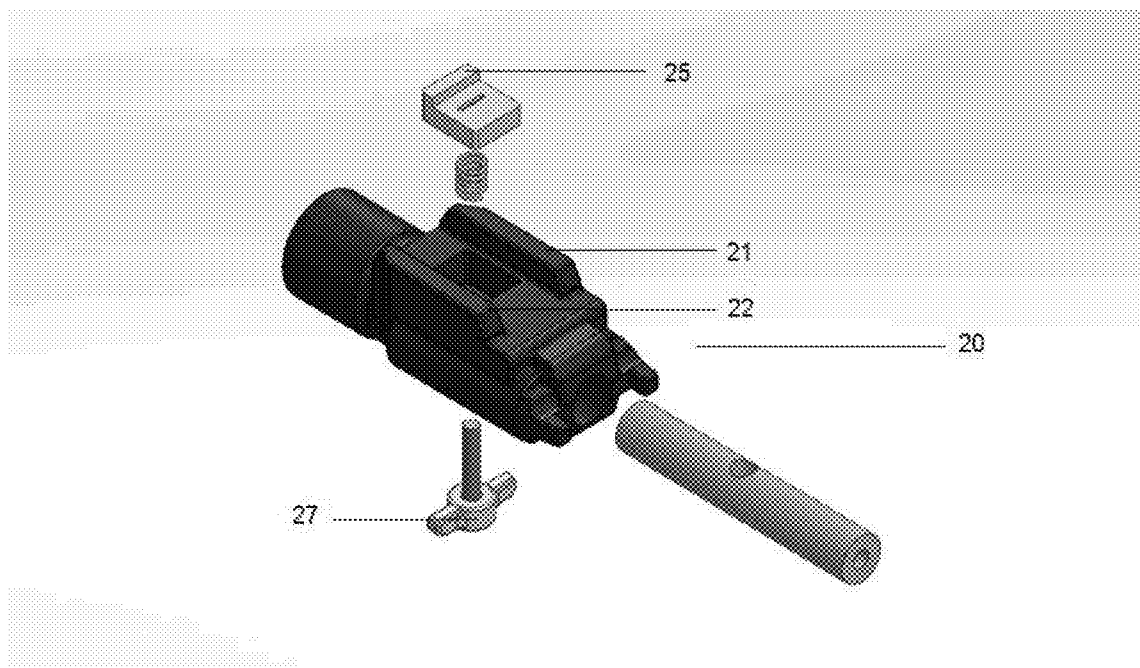




US 20160146572A1

(19) **United States**(12) **Patent Application Publication**
LEY(10) **Pub. No.: US 2016/0146572 A1**(43) **Pub. Date: May 26, 2016**(54) **MECHANISM FOR ATTACHMENT OF
ACCESSORIES TO GUN**(52) **U.S. Cl.**
CPC **F41C 27/00** (2013.01)(71) Applicant: **RYAN M. LEY**, WILMINGTON, NC
(US)(57) **ABSTRACT**(72) Inventor: **RYAN M. LEY**, WILMINGTON, NC
(US)(21) Appl. No.: **14/949,428**(22) Filed: **Nov. 23, 2015****Related U.S. Application Data**(60) Provisional application No. 62/083,216, filed on Nov.
22, 2014.**Publication Classification**(51) **Int. Cl.**
F41C 27/00 (2006.01)

A system for attaching and stabilizing a gun attachment accessory to the frame of a firearm in which the firearm frame has two parallel lateral rails running longitudinally along the length of the firearm frame and a one groove in the bottom of the firearm barrel frame positioned between and perpendicular to the lateral rails. A gun attachment accessory mounted to the frame via the lateral rails features a protrusion located on the upper surface of an accessory that is equipped with means to extend the protrusion such that it engages with the groove in the bottom of the firearm frame. The means to extend the protrusion such that it engages with the groove include a thumb screw possibly equipped with a compression spring, threaded through a bore such that the turning of the screw raises or lowers a platform featuring the protrusion.



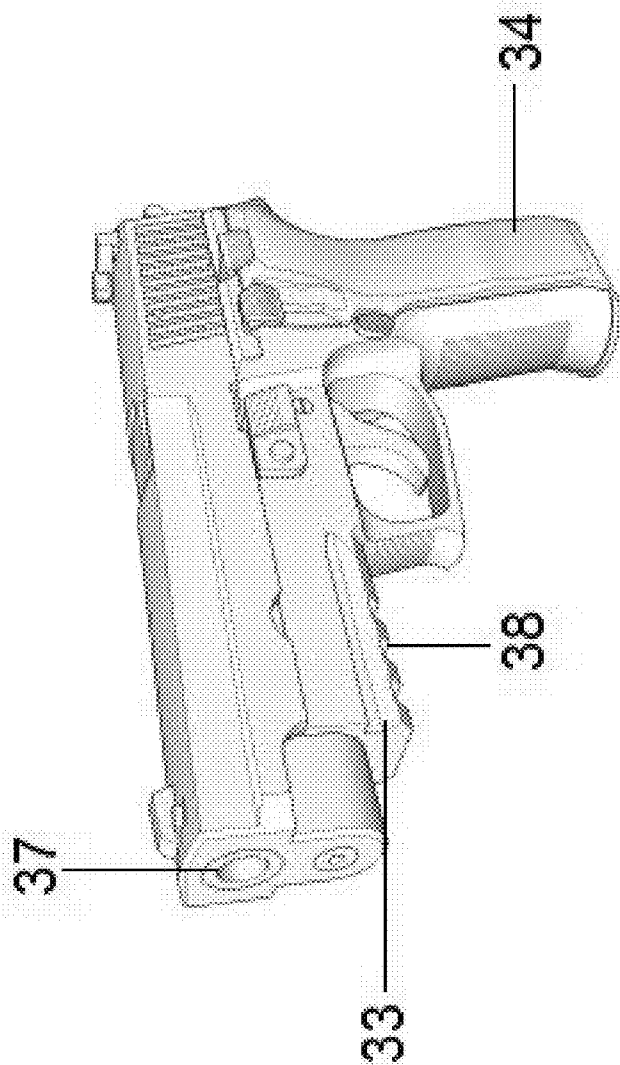


FIGURE 1

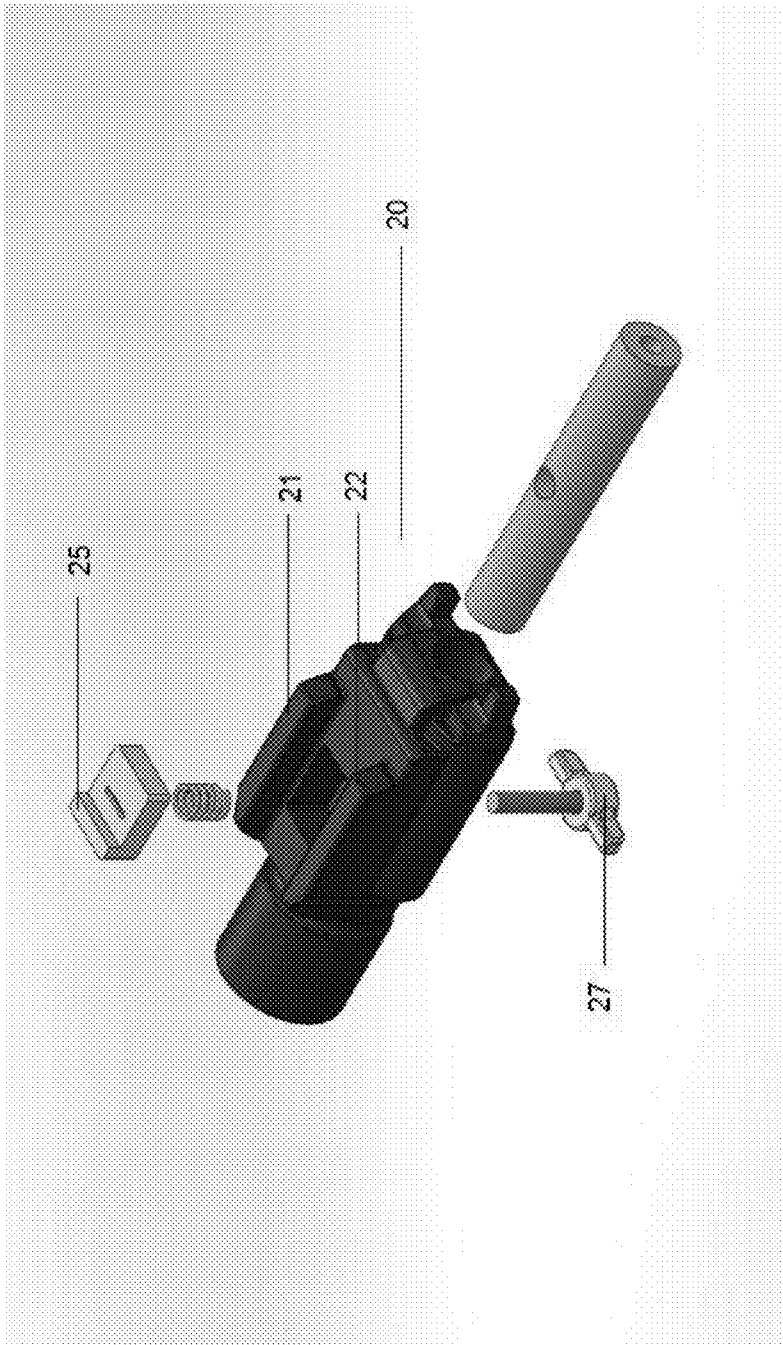


FIGURE 2

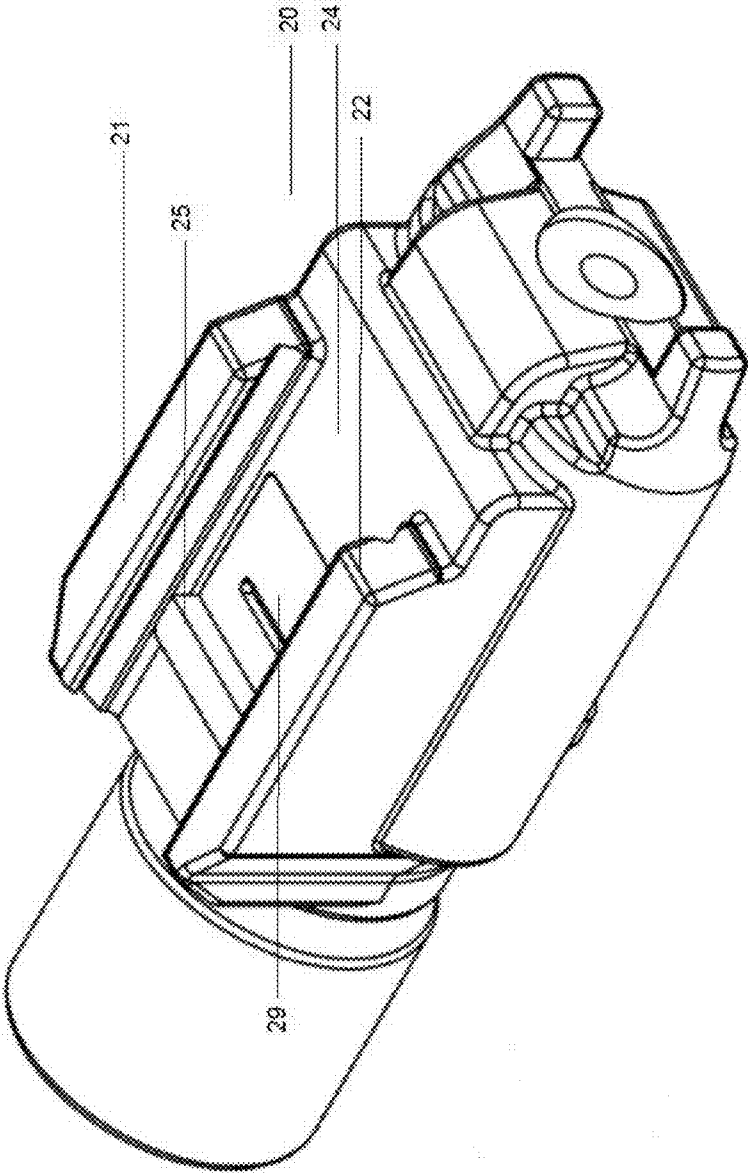


FIGURE 3

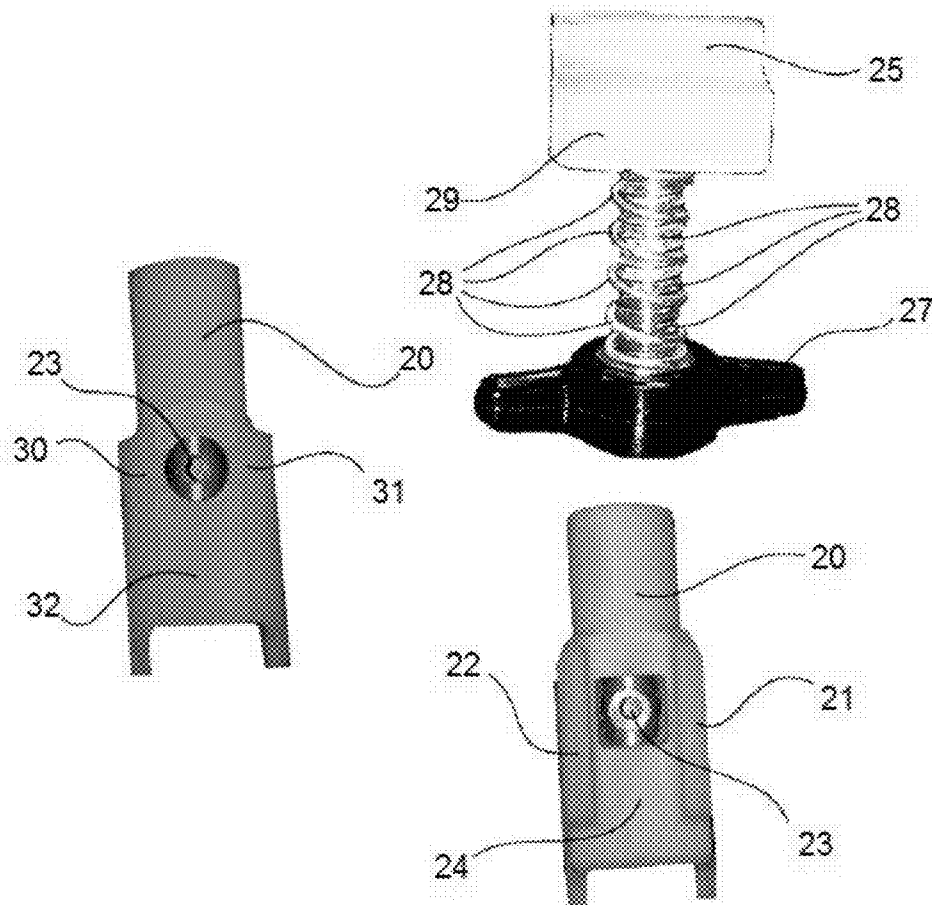


FIGURE 4

MECHANISM FOR ATTACHMENT OF ACCESSORIES TO GUN

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of priority to U.S. Provisional Application Number 62/083,216 filed on Nov. 22, 2014. The content of United States Provisional Application Number 62/083,216 filed on Nov. 22, 2014 is incorporated by reference herein in its entirety.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not Applicable.

THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT

[0003] Not Applicable.

INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC

[0004] Not Applicable.

BACKGROUND OF THE INVENTION

[0005] (a) Field of the Invention.

[0006] The present invention is in the technical field of accessories that may be attached to guns. More particularly, the present invention is in the technical field of mechanisms that provide for the attachment of accessories to guns.

[0007] (b) Background Art.

[0008] The technical field of the present invention has long known of a variety of mechanisms providing for the attachment of accessories to guns. However, the present state of the art is such that these mechanisms frequently comprise delicate and finely calibrated clips, button releases, and the like. Though admittedly functional for the purpose of facilitating the attachment of an accessory to the barrel of a gun, delicate and finely calibrated components in the attachment mechanisms known in the art are undesirable from a manufacturing cost perspective and they further leave the user with a product that is not durable and, therefore, not well-suited for high intensity activities undertaken while the mechanism is engaged, including without limitation, tactical training exercises utilizing a gun.

[0009] For the above stated reasons, the present state of the art is wanting of a mechanism that facilitates the attachment of accessories to a gun, but that is both inexpensive to manufacture and sturdy and durable in use. It is considered a primary objective of the present invention to provide a mechanism meeting these criteria.

BRIEF SUMMARY OF THE INVENTION

[0010] The present invention is an inexpensive and sturdy mechanism allowing attachment of accessories to the barrel of a gun having two parallel lateral rails extending longitudinally along the bottom of a barrel frame and at least one groove between and perpendicular to the lateral rails, the mechanism formed of a rigid material and comprising a selected gun attachment accessory, a track formed of two parallel lateral channels into which the parallel lateral rails of the gun barrel frame may be inserted and at least one retractable protrusion between and perpendicular to the lateral chan-

nels, the protrusion fitting into at least one groove between and perpendicular to the lateral rails along the bottom of the barrel frame. The present invention enables the vertical stabilization of the gun attachment accessory to the weapon via the engagement of the parallel lateral channels of the mechanism with the parallel lateral rails along the bottom of the gun barrel frame. Further, the present invention enables the horizontal and longitudinal stabilization of the gun attachment accessory to the weapon via the engagement of the retractable protrusion with at least one groove between and perpendicular to the lateral rails along the bottom of the barrel frame. Still further, the vertical, horizontal and longitudinal stabilization is achieved without need for finely calibrated and delicate clips, button releases, etc., but rather is accomplished through a relatively crude, but sturdy design of the mechanism, including without limitation the parallel lateral channels and the retractable protrusion.

[0011] The inventor contemplates that alternative embodiments of the above-disclosed invention exist, each a more detailed implementation of the above-described basic invention. Specifically, the inventor contemplates that the means whereby the retractable protrusion may be configured to engage or retract may be via simple thumb screw mechanism wherein the thumb screw is threaded through a bore in the body of the gun attachment accessory, a rigid piece featuring the protrusion being recessed in the bore opposite the head of the thumb screw. In this particular embodiment, the tip of the thumb screw is in contact with the underneath surface of the rigid piece featuring the protrusion and thereby raises or lowers the rigid piece and the protrusion when the thumb screw is turned clockwise or counterclockwise, respectively, by a user manipulating the head of the screw. When the present invention is loosely attached to a gun via insertion of the parallel lateral rails along the bottom of the gun barrel frame into the parallel lateral channels of the mechanism, the gun attachment accessory is locked into place via clockwise turning of the thumb screw until the protrusion is within at least one groove between and perpendicular to the lateral rails along the bottom of the barrel frame. In this sense, the attachment of the accessory to the weapon may be tightened or loosened at a user's discretion by rotation of the thumbscrew clockwise or counterclockwise, respectively.

[0012] A similar embodiment is further contemplated wherein the retractable protrusion may be configured to engage or retract may be via simple thumb screw mechanism comprising a thumb screw that is threaded through a bore in the body of the gun attachment accessory, a rigid piece featuring the protrusion being recessed in the bore opposite the head of the thumb screw, and a compression spring having a flat panel affixed at its base, the plane of the panel being perpendicular to the axis of the spring cylinder. In function, the head of the thumbscrew is present at a first end of the bore, and the rigid piece featuring the protrusion is present at a second end of the bore. Within the bore, the tip of the thumb screw is in contact with the flat panel affixed to one end of the compression spring and the second end of the compression spring is in contact with the underneath surface of the rigid piece featuring the protrusion, such that clockwise turning of the thumb screw forces compression of the compression spring that, in turn, biases the rigid piece and protrusion to extend outward from the bore. When the present embodiment is loosely attached to a gun via insertion of the parallel lateral rails along the bottom of the gun barrel frame into the parallel lateral channels of the mechanism, the gun attachment acces-

sory is locked into place via clockwise turning of the thumb screw until the protrusion is within at least one groove between and perpendicular to the lateral rails along the bottom of the barrel frame. The advantage of this embodiment lies in the fact that the tightening of the thumb screw effecting the tightening of the protrusion against at least one groove between and perpendicular to the lateral rails along the bottom of the barrel frame is not the only mechanism holding the protrusion in place within the groove and, therefore, if the thumb screw were to be released by counterclockwise rotation, whether intentional or accidental, the compression spring mechanism continues to bias the protrusion against the groove and, thereby, keep the gun attachment mechanism sturdily locked in place. While a compression spring having a flat panel affixed at its base, the plane of the panel being perpendicular to the axis of the spring cylinder, is recited as a biasing means in this particular embodiment, the inventor is cognizant that any number of biasing means may be employed in the alternative without impairing the function of the overall mechanism, including without limitation a compression spring without the flat panel affixed or a longer compression spring enveloping the thread of the thumb screw and in direct contact with the head of the thumbscrew.

[0013] The inventor further expressly contemplates that any of the embodiments referenced herein may be also utilized with any gun having two parallel lateral rails longitudinal along the bottom of a barrel frame and a series of grooves between and perpendicular to the lateral rails, thus enabling the gun attachment accessory to be affixed to the gun at any of a select number of configurations occasioned by the spacing in the series of grooves between and perpendicular to the lateral rails in the gun frame. Further, the inventor contemplates that the gun attachment accessory itself may be any item that may be useful to a user when attached to the barrel frame of a firearm, including without limitation, a flashlight, a dummy flashlight, a laser pointer, a bayonet, a gun stand, or the like.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

[0014] FIG. 1 is a perspective view of a gun on which the now disclosed inventive mechanism is intended for use;

[0015] FIG. 2 is an exploded perspective view of a mountable gun accessory making use of the now disclosed inventive mechanism;

[0016] FIG. 3 is a perspective view of a widget having the now disclosed inventive mechanism integrated; and

[0017] FIG. 4 is three (3) isolation views of the varying components of the now disclosed inventive mechanism as the same may be found integrated with a widget for attachment to a gun.

DETAILED DESCRIPTION OF THE INVENTION

[0018] Referring now to the invention in more detail, in FIG. 1 there is shown an example of a handgun of a type that would be compatible for use with the now disclosed inventive mechanism. Specifically depicted is a handgun having a handle 34 and barrel 37, and also having a pair of parallel lateral rails 33 at the bottom of the barrel 37 frame and at least one groove 38 perpendicular to and between the parallel lateral rails 33, the groove 38 also being at the bottom of the barrel 37 frame. It is the presence of these parallel lateral rails

33 and the perpendicular groove 38 that is necessary for a weapon to be compatible with the now disclosed inventive mechanism.

[0019] Further referring to the invention in more detail, in FIG. 2 there is shown an exploded view of an arbitrary widget 20 making use of the now disclosed inventive mechanism in association with a compatible handgun. FIG. 2 illustrates a first lateral channel 21 engaging a first parallel lateral rail 33 (not shown) of the handgun, the exterior of a second lateral channel 22 engaging a second parallel lateral rail 33 (not shown) of the handgun, and the head 27 of a thumbscrew component of the inventive mechanism. As depicted, the first lateral channel 21 and the second lateral channel 22 secure the widget 20 to the handgun via engagement of the parallel lateral rails 33 (not shown) at the base of the barrel 37 frame of the handgun. Further, the head 27 of the thumb screw component is twisted clockwise to push a protrusion 25 upward to engage one of the perpendicular grooves 38 (not shown) in the base of the barrel 37 (not shown) frame of the handgun, thus securing the widget 20 longitudinally along the length of the handgun barrel 37 (not shown).

[0020] To convey a better understanding of the inventive mechanism, in FIG. 3 there is shown an elevated perspective view of a widget having the now disclosed inventive mechanism integrated. Specifically shown is the arbitrary widget 20 having the inventive mechanism integrated, the inventive mechanism comprising the first lateral channel 21, the second lateral channel 22, a protrusion 25 that is perpendicular in orientation to the first lateral channel 21 and second lateral channel 22, a flat recess 24 between the first lateral channel 21 and second lateral channel 22, and a platform component 29 to which the protrusion 25 is attached. Because the view of FIG. 3 is strictly an elevated perspective view of the mechanism, the aspects of the mechanism to be present at the bottom of the arbitrary widget 20 such as the head 27 of the thumbscrew already identified cannot be seen in FIG. 3.

[0021] In FIG. 4 there is shown three (3) isolation views of the varying components of the now disclosed inventive mechanism as the same may be found integrated with a widget for attachment to a gun. The views are of the components disassembled. Depicted is the top of the arbitrary widget 20 showing the first lateral channel 21, the second lateral channel 22, the flat recess 24 between the lateral channels, and a threaded bore 23 through the center of the widget 20. Also depicted is the bottom of the arbitrary widget 20 showing a relatively smooth bottom surface 32, a first depression 30 and a second depression 31 designed to compliment the arms of the head 27 of the thumb screw component, and the view from the bottom of the threaded bore 23 through the middle of the widget 20. Further depicted is the thumb screw component and assembly of the inventive mechanism featuring a thumb screw having a head 27 and a threaded shaft 26, a compression spring 28 enveloping the threaded shaft 26, and the previously identified platform component 29 to which the protrusion 25 is attached.

[0022] In operation, any arbitrary widget 20 may be attached to a compatible gun having at least two parallel lateral rails 33 at the base of the gun's barrel 37 frame and at least one groove 38 in the base of the gun's barrel 37 frame, the groove 38 being cut perpendicular to and being located in between the parallel lateral rails 33 in the base of the gun's barrel 37 frame. The widget 20 utilizes the inventive mechanism to attach to the base of the gun barrel 37 by way of a two-fold securing system: (i) the insertion of the parallel

lateral rails **33** at the base of the gun's barrel **37** frame into the first lateral channel **21** and the second lateral channel **22**, respectively, of the inventive mechanism, and (ii) the insertion of the protrusion **25** of the inventive mechanism into at least one groove **38** in the base of the gun's barrel **37** frame located between and perpendicular to the parallel lateral rails **33**. In practice, the parallel lateral rails **33** of the gun barrel **37** frame slide into the corresponding first lateral channel **21** and second lateral channel **22**, and then the widget **20** is locked into place by insertion of the protrusion **25** into one of the grooves **38** in the gun barrel **37** frame. The protrusion **25** is inserted into a groove **38** by the clockwise turning of the head **27** of the thumb screw causing the threads of the shaft **26** to engage the threaded bore **23** and drive the shaft **26** upward, thus driving the platform component **29** and the attached protrusion **25** upward until the protrusion **25** firmly engages the groove **38**. The protrusion **25** is disengaged from the groove **38** by the counter-clockwise turning of the head **27** of the thumb screw causing the threads of the shaft **26** to engage the threaded bore **23** and cause the shaft **26** to retreat downward, thus allowing the platform component **29** and the protrusion **25** to retreat as well and disengage the groove **38**. The introduction of the compression spring **28** between either the threaded bore **23** and the platform component **29** or between the head **27** of the thumb screw and the threaded bore **23** provides biasing means to ensure that the mechanism remains tightly engaged when needed and counteracts the loosening effect of the head **27** of the thumb screw being inadvertently turned counter-clockwise during use and/or demanding physical activity.

[0023] Reference throughout the specification to features, advantages, or similar language does not imply that all of the features and advantages that may be realized with the present invention should be or are in any single embodiment of the invention. Rather, language referring to the features and advantages is understood to mean that a specific feature, advantage, or characteristic described in connection with an embodiment is included in at least one embodiment of the present invention. Thus, discussion of the features and advantages, and similar language, throughout the specification may, but do not necessarily, refer to the same embodiment.

[0024] Furthermore, the described features, advantages, and characteristics of the invention may be combined in any suitable manner in one or more embodiments. One skilled in the relevant art will recognize that the invention can be practiced without one or more of the specific features or advantages of a particular embodiment. In other instances, additional features and advantages may be recognized in certain embodiments that may not be present in all embodiments of the invention.

[0025] It is understood that the above-described embodiments are only illustrative of the application of the principles of the present invention. The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiment, including the best mode, is to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims, if any, in conjunction with the foregoing description.

[0026] While the foregoing written description of the invention enables one of ordinary skill to make and use what is considered presently to be the best mode thereof, those of ordinary skill will understand and appreciate the existence of variations, combinations, and equivalents of the specific

embodiment, method, and examples herein. The invention should therefore not be limited by the above described embodiment, method, and examples, but by all embodiments and methods within the scope and spirit of the invention.

I claim:

1. A system for attaching a component to a firearm having a barrel frame, the system comprising
 - a first lateral rail extending longitudinally along the bottom of the firearm barrel frame;
 - a second lateral rail extending longitudinally along the bottom of the firearm barrel frame, this second rail being spaced from and parallel to the first rail;
 - at least one groove in the bottom of the firearm barrel frame positioned between and perpendicular to the first and second parallel lateral rails extending longitudinally along the bottom of the firearm barrel frame;
 - a first lateral channel feature on the component to be attached to the firearm, the channel configured to compliment and interlock with the first lateral rail along the bottom of the firearm barrel frame;
 - a second lateral channel feature on the component to be attached to the firearm, the channel configured to compliment and interlock with the second lateral rail along the bottom of the firearm barrel frame;
 - a protrusion feature on the component to be attached to the firearm, the protrusion being configured to compliment and interlock with at least one groove in the bottom of the firearm barrel frame positioned between and perpendicular to the first and second parallel lateral rails extending longitudinally along the bottom of the firearm barrel frame, the protrusion being positioned between the first channel and the second channel; and
 - means whereby the protrusion feature on the component to be attached to the firearm may be manually adjusted so as to extend or retract the protrusion.
2. The system of claim 1 wherein the means for manually adjusting the protrusion feature on the component to be attached to the firearm is a mechanism comprising
 - a threaded bore through the center of the component, the bore having a first end and a second end with the protrusion feature being positioned at the second end of the bore;
 - a threaded screw complimentary to the threads of the bore that may advance or retreat through the bore by the clockwise or counter-clockwise turning of the screw, the head of the screw being at the first end of the bore; and
 - means whereby the screw engages the protrusion feature such that the protrusion is extended outward from the body of the component when the screw is advanced through the bore, and the protrusion is retracted to the body of the component when the screw is retreated through the bore.
3. The system of claim 2 wherein the screw is a thumb screw.
4. The system of claim 1 wherein the protrusion feature is a platform having at least one protrusion on one surface of the platform.
5. The system of claim 2 wherein the protrusion feature is a platform having at least one protrusion on one surface of the platform.
6. The system of claim 3 wherein the protrusion feature is a platform having at least one protrusion on one surface of the platform.

7. A system for attaching a component to a firearm having a barrel frame, the system comprising

- a first lateral rail extending longitudinally along the bottom of the firearm barrel frame;
- a second lateral rail extending longitudinally along the bottom of the firearm barrel frame, this second rail being spaced from and parallel to the first rail;
- at least one groove in the bottom of the firearm barrel frame positioned between and perpendicular to the first and second parallel lateral rails extending longitudinally along the bottom of the firearm barrel frame;
- a first lateral channel feature on the component to be attached to the firearm, the channel configured to complement and interlock with the first lateral rail along the bottom of the firearm barrel frame;
- a second lateral channel feature on the component to be attached to the firearm, the channel configured to complement and interlock with the second lateral rail along the bottom of the firearm barrel frame;
- a protrusion feature on the component to be attached to the firearm, the protrusion feature comprising a platform having at least one protrusion on one surface of the platform, and the protrusion being configured to com-

pliment and interlock with at least one groove in the bottom of the firearm barrel frame positioned between and perpendicular to the first and second parallel lateral rails extending longitudinally along the bottom of the firearm barrel frame, the protrusion feature being positioned between the first channel and the second channel;

- a threaded bore through the center of the component, the bore having a first end and a second end with the protrusion feature being positioned at the second end of the bore;
- a threaded thumb screw complimentary to the threads of the bore that may advance or retreat through the bore by the clockwise or counter-clockwise turning of the screw, the head of the screw being at the first end of the bore; and

means whereby the screw engages the protrusion feature such that the protrusion is extended outward from the body of the component when the screw is advanced through the bore, and the protrusion is retracted to the body of the component when the screw is retreated through the bore.

* * * * *