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United States Patent	12392168
Kind Code	B2
Date of Patent	August 19, 2025
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Universal chassis for door handle assemblies

Abstract

A door handle assembly includes a chassis, first and second trim plates, and a latch assembly. The chassis includes an interior chassis portion and an exterior chassis portion. The interior chassis portion is configured to extend from a first side of a door and includes at least one trim engagement mechanism. The exterior chassis portion is configured to extend from a second side of a door and includes at least one trim engagement mechanism. The first trim plate is configured to removably engage the first trim engagement mechanism, optionally via a trim plate adapter. The second trim plate is configured to removably engage the second trim engagement mechanism, also optionally via a trim plate adapter. The latch assembly extends between the exterior chassis portion and the interior chassis portion. The first trim engagement mechanism and the second trim engagement mechanism are capable of removably engaging with interchangeable trim plates.

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Appl. No.: **18/504339**

Filed: **November 08, 2023**

Prior Publication Data

Document Identifier	Publication Date
US 20240141696 A1	May. 02, 2024

Related U.S. Application Data

continuation parent-doc US 17569877 20220106 US 11851912 child-doc US 18504339

us-provisional-application US 63134821 20210107

Publication Classification

Int. Cl.: **E05B63/00** (20060101); **E05B3/04** (20060101); **E05B3/06** (20060101); **E05B15/02** (20060101)

U.S. Cl.:

CPC **E05B63/0056** (20130101); **E05B3/04** (20130101); **E05B3/06** (20130101); **E05B15/02** (20130101);

Field of Classification Search

CPC: E05B (3/00); E05B (3/003); E05B (3/02); E05B (3/04); E05B (3/06); E05B (3/065); E05B (15/00); E05B (15/02); E05B (15/025); E05B (15/0205); E05B (15/021); E05B (15/022); E05B (15/0225); E05B (2015/0215); E05B (63/00); E05B (63/0056); E05B (63/006)

USPC: 292/357

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS (1) This application is a continuation of U.S. patent application Ser. No. 17/569,877, filed Jan. 6, 2022, now U.S. Pat. No. 11,851,912, which claims the benefit of U.S. Provisional Application No. 63/134,821, filed Jan. 7, 2021, the entire disclosures of which are herein incorporated by reference in their entireties. To the extent appropriate, a claim of priority is made to each of the above disclosed applications.

TECHNICAL FIELD

(1) The present disclosure relates to the field of door handle assemblies. In particular, this disclosure relates to a device and method of providing a universal chassis that can accommodate a variety of escutcheons.

BACKGROUND

(2) Door handle assemblies are commonly known in the art and are used for installation on different types of doors. The door handle assembly is generally comprised of a rotatable handle having a locking mechanism, a handle mount, and a faceplate. Door handle assemblies may be used for installation on either newly manufactured doors or currently installed doors, which require replacement of an existing door handle assembly. Further, replacing an existing door handle assembly may not require replacing the entire door handle assembly, but instead the internal chassis or an entire interior and/or exterior assembly.

(3) The door handle assemblies currently available include internal chassis pieces and faceplates that are manufactured to fit together. Accordingly, although portions of a door handle assembly may be replaced, typically such replacements are “like for like” because a chassis is typically designed for use with the same faceplate type with which that chassis was originally sold. Accordingly, if a user wishes to change the type of faceplate used in the door handle assembly, typically the entire assembly must be replaced.

SUMMARY

(4) In general terms, this disclosure is directed toward a device and method for providing a universal chassis that can accommodate a variety of escutcheons.

(5) In a first aspect, a door handle assembly includes a chassis, a first and second escutcheon, and a latch assembly. The chassis includes an interior chassis portion and an exterior chassis portion. The interior chassis portion is configured to extend from a first side of a door and includes at least one trim plate having at least one first fastener engagement mechanism. The exterior chassis portion is configured to extend from a second side of a door and includes at least a second trim plate having at least one second fastener engagement mechanism. The first escutcheon has at least one first post configured to removably engage the at least one first fastener engagement mechanism. The second escutcheon has at least one second post configured to removably engage the at least one second fastener engagement mechanism. The latch assembly extends between the exterior chassis portion and the interior chassis portion. The at least one first fastener engagement mechanism and the at least one second fastener engagement mechanism are capable of removably engaging with a plurality of different escutcheons.

(6) In another aspect, a method of installing a door handle assembly is described. The method includes positioning a latch assembly at least partially within a crossbore of a door. An interior escutcheon is attached to a first trim plate of an interior chassis portion and an exterior escutcheon is attached to a second trim plate of an exterior chassis portion. The interior chassis is positioned at

a borehole on an interior side of the door, and the interior chassis comprises an interior handle mount attachable to an interior handle. A first mounting post and a second mounting post extend toward and are engageable with an exterior chassis. The exterior chassis portion is positioned at the borehole on an exterior side of the door. The exterior chassis comprises an exterior handle mount attachable to an exterior handle. An exterior latch mount is rotatably attached to the latch assembly and the interior chassis portion. The interior handle is attached to the interior handle mount and the exterior handle is attached to the exterior handle mount. At least one mounting screw is inserted and tightened into a corresponding mounting post that extends from the interior escutcheon through the interior chassis portion and to the exterior chassis portion. The interior escutcheon and the exterior escutcheon are removable from the interior chassis portion and the exterior chassis portion.
(7) In yet another aspect, a door handle assembly is described. The door handle assembly includes a chassis, an interior escutcheon, an exterior escutcheon, and a latch assembly. The chassis comprises an interior chassis portion and an exterior chassis portion. The interior chassis portion is configured to extend from a first side of a door and comprises at least one first recess and at least one first catch. The exterior chassis portion is configured to extend from a second side of a door and comprises at least one second recess and at least one second catch. The interior escutcheon comprises at least one first post and at least one first cantilever and the exterior escutcheon comprises at least one second post and at least one second cantilever. The latch assembly extends between the exterior chassis portion and the interior chassis portion. The at least one first recess is configured to removably engage with the at least one first post and the at least one first catch is configured to removably engage with the at least one first cantilever. The at least one second recess is configured to removably engage with the at least one second post and the at least one second catch is configured to removably engage with the at least one second cantilever.
(8) Corresponding reference characters indicate corresponding parts throughout the several views. The exemplifications set out herein illustrate an embodiment of the invention, and such exemplifications are not to be construed as limiting the scope of the invention in any manner.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
(1) The following drawings are illustrative of particular embodiments of the present disclosure and therefore do not limit the scope of the present disclosure. The drawings are not to scale and are intended for use in conjunction with the explanations in the following detailed description. Embodiments of the present disclosure will hereinafter be described in conjunction with the appended drawings, wherein like numerals denote like elements.
(2) FIG. **1** illustrates an exploded embodiment of a door handle assembly according to an example embodiment.
(3) FIG. **2** illustrates an interior view of a universal chassis.
(4) FIG. **3** illustrates an example embodiment of a trim plate adapter.
(5) FIG. **4** illustrates an example embodiment of a chassis assembly including an escutcheon and trim plate adapter connected to a trim plate of a chassis.
(6) FIG. **5** illustrates another example embodiment of a trim plate adapter.
(7) FIG. **6** illustrates an exploded view of a chassis assembly including a chassis and a trim plate adapter of FIG. **5**.
(8) FIG. **7** is a plan view of the chassis assembly of FIG. **6** with the trim plate adapter mounted to the chassis.
(9) FIGS. **8***a*-**8***c* illustrate different embodiments of a snap fit joint between a trim plate and an escutcheon.
(10) FIG. **9** illustrates an example embodiment of a cast escutcheon.

(11) FIG. **10** illustrates an example engagement mechanism between a trim plate and an escutcheon.
(12) FIGS. **11***a*-**11***b* illustrates an example chassis capable of engaging two different escutcheons.
DETAILED DESCRIPTION
(13) The figures and descriptions provided herein may have been simplified to illustrate aspects that are relevant for a clear understanding of the herein described devices, systems, and methods, while eliminating, for the purpose of clarity, other aspects that may be found in typical devices, systems, and methods. Those of ordinary skill may recognize that other elements and/or operations may be desirable and/or necessary to implement the devices, systems, and methods described herein. Because such elements and operations are well known in the art, and because they do not facilitate a better understanding of the present disclosure, a discussion of such elements and operations may not be provided herein. However, the present disclosure is deemed to inherently include all such elements, variations, and modifications to the described aspects that would be known to those of ordinary skill in the art.
(14) References in the specification to "one embodiment," "an embodiment," "an illustrative embodiment," etc., indicate that the embodiment described may include a particular feature, structure, or characteristic, but every embodiment may or may not necessarily include that particular feature, structure, or characteristic. Moreover, such phrases are not necessarily referring to the same embodiment. Further, when a particular feature, structure, or characteristic is described in connection with an embodiment, it is submitted that it is within the knowledge of one skilled in the art to affect such feature, structure, or characteristic in connection with other embodiments whether or not explicitly described. Additionally, it should be appreciated that items included in a list in the form of "at least one A, B, and C" can mean (A); (B); (C); (A and B); (A and C); (B and C); or (A, B, and C). Similarly, items listed in the form of "at least one of A, B, or C" can mean (A); (B); (C); (A and B); (A and C); (B and C); or (A, B, and C).
(15) In the drawings, some structural or method features may be shown in specific arrangements and/or orderings. However, it should be appreciated that such specific arrangements and/or orderings may not be required. Rather, in some embodiments, such features may be arranged in a different manner and/or order than shown in the illustrative figures. Additionally, the inclusion of a structural or method feature in a particular figure is not meant to imply that such feature is required in all embodiments and, in some embodiments, may not be included or may be combined with other features.
(16) In example aspects of the present disclosure, a door handle assembly includes a universal chassis that allows for the installation of any escutcheon, including escutcheons having different aesthetic appearances. Such an assembly eliminates the requirement that a chassis is only able to accommodate a single escutcheon. Further, the escutcheons may be removably attached to a trim plate of the chassis, allowing for the escutcheon to be changed without having to also change the chassis.
(17) The chassis and escutcheon and/or trim plate adapter may include a plurality features that create a secure attachment that prevents movement in any direction. For example, and as described below, an example embodiment includes two offsetting posts and two offsetting screw attachments that correctly align the escutcheon (for example, squarely) to the universal chassis and prevents subsequent movement between the escutcheon and/or trim plate adapter and the universal chassis. In alternative embodiments, other alignment features, such as use of posts, attachment tabs, and crush ribs may be used.
(18) FIG. **1** illustrates an exploded view of an example embodiment of a door handle assembly **100** according to example embodiments described herein. The door handle assembly **100** includes at least a latch assembly **102** and a universal chassis **200**. The universal chassis **200** includes a first chassis portion **200***a* and a second chassis portion **200***b*. The first chassis portion **200***a* is configured to extend from a first side of a door and the second chassis portion **200***b* is configured

to extend from a second, opposing side of a door.
(19) The first chassis portion **200***a* and the second chassis portion **200***b* are configured to engage the latch assembly **102** and each other to actuate a latch bolt **110**. As described in more detail below, the chassis **200** is a universal chassis and is configured to engage with a plurality of different types of escutcheons **104**, with or without a trim plate adapter. The first chassis portion **200***a* has a trim plate **114***a* configured to be located on an outside of a first side of a door, and the second chassis portion **200***b* has a trim plate **114***b* configured to be located on an outside of a second side of the door. The trim plates **114***a*, **114***b* are capable of removably connecting to a plurality of escutcheons **104**. The universal chassis **200** allows a user to change the escutcheon **104** (without or without a trim plate adapter **300**) without having to also change the chassis **200**.
(20) The door handle assembly **100** includes two escutcheons **104**, one located on each exterior side of the interior chassis portion **200***a* and the exterior chassis portion **200***b*. As described in further detail below, an escutcheon **104** may be a stamped rose or a cast rose. A stamped rose may also include a trim plate adapter **300** configured to engage the stamped rose and the trim plates **114***a*, **114***b* of the chassis **200**.
(21) A handle **106***a* is engageable with an interior handle mount **112***a*, and a handle **106***b* is engageable with an exterior handle mount **112***b*. The escutcheons **104** include a handle opening **304**, allowing the handles **106***a*, **106***b* to extend through the escutcheon **104** to the chassis **200**.
(22) At least one mounting screw **108** is insertable through and engageable with the escutcheon **104**, the exterior chassis portion **200***b*, and the interior chassis portion **200***a*. In the example shown, a pair of such mounting screws **108** are used. The interior chassis portion **200***a* includes a pair of mounting posts **116** that extend toward and are engageable with the exterior chassis portion **200***b*. The exterior chassis portion **200***b* includes an exterior latch mount **118** that rotatably attaches to the latch assembly **102** and the interior chassis portion **200***a*.
(23) FIG. **2** illustrates an example outside facing view of a trim plate **114** of an interior chassis portion **200***a* or an exterior chassis portion **200***b*. In the orientation shown, the trim plate **114** faces away from the door and engages with the escutcheon **104**. Each of the interior chassis portion **200***a* and the exterior chassis portion **200***b* has generally the same outside facing coupling features on a base **210** that are used to engage with an outer body that is an escutcheon **104** and/or trim plate adapter **300**. The interior chassis portion **200***a* is shown as an exemplary embodiment of the trim plate **114** having the outside facing coupling features on the base **210**. The trim plate **114** includes the outside facing coupling features including at least one fastener attachment **202** (also known as a fastener engagement mechanism), at least one catch **204**, a first fastener hole **206***a*, and a second fastener hole **206***b*. The first fastener hole **206***a* and the second fastener hole **206***b* are configured to allow a mounting screw **108** to engage the exterior chassis portion **200***b* and the interior chassis portion **200***a*.
(24) As shown in the example embodiment, four fastener attachments **202***a*, **202***b*, **202***c*, **202***d* are included on the trim plate **114**. Also included are four catches **204***a*, **204***b*, **204***c*, **204***d*. However, fewer fastener attachments **202** and/or fewer catches **204** may be implemented on the trim plate **114**, for example two fastener attachments **202***a*, **202***d* and two catches **204***c*, **204***b*.
(25) In an example embodiment, the fastener attachment **202** is a recess or aperture through the trim plate **114** that is configured to receive a post from a trim plate adapter **300** or an escutcheon **104**. The recess is sized and shaped to securely and snugly fit the post, which is described below. For example, the fastener attachment **202** is in the form of a recess that includes an interference fit to securely attach the escutcheon **104** to the trim plate **114**. In another embodiment, the fastener attachment **202** is an opening configured to allow a post of the escutcheon **104** or trim plate adapter **300** to extend through.
(26) The at least one catch **204** includes a cantilever feature, which is described in more detail at FIGS. **8***a*-**8***c*. The at least one catch **204** engages with the trim plate adapter **300**, or in some embodiments, with the escutcheon **104**.

(27) FIG. **3** illustrates an example embodiment of a trim plate adapter **300**. A trim plate adapter **300** is configured to engage with both the escutcheon **104** and the trim plate **114** of one of the chassis portions **200***a*, **200***b* to provide a secure fit. The trim plate adapter **300** is configured to allow any escutcheon **104** to engage with the universal chassis **200**. Although the trim plate adapter **300** is shown as having a square shape, alternative shapes are possible, such as rectangular, oval, or circular. For example, the trim plate adapter **300** may be secured within a stamped escutcheon **104** to eliminate any relative movement between the stamped escutcheon **104** and the chassis **200**. Further, the trim plate adapter **300** can be used to removably attach any escutcheon **104** to the universal chassis **200**.

(28) The trim plate adapter **300** includes interior facing coupling features including a first fastener hole **302***a* and a second fastener hole **302***b*, a handle opening **304**, at least one post **306**, and at least one snap fit joint **308**.

(29) The trim plate adapter **300** has an outer dimension configured to fit within an escutcheon **104**. The trim plate adapter **300** includes first and second connection mechanisms **310***a*, **310***b* that allow the trim plate adapter **300** to securely engage the escutcheon **104**. The trim plate adapter **300** may also include a plurality of ridges **312** along an outside edge that provide an interference or friction fit within the escutcheon **104**. The plurality of ridges **312** extend in a longitudinal direction along a perimeter of the trim plate adapter **300**. In an embodiment, the plurality of ridges **312** are sized to fit snugly within the escutcheon **104**. In alternative examples, the ridges **312** can extend in any direction non-parallel to the perimeter of the escutcheon **104**.

(30) The trim plate adapter **300** includes at least one post **306** that extends in a direction toward the chassis **200**. As shown in the example embodiment, the four posts **306***a*, **306***b*, **306***c*, **306***d* extend from a base **314** of the trim plate adapter **300**. However, two or four posts may be utilized.

(31) In an embodiment, the at least one post **306** includes a plurality of ridges **312** that form a frictional engagement between the trim plate adapter **300** and the trim plate **114** of the chassis **200**. The ridges **312** extend in a perpendicular direction from the post **306**. In an embodiment, the plurality of ridges **312** are sized to fit snugly within a recess of the chassis **200**. In alternative examples, the ridges **312** can extend in any direction non-parallel to the perimeter of the post **306**.

(32) In yet another embodiment, the plurality of ridges **312** are located on the post **306**, such that when extended through a fastener attachment **202** comprising an opening of the chassis **200**, the ridges **312** maintain the post **306** through the opening.

(33) In a further embodiment, the fastener attachment **202** of the chassis **200** and the post **306** of the trim plate adapter **300** are used to align the chassis **200** and the trim plate adapter **300**. The snap fit joint **308** is used to securely attach the trim plate adapter **300** to the chassis **200**.

(34) As shown in the example embodiment, four snap fit joints **308***a*, **308***b*, **308***c*, **308***d* are included on the trim plate adapter **300**. However, two or four snap fit joints **308** may be utilized. The snap fit joints **308** maintain the fit between the trim plate adapter **300** and the trim plate **114**. The snap fit joints **308** are described in further detail at FIGS. **8***a*-**8***c*.

(35) The trim plate adapter **300** may be sized and shaped so the post **306** of the trim plate adapter **300** engages with the fastener attachment **202** of the chassis **200**, and so the snap fit joint **308** engages with the catch **204**. Further, the trim plate adapter **300** is sized and shaped so the fastener holes **302***a*, **302***b* of the trim plate adapter **300** align with the fastener holes **206***a*, **206***b* of the chassis **200**. The trim plate adapter **300** may have an exterior shape sized to fit any size escutcheon **104**, especially trim plates **114** that have a larger length and width than a traditional escutcheon **104**.

(36) It is noted that, in the absence of a trim plate adapter **300**, an escutcheon may be constructed to have interior facing coupling features analogous to those of the trim plate adapter, to engage with the trim plate **114** analogously. However, in such arrangements, while escutcheons may be interchangeable among those which have such internal features, use of the trim plate adapter **300** allows a variety of other escutcheon types to be used by disassociating the exterior appearance of

the escutcheon from the interior engagement mechanism connecting that escutcheon to the trim plate **114**.
(37) FIG. **4** illustrates a chassis assembly including a trim plate adapter **300** connected to the escutcheon **104** and the trim plate **114** of the chassis **200**. The trim plate adapter **300** is removably secured to the trim plate **114** with the at least one snap fit joint **308** connected to the at least one catch **204**, and the at least one post **306** connected to the at least one fastener attachment **202**.
(38) In the example shown, each of the four posts **306***a*, **306***b*, **306***c*, **306***d* extend through each of the four fastener attachments **202***a* **202***b*, **202***c*, **202***d*. The fastener attachment **202** of the trim plate **114** includes recesses through which each of the posts **306** extends through. The posts **306** may include a plurality of ridges that create an interference fit to securely attach to the trim plate **114** without movement in any direction.
(39) FIG. **5** illustrates another example embodiment of a trim plate adapter **350** connected to the escutcheon **104** and the trim plate **114** of the chassis **200**. In the embodiment shown, the connection between the trim plate **114** and the trim plate adapter **350** is maintained by the post **306***a*, **306***b* extending through the fastener attachments **202***b*, **202***d*, and two fasteners **406***a*, **406***b* extending through the fastener attachments **202***a*, **202***c*.
(40) The chassis **200** is secured to the trim plate adapter **350** with the at least one fastener **406** connected to the at least one fastener attachment **202**. In the example shown, two fastener attachments **202***a*, **202***b* are recesses configured to accept first and second posts **306***a*, **306***b*. Two other fastener attachments **202***a*, **202***c* are configured to accept first and second fastener **406***a*, **406***b*. The fasteners **406***a*, **406***b* may be a screw, as shown.
(41) FIG. **6** illustrates an exploded view of a chassis assembly including the trim plate adapter **350** and chassis **200** of FIG. **5**. As shown, the first and second fastener **406***a*, **406***b* extend into the chassis **200** and then the trim plate adapter **350**. The fasteners **406** are only capable of being accessed from an inside of the chassis **200** before being installed on a door.
(42) FIG. **7** illustrates an assembled configuration of a chassis assembly in a further possible embodiment, in which a trim plate adapter **400** is connected to both the escutcheon **104** and the trim plate **114** of the chassis **200**. In the embodiment shown, the connection between the trim plate **114** and the trim plate adapter **400** is maintained by the post **306** extending through the fastener attachment **202**, and the snap fit joint **308** engaging with the catch **204**. However, in this alternative embodiment, only one of the posts **306** and the fastener attachment **202**, or the snap fit joint **308** and the catch **204**, are needed to secure the escutcheon **104** to the trim plate **114**.
(43) The chassis **200** is secured to the trim plate adapter **400** with the at least one snap fit joint **308** connected to the at least one catch **204** and the at least one post (not shown) connected to the at least one fastener attachment **202***b*, **202***d*. The connection between the at least one snap fit joint **308** and the at least one catch **204** is shown in more detail at FIGS. **8***a*-**8***c*.
(44) In the example shown, two of the fastener attachments **702***a*, **702***b* are openings, and two of the fastener attachments **704***a*, **704***b* are recesses. The first and the second posts (not shown) extend through two of the fastener attachment **702***a*, **702***b*, and first and second fastener **406***b*, **406***b* extend into two of the fastener attachments **704***a*, **704***b*.
(45) FIGS. **8***a*-**8***c* illustrate different embodiments of a snap fit joint **600** and the catch **204**, useable in conjunction with various escutcheons and/or trim plate adapters **300**, **350**, **400** as described herein. FIG. **8***a* illustrates a first embodiment of the snap fit joint **600** including a cantilever **602** on the trim plate adapter **300** and a receiver portion **606** on the trim plate **114**, and a post **604**. The cantilever **602** includes a protrusion **608** configured to engage the receiver portion **606** and maintains the chassis **200** secured to the respective trim plate adapter.
(46) FIG. **8***b* illustrates an alternative embodiment of a snap fit joint **600** including a cantilever **602** of the trim plate adapter **300** and a receiver portion **606** of the trim plate **114**. The receiver portion **606** includes a first and second protrusion **608***a*, **608***b* configured to engage the cantilever **602** and maintains the chassis **200** secured to the respective trim plate adapter.

(47) FIG. **8***c* illustrates yet another embodiment of a snap fit joint **600** including a cantilever **602** of the trim plate adapter **300** and a receiver portion **606** of the trim plate **114**. The receiver portion **606** has a U-shape and includes a first protrusion **608***a* and a second protrusion **308***b* configured to engage the cantilever **602** and maintains the chassis **200** secured to the respective trim plate adapter.
(48) FIG. **9** illustrates an example of a chassis assembly including a cast escutcheon **700** connected to a chassis **200**. The cast escutcheon **700** is configured to engage with the trim plate **114** to provide a secure fit. The cast escutcheon **700** is shown as having a decorative shape, but other alternative shapes are possible, such as rectangular, oval, or circular.
(49) The escutcheon **700** includes first and second fastener holes **302***a*, **302***b*, a handle opening **304**, and at least one post **702**. In the embodiment shown, the escutcheon **700** includes four posts **702**, two of the posts **702** extend through a fastener attachment **202** in the chassis **200** and two of the posts **702** extend into a fastener attachment **202** of the chassis **200**. However, in other embodiments, the configuration of the posts **702** may be different.
(50) In this example embodiment, the cast escutcheon **700** is directly mounted to the trim plate without use of a trim plate adapter. However, in alternative arrangements, a trim plate adapter could be used. The shape of the trim plate adapter, as noted above, could accommodate a shape of the escutcheon.
(51) FIG. **10** illustrates an embodiment of the connection **800** between a locating post **802** of the escutcheon **700** and the fastener attachment **202** of the trim plate **114**. The escutcheon **700** includes a locating post **802** that not only engages the fastener attachment **202** of the trim plate **114**, but is located under a blind hole to provide security, for example, when the escutcheon **700** is located on an exterior door. Further, the locating post **802** is configured to engage a fastener attachment **202** of the trim plate **114** to securely engage the chassis **200**.
(52) The connection between the escutcheon (e.g., escutcheons **104**, **700**) and/or trim plate adapter (e.g., adapters **300**, **350**, **400**) and the trim plate **114** are removable connections, so the trim plate **114** is capable of connecting to a plurality of different escutcheons and/or trim plate adapters. Further, a new and/or different escutcheon and/or trim plate adapter may be removably connected to the trim plate **114** while the chassis **200** remains installed in a door.
(53) FIGS. **11***a* and **11***b* illustrate an example embodiment of a chassis **200** capable of connecting different escutcheons **104**, **700**. FIG. **11***a* illustrates the trim plate **114** capable of connecting to a trim plate adapter **400** and a first escutcheon **104**, and FIG. **11***b* illustrates the same trim plate **114** capable of connecting to a second escutcheon **700**. As shown, the second escutcheon **700** is different than the first escutcheon **104**.
(54) In an embodiment, the trim plate adapter **400** is connected to the escutcheon **104** via a friction fit and the trim plate adapter **400** is connected to the trim plate **114** of the chassis **200** via first and second fasteners **902***a*, **902***b*. Subsequently, when a second escutcheon **700** is to be connected to the chassis **200**, the first and second fasteners **902***a*, **902***b* are disconnected and the trim plate adapter **400** and first escutcheon **104** are removed. Then, a second escutcheon **700** is connected to the trim plate **114** of the chassis **200** via the first and second fasteners **902***a*, **902***b*.
(55) An example method of installing a door handle assembly in a door as described herein includes the following. The door includes a bore formed through the door from an exterior side to an interior side. The door also includes a latch bolt bore formed from an edge of the door to the bore.
(56) A first escutcheon (e.g., escutcheon **104**) is attached to a trim plate **114** of an interior chassis portion **200***a*, and then the interior chassis portion **200***a* is inserted into the bore on the interior side of the door. A second escutcheon (e.g., escutcheon **104**) is attached to a trim plate **114** of an exterior chassis portion **200***b*, and then the exterior chassis portion **200***b* is inserted into the bore on the exterior side of the door. The latch assembly is inserted into the latch bolt bore of the door. The interior chassis portion **200***a* is connected to the latch assembly **102** and the exterior chassis portion

200*b*, which forms the universal chassis **200**.
(57) The first escutcheon **104** may be attached to the trim plate **114** with or without a trim plate adapter, such as the trim plate adapters **300**, **350 400**.
(58) After the chassis **200** is installed, a first handle **106***a* is connected to the interior chassis portion **200***a* and a second handle **106***b* is connected to the exterior chassis portion **200***b*. Before an escutcheon is removed, the handle **106** must also be removed.
(59) When a new escutcheon is desired, the chassis **200** is removed from the door. Then, a new escutcheon (with a trim plate adapter, if needed) is attached to one of the trim plates **114**. When changing the escutcheon, the chassis **200** does not also need to be changed. Further, if the trim plate **114** is first engageable with an escutcheon, the trim plate **114** is subsequently engageable with a trim plate adapter.
(60) Referring to FIGS. **1-11** generally, it is noted that the door handle assembly described herein has a number of advantages in terms of ease of assembly and accommodation of various escutcheons. In particular, the universal chassis allows for the installation of any escutcheon, therefore eliminating the requirement that a chassis is only able to accommodate a predetermined escutcheon. Further, a trim plate adapter allows any escutcheon to be secured to the universal chassis. Additional advantages are apparent by way of the description of the door handle assembly provided herein, and as reflected in the claims included below.
(61) The description and illustration of one or more embodiments provided in this application are not intended to limit or restrict the scope of the invention as claimed in any way. The embodiments, examples, and details provided in this application are considered sufficient to convey possession and enable others to make and use the best mode of the claimed invention. The claimed invention should not be construed as being limited to any embodiment, example, or detail provided in this application. Regardless of whether shown and described in combination or separately, the various features (both structural and methodological) are intended to be selectively included or omitted to produce an embodiment with a particular set of features. Having been provided with the description and illustration of the present application, one skilled in the art may envision variations, modifications, and alternate embodiments falling within the spirit of the broader aspects of the claimed invention and the general inventive concept embodied in this application that do not depart from the broader scope.

Claims

1. A door handle assembly comprising: a chassis configured to be mounted on a door, the chassis including: a first chassis portion including a first trim plate, a first handle mount, and at least one mounting post, the first handle mount and the at least one mounting post extending in opposite directions from the first trim plate, the first trim plate configured to extend from a first side of the door; and a second chassis portion including a second trim plate defining at least one fastener hole and a second handle mount extending from the second trim plate, the second trim plate configured to extend from an opposite second side of the door, wherein the first chassis portion is configured to couple to the second chassis portion with at least one fastener that extends through the at least one fastener hole and into the at least one mounting post with a latch mount extending between the first and second handle mounts; and a latch assembly configured to be mounted on the door disposed between the first chassis portion and the second chassis portion and operatively coupled to the latch mount, wherein one or both of the first trim plate and the second trim plate have a base defining at least one outside facing coupling; and an outer body defining a handle opening and at least one interior facing coupling, wherein the outer body is configured to couple to the base with the at least one outside facing coupling engaging with the at least one interior facing coupling such that the handle opening is aligned with the first or second handle mount and a handle can extend therethrough.

2. The door handle assembly of claim 1, wherein the outer body is an escutcheon that couples directly to the base.
3. The door handle assembly of claim 1, wherein the outer body is an adapter that couples directly to the base, the adapter also configured to removably couple to an escutcheon.
4. The door handle assembly of claim 3, further comprising the escutcheon, wherein the adapter has an outer perimeter configured to fit within the escutcheon, the escutcheon configured to attach to the outer perimeter of the adapter.
5. The door handle assembly of claim 3, wherein the adapter includes at least one second fastener hole.
6. The door handle assembly of claim 1, wherein the at least one outside facing coupling is a recess/aperture or a post and the at least one interior facing coupling is the other of the recess/aperture or the post.
7. The door handle assembly of claim 6, wherein the at least one outside facing coupling is an aperture such that at least one second fastener is configured to secure the trim plate to the outer body via the aperture.
8. The door handle assembly of claim 1, wherein the at least one outside facing coupling is a cantilever or a receiver portion and the at least one interior facing coupling is the other of the cantilever or the receiver portion.
9. The door handle assembly of claim 8, wherein the cantilever and the receiver portion form a snap-fit connection.
10. The door handle assembly of claim 8, wherein the at least one outside facing coupling also includes a recess or a post and the at least one interior facing coupling also includes the other of the recess or the post.
11. The door handle assembly of claim 10, further comprising at least one second fastener configured to secure the trim plate to the outer body.
12. A door handle assembly comprising: a chassis configured to be mounted on a door, the chassis including: a first chassis portion including a first trim plate and a first handle mount extending from the first trim plate, the first trim plate configured to extend from a first side of the door and having a first base defining at least one first outside facing coupling; and a second chassis portion including a second trim plate and a second handle mount, extending from the second trim plate, the second trim plate configured to extend from an opposite second side of the door and having a second base defining at least one second outside facing coupling, wherein the first chassis portion is configured to couple to the second chassis portion with a latch mount extending between the first and second handle mounts; and a latch assembly configured to be mounted on the door disposed between the first chassis portion and the second chassis portion and operatively coupled to the latch mount; a first escutcheon or a first adapter defining a first handle opening and at least one first interior facing coupling, wherein the at least one first interior facing coupling is configured to engage with the at least one first outside facing coupling such that the first handle opening is aligned with the first handle mount; a first handle mounted on the first handle mount and extending through the first handle opening; a second escutcheon or a second adapter defining a second handle opening and at least one second interior facing coupling, wherein the at least one second interior facing coupling is configured to engage with the at least one second outside facing coupling such that the second handle opening is aligned with the second handle mount; and a second handle mounted on the second handle mount and extending through the second handle opening.
13. The door handle assembly of claim 12, further comprising the first escutcheon and the first adapter, the first escutcheon removably coupled to the first adapter and the first adapter couples to the first chassis portion.
14. The door handle assembly of claim 12, further comprising the second escutcheon and the second adapter, the second escutcheon removably coupled to the second adapter and the second adapter couples to the second chassis portion.

15. The door handle assembly of claim 12, wherein the at least one first and second outside facing couplings include a recess or aperture and the at least one first and second interior facing couplings include a corresponding post.
16. The door handle assembly of claim 15, further comprising at least one second fastener configured to engage the trim plate to the escutcheon or adapter.
17. The door handle assembly of claim 12, wherein the at least one first and second outside facing couplings include a receiver portion and the at least one first and second interior facing couplings include a corresponding cantilever.
18. The door handle assembly of claim 12, wherein the at least one first and second outside facing couplings include a recess or aperture and a receiver portion, and the at least one first and second interior facing couplings include a corresponding post and cantilever.
19. A door handle assembly comprising: a chassis configured to be mounted on a door, the chassis including: a first chassis portion including a first trim plate and a first handle mount extending from the first trim plate, the first trim plate configured to extend from a first side of the door and having a first base defining a plurality of first apertures; and a second chassis portion including a second trim plate and a second handle mount, extending from the second trim plate, the second trim plate configured to extend from an opposite second side of the door and having a second base defining a plurality of second apertures, wherein the first chassis portion is configured to couple to the second chassis portion with a latch mount extending between the first and second handle mounts; and a latch assembly configured to be mounted on the door disposed between the first chassis portion and the second chassis portion and operatively coupled to the latch mount; a first escutcheon or a first adapter including at least one first post and at least one first fastener mount, wherein the at least one first post engages with at least one of the plurality of first apertures, and wherein at least one first fastener extends through at least one of the plurality of first apertures and fastens to the at least one first fastener mount; and a second escutcheon or a second adapter including at least one second post and at least one second fastener mount, wherein the at least one second post engages with at least one of the plurality of second apertures, and wherein at least one second fastener extends through at least one of the plurality of second apertures and fastens to the at least one second fastener mount.
20. The door handle assembly of claim 19, further comprising both the first escutcheon and the first adapter, the first escutcheon configured to be mounted to the first adapter, and both the second escutcheon and the second adapter, the second escutcheon configured to be mounted to the second adapter.