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(54) **SYSTEMS AND METHODS FOR MULTI-ACCESSORY MOUNT ASSEMBLY FOR A FIREARM**

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(60) Provisional application No. 63/170,791, filed on Apr. 5, 2021.

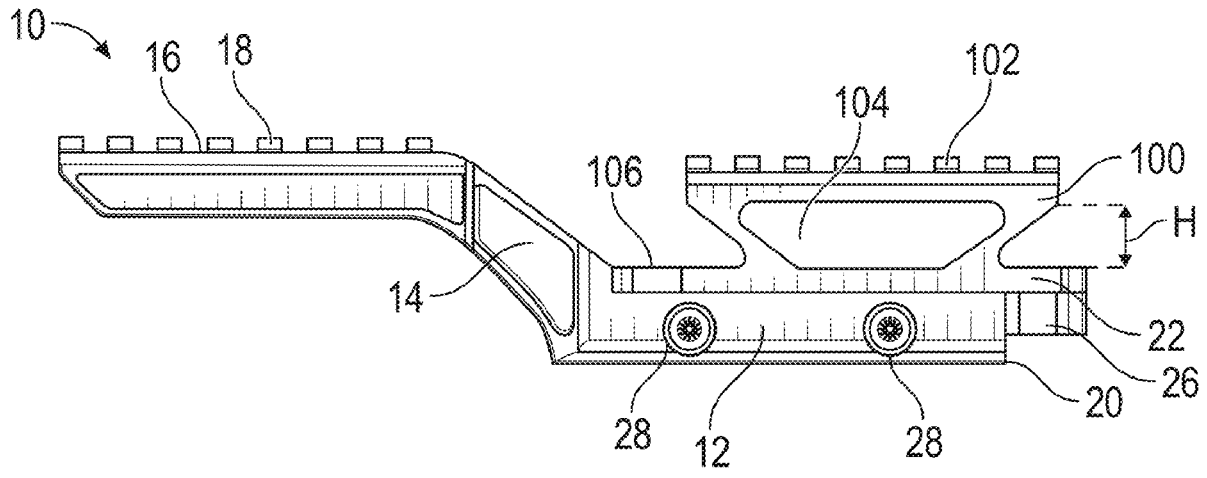
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F41G 11/00 (2006.01)

(52) **U.S. Cl.**
CPC ***F41G 11/003*** (2013.01)

(57) **ABSTRACT**

A multi-accessory mount assembly for use with a firearm, and methods for coupling the assembly to the firearm are provided. The assembly may include a proximal portion having a lower surface configured to be removably coupled to the firearm and an upper surface configured to be removably coupled to a sub mount. The sub mount may be configured to be removably coupled to a first firearm accessory, e.g., an optic scope, a red dot sight, a reflex sight, a night vision monocular or scope, or a magnifier. The assembly further may include a distal portion extending distally from the proximal portion via a neck portion, such that the distal portion is elevated higher than the proximal portion. An upper surface of the distal portion may be configured to be removably coupled to a second firearm accessory, e.g., an infrared laser or a night vision monocular or scope.



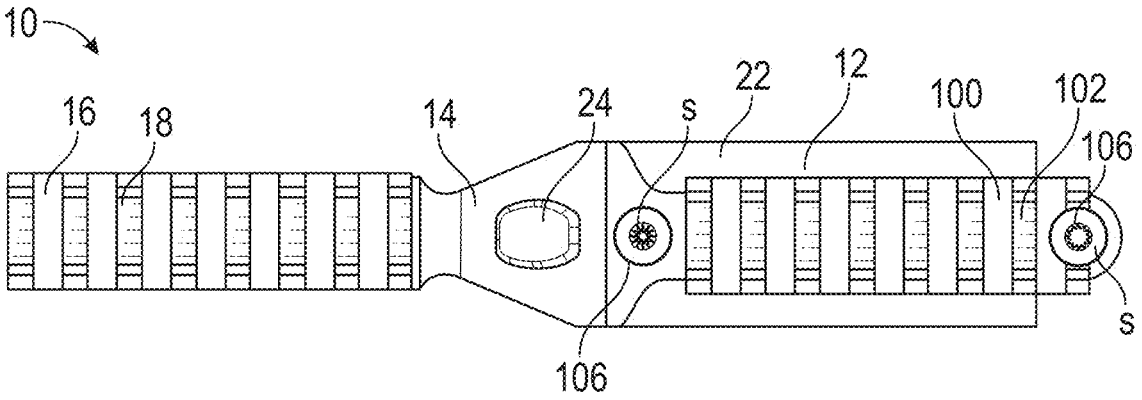

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FIG. 1A

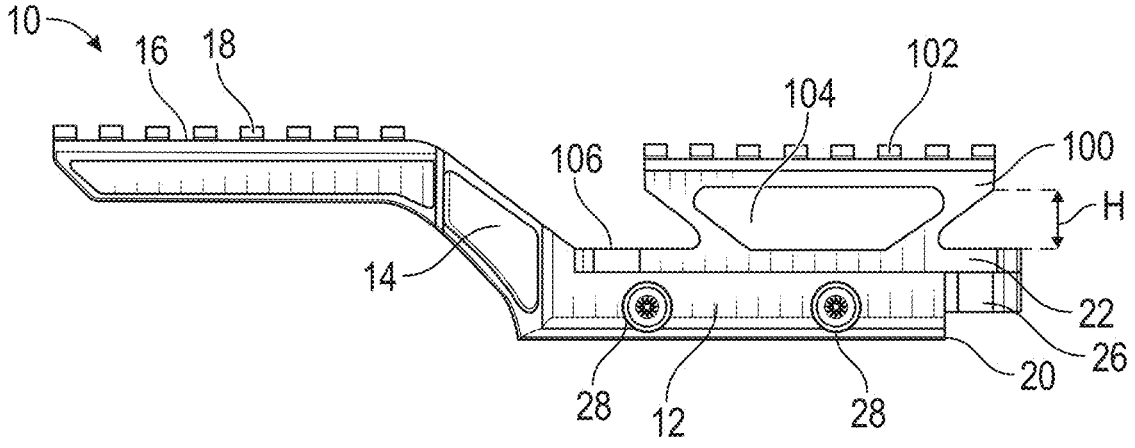

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FIG. 1B

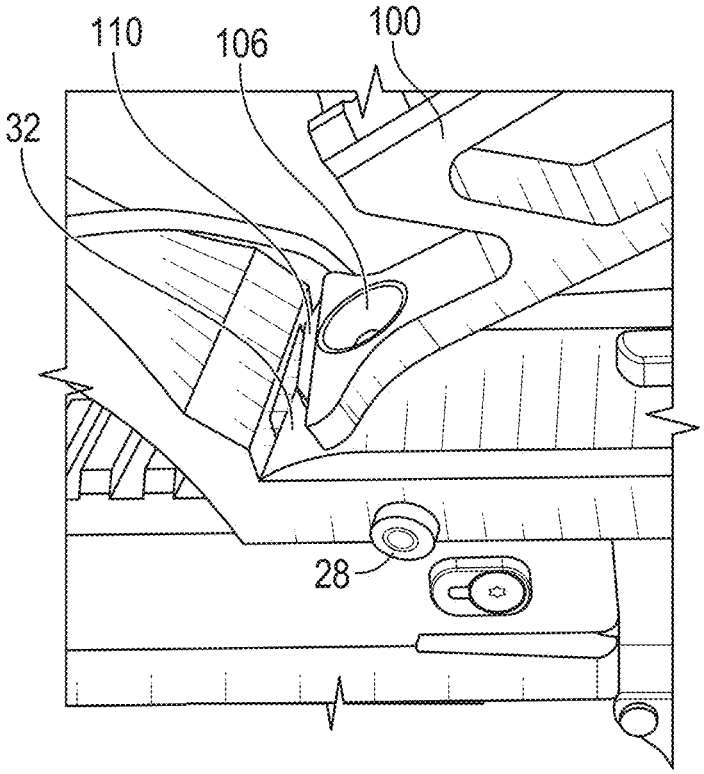


FIG. 1C

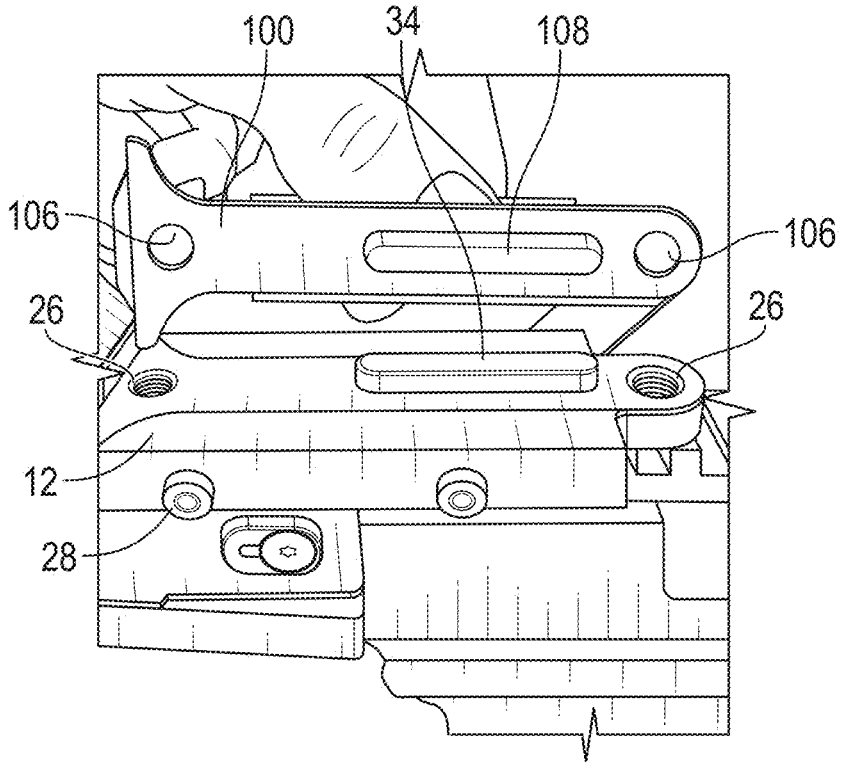


FIG. 1D

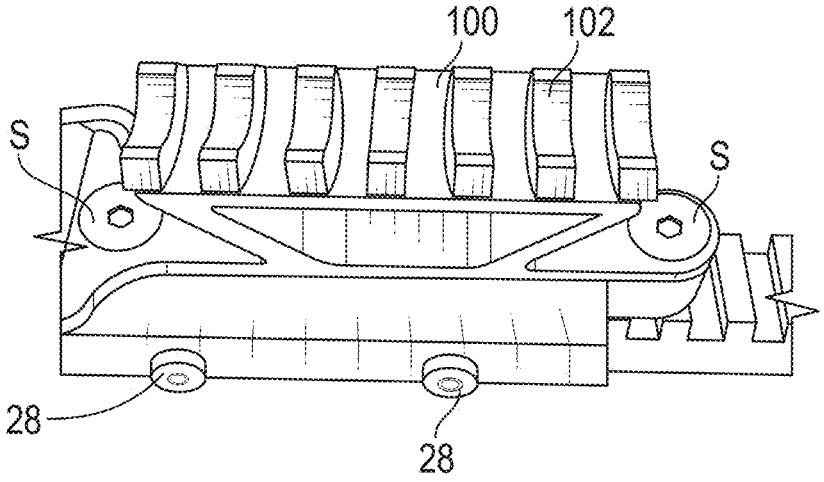


FIG. 1E

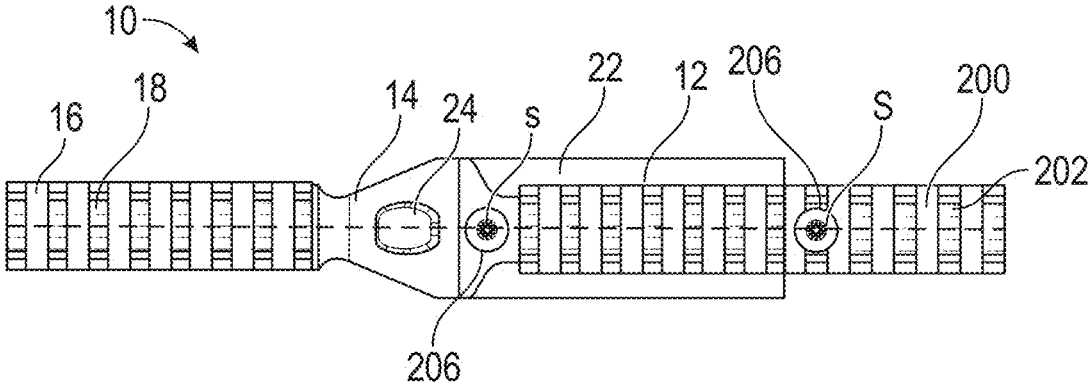


FIG. 2A

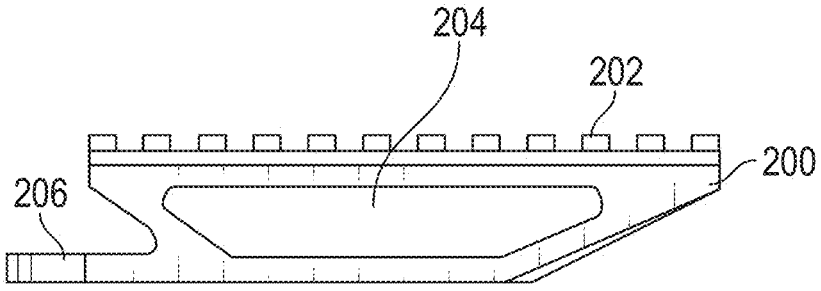


FIG. 2B

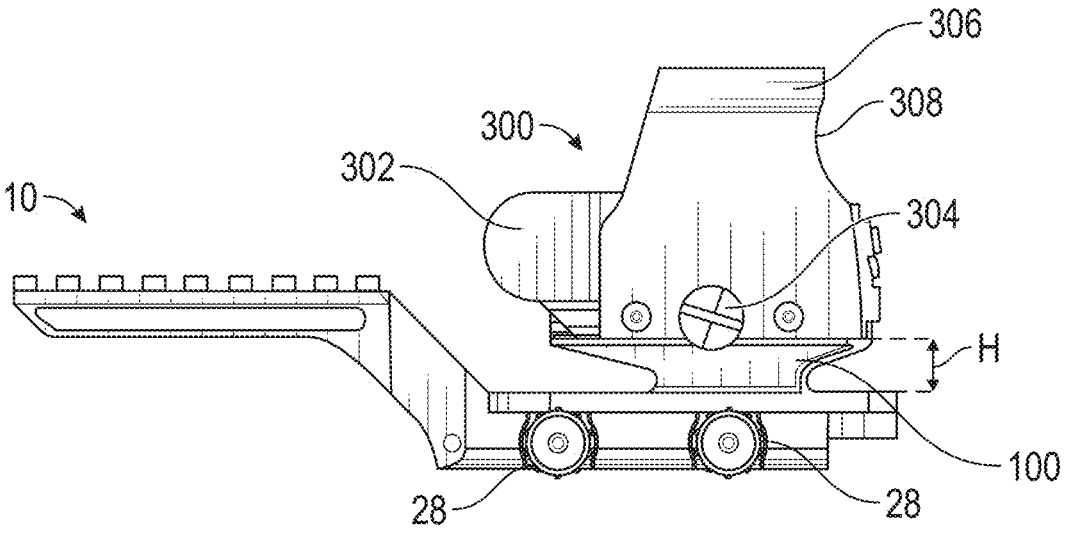

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FIG.3

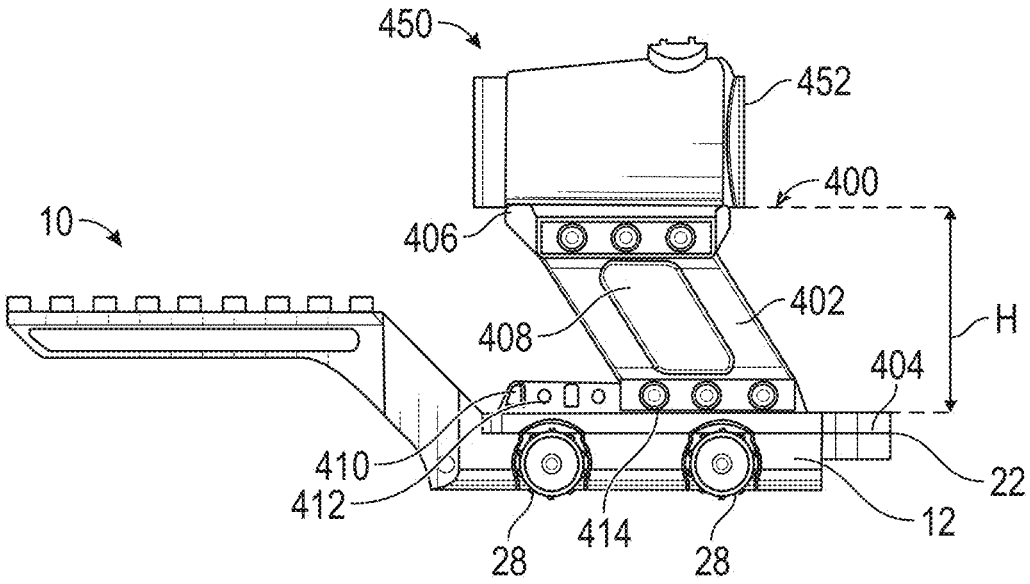

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FIG.4

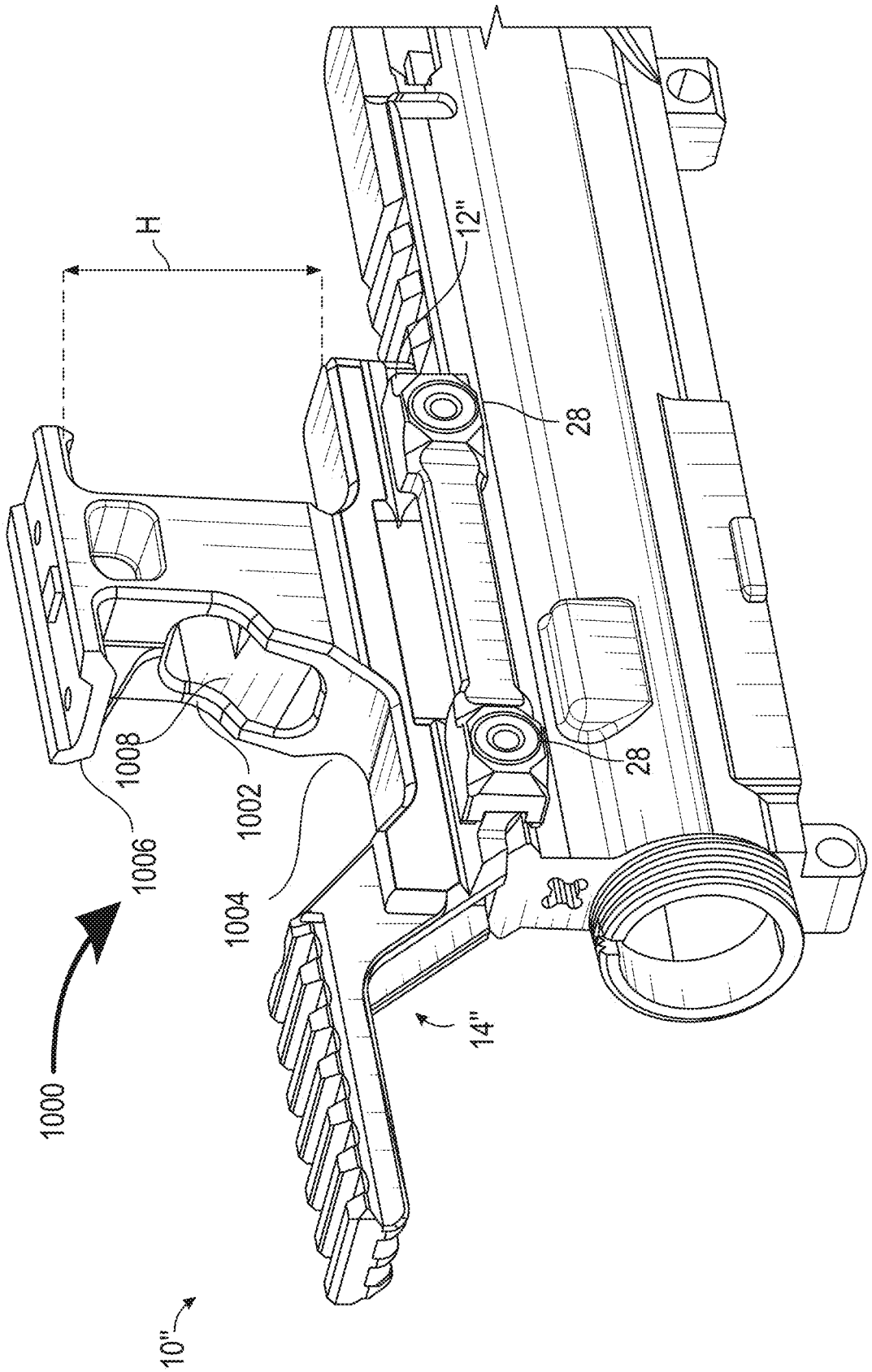


FIG. 5

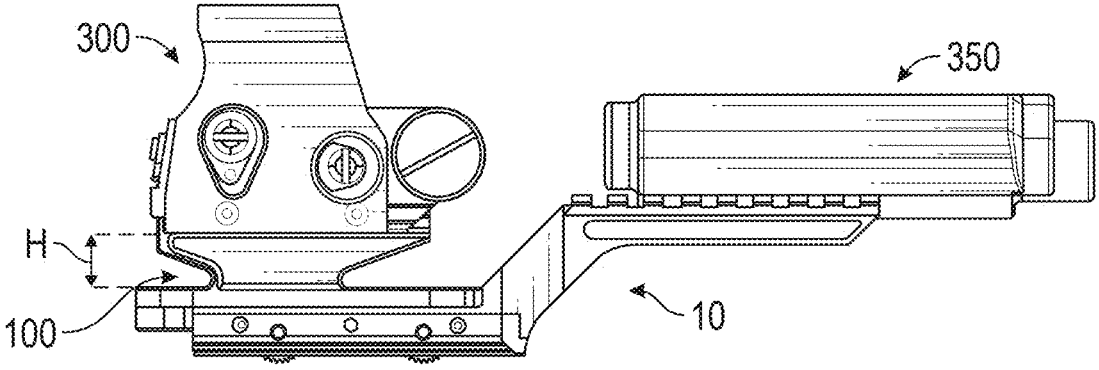


FIG. 6A

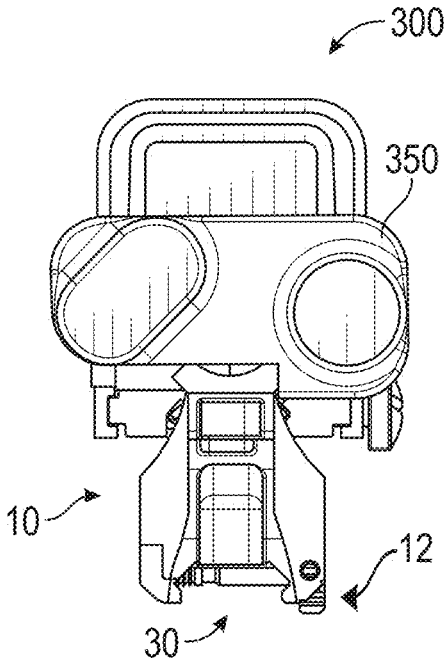


FIG. 6B

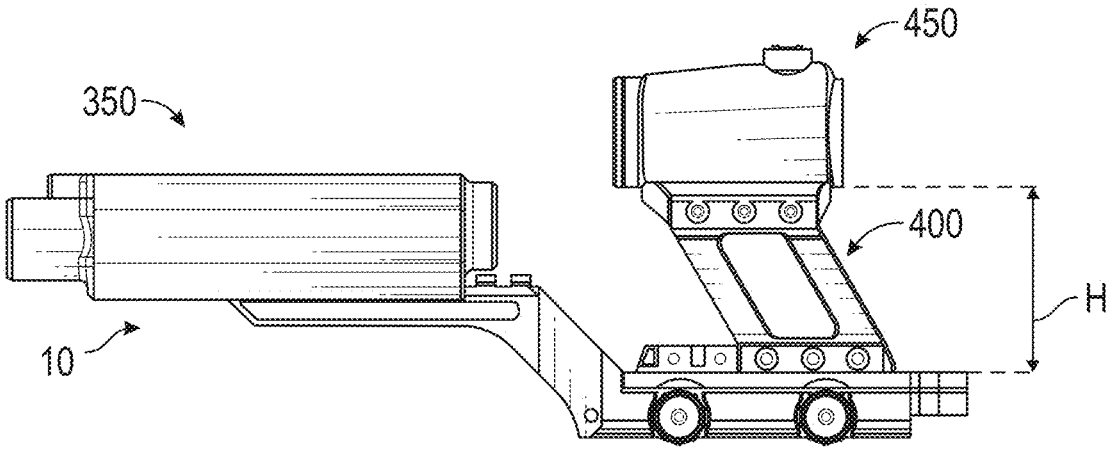


FIG. 6C

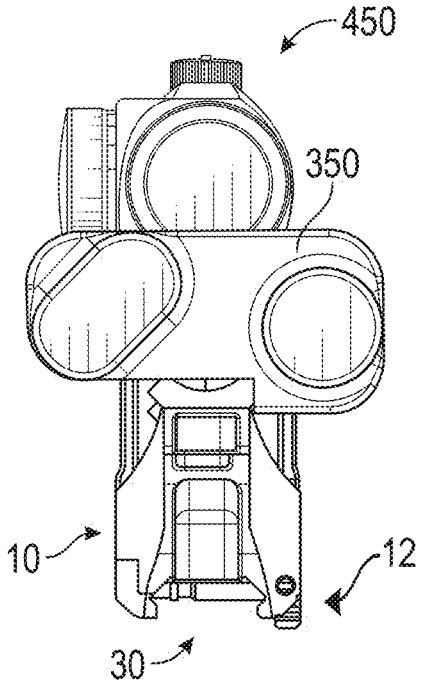


FIG. 6D

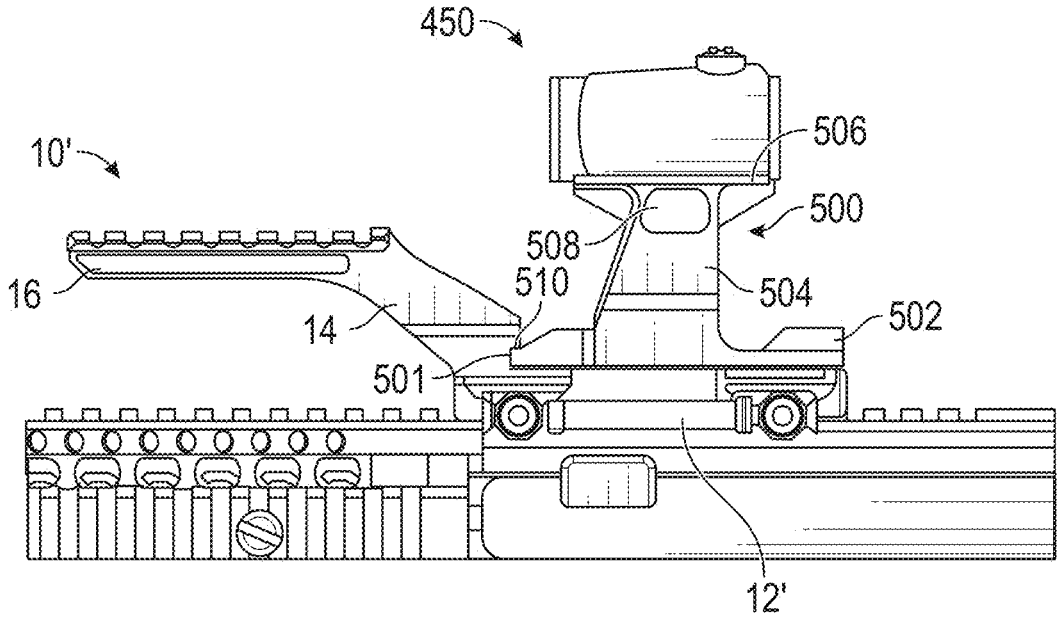


FIG. 7A

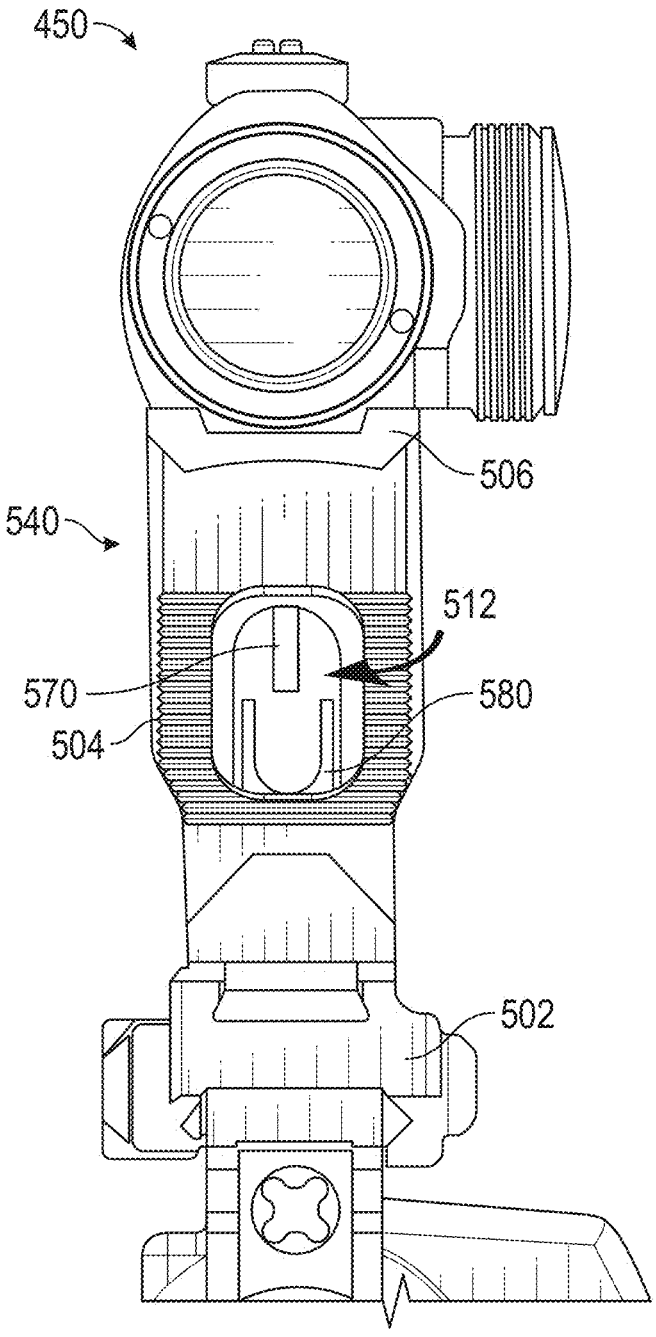


FIG. 7B

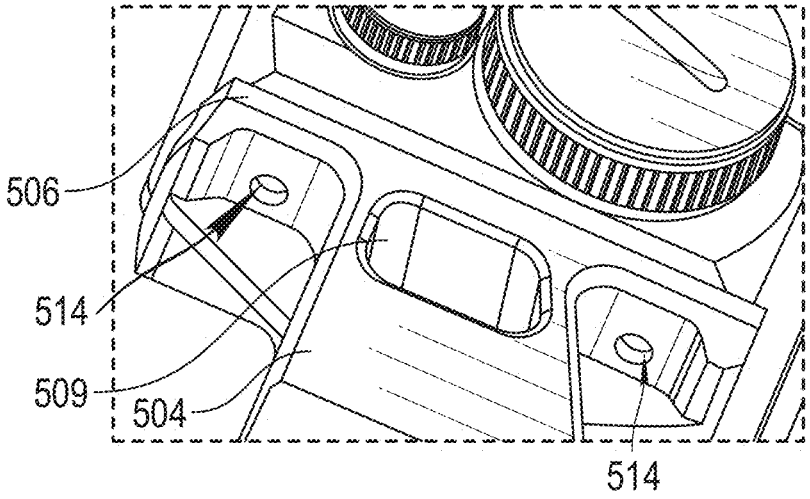


FIG. 7C

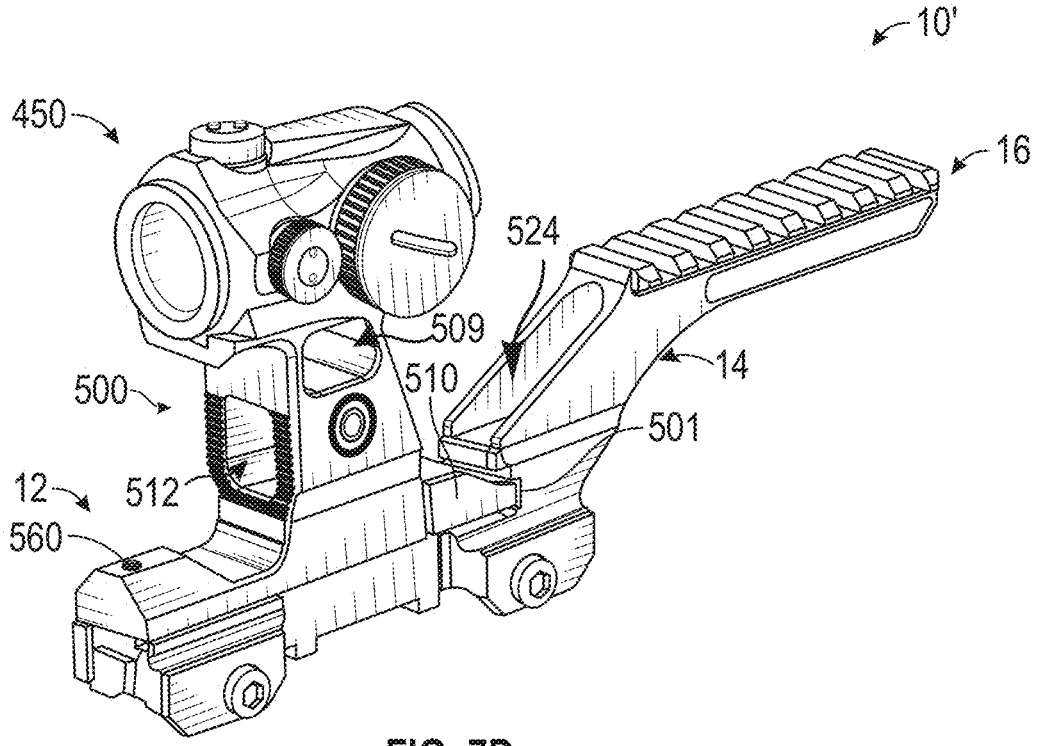


FIG. 7D

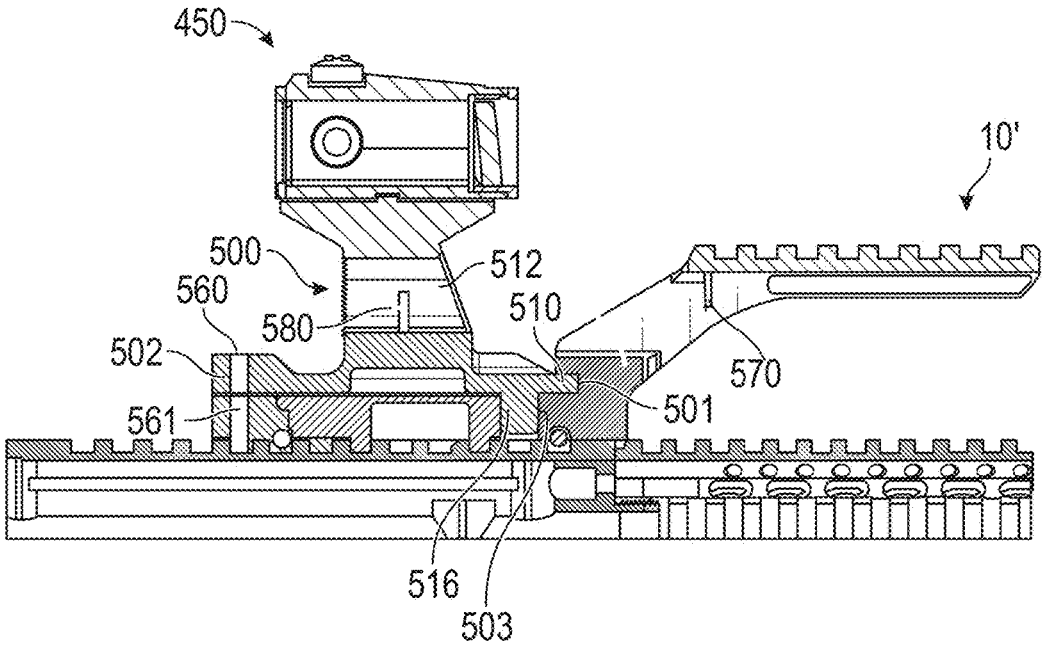

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FIG. 7E

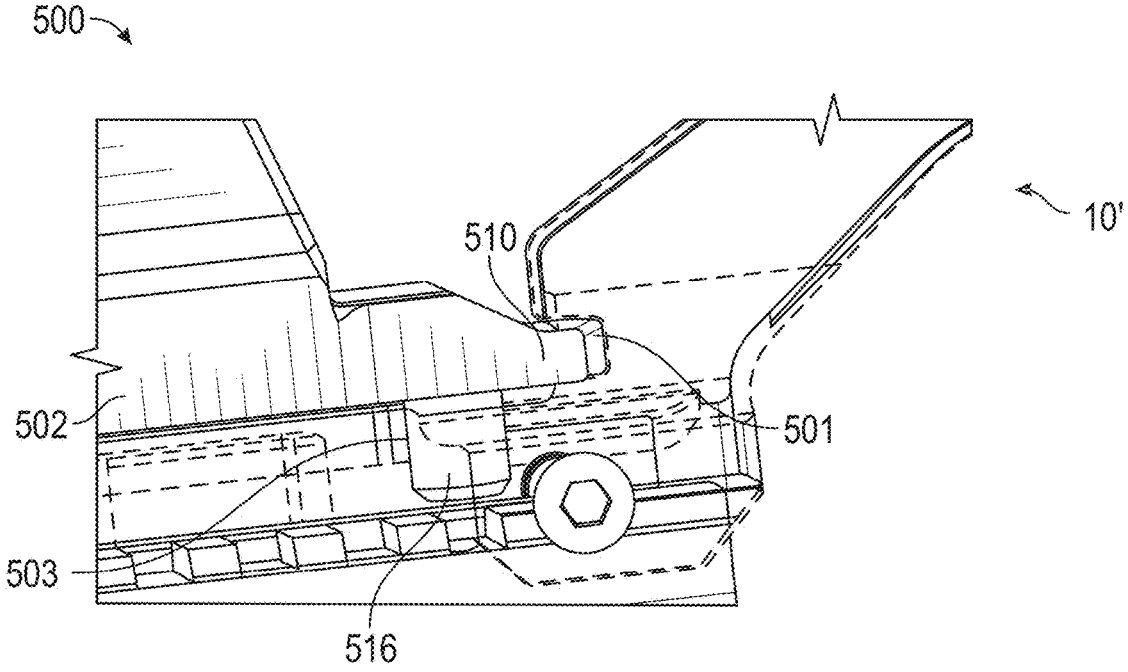

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FIG. 7F

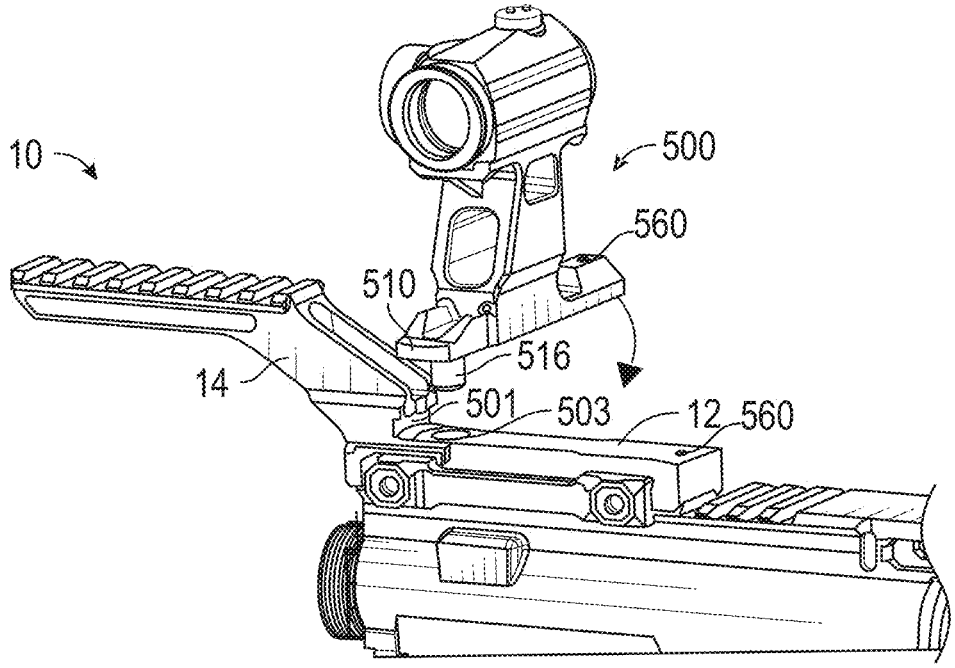


FIG. 7G

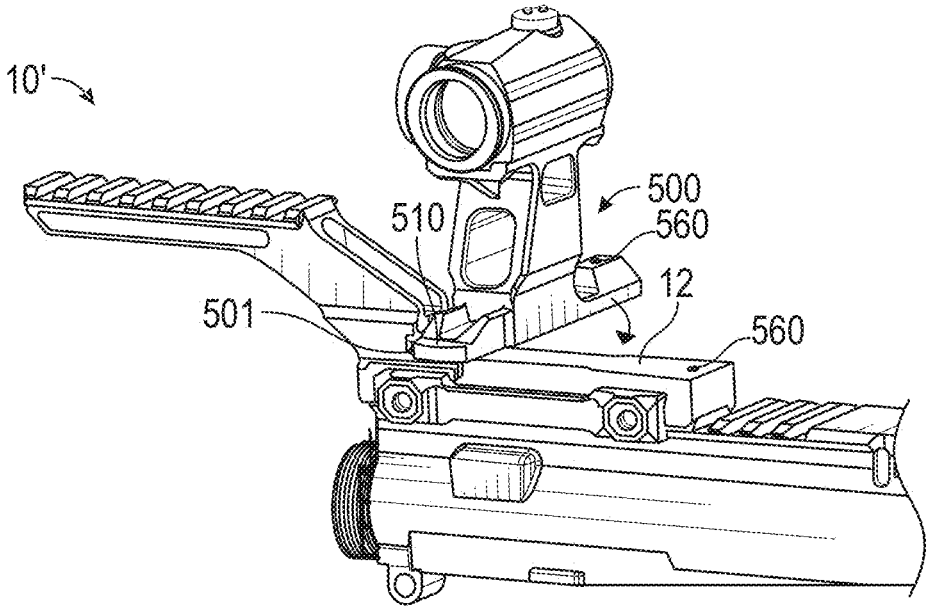


FIG. 7H

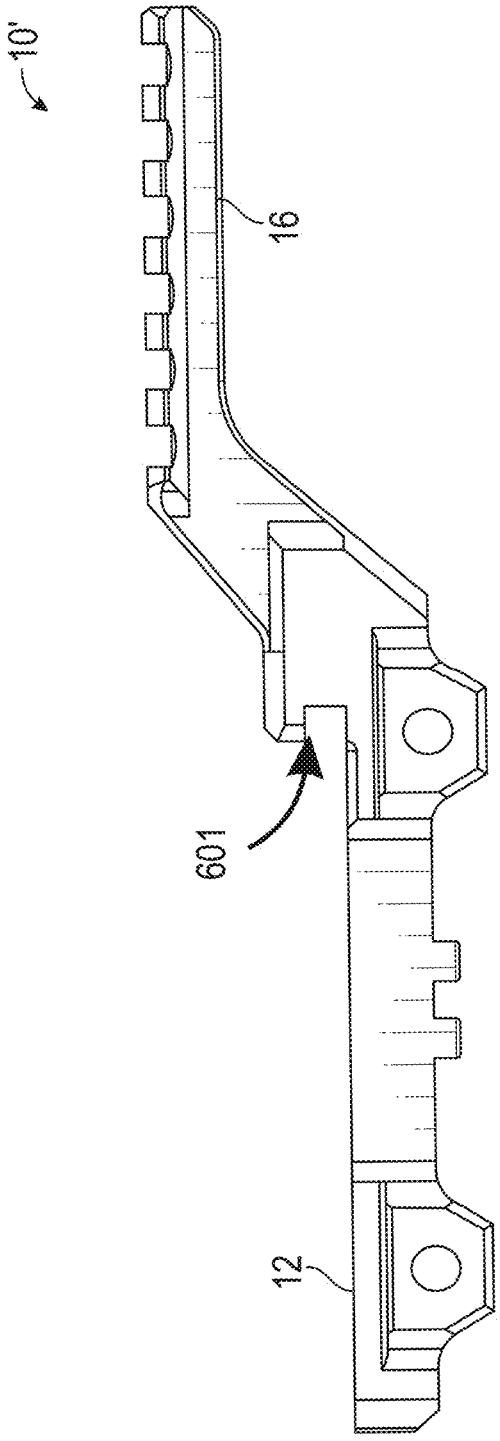


FIG. 8A

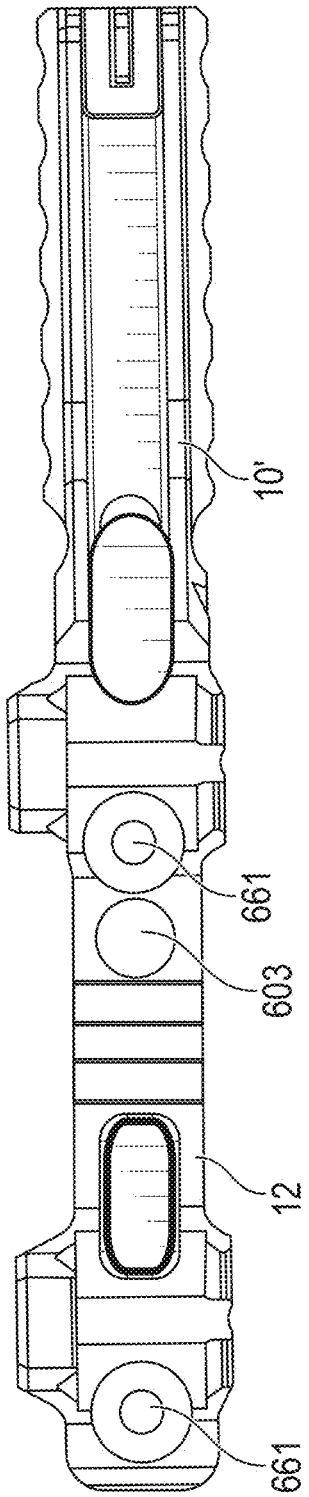


FIG. 8B

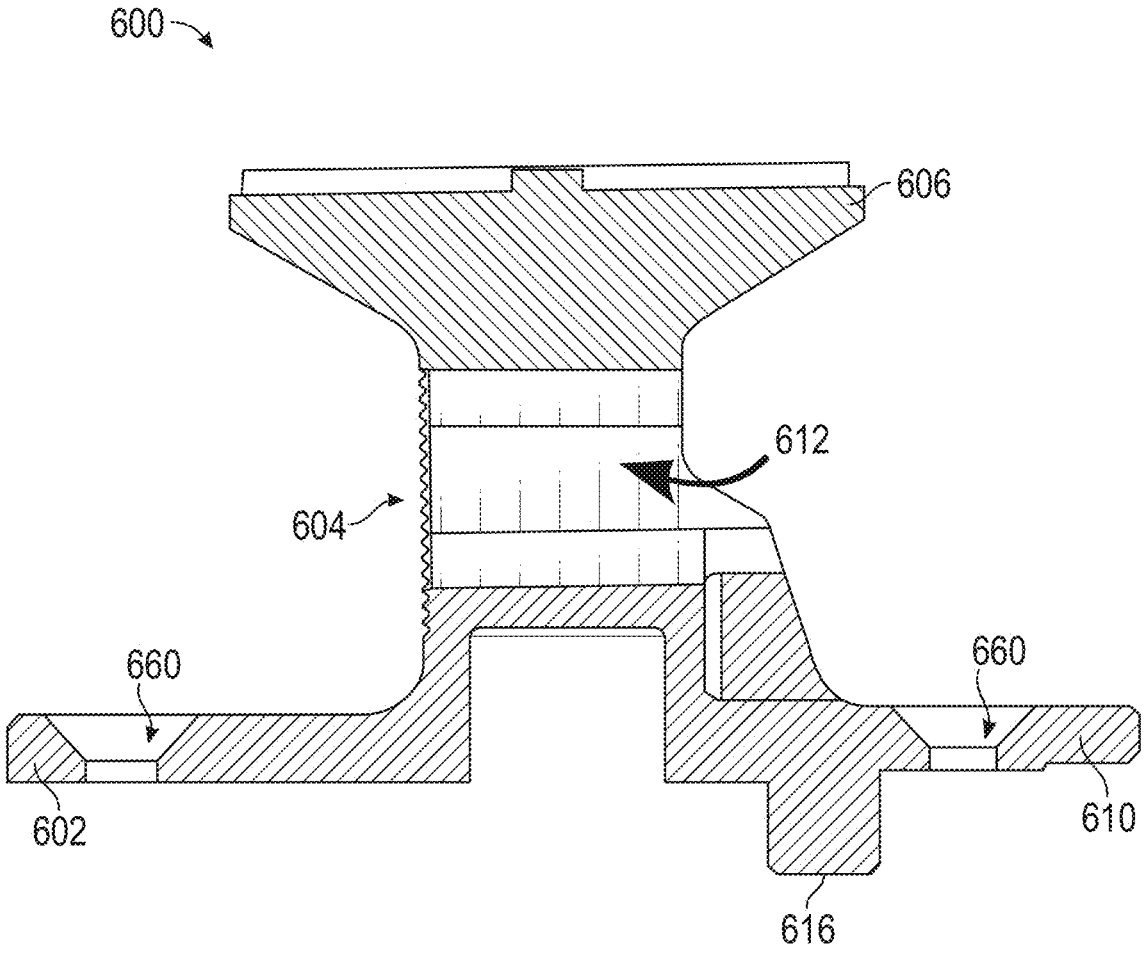


FIG. 8C

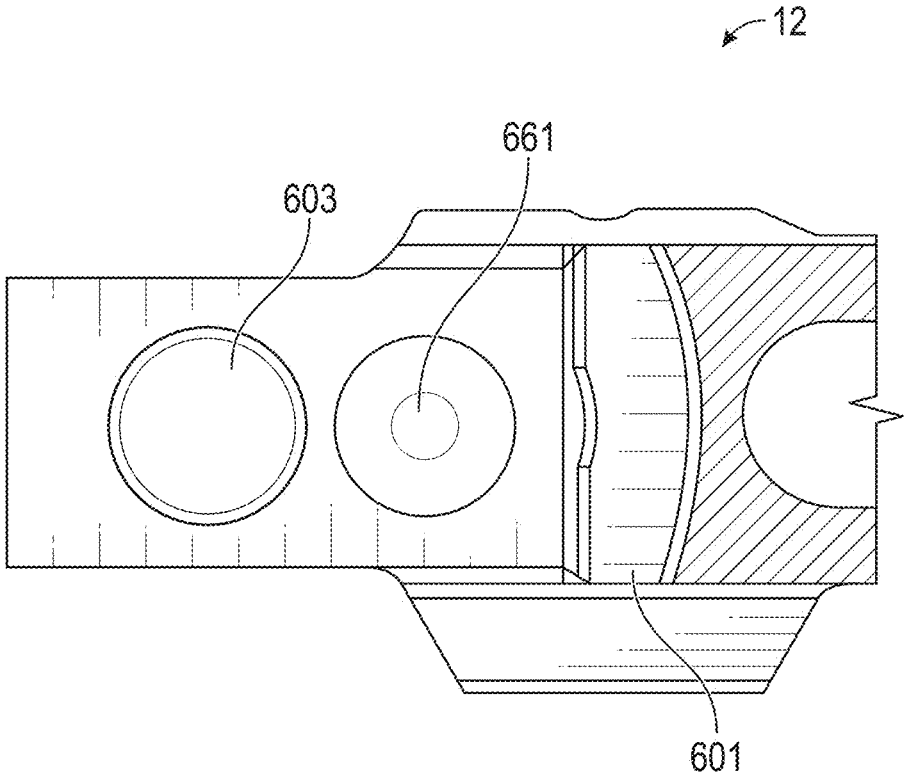


FIG. 8D

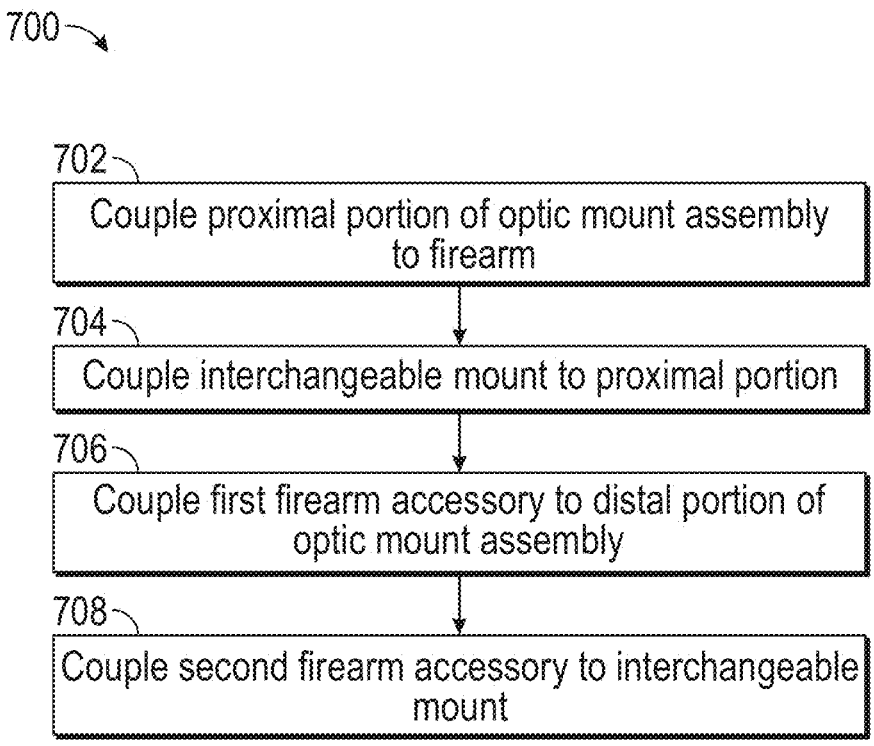

700
702
Couple proximal portion of optic mount assembly to firearm
704
Couple interchangeable mount to proximal portion
706
Couple first firearm accessory to distal portion of optic mount assembly
708
Couple second firearm accessory to interchangeable mount

FIG. 9

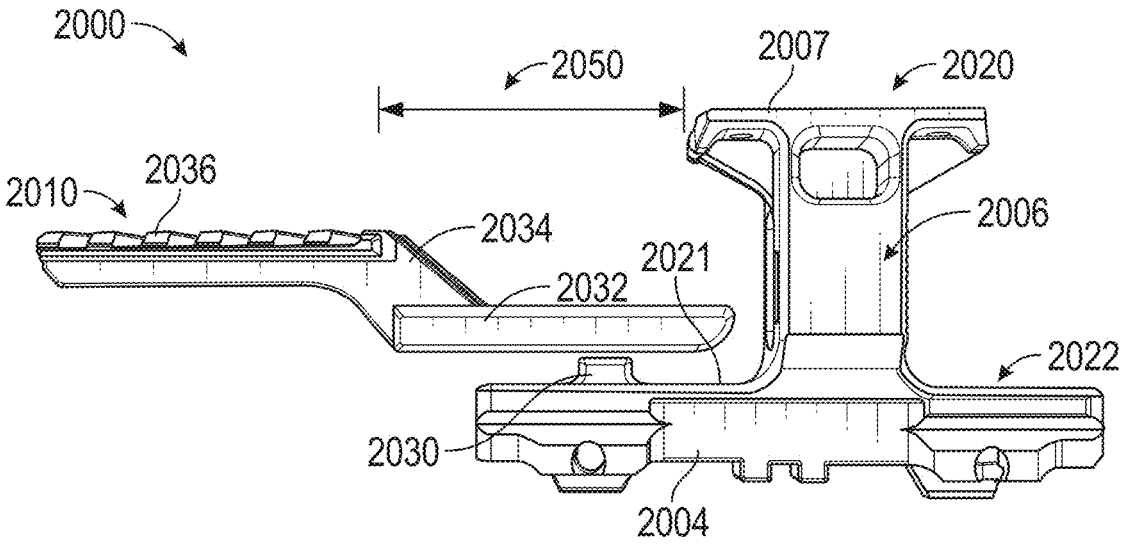


FIG. 10A

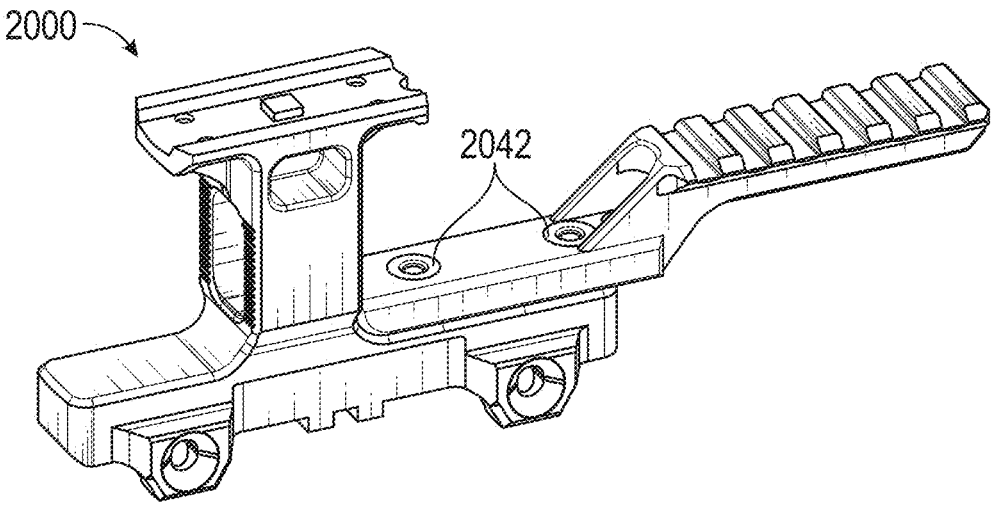


FIG. 10B

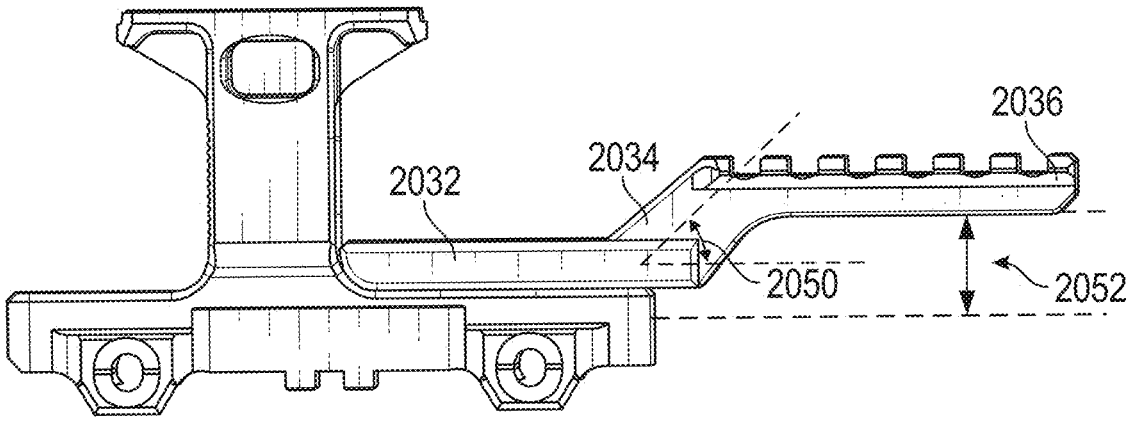


FIG. 10C

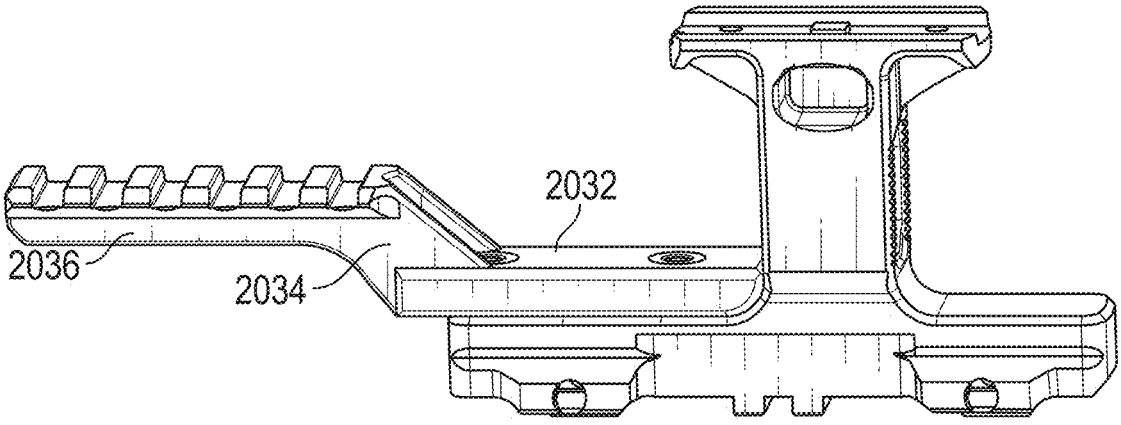


FIG. 10D

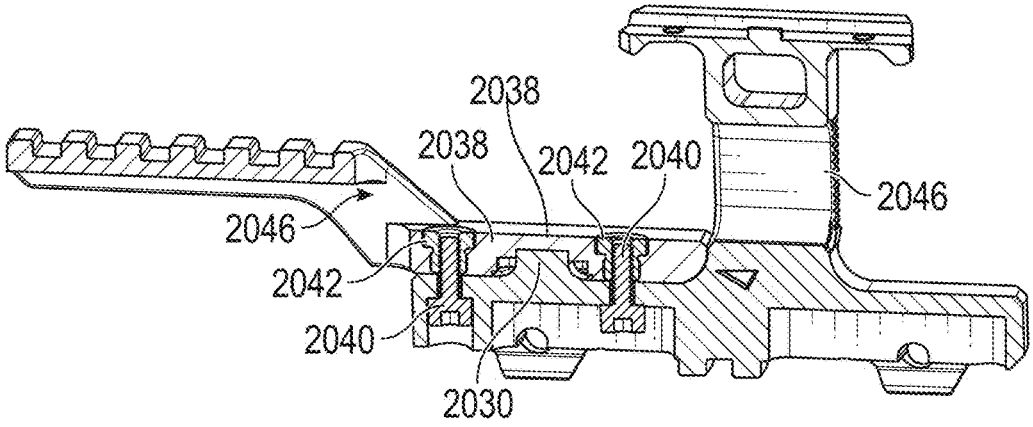


FIG. 10E

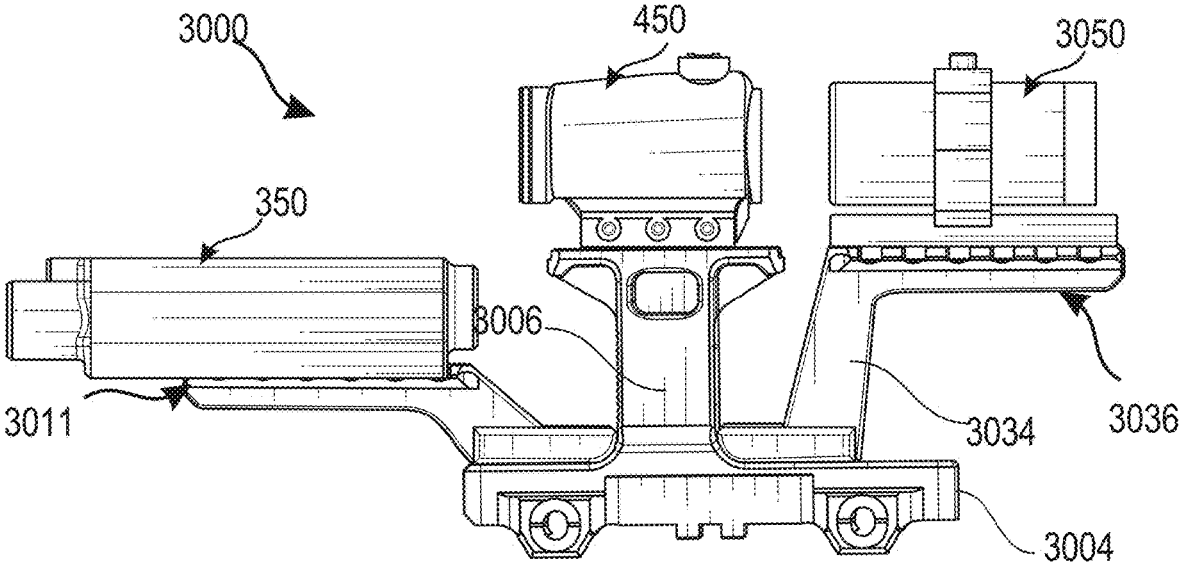


FIG. 11

SYSTEMS AND METHODS FOR MULTI-ACCESSORY MOUNT ASSEMBLY FOR A FIREARM

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present disclosure is a continuation application of and claims priority to and the benefit of U.S. application Ser. No. 17/898,301, filed Aug. 29, 2022, which claims priority to and the benefit of U.S. application Ser. No. 17/514,190, filed Oct. 29, 2021, now U.S. Pat. No. 11,733,004, issued Aug. 22, 2023, which claims priority to and the benefit of U.S. Provisional Application No. 63/170,791 filed Apr. 5, 2021, the entire contents of which are hereby incorporated by reference herein

FIELD OF THE DISCLOSURE

[0002] The disclosure generally relates to a firearm and more particularly relates to systems and methods for a multi-accessory mount assembly for a firearm.

BACKGROUND

[0003] Conventional optic scopes, magnifiers, and laser scopes have been used with firearms to facilitate aiming and to improve shooting accuracy. It is with respect to these and other considerations that the disclosure made herein is presented.

SUMMARY

[0004] Some or all of the above needs and/or problems may be addressed by certain embodiments of the enhanced, elevated multi-accessory mount assembly for a firearm disclosed herein. The firearm may include a barrel with a muzzle end and a breech end. On the firearm usually positioned above the barrel and between the muzzle end and breech end is a mounting surface to which an optic may be mounted. Such mounting surfaces may include a Picatinny rail or a Weaver rail. According to certain embodiments, the multi-accessory mount assembly may include a proximal portion having a lower surface configured to be removably coupled to the firearm, for example, by attaching to a Picatinny or Weaver rail, and an upper surface configured to be removably coupled to an interchangeable sub mount. The interchangeable sub mount is configured to be removably coupled to one or more first firearm accessory, e.g., an optic scope, red dot sight, reflex sight, night vision monocular/scope, or magnifier. The assembly further may include a distal portion extending distally from the proximal portion via a neck portion, e.g., a goose neck, such that the distal portion is elevated higher than the proximal portion. An upper surface of the distal portion is configured to be removably coupled to a second firearm accessory, e.g., an infrared (IR) laser, night vision monocular/scope.

[0005] Other features and aspects of the multi-accessory mount assembly will be apparent or will become apparent to one with skill in the art upon examination of the following figures and the detailed description. All other features and aspects, as well as other system, method, and assembly embodiments, are intended to be included within the description and are intended to be within the scope of the accompanying claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] The detailed description is set forth with reference to the accompanying drawings. The use of the same reference numerals may indicate similar or identical items. Various embodiments may utilize elements and/or components other than those illustrated in the drawings, and some elements and/or components may not be present in various embodiments. Elements and/or components in the figures are not necessarily drawn to scale. Throughout this disclosure, depending on the context, singular and plural terminology may be used interchangeably.

[0007] FIG. **1**A schematically depicts an upper perspective view of an exemplary multi-accessory mount assembly constructed in accordance with one or more embodiments of the disclosure.

[0008] FIG. **1**B illustrates a side perspective view of the multi-accessory mount assembly of FIG. **1**A.

[0009] FIGS. **1**C to **1**E illustrate the steps of coupling a sub mount to a proximal portion of the multi-accessory mount assembly in accordance with one or more embodiments of the disclosure.

[0010] FIG. **2**A illustrates an upper perspective view of another exemplary multi-accessory mount assembly constructed in accordance with one or more embodiments of the disclosure.

[0011] FIG. **2**B illustrates a side perspective view of the interchangeable sub mount of FIG. **2**A.

[0012] FIG. **3** illustrates a view of an exemplary multi-accessory mount assembly coupled to an exemplary optic in accordance with one or more embodiments of the disclosure.

[0013] FIG. **4** illustrates a view of an exemplary multi-accessory mount assembly coupled to an exemplary optic in accordance with one or more embodiments of the disclosure.

[0014] FIG. **5** illustrates a view of an exemplary one-piece multi-accessory mount assembly in accordance with one or more embodiments of the disclosure.

[0015] FIG. **6**A illustrates a side view of a multi-accessory mount assembly coupled to an optic and a laser in accordance with one or more embodiments of the disclosure.

[0016] FIG. **6**B illustrates a rear view of the multi-accessory mount assembly of FIG. **6**A.

[0017] FIG. **6**C illustrates a side view of a multi-accessory mount assembly coupled to an optic and a laser in accordance with one or more embodiments of the disclosure.

[0018] FIG. **6**D illustrates a rear view of the multi-accessory mount assembly of FIG. **6**C.

[0019] FIGS. **7**A to **7**E illustrate various views of another exemplary multi-accessory mount assembly coupled to another exemplary optic in accordance with one or more embodiments of the disclosure.

[0020] FIGS. **7**F to **7**H illustrate the coupling mechanism of the multi-accessory mount assembly of FIGS. **7**A-**7**E.

[0021] FIGS. **8**A to **8**C illustrate various views of another exemplary multi-accessory mount assembly in accordance with one of more embodiments of the disclosure.

[0022] FIG. **8**D is a top view of the coupling mechanism of the multi-accessory mount assembly of FIGS. **8**A to **8**C.

[0023] FIG. **9** is a flow chart illustrating the steps of an exemplary method for coupling a multi-accessory mount assembly to a firearm in accordance with one or more embodiments of the disclosure.

[0024] FIGS. **10**A to **10**E and **11** illustrate various views of another exemplary multi-accessory mount assembly in accordance with one of more embodiments of the disclosure.

DETAILED DESCRIPTION

Overview

[0025] Described below are embodiments of a multi-accessory mount assembly that can be attached to a firearm. Methods of installing the multi-accessory mount assembly on the firearm are also disclosed. The firearm may include a barrel with a breech end and a muzzle end. In some instances, the firearm may be a rifle (e.g., fully automatic, semi-automatic or bolt-action), pistol, shotgun, or the like. In some instances, the firearm may be a rifle, such as an M-16 style rifle, an AR-15 style rifle, an AR-10 style rifle, or an M-4 style rifle, among others that include a Picatinny or Weaver rail positioned above the barrel. Any firearm may be used in association with the firearm sight disclosed herein.

[0026] The multi-accessory mount assembly of the present disclosure solves several problems that military, law enforcement, first responders and civilians have encountered when using an IR laser on a rifle. A multi-accessory mount assembly in accordance with the present disclosure includes a base with an elevated mount, and sub mounts that attach to the base. For example, the sub mounts may be interchangeable. The multi-accessory mount assembly moves the position of the IR laser/illuminator to the approximate center of the rifle (e.g., approximately over the action), and elevates the IR laser/illuminator to avoid the IR emission from the IR laser/illuminator being blocked or obscured by the user's hand should the user hold the rifle with their support (or off) hand gripping the handguard. The interchangeable sub mount removably attaches to an optic, such as one or more of a scope, red dot, reflex sight, magnifier or the like. The interchangeable sub mount positions the optic so that it sufficiently clears the IR laser so as not to impede the operability of the optic. Because the sub mount is interchangeable, it may be sized for different optics, and/or for multiple components, such as a red dot/reflex sight and a magnifier. The sub mount attaches to the base in a fitted fashion so that the optic returns to zero if the sub mount is removed from the base and then subsequently reattached. The multi-accessory mount assembly frees up rail space on the firearm platform, balances the weight to center mass over the firearm, and provides a near co-witnessed and unobstructed path for the laser/illuminator to be mounted rearward of the support arm of the shooter/operator.

[0027] Certain embodiments of the multi-accessory mount assembly are designed to be modular and perfectly complements superior shooting stances and body mechanics, while capitalizing on reduced fatigue (e.g., heads up versus hunched positions) while shooting, thus allowing proper body mechanics and positioning. The multi-accessory mount assembly further allows the operator to utilize modern and mission critical head-borne systems and personal protective equipment (PPE), e.g., helmets, night vision, gasmasks, communications equipment, body armor, face wraps, etc., and aids in shoulder transitions for offhand shooting and cross eye dominant individuals. The multi-accessory mount assembly is designed to be modular and scalable and may accept multiple optics system configurations. The assembly further may include a space to mount a magnifier behind the day optic.

[0028] These and other embodiments of the disclosure will be described in more detail through reference to the accompanying drawings in the detailed description of the disclosure that follows. This brief introduction, including section titles and corresponding summaries, is provided for the reader's convenience and is not intended to limit the scope of the claims or the proceeding sections. Furthermore, the techniques described above and below may be implemented in a number of ways and in a number of contexts. Several example implementations and contexts are provided with reference to the following figures, as described below in more detail. However, the following implementations and contexts are but a few of many.

Illustrative Embodiments

[0029] Referring now to FIGS. **1**A to **1**E, an exemplary multi-accessory mount assembly is provided. Multi-accessory mount assembly **10** may include proximal portion **12**, neck portion **14**, and distal portion **16**. Distal portion **16** extends from proximal portion **12** via neck portion **14**. Moreover, neck portion **14** may be angled such distal portion **16** is elevated higher than proximal portion **12**. As shown in FIG. **1**A, neck portion **14** may include cut outs **24** to reduce the weight of the multi-accessory mount assembly. In some embodiments, cut outs **24** may extend horizontally through neck portion **14**.

[0030] Proximal portion **12** has lower surface **20** and upper surface **22**. Lower surface **20** is configured to be removably coupled to a firearm. In some instances, the firearm may be a conventional and/or tactical, and may be a rifle, pistol, shotgun or the like. However, the firearm may be any number of firearms, such as, but not limited to, an M-16 style rifle, an AR-15 style rifle, an AR-10 style rifle, or an M-4 style rifle, or the like with a rail system, such as a Picatinny rail or a Weaver rail. The firearm may generally include a barrel and a muzzle end. Proximal portion **12** may include one or more screws/knobs **28** for facilitating attachment of proximal portion **12** to the rail system of the firearm, e.g., the Picatinny rail or the Weaver rail.

[0031] Distal portion **16** has an upper surface configured to be removably coupled to a firearm accessory, e.g., an IR laser/illuminator. The upper surface of distal portion **16** may include rail system **18** to facilitate coupling with the firearm accessory. For example, rail system **18** may include a Picatinny rail or a Weaver rail. Distal portion **16** may be elevated from the rail system of the firearm to a predetermined height when proximal portion **12** is coupled to the rail system of the firearm, thereby creating a space sized and shaped to permit the support hand of the operator of the firearm to grip the handguard without interfering with the use of the firearm accessory.

[0032] Upper surface **22** of proximal portion **12** may be configured to be removably coupled to an interchangeable sub mount, e.g., interchangeable sub mount **100**. For example, upper surface **22** may include one or more apertures **26**, e.g., threaded apertures, for receiving screws that pass through corresponding apertures in interchangeable sub mount **100** to tightly secure the interchangeable sub mount. For example, upper surface **22** may include a threaded aperture at a proximal region and another threaded aperture at a distal region. Accordingly, interchangeable sub mount **100** may include a corresponding number of apertures **106**, e.g., threaded apertures, such that apertures **106** may be aligned with apertures **26** of proximal portion **12**.

[0033] As shown in FIG. **1**C, proximal portion **12** may include position reference features that ensure exact repositioning of interchangeable sub mount **100** relative to the

proximal portion **12**. An example system of position reference features includes groove **32** sized and shaped to receive and mate with ridge **110** of interchangeable sub mount **100**. In addition, as shown in FIG. **1**D, interchangeable sub mount **100** may include groove **108** sized and shaped to receive and mate with protrusion **34** of proximal portion **12**. Accordingly, interchangeable sub mount **100** may be removably coupled to proximal portion **12** such that groove **32** mates with ridge **110**, groove **108** mates with protrusion **34**, and apertures **106** are aligned with apertures **26**, as shown in FIG. **1**E. Upon alignment, a fastener, e.g., screws S, may be used to couple interchangeable sub mount **100** with proximal portion **12** via apertures **26** and **106**, as shown in FIG. **1**F. Screws S may fit through cutouts in the Picatinny rail, if necessary, which function as extensions of apertures **106** and **26**. With this mounting system for interchangeable sub mount **100**, interchangeable sub mount **100** can be repeatedly removed and re-installed and return to zero each time.

[0034] The upper surface of interchangeable sub mount **100** may be configured to be removably coupled to one or more firearm accessories, e.g., one or more of a red dot, reflex sight, scope, IR or thermal scope/monocular, or a magnifier. The term "optic" will be used herein to describe collectively an optic or an optic mount. The upper surface of interchangeable sub mount **100** may include a rail system **102** to facilitate coupling with the firearm accessory. For example, protrusions **102** may include a Picatinny rail or a Weaver rail. Moreover, interchangeable sub mount **100** may include opening **104** for weight reduction of interchangeable sub mount **100**. As shown in FIG. **1**B, height H of the upper surface of interchangeable sub mount **100** may be predetermined based on, for example, the desired height of the optic for the shooter and/or the attached optic so that it is operable over the firearm accessory attached to distal portion **16**. For example, some optics are shorter (e.g., distance from bottom surface of the optic to reticle) than other optics, and they may require a relatively taller interchangeable sub mount, so the reticle of the optic is viewable on target over the firearm accessory.

[0035] Referring now to FIGS. **2**A and **2**B, an alternative exemplary interchangeable sub mount for coupling with multi-accessory mount assembly **10** is provided. Interchangeable sub mount **200**, as shown in FIG. **2**B, may be constructed and coupled to proximal portion **12** similar to interchangeable sub mount **100**. For example, rail system **202** corresponds with rail system **102**, opening **204** corresponds with opening **104**, and one or more apertures **206** corresponds with one or more apertures **106**. Interchangeable sub mount **200** differs from interchangeable sub mount **100** in that interchangeable sub mount **200** may have a longer longitudinal length than interchangeable sub mount **100**, and consequently can have two or more firearm accessories attached to it, such as a red dot/reflex sight and a magnifier or a thermal or IR scope or monocular. Accordingly, the operator of the firearm may select between interchangeable sub mounts **100** and **200** based on the desired firearm accessory(ies) to be coupled to the firearm.

[0036] Referring now to FIG. **3**, coupling multi-accessory mount assembly **10** to an optic is described. Optic **300** may be removably coupled to an upper surface of the interchangeable mount, e.g., interchangeable sub mount **200**, such that optic **300** is positioned at a height H. Optic **300** may include base **302** and lens holder **306** for holding lens **308**. Moreover, optic **300** may include knob **304**, which may be actuated to fix optic **300** to the interchangeable sub mount **100**.

[0037] Referring now to FIG. **4**, coupling multi-accessory mount assembly **10** to optic **450** via interchangeable sub mount **400**, which is adjustable, is described. Interchangeable sub mount **400** may be constructed similar to interchangeable sub mounts **100** and **200** described above. For example, lower surface **404** of interchangeable sub mount **400** may be configured to be removably coupled to upper surface **22** of proximal portion **12**, e.g., via screw S, and upper surface **406** of interchangeable sub mount **400** may be configured to be removably coupled to a firearm accessory, e.g., optic **450**. Moreover, upper surface **406** may extend from lower surface **404** via middle portion **402**, which may have opening **408**. Unlike interchangeable sub mounts **100** and **200**, as shown in FIG. **4**, interchangeable sub mount **400** may have a parallelogram shape such that upper surface **406** is positioned distal to lower surface **404**. Accordingly, middle portion **402** may be angled.

[0038] In addition, the lower portion of interchangeable sub mount **400** may include rail system **412**, which may be fixed to proximal portion **12**, such that middle portion **402** is slidably movable relative to rail system **410**. Accordingly, rail system **410** may include threaded apertures for aligning with the threaded apertures of proximal portion **12**, and for receiving screw S, such that rail system **410** may be fixed relative to proximal portion **12**. As shown in FIG. **4**, rail system **410** may include a plurality of openings **412** configured to engage with pins/knobs **414** (e.g., a screw), such that pins/knobs **414** may be disengaged with openings **412** to permit middle portion **402** to be moved along rail system **410** to a desired longitudinal position, and pins/knobs **414** may engage with openings **412** to lock middle portion **402** in the desired longitudinal position relative to rail system **410** and proximal portion **12**.

[0039] Optic **450** may be removably coupled to upper surface **406** of interchangeable sub mount **400**. Moreover, optic **450** may have one or more knobs for controlling operation of optic **450**. When multi-accessory mount assembly **10** is coupled to both optic **450** via interchangeable sub mount **400** and IR laser/illuminator **350**, optic **450** is raised by height H.

[0040] FIG. **5** is a perspective view of an exemplary multi-accessory mount assembly where the sub mount is integrally formed with the proximal portion of the multi-accessory mount assembly, e.g., as a single piece. In such a configuration, the sub mount **1000** portion is not interchangeable, but fixed with the rest of the multi-accessory mount assembly. This configuration also may allow for an optic to be above a laser such that the laser does not block the firearm operator's vision of the optic reticle on the target. Further, the one-piece design may provide stability and be configured to allow for mounting of a single type of optic. As shown in FIG. **5**, upper portion **1006** of sub mount **1000** may extend from lower portion **1002** via middle portion **1004**. Middle portion **1004** may contain serrations on the front or rear. Moreover, sub mount **1000** may have a tapered shape such that the width of middle portion **1004** decreases from lower portion **1002** toward upper portion **1006**. For example, a proximal side of middle portion **1004** may extend vertically, whereas a distal side of middle portion **1004** may be angled.

[0041] As shown in FIG. **5**, multi-accessory mount assembly **10"** may be constructed similar to multi-accessory mount assembly **10**, with similar components having like prime reference numerals. For example, proximal portion **12"** corresponds with proximal portion **12**, neck portion **14"** corresponds with neck portion **14**, and distal portion **16"** corresponds with distal portion **16**. Multi-accessory mount assembly **10'** differs from multi-accessory mount assembly **10** in that multi-accessory mount assembly **10"** is one-piece with the proximal portion **12"**, neck portion **14"**, and distal portion **16"**, as described in further detail above.

[0042] FIG. **6**A is a side view of multi-accessory mount assembly **10** coupled to both optic **300** via interchangeable sub mount **100**, and to laser **350**. FIG. **6**B is a rear view of multi-accessory mount assembly **10** coupled to optic **300** via interchangeable sub mount **100** and to laser **350**. Height H allows for optic **300** to be visible above laser **350**. As shown in FIG. **6**B, lower surface **20** of proximal portion **12** may include channel **30** sized and shaped to engage with the rail mechanism of the firearm, e.g., at the middle region of the firearm (e.g., approximately over the action), via screws/knobs **28**. The line of sight through optic **300** may be above IR laser **350**, being raised by height H, such that IR laser **350** does not block the firearm operator's vision of the optic reticle on the target.

[0043] FIG. **6**C is a side view of multi-accessory mount assembly **10** coupled to both optic **450** via interchangeable sub mount **400**, and to laser **350**. As will be understood by a person having ordinary skill in the art, any of the firearm accessories described above may be interchangeably coupled to multi-accessory mount assembly **10**, and multi-accessory mount assembly **10** further may be removably coupled to other known firearm accessories. FIG. **6**D is a rear view of multi-accessory mount assembly **10** coupled to optic **450** via interchangeable sub mount **400** and to laser **350**. The height H allows for optic **450** to be visible above the laser **350**. As shown in FIG. **6**D, the reticle of optic **450** may be visible on target above IR laser/illuminator **350**, such that laser **350** does not block the firearm operator's vision of the optic reticle on the target.

[0044] Referring now to FIGS. **7**A to **7**E, an alternative exemplary interchangeable sub mount for coupling with an alternative exemplary multi-accessory mount assembly is provided. Multi-accessory mount assembly **10'** may be constructed similar to multi-accessory mount assembly **10**, with similar components having like-prime reference numerals. For example, proximal portion **12** corresponds with proximal portion **12**, neck portion **14** corresponds with neck portion **14**, and distal portion **16** corresponds with distal portion **16**. Multi-accessory mount assembly **10'** differs from multi-accessory mount assembly **10** in that multi-accessory mount assembly **10'** includes groove **501** disposed between proximal portion **12** and neck portion **14** for releasably engaging with interchangeable sub mount **500**, as described in further detail below. As shown in FIG. **7**D, neck portion **14** may include cut outs **524** to reduce the weight of the multi-accessory mount assembly. In some embodiments, cut outs **524** may extend horizontally through neck portion **14**.

[0045] Interchangeable sub mount **500** may be constructed similar to interchangeable sub mounts **100**, **200**, and **400** described above. For example, lower portion **502** of interchangeable sub mount **500** may be configured to be removably coupled to proximal portion **12**, and upper portion **506** of interchangeable sub mount **500** may be configured to be removably coupled to a firearm accessory, e.g., optic **450**. Moreover, upper portion **506** may extend from lower portion **502** via middle portion **504**. Middle portion **504** may contain serrations on the front or rear. Unlike interchangeable sub mounts **100**, **200**, and **400**, as shown in FIG. **7**A, interchangeable sub mount **500** may have a tapered shape such that the width of middle portion **504** decreases from lower portion **502** toward upper portion **506**. For example, a proximal side of middle portion **504** may extend vertically, whereas a distal side of middle portion **504** may be angled.

[0046] In addition, as shown in FIG. **7**B, interchangeable sub mount **100** may include opening **512** extending from the proximal side of middle portion **504** to the distal side of middle portion **504** for weight reduction of interchangeable sub mount **500**. An iron-sight system including bar **570** and ramp **580** may be disposed within opening **512**. For example, the iron sight system may be configured such that ramp **580** is set within opening **512** and rear bar **570** is within cut out **24**. As will be understood by a person having ordinary skill in the art, the iron-sight system may be any other iron sight system of one or two pieces, including but not limited to post systems, bead systems, ramp systems, ring systems, or combinations of these or other iron-sight systems.

[0047] As shown in FIG. **7**C, upper portion **506** may include one or more apertures **514**, e.g., threaded apertures, for receiving screws that pass through corresponding apertures in the firearm accessory, e.g., optic **450**, to tightly secure the firearm accessory to interchangeable sub mount **500**. As shown in FIGS. **7**A and **7**D, interchangeable sub mount **100** may include openings **508** and **509**, each extending laterally into a side of middle portion **504** for additional weight reduction of interchangeable sub mount **500**. Openings **508** and **509** may be separated by a support-providing wall, such that neither openings **508** nor **509** extend completely through middle portion **504**.

[0048] Referring now to FIGS. **7**E to **7**H, coupling multi-accessory mount assembly **10'** to optic **450** via interchangeable sub mount **500** is described. As shown in FIG. **7**E, lower portion **502** may include screw bore **560** extending through a proximal portion of lower portion **502**, and proximal portion **12** may have a corresponding screw bore **561** extending at least partially therethrough, which may be aligned with screw bore **560** to facilitate securement of interchangeable sub mount **500** to proximal portion **12**, e.g., via a screw. As described above, multi-accessory mount assembly **10'** includes groove **501** for releasably engaging with interchangeable sub mount **500**. Accordingly, as shown in FIGS. **7**G and **7**H, lower portion **502** of interchangeable sub mount **500** includes ridge **510** sized and shaped to be securely received by groove **501**. In addition, lower portion **502** of interchangeable sub mount **500** includes pin **516** extending outwardly from the bottom surface of lower portion **502**, and multi-accessory mount assembly **10'** includes receptacle **503**, sized and shaped to securely and pivotally receive pin **516** therein.

[0049] First, as shown in FIGS. **7**G, interchangeable sub mount **500** may be positioned above and perpendicular to multi-accessory mount assembly **10'**, such that pin **516** is aligned with receptacle **503**, and so that lowering of interchangeable sub mount **500** toward multi-accessory mount assembly **10'** can be achieved without colliding ridge **510** and neck portion **14**. When interchangeable sub mount **500** is in contact with multi-accessory mount assembly **10'** such

that pin **516** is received within receptacle **503**, interchangeable sub mount **500** may then be rotated relative to multi-accessory mount assembly **10'** as shown in FIG. **7**H so that ridge **510** enters groove **501**.

[0050] FIG. **7**D illustrates when interchangeable sub mount **500** is properly aligned with multi-accessory mount assembly **10'**, e.g., when lower portion **502** is parallel with proximal portion **12**, and screw bore **560** is aligned with screw bore **561**. A screw may then be inserted to secure interchangeable sub mount **500** to proximal portion **12**. The frictional forces between ridge **510** and groove **501**, the frictional forces between pin **516** and receptacle **503**, and the frictional forces between the bottom surface of lower portion **502** and the upper surface of proximal portion **12** may assist in securely maintaining interchangeable sub mount **500** in positioned relative to multi-accessory mount assembly **10'**.

[0051] Referring now to FIGS. **8**A to **8**D, an alternative exemplary interchangeable sub mount for coupling with an alternative exemplary multi-accessory mount assembly is provided. FIG. **8**A shows a side view of a proximal portion **12** onto which the interchangeable sub mount **600** will be mounted. FIG. **8**B shows the bottom view of the proximal portion **12**, including showing screw bores extending therethrough. FIG. **8**C shows a cross-sectional view of the interchangeable sub mount **600**.

[0052] As shown in FIG. **8**A, multi-accessory mount assembly **10'** may be constructed similar to multi-accessory mount assembly **10**, with similar components having prime reference numerals. For example, proximal portion **12** corresponds with proximal portion **12**, neck portion **14** corresponds with neck portion **14**, and distal portion **16** corresponds with distal portion **16**. Multi-accessory mount assembly **10'** differs from multi-accessory mount assembly **10** in that multi-accessory mount assembly **10'** includes groove **601** disposed between proximal portion **12** and neck portion **14** for releasably engaging with interchangeable sub mount **600**, as described in further detail below.

[0053] As shown in FIG. **8**C, interchangeable sub mount **600** may be constructed similar to interchangeable sub mounts **100**, **200**, **400**, and **500** described above. For example, lower portion **602** of interchangeable sub mount **600** may be configured to be removably coupled to proximal portion **12**, and upper portion **606** of interchangeable sub mount **600** may be configured to be removably coupled to a firearm accessory, e.g., optic **450**. Moreover, upper portion **606** may extend from lower portion **602** via middle portion **604**. For example, a proximal side of middle portion **604** may extend vertically, whereas at least a portion of a distal side of middle portion **604** may be angled. Middle portion **604** may contain serrations on the front or rear. In addition, interchangeable sub mount **600** may include opening **612** extending from the proximal side of middle portion **604** to the distal side of middle portion **604** for weight reduction of interchangeable sub mount **600**.

[0054] Lower portion **602** may include one or more screw bores **660** extending through a proximal portion of lower portion **602**, and proximal portion **12** may have a corresponding screw bore **661** extending at least partially therethrough, which may be aligned with screw bore **660** to facilitate securement of interchangeable sub mount **600** to proximal portion **12**, e.g., via a screw. As shown in FIG. **8**C, proximal portion **12** may include two separate screw bores **660** for mounting interchangeable sub mount **600** thereupon, which may be aligned with the two screw bores **661** of proximal portion **12**, as shown in FIG. **8**B.

[0055] FIG. **8**D shows the coupling mechanism of proximal portion **12** for securing interchangeable sub mount **600** to the proximal portion **12**. As described above, multi-accessory mount assembly **10'** includes groove **601** for releasably engaging with interchangeable sub mount **600**. Accordingly, groove **601** is sized and shaped to securely receive ridge **610** of lower portion **602** of interchangeable sub mount **600**, as shown in FIG. **8**D. In addition, proximal portion **12** includes receptacle **603** sized and shaped to securely and pivotally receive pin **616** extending outwardly from the bottom surface of lower portion **602** of interchangeable sub mount **600** therein.

[0056] Referring now to FIG. **9**, exemplary method **700** for coupling multi-accessory mount assembly **10**, **10'** to a firearm is provided. At step **702**, proximal portion **12**, **12**, **12** of multi-accessory mount assembly **10**, **10'** may be coupled to the rail mechanism of the firearm, e.g., a Picatinny rail or a Weaver rail, via screws/knobs **28**. Multi-accessory mount assembly **10**, **10'**, **10"** should be coupled to the firearm such that distal portion **16**, is distal to proximal portion **12**, relative to the firearm. At step **704**, an interchangeable sub mount, e.g., interchangeable sub mounts **100**, **200**, **400**, **500**, **600**, may be selected by the firearm operator and coupled to proximal portion **12**, **12'**, **12"** using a system of position reference features depending on which interchangeable sub mount is selected, e.g., such that groove **32** mates with ridge **110**, groove **108** mates with protrusion **34**, apertures **106** are aligned with apertures **26**, pin **516** is received within receptacle **503**, ridge **510** enters groove **501**, screw bore **560** is aligned with screw bore **561**, pin **616** is received within receptacle **603**, ridge **610** enters groove **601**, and/or screw bore **660** is aligned with screw bore **661**, etc.

[0057] Screws S may be used to fix the selected interchangeable sub mount to the proximal portion. For example, when interchangeable sub mount **500** is selected, interchangeable sub mount **500** may be coupled to proximal portion **12**, e.g., by engaging pin **516** and receptacle **503**, rotating interchangeable sub mount **500** until ridge **516** is engaged with groove **501**, and inserting screw S through screw bores **560** and **561**. When interchangeable sub mount **600** is selected, interchangeable sub mount **600** may be coupled to proximal portion **12**, e.g., by engaging pin **616** and receptacle **603**, rotating interchangeable sub mount **600** until ridge **616** is engaged with groove **601**, and inserting screws S through both screw bores **660** and both screw bores **661**. At step **706**, a first firearm accessory, e.g., laser **350**, may be coupled to the upper surface of distal portion **16**, **16'**, **16"**. At step **708**, a second firearm, e.g., optic **450** or **300**, may be coupled to the upper surface of the selected interchangeable sub mount.

[0058] Referring now to FIGS. **10**A-**10**E, an embodiment in accordance to the present disclosure provides for an accessory mount **2000** comprising a multi-accessory mount assembly **2010** removably coupled to a sub mount assembly **2020**. The sub mount assembly **2020** may be similar to the mount assemblies and interchangeable sub mounts described above. For example, the sub mount assembly **2020** may include a base **2004** that is configured to mount to a firearm, such as by a Picatinny rail or the Weaver rail associated with an upper receiver or handguard. The base **2004** is coupled to a fixed or interchangeable optic mount **2006**. The optic mount may include an attachment surface

2007 that can be configured to securely receive and attach to any number of suitable accessories, such as optics (e.g., red dot sights, reflex sights, LVPO, scopes, magnifiers, etc.). In certain embodiments, where interchangeable the optic mount **2006** may be removable, the optic mount **2006** may be removed so that the base **2004** may remain attached to the firearm to ensure a return to zero when the optic mount **2006** is reattached, as discussed above.

[0059] To the distal and proximate sides of the optic mount **2006** (also referred to as the muzzle end and breach end of the firearm to which the accessory mount **2000** may be attached, respectively) may be mounting surfaces **2021** and **2022**, respectfully. In the embodiment shown, the distal mounting surface **2021** is configured to receive the multi-accessory mount assembly **2010**. However, the proximate surface **2022** may also be configured to receive a multi-accessory mount assembly, which may be sized and shaped to hold an accessory, for example, a magnifier, as described in connection with FIG. **11** below. The size and configuration of the multi-accessory mount assembly may be determined to align the magnifier and the optic attached to the optic mount **2006**.

[0060] The distal surface **2021** may include a protrusion **2030** that may be received within a corresponding recess **2031** on the underside of the base **2032** of the multi-accessory mount assembly **2010**, wherein the protrusion **2030** and recess **2038** secure and align the multi-accessory mount assembly **2010** to the base **2004**, as further discussed below.

[0061] The multi-accessory mount assembly **2010** may be configured in size and shape to receive an accessory, such as a laser sight. Other accessories that may be mounted to the multi-accessory mount assembly **2010** include thermal and IR optics, range finder, flashlight, IR illuminator, etc. The multi-accessory mount assembly **2010** may include a base portion **2032**, a neck portion **2034**, and an attachment arm **2036**. The base portion **2032** includes a groove or recession **2038** (see, e.g., FIG. **10**E) that mates with the protrusion **2030** to ensure repeatable alignment of the multi-accessory mount assembly **2010** with the base **2004** as the multi-accessory mount assembly **2010** is taken off and reinstalled. The neck **2034** may extend away from the base **2004** in the distal direction, at an angle **2050** (see, e.g., FIG. **10** C), raising the attachment arm **2036** above the rail to which the accessory mount **2000** is attached, creating a gap **2052**. The angle, in some embodiments, is preferably an acute angle between 10 degrees and 90 degrees.

[0062] This configuration reduces the footprint of the accessory mount **2000** on the rail of the firearm to which it is attached, and avoids having to mount an accessories used for sighting and/or aiming (e.g., laser) to the handguard. This also positions the accessories closer to the user and the center of balance of the firearm, reducing weight at the distal end of the barrel, and providing for a more balanced operation and secure hold on the firearm. The size of the neck (e.g., length and/or angle) determined the height of the attachment arm **2036** above the rail, which may vary from application to application, not to mention form accessory to accessory. Of note, placing accessories, such as a laser sight, on the attachment arm **2036** rather than at the distal end of the handguard, as is common, frees up space that may allow a better grip on the handguard by the user, and by having the attachment arm **2036** separated from the rail by the gap **2052** prevents the user's hand that is gripping the handguard from blocking the light or laser light from the laser sight.

[0063] The multi-accessory mount assembly **2010** may be secured to the base **2004** using any suitable fasteners, such as screw **2040** and corresponding press pins **2042**. While the screws **2040** and press pins **2042** are shown in the orientation of being screwed together from the underneath side of the base **2004**, which may prevent the accessory mount **2000** from separating from the firearm as the screw **2040** are not able to back out a sufficient distance to release the mount as they will contact the rail to which the accessory mount **2000** is attached before they disengage from one another, they may also be positioned in a reverse configuration. By reversing the fastener configuration may allow for removal of the multi-accessory mount assembly **2010** without removing the accessory mount **2000** from the firearm. This may be desirable in certain applications where it is desirable for the base to remains attached to the firearm.

[0064] The optic mount **2006** and the multi-accessory mount assembly **2010** may include passages **2046**, as described above, and as shown in FIG. **10**E.

[0065] In some embodiments, the optic mount **2006** and the multi-accessory mount assembly **2010** are aligned in the same longitudinal plane such that they are vertically displaced with one looking over the other. For instance, an optic mounted to the attachment surface **2007** is aligned with and positioned over an accessory mounted to the attachment arm **2036**. In addition, the mounting surfaces (or planes) of the mounting arm **2036** and attachment surface **2007** are parallel to one another, and vertically displaced. Further, the attachment surface **2007** and the attachment arm **2036** may be axially displaced along the longitudinal axis of the firearm to which the accessory mount **2000** is attached by a gap **2050**. This gap **2050** enables the user to have the space to perform certain actions related to the operation of the accessory attached to the attachment arm **2036**, such as replace batteries.

[0066] In some embodiments, the optic mount **2006** and multi-accessory mount assembly **2010** may be axially aligned, relative to the direction of the firearm barrel to which the accessory mount **2000** is attached, wherein the accessory attached to the attachment arm **2036** is positioned for use in conjunction with the optic attached to the optic mount. For instance, the optic mount **2006** may have a red dot or reflect optic attached thereto, and the multi-accessory mount assembly **2010** may have a thermal or IR device attached thereto, and the two accessories should be configured relative to one another so their optical paths are aligned, and one does not disrupt the other.

[0067] As shown in FIG. **11**, in some embodiments, an accessory mount **3000** in accordance with an embodiment of the disclosure may include an optic mount **3006**, a first multi-accessory mount assembly **3011** and a second multi-accessory mount assembly **3036**. In certain embodiments, the accessory mount **3000** may have one or both of the multi-accessory mount assemblies **3011** and **3036**, each of which may be removable from the base **3004**.

[0068] The second multi-accessory mount assembly **3036** may be configured to receive an accessory that can be removably attached thereto, such as a magnifier **3050**. The second multi-accessory mount assembly **3036** may be configured and sized so that an accessory attached thereto is

aligned with the optic **450** mounted to the optic mount **3006**. Thus, a user looking through the magnifier **3050** is able to see through the optic **450**.

[0069] The optic **450** mounted and magnifier **3050** may be aligned in the same vertical plane with an accessory, such as a laser **350**, mounted to the first multi-accessory mount assembly **3011**. A neck portion **3034** of the second multi-accessory mount assembly **3036** may be at an acute angle relative to the base **3004** or substantially perpendicular to the base **3004**.

[0070] In some embodiments, the optic mount **3006** and both first and second multi-accessory mount assemblies **3011**, **3036** may be axially aligned, relative to the direction of the firearm barrel to which the accessory mount **3000** is attached. For instance, in one embodiment, the optic mount **3006** may have a red dot or reflex optic attached thereto, and the multi-accessory mount assembly **3011** may have a thermal or IR device **350** attached thereto, and the red dot/reflex optic **450** and laser should be configured relative to one another so their optical paths are vertically separated, while the second multi-accessory mount assembly **3036** may have a magnifier **3050** attached thereto that is optically aligned with the red dot/reflex optic **450** mounted to the optic mount **3006**.

[0071] Although specific embodiments of the disclosure have been described, numerous other modifications and alternative embodiments are within the scope of the disclosure. For example, any of the functionality described with respect to a particular device or component may be performed by another device or component. Further, while specific device characteristics have been described, embodiments of the disclosure may relate to numerous other device characteristics. Further, although embodiments have been described in language specific to structural features and/or methodological acts, it is to be understood that the disclosure is not necessarily limited to the specific features or acts described. Rather, the specific features and acts are disclosed as illustrative forms of implementing the embodiments. Conditional language, such as, among others, "can," "could," "might," or "may," unless specifically stated otherwise, or otherwise understood within the context as used, is generally intended to convey that certain embodiments could include, while other embodiments may not include, certain features, elements, and/or steps. Thus, such conditional language is not generally intended to imply that features, elements, and/or steps are in any way required for one or more embodiments.

That which is claimed is:

1. A multi-accessory mount for use with a firearm, the multi-accessory mount comprising:

a base that can be removably coupled to a firearm rail;

a first mount coupled to the based and including a first mounting platform configured to receive a first firearm accessory, the first mounting platform at a first height above the firearm rail when the multi-accessory mount is coupled to the firearm rail, and wherein the first mounting platform comprises a first planar mounting surface;

a second mount coupled to the base and including a second mounting platform configured to receive a second firearm accessory, the second mounting platform at a second height above the firearm rail when the multi-accessory mount is coupled to the firearm rail, wherein the first height is equal to or greater than the second height, and wherein the second mounting platform comprises a second planar mounting surface; and

wherein the first mounting platform and the second mounting platform are longitudinally aligned and spaced apart relative to a longitudinal axis of the base.

2. The multi-accessory mount of claim **1**, further comprising a third mount coupled to the base and including a third mounting platform configured to receive a third firearm accessory.

3. The multi-accessory mount of claim **2**, wherein the third mounting platform is a third height above the firearm rail when the multi-accessory mount is coupled to the rail of the firearm, and wherein the third height is different than at least one of the first height and the second height.

4. The multi-accessory mount of claim **2**, wherein at least one of the first mount, second mount or third mount is detachable from the base.

5. The multi-accessory mount of claim **2**, wherein second mount is detachable from the base.

6. The multi-accessory mount of claim **2**, wherein the third mount is detachable from the base.

7. The multi-accessory mount of claim **1**, wherein at least a portion of the second mount defines a gap between at least the portion of the second mount and the rail of the firearm when the multi-accessory mount assembly is coupled to the rail of the firearm.

8. The multi-accessory mount of claim **1**, wherein at least one of the first mounting platform or the second mounting platform comprises a planar mounting surface.

9. A accessory mount for use with a firearm having a muzzle end and a breach end, the accessory mount comprising:

a base that can be removably coupled to a rail of the firearm;

a first mount coupled to the base and having a first mounting platform configured to receive a first firearm accessory, the first mounting platform at a first height above the rail of the firearm when the accessory mount is coupled to an attachment surface of the firearm;

a second mount coupled to the base and extending from the base towards the muzzle end of the firearm when coupled to the rail of the firearm, and the second mount having a second mounting platform configured to receive a second firearm accessory, the second mounting platform at a second height above the attachment surface of the firearm when the accessory mount is coupled to the attachment surface of the firearm, wherein the first height is equal to or greater than the second height; and

wherein at least a portion of the second mount defines a gap between at least the portion of the second mount and the attachment surface of the firearm when the multi-accessory mount assembly is coupled to the attachment surface of the firearm.

10. The accessory mount of claim **9**, wherein the second mounting platform comprises a planar mounting surface.

11. The accessory mount of claim **9**, wherein the first mounting platform and the second mounting platform are longitudinally aligned and spaced apart relative to a longitudinal axis of the base.

12. The accessory mount of claim **9**, further comprising a third mount coupled to the base and including a third mounting platform configured to receive a third firearm accessory.

13. The accessory mount of claim **12**, wherein the third mounting platform is a third height above the attachment surface when the accessory mount is coupled to the attachment surface of the firearm, and wherein the third height is different than at least one of the first height and the second height.

14. The accessory mount of claim **12**, wherein at least one of the first mount, second mount or third mount is detachable from the base.

15. The accessory of claim **9**, wherein a first longitudinal axis of the first mounting platform and a second longitudinal axis of the second mounting platform are parallel to a third longitudinal axis of the attachment surface of the firearm when the firearm accessory mount is mounted to the attachment surface of the firearm accessory mount.

16. A method of using a multi-accessory mount, comprising:

attaching the multi-accessory mount to a firearm, wherein the multi-accessory mount comprises,

a base that is removably coupled to a firearm rail,

a first mount coupled to the based and including a first mounting platform configured to receive a first firearm accessory, the first mounting platform at a first height above the firearm rail when the multi-accessory mount is coupled to the firearm rail, and wherein the first mounting platform comprises a first planar mounting surface, and

a second mount coupled to the base and including a second mounting platform configured to receive a second firearm accessory, the second mounting platform at a second height above the firearm rail when the multi-accessory mount is coupled to the firearm rail, wherein the first height is equal to or greater than the second height, and wherein the second mounting platform comprises a second planar mounting surface;

attaching an optic device to the first mounting platform; and

attaching a laser-based aiming device to the second mounting platform.

17. The method of claim **16**, wherein the optic device is a red dot aiming device.

18. The method of claim **16**, wherein the laser-based aiming device includes an illuminator.

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