SYSTEMS AND METHODS FOR COUPLING A HOLSTER TO ANOTHER COMPONENT

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ABSTRACT

An adapter for coupling a component to a holster. The adapter includes a body having a first portion and a second portion extending from the first portion, the first portion including a D-shaped through-hole extending therethrough. The adapter also includes a spring latch sized and shaped to be coupled to the second portion.
FIG. 11

FIG. 12
SYSTEMS AND METHODS FOR COUPLING A HOLSTER TO ANOTHER COMPONENT

BACKGROUND OF THE INVENTION

[0001] Holsters are commonly used to hold an electronic communications device, such as a handheld phone or a two-way radio receiver/transmitter. The holsters are sometimes removably coupled to a belt (e.g., to a belt loop), so that the electronic communications device is readily available to a user while wearing the belt, and so when the holster is not required, the holster may be removed from the belt. However, some current systems for coupling the holster to the belt include a large number of components (e.g., in some cases are formed by five or more different components), and have relatively high cost. Additionally, some current coupling systems only offer the ability to couple the holster to the belt using a rigid belt clip, thereby limiting the movement of the holster relative to the belt.

[0002] Accordingly, there is a need for improved systems and methods for coupling a holster to another component.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0003] The accompanying figures, where like reference numerals refer to identical or functionally similar elements throughout the separate views, together with the detailed description below, are incorporated in and form part of the specification, and serve to further illustrate embodiments of concepts that include the claimed invention, and explain various principles and advantages of those embodiments.

[0004] FIGS. 1 and 2 illustrate a system for coupling a component to a holster in accordance with one embodiment.

[0005] FIGS. 3 and 4 illustrate a holster of the system of FIGS. 1 and 2.

[0006] FIGS. 5 through 8 illustrate an adapter of the system of FIGS. 1 and 2.

[0007] FIG. 9 illustrates the adapter, as well as a spring latch.

[0008] FIGS. 10 and 11 illustrate the spring latch.

[0009] FIGS. 12 through 14 illustrate a coupling of the spring latch and adapter to the holster.

[0010] FIGS. 15 and 16 illustrate a belt loop of the system of FIGS. 1 and 2.

[0011] FIG. 17 illustrates a coupling of the belt loop to the adapter.

[0012] FIG. 18 illustrates an adapter according to another embodiment.

[0013] FIG. 19 illustrates the adapter of FIG. 18, coupled to the belt loop of the system of FIGS. 1 and 2.

[0014] FIGS. 20 and 21 illustrate the system of FIGS. 1 and 2, but with the adapter and belt loop removed, and a belt clip instead coupled to the holster.

[0015] FIGS. 22 through 25 illustrate the belt clip, including a spring latch on the belt clip.

[0016] Skilled artisans will appreciate that elements in the figures are illustrated for simplicity and clarity and have not necessarily been drawn to scale. For example, the dimensions of some of the elements in the figures may be exaggerated relative to other elements to help to improve understanding of embodiments of the present invention.

[0017] The apparatus and method components have been represented where appropriate by conventional symbols in the drawings, showing only those specific details that are pertinent to understanding the embodiments of the present invention so as not to obscure the disclosure with details that will be readily apparent to those of ordinary skill in the art having the benefit of the description herein.

DETAILED DESCRIPTION OF THE INVENTION

[0018] One embodiment provides an adapter for coupling a component to a holster. In one example, the adapter includes a body having a first portion and a second portion extending from the first portion, the first portion including a D-shaped through-hole extending therethrough. The adapter also includes a spring latch sized and shaped to be coupled to the second portion.

[0019] Another embodiment provides a system for coupling a holster to a belt loop. In one example, the system includes a body having a first portion and a second portion extending from the first portion, the first portion including a D-shaped through-hole extending therethrough. The system also includes a spring latch sized and shaped to be coupled to the second portion. The system also includes a holster having a rear wall. The rear wall includes a slot, and the slot is sized and shaped to receive the second portion of the adapter.

[0020] Yet another embodiment provides a system for coupling a component to a holster. In one example, the system includes an adapter having a first portion and a second portion extending from the first portion, the first portion including a D-shaped through-hole extending therethrough. The system also includes a belt loop having a loop portion and a D-shaped protrusion extending from the loop portion, the D-shaped protrusion sized and shaped to be received within the D-shaped through-hole of the adapter. The system also includes a holster having a rear wall. The rear wall includes a slot, and the slot is sized and shaped to receive the second portion of the adapter.

[0021] FIGS. 1 and 2 illustrate a system 10 for removably coupling a holster 14 to one or more components. In the illustrated embodiment, the system 10 includes the holster 14, an adapter 18, and a belt loop 22. The holster 14 is removably coupled to the adapter 18, and the adapter 18 is removably coupled to the belt loop 22, such that the holster 14 may be selectively coupled and uncoupled from the belt loop 22.

[0022] With reference to FIGS. 3 and 4, the holster 14 includes a body 26 having an upper end 30 and a lower end 34. The holster 14 is sized and shaped to receive and hold an electronic communications device, such as a handheld telephone, two-way radio, or other wired or wireless device, or in some embodiments a non-electronic device. In some embodiments, the holster 14 is a taser holster, or a gun holster. The holster 14 may be used generally to hold any type of device. With reference to FIG. 4, in the illustrated embodiment the holster 14 includes a rear wall 38 and a plurality of side walls 42 extending from the rear wall 38 that are configured to wrap about, engage, or otherwise receive and hold a device (e.g., an electronic or non-electronic communications device). In the illustrated embodiment the holster 14 is plastic, although other embodiments include different materials.

[0023] With reference to FIGS. 3, 4, and 12 through 14, the holster 14 further includes a coupling region 46 that is used to removably couple the holster 14 to the adapter 18. In the illustrated embodiment, the coupling region 46 is
disposed on the rear wall 38 at the upper end 30 of the holster 14, and includes a slot 50 that defines a first channel 54 (FIG. 13) and a second channel 58 (FIG. 14). The first and second channels 54, 58 are disposed on opposite sides of the slot 50, and extend generally vertically in a direction between the upper end 30 and the lower end 34 of the holster 14. Some embodiments include a different number and/or arrangement of channels 54, 58 than that illustrated. As illustrated in FIGS. 3 and 4, the coupling region 46 further includes a protrusion 62 extending from the rear wall 38 into the slot 50, in a direction generally perpendicular to the rear wall 38. The protrusion 62 is disposed between the first and second channels 54, 58. In the illustrated embodiment, the protrusion 62 has a generally rounded, egg-like shape, forming a raised bump along the rear wall 38, with a latch pin 63 extending from the protrusion 62. In some embodiments, more than one protrusion and/or latch pin 63 are provided.

With reference to FIGS. 5 through 8, the adapter 18 includes a body 66 having a first portion 70 and a second portion 74 (e.g., mounting bracket) extending from the first portion 70. In the illustrated embodiment the body 66 is made of plastic, although other embodiments include different materials. The first portion 70 includes a D-shaped through-hole 78 extending therethrough. The second portion 74 includes a first rail 82 and a second rail 86. Each of the rails 82, 86 is an elongate structure (e.g., a rib). The first rail and second rails 82, 86 are disposed on opposite sides of the second portion 74, and extend laterally away from each other. As illustrated in FIGS. 7 and 8, the second portion 74 further includes a slot 90, and a plurality of protrusions 94 extending laterally into the slot 90. In the illustrated embodiment, the second portion 74 includes four protrusions 94 extending laterally into the slot 90. Other embodiments include different numbers and/or arrangements of protrusions 94 than that illustrated. The second portion also includes a detent 96 (FIGS. 7 and 8), although other embodiments include more than one detent 96.

With reference to FIGS. 9 through 11, the adapter 18 further includes a spring latch 98 removably coupled to the body 66. As illustrated in FIG. 9, the spring latch 98 is sized and shaped to extend into the slot 90 and to extend underneath the protrusions 94, such that the spring latch 98 is held in place (e.g., frictionally) by the protrusions 94. In other embodiments, the spring latch 174 is fastened to (e.g., welded in place) on the body 66. In the illustrated embodiment, the spring latch 98 is made of sheet metal, although other constructions include different materials.

The spring latch 98 includes a first portion 102 and a second portion 106 extending from the first portion 102, the second portion 106 having a through-hole 110 extending therethrough (e.g., a generally triangular-shaped through-hole, although other constructions include a different shaped through-hole, such as a rectangular-shaped through-hole). As illustrated in FIG. 11, the first portion 102 generally extends along a plane 114, and the second portion 106 extends at an oblique angle 118 relative to the plane 114. As illustrated in FIG. 9, when the spring latch 98 is coupled to the body 66, the first portion 102 is retained by the protrusions 94 and the second portion 106, including the through-hole 110, protrudes from the body 66. As illustrated in FIGS. 9 and 10, the spring latch 98 also includes another through-hole 116 that fits (e.g., snaps) over the detent 96, such that the detent 96 retains and engages the spring latch 98. In some embodiments, as illustrated in FIGS. 10 and 11, the first portion 102 also includes a bent tab 120, which helps to fill up any tolerance gaps during insertion of the spring latch 98 into the body 66, and also helps to prevent the spring latch 98 from shifting after being inserted into the body 66.

With reference to FIGS. 12 through 14, to couple the adapter 18 to the holster 14, the first and second rails 82, 86 on the second portion 74 are moved (e.g., slid) up inside the first and second channels 54, 58 respectively of the coupling region 46 on the holster 14, in a direction toward the upper end 30 of the holster. The remainder of the second portion 74 between the first and second rails 82, 86 is sized and shaped to slide within the slot 50 between the first and second channels 54, 58 as the first and second rails 82, 86 slide in the first and second channels 54, 58. As the second portion 74 slides up within the slot 50, the spring latch 98 (which is already coupled to the body 66 as seen in FIG. 9) eventually contacts the protrusion 62, causing the second portion 106 of the spring latch 98 to flex away from a normally biased position and slide along the protrusion 62. As the second portion 106 slides along the protrusion 62, the through-hole 110 on the second portion 106 eventually snaps over the latch pin 63 as seen in FIGS. 3, 4, 13, and 14, thereby locking the adapter 18 in place relative to the holster 14. The adapter 18 is configured to be spatially fixed relative to the holster 14 when the adapter 18 is coupled to the holster 14. Additionally, as seen in FIG. 1, an area of the first portion 70 of the body 66 is spaced by a gap 121 from the holder 18. This gap increases robustness of the adapter 18 during a drop impact.

With reference to FIGS. 12 through 14, to remove the adapter 18 from the holster 14, the reverse process is used. First, the second portion 106 of the spring latch 98, including the through-hole 110, is lifted off of the latch pin 63. For example, in the illustrated embodiment, the holster 14 includes a notch 122 along the upper end 30, providing access for a tool (e.g., screwdriver) to reach in and lift the second portion 106 of the spring latch 98. With the second portion 106 of the spring latch 98 lifted off of the latch pin 63, the first and second rails 82, 86 are then slid down out of the first and second channels 54, 58, thereby completely freeing the adapter 18 from the holster 14.

With reference to FIGS. 15 through 17, the belt loop 22 includes a body 126. Through a loop for receiving a belt. In some embodiments, the belt loop 22 is part of a clothing item having plurality of such bodies 126 integrally formed thereon in one piece for receiving a belt. In the illustrated embodiment the body 126 is leather, although embodiments include different materials. In some embodiments, the belt loop 22 is an individual piece that is coupled to (e.g., removably coupled to) a clothing item or other object.

As illustrated in FIGS. 15 through 17, the belt loop 22 includes a bracket 130 coupled to the body 126. In the illustrated embodiment the bracket 130 is plastic, although other embodiments include different materials. The bracket 130 includes a D-shaped protrusion 134 (e.g., D-stud). In the illustrated embodiment, the bracket 130 is coupled to the body 126 with four fasteners 138 (e.g., screws, rivets, etc.). In some embodiments, the bracket 130 is integrally formed in one piece with the body 126.

With reference to FIG. 17, to couple the belt loop 22 to the adapter 18, the D-shaped protrusion 134 on the belt loop 22 is inserted into the D-shaped through-hole 78 in the
adapter 18, and the adapter 18 is then swiveled (e.g., rotated 180 degrees relative to the belt loop 22), thereby locking the D-shaped protrusion 134 within the adapter 18. FIG. 17 illustrates a position of the adapter 18 after the adapter 18 has been swiveled and the belt loop 22 has been coupled to the adapter 18. In some embodiments, the swiveling may be performed with only a single hand. The belt clip 18 is configured to be spatially fixed relative to the holster 14 when the belt clip 18 is coupled to the holster 14.

To remove the belt loop 22 from the adapter 18, the reverse process is used. The adapter 18 is swiveled in an opposite direction (e.g., rotated 180 degrees in an opposite direction relative to the belt loop 22), thereby unlocking the D-shaped protrusion 134 from the adapter 18. The adapter 18 is then free to be pulled away from the belt loop 22.

The ability of the adapter 18 to swivel relative to the belt loop 22 not only allows the adapter 18 to be easily coupled to and removed from the belt loop 22. The ability to swivel also allows the holster 14 (and any device disposed therein) to easily be swiveled out of the way for example when a user enters a vehicle, sits down, or otherwise encounters an obstacle that would otherwise contact the holster 14 and impede movement of the user if the holster 14 were not allowed to swivel.

In some embodiments, the adapter 18 includes one or more detents 140 that provide tactile feedback to the user and permits incremental adjustment of the belt loop 22 relative to the adapter 18. In the illustrated embodiment, the adapter 18 includes six detents 140 in the form of protrusions spaced around the D-shaped through-hole 78 that extend toward a center of the D-shaped through-hole 78. As illustrated in FIG. 19, these detents 140 are configured to contact the D-shaped protrusion 134 as the adapter 18 is swiveled. Other embodiments include different numbers and/or arrangements of detents 140.

In some embodiments, the adapter 18 couples the holster 14 to a component other than the belt loop 22. For example, because the adapter 18 includes a D-shaped through-hole 78, the adapter 18 is sized and shaped to receive a corresponding D-shaped protrusion on any device, whether that D-shaped protrusion has been integrally formed as part of the other device or has been added on as a separate component onto the other device.

FIGS. 20 and 21 illustrate alternative examples of the system 10 for removably coupling the holster 14 to one or more components. As illustrated in FIGS. 20 and 21, instead of being coupled to the adapter 18 and the belt loop 22, the holster 14 is instead coupled to a belt clip 142.

With reference to FIGS. 22 through 25, the belt clip 142 includes a first body 146 that is pivotally coupled to a second body 150 about a pivot pin 154. The first body 146 includes an upper end 158 and a lower end 162. As illustrated in FIG. 25, the belt clip 142 includes a biasing member 164 (e.g., a spring in the illustrated embodiment) that biases the upper end 158 of the first body 146 away from the second body 150, and biases the lower end 162 of the first body 146 toward the rear wall 38 of the holster 14.

With reference to FIGS. 23 through 25, the second body 150 includes a first rail 166 and a second rail 170. The first and second rails 166, 170 are disposed on opposite sides of the second body 150, and extend laterally away from each other, similar to the first and second rails 82, 86 on the adapter 18. The second body 150 further includes a spring latch 174 removably coupled to the second body 150. As illustrated in FIGS. 24 and 25, in the illustrated embodiment the spring latch 174 wraps around the second body 150, and is held in place frictionally on the second body 150 (e.g., clips onto the second body 150). In other embodiments the spring latch 174 is fastened to (e.g., welded in place) on the second body 150.

With reference to FIGS. 23 and 24, the spring latch 174 includes a first portion 178 and a second portion 182, the second portion 182 having a through-hole 186 extending therethrough (e.g., a generally triangular-shaped through-hole, although other constructions include a different shaped through-hole, such as a rectangular-shaped through-hole). Similar to the spring latch 98, the second portion 182 of the spring latch 174 extends at an oblique angle relative to the first portion 178, such that when the spring latch 174 is coupled to the second body 150, the first portion 178 is retained on the second body 150 and the second portion 182, including the through-hole 186, protrudes away from the second body 150.

With reference to FIGS. 20 through 25, to couple the belt clip 142 to the holster 14, the first and second rails 166, 170 on the second body 150 are moved (e.g., slid) up inside the first and second channels 54, 58 respectively of the coupling region 46 on the holster 14, in a direction toward the upper end 30 of the holster 14. The remainder of the second body 150 between the first and second rails 166, 170 is sized and shaped to slide within the slot 50 between the first and second channels 54, 58 as the first and second rails 166, 170 slide in the first and second channels 54, 58. As the second body 150 slides up within the slot 50, the spring latch 174 (which is already coupled to the second body 150 as seen in FIGS. 22 through 25) eventually contacts the protrusion 62, causing the second portion 182 of the spring latch 174 to flex away from a normally biased position and slide along the protrusion 62. As the second portion 106 slides along the protrusion 62, the through-hole 186 on the second portion 182 eventually snaps over the latch pin 63 (e.g., similar to what is illustrated in FIGS. 13 and 14), thereby locking the belt clip 142 in place.

With continued reference to FIGS. 20 through 25, to remove the belt clip 142 from the holster 14, the reverse process is used. First, the second portion 182 of the spring latch 174, including the through-hole 186, is lifted off of the latch pin 63. For example, a user may apply a tool (e.g., screwdriver) into the notch 122 (FIG. 21) and lift the second portion 182 of the spring latch 174. With the second portion 182 of the spring latch 174 lifted off of the latch pin 63, the first and second rails 166, 170 are then slid down out of the first and second channels 54, 58, thereby completely freeing the belt clip 142 from the holster 14.

Overall, the system 10 thus allows the belt clip 142 and the adapter 18 to be interchangeably coupled and removed from the holster 14. Additionally, the adapter 18 is robust, and has few components. In testing environments, the adapter 18 has been able to withstand a five foot drop while coupled to the holster 14, with the combined weight of the holster 14 and communications device (e.g., 600 grams) pressing down on the adapter 18 upon impact. Additionally, in testing environments, the adapter 18 has been able to withstand a 75 pound force pull test while the adapter 18 was coupled to the belt loop 22.

The benefits, advantages, solutions to problems, and any element(s) that may cause any benefit, advantage, or
solution to occur or become more pronounced are not to be construed as a critical, required, or essential features or elements of any or all of the claims. The invention is defined solely by the appended claims including any amendments made during the pendency of this application and all equivalents of those claims as issued.

Moreover in this document, relational terms such as first and second, top and bottom, and the like may be used solely to distinguish one entity or action from another entity or action without necessarily requiring or implying any actual such relationship or order between such entities or actions. The terms “comprises,” “comprising,” “has,” “having,” “includes,” “including,” “contains,” “containing” or any other variation thereof, are intended to cover a non-exclusive inclusion, such that a process, method, article, or apparatus that comprises, has, includes, contains a list of elements does not include only those elements but may include other elements not expressly listed or inherent to such process, method, article, or apparatus. An element proceeded by “comprises . . . a,” “has . . . a,” “includes . . . a,” or “contains . . . a” does not, without more constraints, preclude the existence of additional identical elements in the process, method, article, or apparatus that comprises, has, includes, contains the element. The terms “a” and “an” are defined as one or more unless explicitly stated otherwise herein. The terms “substantially,” “essentially,” “approximately,” “about” or any other variation thereof, are defined as being close to as understood by one of ordinary skill in the art, and in one non-limiting embodiment the term is defined to be within 10%, in another embodiment within 5%, in another embodiment within 1% and in another embodiment within 0.5%. The term “circular” as used herein is defined as connected, although not necessarily directly and not necessarily mechanically. A device or structure that is “configured” in a certain way is configured in at least that way, but may also be configured in ways that are not listed.

The Abstract of the Disclosure is provided to allow the reader to quickly ascertain the nature of the technical disclosure. It is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims. In addition, in the foregoing Detailed Description, it can be seen that various features are grouped together in various embodiments for the purpose of streamlining the disclosure. This method of disclosure is not to be interpreted as reflecting an intention that the claimed embodiments require more features than are expressly recited in each claim. Rather, as the following claims reflect, inventive subject matter lies in less than all features of a single disclosed embodiment. Thus the following claims are hereby incorporated into the Detailed Description, with each claim standing on its own as a separately claimed subject matter.

What is claimed is:

1. An adapter for coupling a component to a holster, the adapter comprising:
   a body having a first portion and a second portion extending from the first portion, the first portion including a D-shaped through-hole extending therethrough; and
   a spring latch sized and shaped to be releasably coupled to the second portion.

2. The adapter of claim 1, wherein the second portion includes a slot and a protrusion extending into the slot, wherein the spring latch is sized and shaped to extend into the slot and to extend underneath the protrusion.

3. The adapter of claim 1, wherein the spring latch includes a first portion and a second portion extending from the first portion of the spring latch, the second portion of the spring latch having a through-hole extending therethrough sized and shaped to receive a portion of a holster.

4. The adapter of claim 3, wherein the first portion of the spring latch extends along a plane, and wherein the second portion of the spring latch extends at an oblique angle relative to the plane.

5. The adapter of claim 1, wherein the first portion of the body includes a plurality of detents spaced around the D-shaped through-hole.

6. A system for coupling a holster to a belt loop, the system comprising:
   the adapter of claim 1; and
   a belt loop having a loop portion and a D-shaped protrusion extending from the loop portion, the D-shaped protrusion sized and shaped to be received within the D-shaped through-hole of the adapter.

7. The system of claim 6, wherein the adapter is configured to swivel relative to the belt loop about the D-shaped protrusion of the belt loop when the adapter is coupled to the belt loop.

8. The system of claim 6, further including a holster having a rear wall, the rear wall including a slot, wherein the slot is sized and shaped to receive the second portion of the adapter.

9. A system for coupling a holster to a belt loop, the system comprising:
   an adapter with a body having a first portion and a second portion extending from the first portion, the first portion including a D-shaped through-hole extending therethrough;
   a spring latch sized and shaped to be coupled to the second portion; and
   a holster having a rear wall, the rear wall including a slot, wherein the slot is sized and shaped to receive the second portion of the body, such that the adapter is releasably coupled to the holster.

10. The system of claim 9, wherein the holster includes a protrusion and a latch pin within the slot, and wherein the spring latch includes both a first portion and a second portion extending from the first portion of the spring latch, the second portion of the spring latch having a through-hole extending therethrough sized and shaped to receive the latch pin.

11. The system of claim 9, wherein the adapter is configured to be spatially fixed relative to the holster when the adapter is coupled to the holster.

12. A system for coupling a component to a holster, the system comprising:
   an adapter having a first portion and a second portion extending from the first portion, the first portion including a D-shaped through-hole extending therethrough;
   a belt loop having a loop portion and a D-shaped protrusion extending from the loop portion, the D-shaped protrusion sized and shaped to be received within the D-shaped through-hole of the adapter; and
   a holster having a rear wall, the rear wall including a slot, wherein the slot is sized and shaped to receive the second portion of the adapter.

13. The system of claim 12, wherein the first portion includes a plurality of detents spaced around the D-shaped through-hole, wherein the plurality of detents are sized and
14. The system of claim 12, wherein the adapter is configured to swivel relative to the belt loop about the D-shaped protrusion of the belt loop when the adapter is coupled to the belt loop.

15. The system of claim 12, wherein the adapter is configured to be spatially fixed relative to the holster when the adapter is coupled to the holster.

16. The system of claim 12, further comprising a belt clip having a first body and a second body coupled to the first body, wherein the slot on the rear wall of the holster is sized and shaped to receive the second body of the belt clip, such that the belt clip and the adapter are configured to be interchangeably coupled with the holster.

17. The system of claim 16, wherein the belt clip is configured to be spatially fixed relative to the holster when the belt clip is coupled to the holster.

18. The system of claim 16, wherein the holster includes a protrusion within the slot of the rear wall, wherein the protrusion is sized and shaped to engage with a portion of the adapter when the adapter is coupled to the holster and with a portion of the belt clip when the belt clip is coupled to the holster.

19. The system of claim 12, wherein the holster is sized and shaped to receive a communications device.

20. The system of claim 19, wherein the holster includes an upper end, a lower end, and a plurality of side walls extending from the rear wall that are configured to receive the communications device, wherein the slot on the rear wall is disposed at the upper end and side walls of the holster.

21. The system of claim 12, wherein the adapter is spatially fixed relative to the holster and the first portion of the adapter includes an area that is spaced by a gap from the holster.

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