1 of the second stock arm 22 and the washer 36. A small groove 31c1 is disposed along a periphery of the second side of the axle, and acts to receive a retaining ring 37 to lock the assembly into place.

0035] In operation, when the button 33 is pressed, the split pin 34 moves the lock pin 35 out of position, and allows the stock arms 21 and 22 to rotate around the axle. When the button 33 is released, the button spring 32 will place outward pressure on lock pin 35 through the button 33 and the split pin 34. When the stock arms 21 and 22 are rotated to a fully open position or a fully closed position, the lock pin 35 slides into position and secures the assembly in place. Accordingly, the assembly 30 acts to allow a user to rotate the stock arms a full 180 degrees between an open position (FIG. 2) and a closed position (FIG. 6) and to automatically lock the same.

0036] FIG. 4 illustrates the under folding firearm stock assembly 10 transition from the open position to a closed position, wherein the stock arms 21 and 22 are rotated 180 degrees, see arrow b, about the pivot assembly until being positioned along side main body side walls lid and lie, respectively. When so positioned, the butt stock 23 can be rotated to a closed position (see arrow a), so as to rest directly beneath the bottom wall of the main body 11e. When so located, the locking member of the pivot assembly can engage the openings, so as to prevent the arms from moving, as described above.

0037] FIG. 5 and FIG. 6 illustrate one embodiment of the under folding firearm stock assembly 10 in operation with the firing mechanism of a rifle. As shown, the rifle firing mechanism 1 can include a factory barrel 2, receiver 3, cartridge receiver 4, trigger guard assembly 5, bolt 6, and bolt operating
handle 7. A ridge R separates the upper portion of the trigger guard assembly 5 and the lower portion of the receiver 4, and a stock connector 8 is positioned beneath the barrel at a location adjacent to the cartridge receiver. The stock connector including a threaded opening 8a for allowing the rifle stock to be bolted to the firing mechanism. These and other components of the rifle firing mechanism are described in U.S. Pat. No. 7,302,881, to Tertin, the contents of which are incorporated herein by reference.

Accordingly, the shape of the firing mechanism opening 12 of the main body conforms to the shape of firing mechanism 1 so as to allow the lowermost portions of the trigger assembly 5 and the cartridge receiver 4 to penetrate the opening 12 and be positioned beneath the bottom wall of the main body 11c. Additionally, the ridge 12a, the third raised section 11e3, and the first raised section 11e1 can act as a shelf upon which the ridge R, the stock connector 8 and the barrel 2 of the firing mechanism can rest, respectively. When so positioned, bolt opening 11e4 of the third raised section, and threaded opening 8a of the stock connector can be aligned so as to receive a bolt (not illustrated) for securing the firing mechanism 1 into the under folding firearm stock assembly 10. (See FIG. 5)

As described herein, one or more elements of the under fold firearm stock assembly 10 can be secured together utilizing any number of known attachment means such as, for example, screws, glue, compression fittings and welds, among others. Moreover, although the above embodiments have been described as including separate individual elements, the inventive concepts disclosed herein are not so limiting. To this end, one of skill in the art will recognize that one or more individual elements such as the main body 11 and the grip 15, for example, may be formed together as one continuous element, either through manufacturing processes, such as welding, casting, or molding, or through the use of a singular piece of material milled or machined with the aforementioned components forming identifiable sections thereof.

As to a further description of the manner and use of the present invention, the same should be apparent from the above description. Accordingly, no further discussion relating to the manner of usage and operation will be provided.

The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the invention. As used herein, the singular forms "a," "an," and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises" and/or "comprising," when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

The corresponding structures, materials, acts, and equivalents of all means or step plus function elements in the claims below are intended to include any structure, material, or act for performing the function in combination with other claimed elements as specifically claimed. The description of the present invention has been presented for purposes of illustration and description, but is not intended to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art without departing from the scope and spirit of the invention. The embodiment was chosen and described in order to best explain the principles of the invention and the practical application, and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated.

What is claimed is:

1. An under folding firearm stock assembly, said stock assembly comprising:
   an elongated body that can be separated into a barrel section and a receiver section having a front end, a back end, a pair of opposing generally parallel side walls joined together by a bottom wall and forming a generally U shaped channel;
   a grip positioned adjacent to the back end of the main body and secured to the bottom wall on a surface opposite to the generally U shaped channel;
   a firing mechanism opening disposed within the bottom wall at a location adjacent to the grip, and a ridge disposed within the firing mechanism opening;
   a bolt opening disposed along the bottom wall of the main body, wherein said bolt opening, being interposed between the firing mechanism opening and the front end of the main body, wherein said bolt opening, firearm receiver opening and ridge are configured to receive and engage a conventional firing mechanism;
   an elongated stock that includes a pair of laterally spaced arms each having a first end and a second end, and a butt stock pivotally secured to the second end of each of the laterally spaced arms; and
   a pivot assembly disposed along the back end of the main body, said pivot assembly being in communication with the first end of each of the laterally spaced arms, and being configured to transition the elongated stock from an open position to a closed position.

2. The under folding firearm stock assembly of claim 1, wherein the elongated stock is configured to pivot 180 degrees about the pivot assembly.

3. (canceled)

4. The under folding firearm stock assembly of claim 1, wherein the grip is configured to be removable.

5. The under folding firearm stock assembly of claim 1, wherein the top surface of the bottom wall includes a plurality of raised sections configured to engage the conventional firing mechanism.

6. The under folding firearm stock assembly of claim 1, wherein the pivot assembly is configured to lock each of the laterally spaced arms in a direction in-line and away from the back end of the main body in the open position.

7. The under folding firearm stock assembly of claim 1, wherein the pivot assembly is configured to lock each of the laterally spaced arms alongside the side walls of the main body in the closed position.

8. The under folding firearm stock assembly of claim 1, wherein the butt stock is configured to pivot between an open position and a closed position.

9. The under folding firearm stock assembly of claim 1, wherein the butt stock is configured to make contact with the surface opposite to the general U shaped channel of the bottom wall of the main body when each of the elongated stock and the butt stock are in the closed positions, respectively.

10. An under folding firearm stock assembly, said stock assembly comprising: means for receiving a firing mechanism of a rifle;
    a barreled front stock assembly can separate from a back receiver stock assembly;
a removable hand grip secured to the bottom of the means for receiving;
means for securing the firing mechanism to the means for receiving;
a pair of laterally spaced arms each having a first end and a second end, and a butt stock pivotally secured to the second end of each of the laterally spaced arms, each of the laterally spaced arms being secured to a first end of the means for receiving; and,
means for pivoting each of the laterally spaced arms between an open position and a closed position.

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