

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC. and AUGUST HOME, INC.,
Petitioner,

v.

MARK W. KILBOURNE,
Patent Owner.

IPR2019-00233
Patent 7,373,795 B2

Before GEORGE R. HOSKINS, RICHARD H. MARSCHALL, and
JASON W. MELVIN, *Administrative Patent Judges*.

HOSKINS, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Apple Inc. and August Home, Inc. (collectively, “Petitioner”) filed a Petition (Paper 3, “Pet.”) pursuant to 35 U.S.C. §§ 311–319 to institute an *inter partes* review of claims 11–20 of U.S. Patent No. 7,373,795 B2 (“the ’795 patent”).

Mark W. Kilbourne (“Patent Owner” or “Mr. Kilbourne”), the solely named inventor and the owner of the ’795 patent, filed a Preliminary Response (Paper 8).

We instituted a trial to determine whether claims 11–17 are unpatentable, on all challenges to claims 11–17 presented in the Petition. Paper 13 (“Institution Decision” or “Inst. Dec.”), 2, 7, 37. We did not institute trial as to claims 18–20, because Patent Owner filed a statutory disclaimer of those claims prior to institution. *Id.* at 1, 32–34, 37.

Patent Owner filed a Patent Owner Response (Paper 17, “PO Resp.”) to the Petition. Petitioner filed a Reply (Paper 20, “Pet. Reply”) to the Patent Owner Response. Patent Owner filed a Sur-reply (Paper 25, “Sur-reply”) to Petitioner’s Reply.

Patent Owner filed a Motion to Exclude Evidence (Paper 33). Petitioner filed an Opposition (Paper 34) to the Motion. Patent Owner filed a Reply (Paper 35).

An oral hearing was held, for which the transcript was entered into the record (Paper 38, “Tr.”).

We have jurisdiction under 35 U.S.C. § 6(b)(4) and § 318(a). This Decision is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 as to the patentability of claims 11–17 of the ’795 patent. We

determine Petitioner has shown, by a preponderance of the evidence, that claims 11–17 are unpatentable.

II. BACKGROUND

A. Real Parties in Interest and Related Proceedings

Petitioner identifies Apple Inc.; August Home, Inc.; ASSA ABLOY Inc.; and ASSA ABLOY AB as real parties-in-interest. Pet. 1, 4–5, 7. Patent Owner identifies only himself, Mr. Kilbourne, as a real party-in-interest. Paper 6, 1. The parties identify one U.S. District Court litigation as related to this proceeding: *Mark W. Kilbourne v. Apple Inc.*, Case No. 4:18-cv-04619 (N.D. Cal.) (hereafter “the District Court Litigation”). Pet. 6; Paper 6, 1; Paper 32, 2.

B. Patent Owner’s Pre-Institution Disclaimer of Claims 18–20 of the ’795 Patent

The Petition asserts claims 18–20 of the ’795 patent are unpatentable under 35 U.S.C. § 103(a). Pet. 8, 57–70. Patent Owner disclaimed claims 18–20 prior to institution of trial, as discussed in the Institution Decision. Inst. Dec. 32–33; *see also* PO Resp. 27 (acknowledging disclaimer). Accordingly, we did not institute trial as to claims 18–20. Inst. Dec. 33–34. Therefore we do not address claims 18–20 any further.

C. The ’795 Patent Disclosure

Our discussion of the ’795 patent here focuses on the disclosures that pertain to the issues presented in this *inter partes* review, which are limited in scope.

The '795 patent discloses systems and methods for electronically extending or retracting the deadbolt of an internal door locking apparatus, which are particularly useful in adapting an electronic actuator to pre-existing deadbolt systems. Ex. 1001, Abstract, 6:47–51, 6:65–7:19. Figure 5 of the '795 patent is reproduced below:

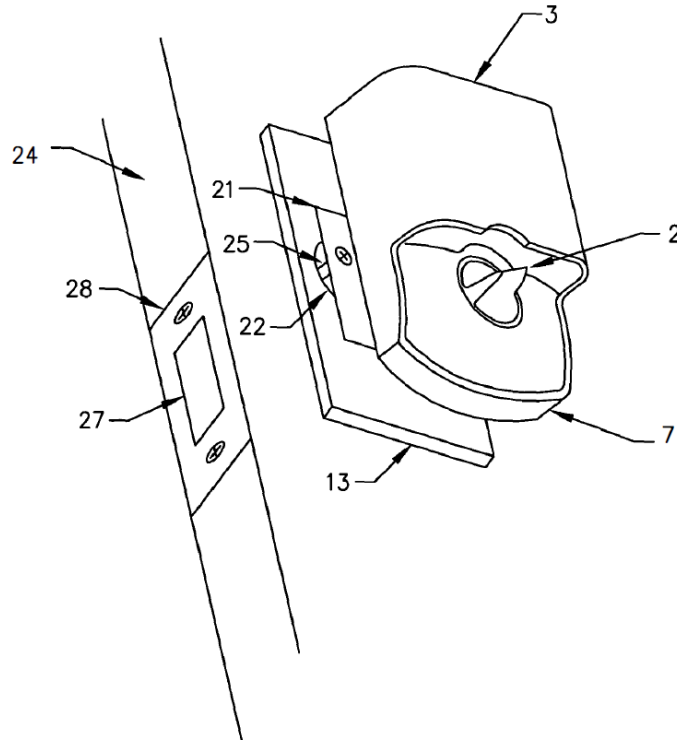


FIGURE 5

**Figure 5 of the '795 Patent
(partially exploded view of door and deadbolt activation apparatus).**

Id. at 1:6–10, 1:54–56. Figure 5 illustrates door 24 and standard internal deadbolt apparatus 28, wherein apparatus 28 includes deadbolt 27 and two bolts 25 (only one of which is shown). *Id.* at 4:41–43, 6:18–20, 6:24–31. Template unit 13 is secured to door 24, using bolts 25 and two brackets 21 (only one of which is shown), on the side of door 24 facing the inside of the

room to be secured. *Id.* at 6:24–38, 7:19–26. Motor and battery housing unit 7, with casing 3, is then attached to template unit 13. *Id.* at 7:52–57.

Figure 2 of the '795 patent is reproduced below:

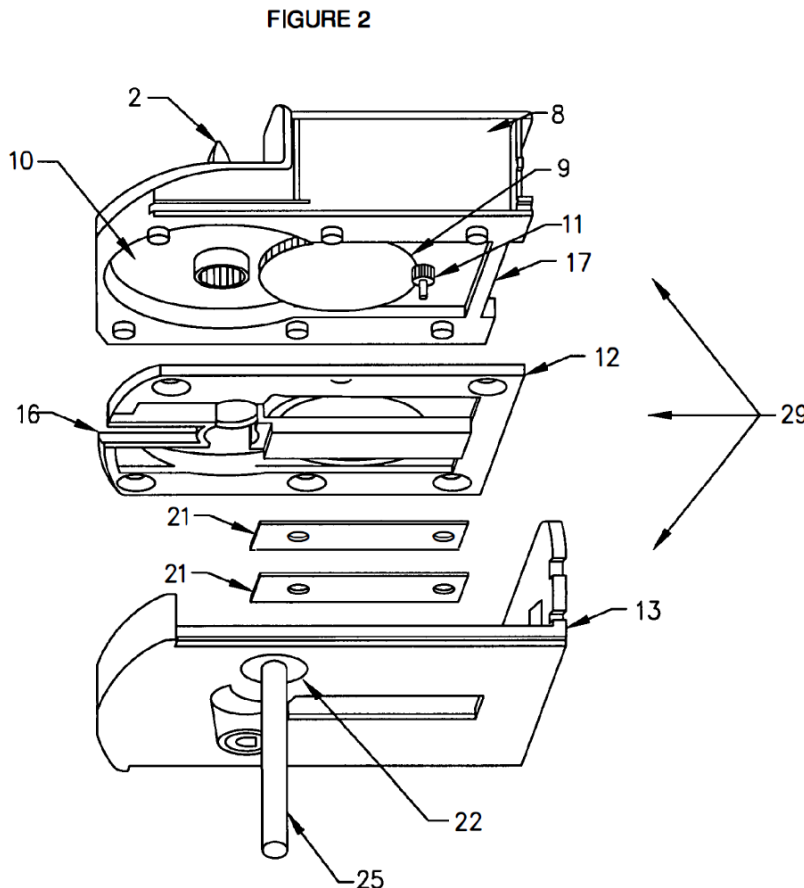


**Figure 2 of the '795 Patent
(partially exploded bottom view of deadbolt activation apparatus).**

Id. at 1:48–49. Figure 2 illustrates gear encasement assembly 29, comprised of template unit 13 (also seen in Figure 5 above), along with gear casing 12 and motor and battery housing unit carriage 17 (both part of unit 7 in Figure 5 above). *Id.* at 4:61–64. “The empty motor and battery housing unit carriage 17 preferably rests on top of gear casing 12 such that gears 9, 10 and 11 are securely held between empty motor and battery housing unit carriage 17 and top of gear casing 12.” *Id.* at 4:28–32.

Figure 3 of the '795 patent is reproduced below:

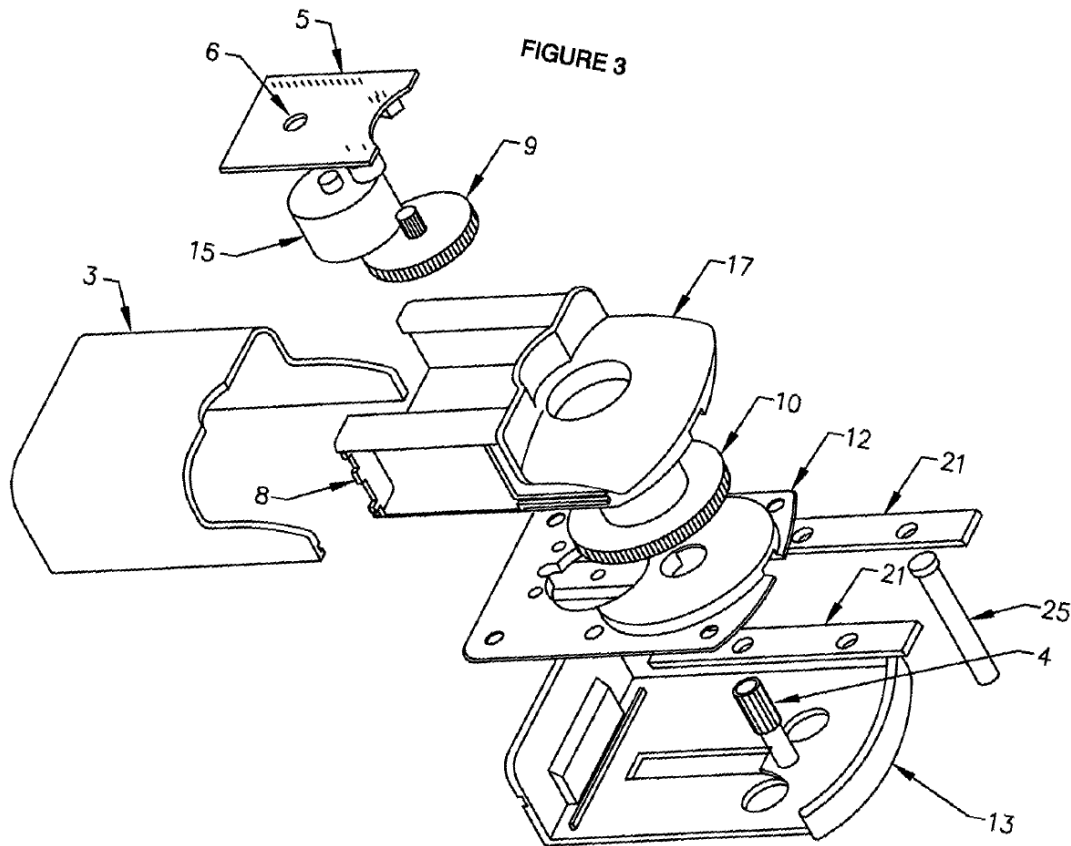


**Figure 3 of the '795 Patent
(fully exploded view of deadbolt activation apparatus).**

Id. at 1:50–51. Figure 3 illustrates several components of motor and battery housing unit 7. Knob gear 10 receives one end of splined stem 4, such that rotation of knob gear 10 rotates stem 4. *Id.* at 3:23–35, 3:47–61, 7:58–64 (Figs. 6A–6B). Motor 15 is powered by batteries in battery bank 8 to rotate knob gear 10 and stem 4. *Id.* at 3:18–22, 4:17–28, 5:12–17, 5:60–6:4. Deadbolt 27 is extended and retracted either manually by turning a knob and the associated knob gear 10, or electronically with motor 15, via stem 4. *Id.* at 3:23–35, 3:47–61, 5:4–11, 6:4–17.

Specifically, the end of splined stem 4 opposite to the end received in knob gear 10 interacts with a “tailpiece” component of standard internal

deadbolt apparatus 28, wherein rotation of stem 4 extends or retracts deadbolt 27. *Id.* at 4:43–45, 5:4–11, 7:67–8:3, 8:64–9:13. The '795 patent indicates it is beneficial for unit 7 to work with different kinds of standard apparatuses 28, which have different tailpiece structures. *Id.* at 7:12–19, 7:29–37, 7:67–8:3. Figure 6C of the '795 patent is reproduced below:

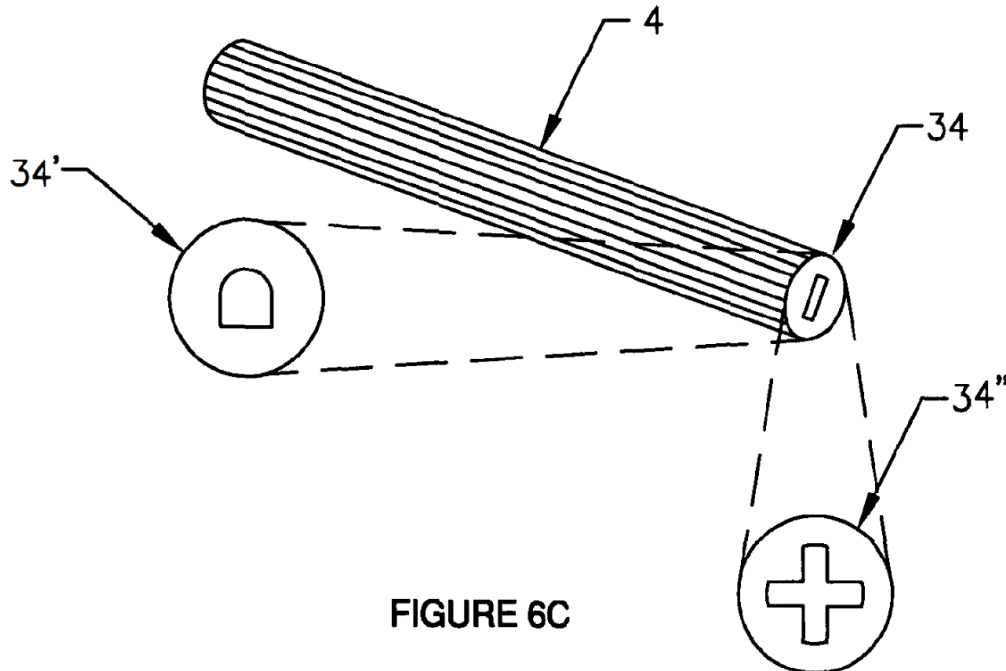


**Figure 6C of the '795 Patent
(perspective view of splined stem 4,
showing three alternative face formations 34, 34', 34'').**

Id. at 7:29–37. Figure 6C illustrates that “the user has the option of pulling out the splined stem 4 from its attachment to the manual turn knob 2 and rotate it such that either the front [or rear] face can be utilized.” *Id.* at 7:29–32. The two faces of splined stem 4 may have different formations 34, 34', or 34'', so unit 7 “can be used with [a] plurality of standard deadbolt locks including ones found in most standard configurations.” *Id.* at 7:32–37.

D. The Claims at Issue During Trial

We instituted trial as to claims 11–17 of the '795 patent. Inst. Dec. 2, 37. These claims include one independent claim, claim 11, which is reproduced here with our emphases added:

11. *A method of moving a deadbolt* comprising the steps of:
 - determining the cross-sectional shape of a tailpiece member of a pre-existing deadbolt system;
 - attaching a deadbolt activating system to said pre-existing deadbolt system with internal mechanisms and a deadbolt, wherein attaching further comprises selecting the end of a reversible elongated member which matches the determined cross-sectional shape of said tailpiece member of said pre-existing deadbolt system and attaching said matching components;
 - sending a signal via a transmitter;
 - electronically activating an electronic input card housed in the deadbolt activating system via reception of the signal;
 - signaling a motor with the electronic card via electronic and mechanical communication;
 - activating a gear, via the motor, housed in the deadbolt activating system to rotate;
 - housing said reversible elongated member, in mechanical communication with the gear, in the deadbolt activating system, whereby the rotation of the gear causes the rotation of the reversible elongated member which is releasably and directly attached to said tailpiece member of internal mechanisms of said pre-existing deadbolt system causing the deadbolt to extend; and*
 - providing a tracking system comprising a sensor and a sensor recognition point;
 - tracking said sensor recognition point, said sensor recognition point configured to indicate a specific position of said pre-existing deadbolt lock;

indicating if said recognition point has been detected by said sensor; transmitting said indication to a sound emitting module; and

emitting a sound from said sound emitting module to indicate when the deadbolt is in the locked position and/or in the unlocked position, wherein said locked and/or unlocked position is based on said indication.

Id. at 14:3–40 (emphases added).

E. Tried Grounds of Unpatentability

We instituted a trial to consider the following two challenges to claims 11–17 of the ’795 patent, as presented in the Petition. *See* Pet. 7–8.

Claim(s) Challenged	35 U.S.C. §	References
11–15, 17	103(a)	Padiak ¹ and Anderson ²
16	103(a)	Padiak, Anderson, and Admitted Prior Art ³ and/or 2000 International Building Code ⁴

¹ Ex. 1004, U.S. Patent No. 6,282,931 B1, iss. Sept. 4, 2001.

² Ex. 1005, U.S. Patent No. 6,318,218 B1, iss. Nov. 20, 2001.

³ Petitioner cites the ’795 patent disclosure at column 2, lines 34–36, as admitted prior art. *See* Pet. 56.

⁴ Ex. 1023, Int’l Code Council, Inc., *Int’l Building Code* (2000).

III. ANALYSIS

A. Claim Construction

In this proceeding, we interpret claims of the '795 patent using the broadest reasonable construction in light of the '795 patent Specification. *See* 37 C.F.R. § 42.100(b) (2018)⁵; *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding use of broadest reasonable construction standard); Patent Office Trial Practice Guide, 77 Fed. Reg. 48,756, 48,764 (Aug. 14, 2012).

1. “reversible elongated member” (Claim 11)

Petitioner contends the term “reversible elongated member” in claim 11 “refers to an elongated member having a different shaped opening on each end to accept the different cross-sectional shapes of different tailpieces.” Pet. 20; *id.* at 20–22 (discussion in support). Patent Owner contends in opposition that the term “means ‘a member longer than it is [wide, and] that can be reversed.’” PO Resp. 12; *id.* at 11–19 (discussion in support). However, the parties agree that construction of this term is not necessary to resolve the issues presented in this *inter partes* review. Pet. 20–21, 42 n.3; PO Resp. 11; Pet. Reply 16; Sur-reply 5.

This claim construction issue has been raised and decided in Petitioner’s favor in the District Court Litigation. *See* Ex. 2018 (claim construction order). The District Court’s claim construction decision led to

⁵ A recent amendment to this rule does not apply here, because the Petition was filed before November 13, 2018. *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018).

a stipulated judgment of non-infringement in Petitioner’s favor. *See* District Court Litigation, ECF No. 161 (entered Jan. 7, 2020). Patent Owner has appealed that judgment to the Federal Circuit. *See id.* at ECF No. 163 (filed Jan. 28, 2020).

We conclude that we need not reach an opinion on this disputed issue to resolve the controversy presented in this *inter partes* review. *See* Inst. Dec. 8–9 (also not reaching this issue at the institution stage). In particular, the combination of Padiak and Anderson, as set forth in Petitioner’s case for obviousness (discussed below in Section III.B.5), would lead to an adaptor member that (a) has a differently shaped opening on each end to accept different cross-sectional shapes of different tailpieces, *and* (b) is longer than it is wide and can be reversed. In other words, Petitioner’s proposed combination would embody the method recited in claim 11, regardless of which of the two proposed constructions of “reversible elongated member” is applied. Therefore, we do not comment on the merits of this claim construction dispute. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (per curiam) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)) (claim terms need to be construed “only to the extent necessary to resolve the controversy”).

2. “housing said reversible elongated member . . . in the deadbolt activating system” (Claim 11)

Claim 11 recites “housing said reversible elongated member, in mechanical communication with the gear, in the deadbolt activating system.” Ex. 1001, 14:22–24.

In the Institution Decision, we construed this limitation “to require housing the reversible elongated member in the deadbolt activating system, and not to require (although it permits) housing the member in the gear.” Inst. Dec. 11; *id.* at 9–11 (discussion in support). This construction has not been challenged during trial. *See* PO Resp. 19–24; Pet. Reply 3–10. We, therefore, apply it here in this Decision.

However, Patent Owner correctly notes that the Institution Decision “did not explicitly address what is required for [the elongated member] to be ‘housed in’ the deadbolt activating system,” and Patent Owner accordingly provides two claim construction positions concerning the meaning of the term “housing . . . in” in claim 11. PO Resp. 20; *id.* at 1–2, 19–24. We consider each in turn.

*a) Relative Positioning of the Elongated Member and
the Deadbolt Activating System*

Patent Owner contends an elongated member is housed in a deadbolt activating system, as required by claim 11, when a portion of the elongated member is “positioned in” or “enclosed in” the system. PO Resp. 20, 23–24; *id.* at 21 (presenting a hypothetical in which a prisoner is “housed in” a jail cell, “even though the prisoner may be able to extend one arm through the [cell] bars”); Tr. 16:3–17:3, 27:3–19. In support, Patent Owner cites dictionary definitions of the word “in” as meaning “inside.” PO Resp. 20 (citing Ex. 2012, 9–11; Ex. 2013, 8–11). Patent Owner contends this construction is supported by the ’795 patent Specification, which indicates splined stem 4 is positioned inside the deadbolt activating system. *Id.* at 21–22 (citing Ex. 1001, Fig. 3, 4:43–45, 7:68–8:3, 9:2–7, 9:23–27).

Some statements in the Patent Owner Response suggest Patent Owner's position might be that an elongated member is housed in a deadbolt activating system only if the entire member is positioned or enclosed inside the system. *See, e.g.*, PO Resp. 5, 7, 22, 23–24, 29–30. However, during the oral hearing, it became clear that Patent Owner's position is that only a portion of the elongated member needs to be positioned or enclosed inside of the deadbolt activating system, to meet the “housing . . . in” requirement of claim 11. *See* Tr. 16:3–17:3, 27:3–19.

Petitioner agrees with Patent Owner that, in claim 11, “[t]he housing need not *fully* ‘enclose’ the reversible elongated member.” Pet. Reply 4 (emphasis added); *id.* at 7 (“The ’795 patent also uses the term ‘housing’ to refer to open structures that *do not fully enclose* the housed objects.” (emphasis added)); Tr. 16:3–17:3.

We concur with the parties in the foregoing regards. Accordingly, we construe the limitation in claim 11 reciting “housing said reversible elongated member . . . in the deadbolt activating system” to require that a portion of the elongated member is positioned or enclosed inside of the deadbolt activating system.

This construction is consistent with the ’795 patent Specification. It is undisputed that splined stem 4 in the Specification corresponds to the elongated member of claim 11. As described in the Specification, splined stem 4 passes through an opening in template unit 13 such that only a portion of splined stem 4 is positioned or enclosed inside of the deadbolt activating system. In particular, one end of splined stem 4 is received in knob gear 10, inside of motor and battery housing unit 7. Ex. 1001, Figs. 1B, 2–3, 3:23–35, 5:4–11, 6:9–12; *see also id.* at Figs. 6A–6C, 7:58–64

(showing and describing how the splines of splined stem 4 interact with engagement face 35 of knob 2, so rotation of knob 2 drives rotation of splined stem 4). The opposite end of splined stem 4 extends outside of the deadbolt activating system, and into a door, to be attached to the tailpiece of standard internal deadbolt apparatus 28 in the door. *Id.* at Fig. 5, 4:41–45, 5:4–11, 6:9–17, 7:67–8:3, 8:64–9:13.

Thus, we determine claim 11 requires that a portion of the elongated member is positioned or enclosed inside of the deadbolt activating system.

b) Whether the Elongated Member May be Releasably Attached to the Deadbolt Activating System

Patent Owner contends an elongated member is housed in a deadbolt activating system *only* when the member “cannot be withdrawn without opening the housing” of the system. PO Resp. 20, 23. Stated another way, the “member is *not merely releasably attached to*” the system. *Id.* at 23–24 (emphasis added).

Addressing the claim language, Patent Owner cites dictionary definitions of the word “housing” as indicating that the elongated member must be “constrained in its movement, specifically its egress, from within the” deadbolt activating system. *Id.* at 20–21 (citing Ex. 2012, 6–8; Ex. 2013, 6–7); *id.* at 21 (presenting a hypothetical in which a guard is not “housed in” a jail cell, “because the guard’s egress from the cell is not constrained”). Patent Owner contends claim 11, in requiring the elongated member to be “releasably” attached to the deadbolt system’s tailpiece (Ex. 1001, 14:24–28), establishes that “the concept of *housing* one element in another element is different from *releasably attaching* one element to another.” *Id.* at 23 (emphasis added).

Patent Owner contends the '795 patent Specification supports Patent Owner's construction, by indicating an elongated member (i.e., splined stem 4) is positioned within the deadbolt activating system so that its "*egress . . . from the deadbolt activating system is constrained,*" and splined stem 4 "cannot be removed from the system without opening the system." *Id.* at 21–22 (emphases added) (citing Ex. 1001, Fig. 3, 4:43–45, 7:68–8:3, 9:2–7, 9:23–27). In Patent Owner's view, this "constraint is apparent" in Figure 3 of the '795 patent, which illustrates splined stem 4 as having "a splined section with an inner diameter larger than the diameter of the opening of the template 13" *Id.* at 22.

Patent Owner further presents extrinsic evidence, via a Declaration signed by Mr. Kilbourne (Ex. 2014), indicating that constraining the elongated member in the deadbolt activating system — "as opposed to positioning the member outside the system and only releasably attaching the member to the system" — provides a functional benefit. Ex. 2014 ¶¶ 13–14; PO Resp. 7–8, 10–11, 22. Mr. Kilbourne testifies that door thickness varies between different doors, and the length of deadbolt tailpiece members varies between different internal deadbolt apparatuses. Ex. 2014 ¶ 13; PO Resp. 7 (citing Ex. 2011, 6:25–7:25). According to Mr. Kilbourne, constraining the elongated member "with respect to both the doorface and the gear driven by the motor used to rotate the . . . elongated member (the motor-driven gear)" addresses this lack of uniformity. Ex. 2014 ¶¶ 13–14; PO Resp. 7–8. Mr. Kilbourne testifies that implementing this constraint maintains the elongated member in sufficient engagement with the tailpiece inside of the door, and with the motor-driven gear inside of the deadbolt activating system. Ex. 2014 ¶¶ 13–14; PO Resp. 7–8.

Petitioner replies⁶ that “[t]he plain and ordinary meaning of ‘housing’ does not require that the housed object be ‘constrained in its egress’” as proposed by Patent Owner. Pet. Reply 3; Ex. 1028 ¶ 4. Petitioner contends the plain language of claim 11 supports Petitioner’s position. Pet. Reply 3–4 (citing Ex. 1001, 14:7–13, 14:22–28). In Petitioner’s view, the different terms “housing” and “releasably attaching” in claim 11 are not redundant, such that the term “‘housing’ permits, but does not require, a releasable attachment.” Pet. Reply 7; Ex. 1028 ¶ 4. Petitioner also asserts Patent Owner’s dictionary definitions support Petitioner’s understanding of the “housing” limitation. Pet. Reply 7–8 (citing Ex. 2012, 6–8; Ex. 2013, 6–7).

Petitioner contends “[t]here is not a single passage in the ’795 patent [Specification] indicating that the claimed . . . elongated member cannot be removed without first opening the housing.” Pet. Reply 4; Ex. 1028 ¶¶ 5–12. Petitioner asserts Patent Owner’s reliance on Figure 3 of the ’795 patent is misplaced, because Figure 3 “does not explicitly illustrate the opening in element 13, nor is the size of the opening relative to the size of the splined stem 4 illustrated or otherwise described anywhere in the ’795 patent.” Pet. Reply 4–5 (citing Ex. 2011, 18:14–16, 21:23–22:8); Ex. 1028 ¶¶ 6–7. Petitioner discounts Mr. Kilbourne’s testimony as not citing any intrinsic evidence to support the notion that constraining the

⁶ Patent Owner contends portions of this reply, and supporting testimony from Dr. Pratt, exceed the proper scope of reply under 37 C.F.R. § 42.23(b). *See* Paper 33, 2–3 (citing Ex. 1028 ¶¶ 4–6). We disagree, because these reply arguments and testimony are proper responses to arguments raised in the Patent Owner Response concerning claim construction of the “housing . . . in” limitation of claim 11. *See* Paper 34, 5–7.

elongated member in the deadbolt activating system provides a functional benefit. Pet. Reply 4 (citing Ex. 2014 ¶¶ 13–14).

Petitioner further contends Figure 6C illustrates splined stem 4 as having a “*uniform* cross-sectional diameter,” such that stem 4 is “reversible” as required by claim 11, thus supporting Petitioner’s construction because such a stem would be releasable from (not constrained in) a housing. Pet. Reply 6–7 (emphasis by Petitioner) (citing Ex. 1001, 7:29–37); Ex. 1028 ¶¶ 8–9. Petitioner also asserts the ’795 patent Specification “uses the term ‘housing’ to refer to open structures” such as motor and battery housing unit 7 “that do not fully enclose the housed objects.” Pet. Reply 7 (citing Ex. 1001, Fig. 1B, 3:2–11); Ex. 1028 ¶ 5.

We begin our consideration of claim 11 with the claim language, which recites the “method . . . step[]” of “housing” an elongated member “in” a deadbolt activating system. Ex. 1001, 14:3–4, 14:22–24. Patent Owner does not specify which of the multitude of proffered dictionary definitions of the words “house” and “housing” in Exhibits 2012 and 2013 supports Patent Owner’s view that the term “housing” in claim 11 requires the member to be *constrained from exiting* an enclosure. PO Resp. 20–21; Ex. 2012, 6–8; Ex. 2013, 6–7. The closest definitions we can discern are: “**hous’ing**, *n.* . . . 6. in machinery, a support or framework to hold something in position, as a journal box” (Ex. 2012, 8), and “**house** . . . *vt* **1** . . . **c:** to confine within a house <*housed* with a bad cold> — often used with *up* <*housed up* all day in these four walls>” (Ex. 2013, 6). Neither of those two definitions, however, provides much support for limiting the term “housing” in claim 11 to require that the member is constrained from exiting the deadbolt activating system. Moreover, we agree with Petitioner’s argument

that the proffered dictionary definitions of the words “house” and “housing” in Exhibits 2012 and 2013 contain many other alternatives that support Petitioner’s broader claim construction, suggesting the words merely connote covering, harboring, sheltering, or containing, without necessarily constraining. *See* Pet. Reply 7–8 (quoting various definitions).

The additional recitation in claim 11 that the elongated member is “releasably . . . attached” to the tailpiece (Ex. 1001, 14:24–28) also does not materially aid Patent Owner’s narrow construction, which would equate “housing . . . in” to be limited to constraining the member from exiting the system. There is no rational relationship between whether one end of the elongated member is releasably attached to the tailpiece, and whether the opposite end of the elongated member is releasably or non-releasably housed in the deadbolt activating system. We agree with Petitioner’s contention that Patent Owner’s argument here rests on a false dichotomy, because the term “housing” is consistent with both a releasable, and a non-releasable, “housing” of the elongated member in the deadbolt activating system. *See* Pet. Reply 7.

The best support in the ’795 patent Specification for Patent Owner’s narrow construction is Figure 3, which appears to illustrate splined stem 4 as having a splined section (for receipt in knob gear 10) and an un-splined section (to extend through an opening in template unit 13). *See* Ex. 1001, Fig. 3. Further, the splined section appears to have a larger outer diameter than the un-splined section. *See id.* Thus, there appears to be a shoulder portion at the interface of the splined and un-splined sections, which might prevent the splined section from extending through the opening in template unit 13, but permit the un-splined section to extend through the opening,

thereby constraining splined stem 4 from exiting the deadbolt activating system. *See id.*

We accord little weight to this illustration, however, for at least five reasons. First, as Petitioner points out, Figure 3 does not clearly show the size of the opening in template unit 13 in relation to the size of splined stem 4. *See* Pet. Reply 4–5; Ex. 1028 ¶¶ 6–7. Patent Owner appears to assume that the un-splined section is shown as extending through the opening, so that the opening is not independently perceivable. However, Patent Owner’s position is not consistent with the “fully exploded view” nature of the illustration, in which each part is generally shown separately from the other parts. *See* Ex. 1001, 1:50–51, Fig. 3; Ex. 1028 ¶ 6.

Second, the written description cited by Patent Owner does not support Patent Owner’s interpretation of what is shown in Figure 3. Splined stem 4 is not described as having a shoulder structure that constrains stem 4 from exiting the system, as is somewhat suggested in Figure 3. Ex. 1001, 4:43–45, 7:67–8:3, 9:2–7, 9:23–27. Instead, the cited written description reflects simply that stem 4 extends from template unit 13 to engage the tailpiece of internal deadbolt apparatus 28. *Id.* The disclosure does not indicate stem 4 is constrained within the system in any manner. *Id.*

Third, the ’795 patent figures are, as a general matter, unreliable as evidentiary sources of disclosed structures, in many regards. As one example, Figure 2 is described as showing knob gear 10, but it does not appear to do so. *See* Ex. 1001, Figs. 2–4, 3:43–49, 4:6–10. It is, further, not clear how the structure of carriage 17 as illustrated in Figure 2 is capable of receiving knob gear 10 of turning knob 2. *See id.* at Figs. 2–4. As another example, the configuration of template unit 13 in Figures 2 and 3 is, at best,

imprecise as to the openings extending through the unit. *See id.* at Figs. 2–3, 4:43–61, 6:24–51, 7:24–29. As a further example, the inter-relationship between gears 9, 10, and 11 is not clearly shown in the '795 patent Figures. *See id.* at Figs. 2–4, 4:6–40, 5:12–13, 5:57–6:2, 8:55–9:2. We do not intend here to suggest that the '795 patent is infirm under 35 U.S.C. § 112. We merely find that, given the multiple instances where the Figures of the '795 patent are not clear, the configuration of splined stem 4 as shown in Figure 3 does not provide adequate support for Patent Owner's claim construction argument.

Fourth, Patent Owner's understanding of what is shown in Figure 3 is directly contradicted by what is shown in Figure 6C. Both figures are described as illustrating the same splined stem 4, not alternative embodiments of different splined stems. Ex. 1001, 5:1–11 (Fig. 3), 7:29–37 (Fig. 6C). Figure 6C, in contrast to Figure 3, illustrates stem 4 as having splines along its entire length, and as having a uniform diameter along its entire length. *Id.* at Fig. 6C. The '795 patent Specification indicates “[i]t is important to note” how the structure shown in Figure 6C provides “the option of *pulling out* the splined stem 4 from its attachment to the manual turn knob 2 and rotate it such that either the front face can be utilized having a standard slot formation 34 or with a half oval face as seen in 34' or cross-slot formation 34'.” *Id.* at 7:29–34 (emphasis added). Thus, instead of disclosing a benefit to having stem 4 be constrained from exiting the system (as Patent Owner would have it), the '795 patent Specification describes easy removability of splined stem 4 as a functional benefit.

Fifth, as Petitioner points out, claim 11 requires that the elongated member is “reversible.” *See* Pet. Reply 6; Ex. 1028 ¶ 7. It is not evident

how splined stem 4, if it has a shoulder as suggested by Figure 3, would be “reversible,” even under Patent Owner’s construction of the term as meaning splined stem 4 “can be reversed.” PO Resp. 12. Splined stem 4 requires a splined section to be received in knob gear 10 and engaged with face 35 for mutual rotation. *See* Ex. 1001, Figs. 3 & 6A–6C, 7:58–64. The un-splined section of stem 4 as shown in Figure 3, with a smaller diameter than the splined section, would not achieve the same functionality if stem 4 were reversed in Figure 3. Further, it is not clear how the splined section of stem 4, having a larger diameter than the un-splined section, could extend out of template unit 13 to interface with a tailpiece, if stem 4 were reversed in Figure 3. *See id.* at Fig. 3, 4:41–45, 5:4–11, 6:9–17, 7:67–8:3, 8:64–9:13.

Mr. Kilbourne’s testimony in support of Patent Owner’s contention that the term “housing” should be limited to constraining the elongated member from exiting the deadbolt activating system is not persuasive. The intrinsic evidence fails to reflect consideration of the functional benefit identified by Mr. Kilbourne as resulting from constraining the elongated member from exiting the deadbolt activating system. *See* Exhibit 2014 ¶¶ 13–14; *Tempo Lighting, Inc. v. Tivoli, LLC*, 742 F.3d 973, 977–78 (Fed. Cir. 2014) (in claim construction, primacy is given to intrinsic evidence consisting of the claim language, specification, and prosecution history). Absent such intrinsic evidentiary support, and based on the scant disclosure in the ’795 patent tending to support Patent Owner’s position as discussed above, we accord Mr. Kilbourne’s testimony little weight in the present claim construction. Mr. Kilbourne’s testimony, further, does not explain persuasively *how* constraining the elongated member from exiting the system achieves the identified functional benefit of adapting to different

door thicknesses or different tailpiece lengths, and such adaptability is not otherwise apparent from the evidence presented here. Ex. 2014 ¶¶ 13–14.

For the foregoing reasons, weighing the evidence presented here together as a whole, we do not construe the “housing . . . in” limitation of claim 11 to require constraining the elongated member from exiting the deadbolt activating system. Instead, we construe claim 11 to permit a releasable attachment between the elongated member and the deadbolt activating system, such that the member may be detached from the system without opening the housing of the system.

3. *“in mechanical communication with” (Claim 11)*

Claim 11 requires the reversible elongated member to be “in mechanical communication with the gear . . . whereby the rotation of the gear causes the rotation of the reversible elongated member.” Ex. 1001, 14:22–25. In the Institution Decision, we construed this limitation to encompass both direct and indirect connections, and to permit independent movement between the elongated member and the gear so long as rotation of the gear causes rotation of the elongated member under some conditions. Inst. Dec. 12–15. Neither party challenged that claim construction during the trial. We, therefore, apply it here in this Decision.

4. *“composing the deadbolt activating system of a gear carriage, a motor and battery carriage and a gear base” (Claim 14)*

Claim 14 recites: “The method of claim 11, further comprising composing the deadbolt activating system of a gear carriage, a motor and battery carriage and a gear base.” Ex. 1001, 14:45–47. Patent Owner

presents two claim construction positions concerning the meaning of this limitation. PO Resp. 24–27. We consider each in turn.

a) “motor and battery carriage”

Patent Owner contends the term “motor and battery carriage” in claim 14 “should be construed to require a component . . . that supports and provides for movement of both a motor and a battery . . .” PO Resp. 24. In Patent Owner’s view, claim 14 excludes an embodiment in which two structurally separate pieces combine to “*collectively define* a motor and battery carriage.” *Id.* at 32 (emphasis by Patent Owner).

Addressing the claim language, Patent Owner cites dictionary definitions of the word “carriage” as signifying, “[i]n the context of a mechanical system,” “a part of the system that carries other parts of the system.” *Id.* at 24 (citing Ex. 2012, 4–5; Ex. 2013, 4–5). Thus, Patent Owner contends a motor and battery carriage “is *a component* that supports and provides for movement of both a motor and a battery.” *Id.* (emphasis added). Patent Owner contends the ’795 patent Specification supports Patent Owner’s construction, because the Specification “consistently illustrates and describes the motor and battery carriage [17] as *a component* that supports and provides for movement of both a motor [15] and a battery [in bank 8].” *Id.* at 24–25 (emphasis added) (citing Ex. 1001, Figs. 2–3, 3:17–21, 3:40–46, 3:61–63, 4:6–12, 4:18–21, 4:25–31, 5:52–57, 7:65–67).

Patent Owner further presents extrinsic evidence, via a Declaration signed by Mr. Kilbourne (Ex. 2014), indicating that providing a single structure to carry the motor and the battery provides a functional benefit. Ex. 2014 ¶¶ 12, 22–25; PO Resp. 6–7, 33–34. Mr. Kilbourne compares

supporting the motor and the battery on a single structure, versus supporting the motor on a first structure and supporting the battery on a second structure attached to the first structure. Ex. 2014 ¶¶ 12, 22–25; PO Resp. 6–7, 33–34. Mr. Kilbourne concludes the former design advantageously avoids “having to physically separate the motor from the battery,” whereas the latter design requires such physical separation which “jeopardiz[es] the necessary [electrical] connection between” the motor and the batteries. Ex. 2014 ¶¶ 23–24; PO Resp. 6–7, 33–34.

Petitioner replies⁷ that, under a broadest reasonable construction, two separate structures may combine to form the “motor and battery carriage” of claim 14. Pet. Reply 24–25. Petitioner contends the intrinsic evidence supports Petitioner’s construction, because the ’795 patent Specification indicates “[i]t is important to note that throughout all of the embodiments (disclosed below) it should be understood that *the location of the gears and motor(s) is variable* and that rearrangements of the gears would be readily apparent to those skilled in the art.” *Id.* at 25 (quoting Ex. 1001, 2:25–29) (emphasis by Petitioner). Petitioner discounts Mr. Kilbourne’s testimony, as not citing any intrinsic evidence to support the notion that providing a single structure to carry the motor and the battery provides a functional benefit. *Id.* (citing Ex. 2014 ¶¶ 23–25). Petitioner further cites testimony from Dr. Pratt, indicating a motor and a battery may be “connected through metal-on-metal

⁷ Patent Owner contends portions of this reply, and supporting testimony from Dr. Pratt, exceed the proper scope of reply under 37 C.F.R. § 42.23(b). See Paper 33, 3–4, 5–6 (citing Ex. 1028 ¶¶ 14–15, 22–23). We disagree, because these reply arguments and testimony are proper responses to arguments raised in the Patent Owner Response concerning claim construction of claim 14. See Paper 34, 5–6, 7–8, 10.

connections that are easily separated and reattached” without causing a functional problem, and “[s]uch connections are commonplace in consumer electronics.” *Id.* at 26 (citing Ex. 1028 ¶¶ 23–25).

We begin our consideration of claim 14 with the claim language, which recites “a motor and battery carriage.” Ex. 1001, 14:46–47. There is no dispute that the term “carriage” connotes a component that supports and provides for movement of a carried object or objects, which here are a motor and a battery. This construction is consistent with the ’795 patent Specification, which discloses “motor and battery housing unit carriage 17” that supports and provides for movement of motor 15 and batteries in bank 8. *Id.* at Figs. 2–3, 3:18–21, 3:43–46. We therefore apply this undisputed meaning of the term “carriage” here.

The parties dispute, however, whether the carriage must be a single structure (Patent Owner’s position), or may include multiple structures which are attached together (Petitioner’s position). We find nothing in the term “carriage,” whether in isolation or in the context of claim 14, that would support Patent Owner’s narrower construction. Ex. 1001, 14:44–47. For example, several of the terms found in the dictionary definitions of the word “carriage” proffered by Patent Owner suggest, in many usages, multiple structures which are attached together to form a carriage. Ex. 2012, 4–5 (“vehicle,” “frame,” “any . . . portion of a machine which carries another part; as, the *carriage* of a typewriter”); Ex. 2013, 4–5 (“vehicle,” “wheelbarrow,” “barge,” “a railway passenger coach,” “a movable part of a machine for supporting or carrying some other movable object or part <the ~ on a lathe> <a typewriter ~>,” “a frame”).

Turning to the '795 patent Specification, we find that motor and battery carriage 17 is shown in Figures 2 and 3 to be a single structure. Ex. 1001, Figs. 2–3. However, the written description cited by Patent Owner does not describe carriage 17 as being composed of a single structure, or identify any functional benefit achieved by using a single structure carriage. Ex. 1001, 3:17–21, 3:40–46, 3:61–63, 4:6–12, 4:18–21, 4:25–31, 5:52–57, 7:65–67. Instead, the '795 patent Specification, albeit in a general fashion, indicates that “the present invention may be embodied in various forms” and may be employed “in virtually any appropriately detailed system and apparatus, structure, or manner,” so “specific details disclosed herein are not to be interpreted as limiting.” *Id.* at 2:8–25; *see also id.* at 12:5–23 (“Although very specific examples have been described and disclosed, the invention of the instant application is considered to comprise and is intended to comprise any equivalent structure and may be constructed in many different ways to function and operate in the general manner as explained hereinbefore,” and the “electronic deadbolt system and method described herein in detail for exemplary purposes is of course subject to many different variations in structure, design, application and methodology.”).

Mr. Kilbourne’s testimony in support of Patent Owner’s contention that the term “carriage” should be limited to a single structure is not persuasive. The intrinsic evidence fails to reflect consideration of the functional benefit identified by Mr. Kilbourne as resulting from a single structure carriage, namely, maintaining a secure electrical connection between the battery and the motor. *See* Exhibit 2014 ¶¶ 12, 22–25; *Tempo Lighting*, 742 F.3d at 977–78; Ex. 1001, 3:3–11, 3:18–22, 7:65–77

(describing how battery bank 8 powers motor 15, without discussing any details of how the connection is made or maintained). Absent such intrinsic evidentiary support, and based on the lack of disclosure in the '795 patent tending to support Patent Owner's position as discussed above, we accord Mr. Kilbourne's testimony little weight in the present claim construction. We also credit Dr. Pratt's testimony, persuasively indicating that "it is not at all problematic for the piece holding the batteries to be separable from the piece holding the motor" while still maintaining an electrical communication when the two carriage pieces are assembled together. Ex. 1028 ¶ 23.

In short, we conclude that requiring the motor and battery carriage to be composed of a single structure would impermissibly incorporate a limitation from the Specification (i.e., the illustration of carriage 17 in Figures 2 and 3 as a single structure) into claim 14. *See RF Del., Inc. v. Pac. Keystone Techs., Inc.*, 326 F.3d 1255, 1263–64 (Fed. Cir. 2003).

For the foregoing reasons, we construe the term "motor and battery carriage" in claim 14 to refer to a component that supports and provides for movement of both a motor and a battery. The component may be formed as a single structure, or as two separate structures which are attached together to form the component.

b) *"composing the . . . system of a gear carriage, a motor and battery carriage and a gear base"*

Patent Owner contends claim 14 should be construed to require that the three specified elements — the gear carriage, the motor and battery carriage, and the gear base — are "distinct" components within the system. PO Resp. 24.

Patent Owner cites *Becton, Dickinson & Co. v. Tyco Healthcare Group*, 616 F.3d 1249, 1254–55 (Fed. Cir. 2010), as holding: “Where a claim lists elements separately, the clear implication of the claim language is that those elements are distinct components of the patented invention, unless the claim language itself suggests otherwise.” PO Resp. 25 (paraphrasing *Becton*, 616 F.3d at 1254). Patent Owner also cites *CAE Screenplates Inc. v. Heinrich Fiedler GmbH*, 224 F.3d 1308, 1317 (Fed. Cir. 2000), as holding: “In the absence of any evidence to the contrary, we must presume that the use of . . . different terms in the claims connotes different meanings.” PO Resp. 25. Patent Owner cites further case law. *Id.* at 25–26.

Patent Owner contends “the language and structure of claim 14,” combined with the ’795 patent Specification, make clear that the motor and battery carriage is “a component distinct from” the gear carriage and the gear base. *Id.* at 26. In support, Patent Owner contends that because claim 14 lists each of those three elements separately, claim 14 “must be construed to mean that the three recited elements are distinct components.” *Id.* (citing case law discussed *supra*).

This construction is supported by the ’795 patent Specification, according to Patent Owner, because Figures 2 and 3 of the Specification depict the three elements of claim 14 as structurally distinct components. *Id.* at 3–4, 26–27 (citing Ex. 1001, 3:43–46, 3:61–64, 4:30–45, 4:60–64). Figure 2 of the ’795 patent is reproduced below:

FIGURE 2

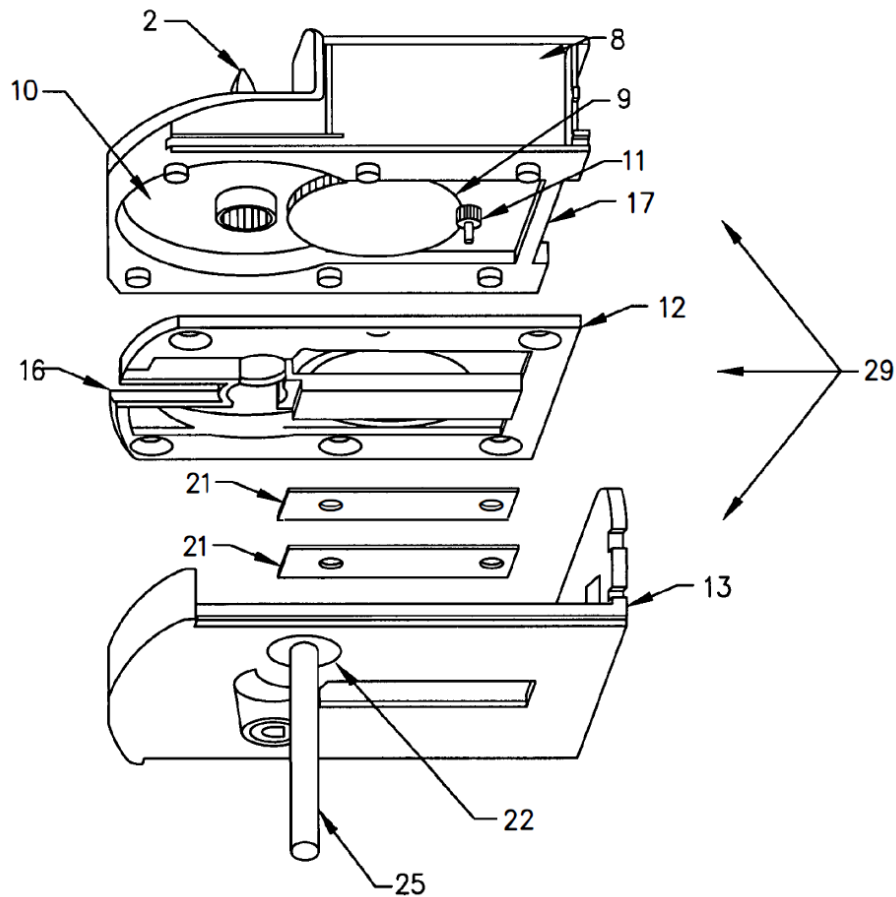


**Figure 2 of the '795 Patent
(partially exploded bottom view of deadbolt activation apparatus).**

Figure 2 illustrates gear encasement assembly 29, comprised of template unit 13, gear casing 12, and motor and battery housing unit carriage 17, which are shown as three structurally distinct components. Ex. 1001, 4:61–64. Patent Owner argues template unit 13 corresponds to the gear base of claim 14, because it “is a base component (or template).” PO Resp. 27 (citing Ex. 1001, 4:40–45, 4:60–64); *id.* at 5 (citing Ex. 1001, 6:24–28). Patent Owner argues gear casing 12 corresponds to the gear carriage of claim 14, because it “supports and provides for separate movement of at least one gear” (i.e., one of gears 9, 10, and 11). *Id.* at 27 (citing Ex. 1001,

4:28–40). Patent Owner argues motor and battery housing unit carriage 17 corresponds to the motor and battery carriage of claim 14, because it supports motor 15 and batteries in bank 8. *Id.* at 26–27 (citing Ex. 1001, Fig. 3, 3:43–46, 3:61–64, 4:61–64). These mappings of claim 14 to the ’795 patent Specification are supported by testimony from Mr. Kilbourne. Ex. 2014 ¶¶ 5–7.

Mr. Kilbourne further testifies that providing “three discrete elements” as assertedly required by claim 14 provides a functional benefit. *Id.* ¶¶ 10–11; PO Resp. 6. Mr. Kilbourne testifies that having these distinct components “allows for easy assembly of the system by the end user in that the [gear] base can be coupled to the doorface, the reversible⁸ elongated member positioned relative to the [gear] base, and the ‘gear carriage’ added to trap the reversible elongated member between the ‘gear carriage’ and the [gear] base.” Ex. 2014 ¶¶ 10–11 (citing Ex. 1001, 4:28–45, 6:24–28); PO Resp. 6.

Petitioner replies⁹ that claim 14 does not require its three elements to “be separate and independently moveable from one another.” Pet. Reply 10. According to Petitioner, “[t]he Federal Circuit has repeatedly held that a single structure can be responsive to multiple claim elements” (*id.* at 11

⁸ In this Decision, we have modified quotations from Patent Owner’s briefs and Declaration to use the spelling “reversible” rather than “reversable,” because the former is how the term is spelled in the ’795 patent.

⁹ Patent Owner contends portions of this reply, and supporting testimony from Dr. Pratt, exceed the proper scope of reply under 37 C.F.R. § 42.23(b). *See* Paper 33, 3–4 (citing Ex. 1028 ¶¶ 14–15). We disagree, because these reply arguments and testimony are proper responses to arguments raised in the Patent Owner Response concerning claim construction of claim 14. *See* Paper 34, 5–6, 7–8.

(citing several cases)), and the cases cited by Patent Owner “are not to the contrary” for various reasons (*id.* at 11–12). Petitioner asserts there is no language in claim 14, or any intrinsic evidence concerning the ’795 patent, “that emphasize[s] the importance of separate structures.” *Id.* at 12–13. Indeed, in Petitioner’s view, Figure 2 of the ’795 patent supports Petitioner’s construction, because “it is not possible to map the [claim] terms ‘motor and battery carriage,’ ‘gear carriage,’ and ‘gear base’ to these three separate pieces [in Figure 2] without violating the ordinary meanings of those terms.” *Id.* at 13–16 (citing Ex. 1001, 3:28–41); Ex. 1028 ¶¶ 13–15. Petitioner particularly asserts template unit 13 “is not a gear base,” and the only structures in Figure 2 that might correspond to a “gear base” are motor and battery housing unit carriage 17 and gear casing 12, “because these are the structures that contact and support the disclosed gears.” Pet. Reply 15 (citing Ex. 1001, claim 9, 3:61–64, 4:28–36); Ex. 1028 ¶ 15.

Patent Owner firstly responds that Petitioner’s “argument *is not* one relating to issues of claim construction,” but rather “concern[s] issues of the application of multiple construed claim limitations to an item of prior art or an accused device.” Sur-reply 3 (emphasis by Patent Owner). We disagree. The issue presented here is whether claim 14 ought to be construed to require that the three identified elements are structurally distinct components, and Petitioner’s arguments address that issue.

Patent Owner secondly responds¹⁰ that claim 14 “not only lists the three identified elements, it recites a *method step* ‘comprising composing the

¹⁰ Petitioner contends this portion of the Sur-reply, and the accompanying evidence of Exhibits 2016 and 2017, exceed the proper scope of reply under

deadbolt activating system’ of’ the three elements. Sur-reply 3 (emphasis by Patent Owner), 9–10. In Patent Owner’s view, the “composing” step “requires that the deadbolt activating system be formed from the three identified elements,” because it “makes clear that the structural relationship between the three elements is such that each of the three elements exists prior to their being combined to compose the recited deadbolt activating system.” *Id.* at 3–4, 9–10. In support, Patent Owner cites dictionary definitions of the word “composing” as meaning “to put together.” *Id.* at 3, 9–10 (citing Ex. 2016, 4; Ex. 2017, 5). Patent Owner also maintains Figure 2 of the ’795 patent supports Patent Owner’s claim construction. *Id.* at 4–5 (citing Ex. 1001, 4:28–33, 4:61–64).

We begin our consideration of claim 14 with the claim language, which recites “[a] method of moving a deadbolt comprising the step[]” of “composing the deadbolt activating system of a gear carriage, a motor and battery carriage and a gear base.” Ex. 1001, 14:3–4, 14:44–47. We disagree with Patent Owner’s assertion that, as a matter of law, the recitation of three different elements in claim 14 necessarily requires the three elements to be separate and distinct structures in the claimed invention. *See, e.g.*, PO Resp. 26 (“As the above cited cases make clear, this language *must* be construed to mean that the three recited elements are distinct components.” (emphasis added)). Instead, we understand the law to be that the recitation of three different elements in claim 14 is one factor to consider within the overall evidence presented on the issue of claim construction, with this one

37 C.F.R. § 42.23(b). *See* Paper 30. Patent Owner disagrees. *See* Paper 31. We tend to agree with Petitioner, but we nonetheless consider the Sur-reply in this regard. *See* 37 C.F.R. § 42.5(b).

factor weighing in favor of determining that the claim may require three separate and distinct structures in the claimed invention. For example, the *Becton* decision first noted the claim at issue there “lists four separate elements,” which creates an “implication” that the “elements are ‘distinct component[s]’ of the claimed invention.” *Becton*, 616 F.3d at 1254 (quoting *Gaus v. Conair Corp.*, 363 F.3d 1284, 1288 (Fed. Cir. 2004)). However, the *Becton* decision then went on to consider other intrinsic evidence, including the claim language as a whole and the specification of the patent at issue, before ultimately construing the claim to require that the recited spring means and hinged arm are “separate structures.” *Id.* at 1254–57.

As Petitioner points out, there are other Federal Circuit cases holding that multiple claim elements may correspond to a single structure. *See* Pet. Reply 11. For example, in *Powell v. Home Depot U.S.A., Inc.*, 663 F.3d 1221 (Fed. Cir. 2011), the court held “*Becton* is not to the contrary” of a jury’s infringement verdict based on a single structure (i.e., a cutting box) in the accused product satisfying two different claim elements (i.e., a cutting box and a dust collection structure). *Id.* at 1231–32; *see also Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1333 n.3 (Fed. Cir. 2006) (“[T]he use of two terms in a claim requires that they connote different meanings, not that they necessarily refer to two different structures.”) (emphasis in original)). As in *Becton*, the court in *Powell* considered all the intrinsic evidence presented, including the claim language as a whole and the specification of the patent at issue, before ultimately construing the claim in that fashion. *Powell*, 663 F.3d at 1231–32.

Considering the ’795 patent at issue here, we conclude the language of claim 14 does not support Patent Owner’s argument that the three recited

elements must be separate and distinct structures. The claim, instead, simply lists the three elements, without specifying any inter-relationship(s) between the elements that would suggest they must be separate and distinct structures.¹¹ Ex. 1001, 14:44–47. This distinguishes the present case from *Becton*, where the claims recited a spring means “connected to” a hinged arm, or “extending between” the hinged arm and a mounting means, leading the court to conclude that construing the spring means and the hinged arm to refer to the same structure would be “nonsensical.” *Becton*, 616 F.3d at 1254 (“If the hinged arm and the spring means are one and the same, then the hinged arm must be ‘connected to’ itself and must ‘extend between’ itself and a mounting means, a physical impossibility.”). Other cases cited by Patent Owner considered similarly limiting language that is not present in claim 14 of the ’795 patent. See *Regents of Univ. of Minn. v. AGA Med. Corp.*, 717 F.3d 929, 934–35 (Fed. Cir. 2013) (claim recited “*first and second* occluding disks,” with “a central portion of the membrane of *the first disk being affixed to* a central portion of the membrane of *the second disk to* define a conjoint disk” (emphases modified)); *Engel Indus., Inc. v. Lockformer Co.*, 96 F.3d 1398, 1404–05 (Fed. Cir. 1996) (court “cannot agree” that a “second portion 24 . . . includes the return portion 26,” because “this assertion contradicts the plain language of the ’641 patent,” which

¹¹ An argument might be made that the “gear carriage” and the “gear base” in claim 14 must be distinct structures, each performing a different function with respect to the common “gear,” but that is not the precise issue presented here. The precise issue presented here is whether the “motor and battery carriage” and the “gear base” in claim 14 must be distinct structures. See, e.g., PO Resp. 24 (contending “the ‘motor and battery carriage’ . . . is distinct from” the gear carriage and the gear base), 32–33.

described the return portion being “also provided” with the second portion, so “they logically cannot be one and the same”).

The “composing” term in claim 14 recognizes that the claim is directed to “[a] *method* of moving a deadbolt comprising the steps of.” Ex. 1001, 14:3–4 (emphasis added). That is, “composing” connotes that claim 14 adds a new method step to the steps already recited in the method of the parent claim 11, as is done with similar terms in other dependent claims. *Id.* at 14:43 (claim 13, “providing”), 14:48 (claim 15, “attaching”), 14:53–55 (claim 16, “constructing” and “attaching”). The “composing” term does not indicate that the recited elements must be distinct structures. For example, the deadbolt activating system will be composed of a motor and battery carriage and a gear base, even if a single structure carries the motor and the battery, and additionally forms a base for a gear. In short, we find nothing in claim 14 that would suggest the three recited elements must be separate and discrete structures.

Turning to the ’795 patent Specification, the parties agree that carriage 17 corresponds to the motor and battery carriage of claim 14, and Petitioner does not dispute Patent Owner’s contention that gear casing 12 corresponds to the gear carriage of claim 14. PO Resp. 3–4, 26–27; Pet. Reply 13–16. There is, however, significant disagreement over what structure(s) in the Specification correspond(s) to the gear base of claim 14, stemming from the fact that the ’795 patent Specification does not refer to any particular structure or structures as a gear base. PO Resp. 3–4, 26–27; Pet. Reply 13–16; Sur-reply 4–5.

We conclude Patent Owner’s mapping of claim 14 to the ’795 patent specification, equating template unit 13 to the gear base of claim 14, is

reasonable. The '795 patent describes Figure 2 as illustrating how the “carriage 17, gear casing 12 and template unit 13 *attach with each other to form the complete gear encasement assembly 29.*” Ex. 1001, 4:61–64 (emphasis added). Thus, even though template unit 13 is not expressly identified as a gear base, it is described as a part of a gear encasement assembly. Further, the '795 patent Specification indicates template unit 13 performs the function of attaching carriage 17 and gear casing 12 to a door, and in that sense, template unit 13 is a “base” for gears 9, 10, and 11. *Id.* at Figs. 2–3, 4:27–64.

By contrast, Petitioner’s contention that template unit 13 cannot be the gear base of claim 14 is belied by Petitioner’s reliance on Padiak’s base plate 812 as comprising a gear base. *See* Pet. Reply 24 (“Padiak’s base plate [812] is a gear base since it supports the gear reduction assembly 804.”); Ex. 1004, Fig. 13 (illustrating gears within gear assembly 804 being directly mounted on a vertically oriented, unnumbered plate, which in turn is supported on base plate 812). During the oral hearing, Petitioner suggested the '795 patent’s template unit 13 cannot be a gear base because it does not “touch” or “contact” a gear. Tr. 22:2–20, 46:18–47:16. However, the same can be said of Padiak’s base plate 812, which does not touch or contact the gears within gear assembly 804. Ex. 1004, Fig. 13. We see no reasonable distinction to draw whereby the '795 patent’s template unit 13 might not be a gear base, while Padiak’s base plate 812 is a gear base.

Thus, we agree with Patent Owner that Figure 2 of the '795 patent can be interpreted to illustrate the three recited elements of claim 14 as embodied in separate and discrete structures 12, 13, and 17. However, the written description cited by Patent Owner does not identify any functional

benefit achieved by using such separate and discrete structures. Ex. 1001, 3:43–46, 3:61–64, 4:28–64, 6:24–28. Instead, the ’795 patent Specification, albeit in a general fashion, indicates that “the present invention may be embodied in various forms” and may be employed “in virtually any appropriately detailed system and apparatus, structure, or manner,” so “specific details disclosed herein are not to be interpreted as limiting.” *Id.* at 2:8–25; *see also id.* at 12:5–23 (“Although very specific examples have been described and disclosed, the invention of the instant application is considered to comprise and is intended to comprise any equivalent structure and may be constructed in many different ways to function and operate in the general manner as explained hereinbefore,” and the “electronic deadbolt system and method described herein in detail for exemplary purposes is of course subject to many different variations in structure, design, application and methodology.”).

Another distinguishing characteristic between this case and *Becton* is that, in *Becton*, the specification of the patent at issue “confirm[ed] that the spring means is a separate element from the hinged arm, as the only elements disclosed in the specification as ‘spring means’ . . . [were] separate structures from the hinged arm.” *Becton*, 616 F.3d at 1254–55. Here, by contrast, carriage 17 is disclosed as *both* a motor and battery carriage (because it carries motor 15 and batteries in bank 8), *and* as a gear carriage (because it carries gears 9, 10, 11). Ex. 1001, Figs. 2–3, 3:61–64, 4:28–32. This same consideration also distinguishes the present case from the *Gaus* decision cited by Patent Owner. *See Gaus*, 363 F.3d at 1288 (“Nothing in the descriptions of those two components suggests that their structures or

functions overlap. To the contrary, the specification plainly describes the two components as separate.”)

Mr. Kilbourne’s testimony in support of Patent Owner’s contention that claim 14 should be construed to require three separate and distinct structures is not persuasive. The intrinsic evidence fails to reflect consideration of the functional benefit identified by Mr. Kilbourne as resulting from providing a separate and discrete gear carriage, motor and battery carriage, and gear base, namely ease of assembly. *See* Ex. 2014 ¶¶ 10–11; *Tempo Lighting*, 742 F.3d at 977–78. Absent such intrinsic evidentiary support, and based on the lack of disclosure in the ’795 patent tending to support Patent Owner’s position as discussed above, we accord Mr. Kilbourne’s testimony little weight in the present claim construction.

In short, we conclude that construing claim 14 to require three separate and distinct structures would impermissibly incorporate a limitation from the Specification (i.e., the illustration in Figure 2 of three separate structures) into claim 14. *See RF Del.*, 326 F.3d at 1263–64.

For the foregoing reasons, we conclude claim 14 does not require the gear carriage, the motor and battery carriage, and the gear base, to be separate and distinct structures in the claimed invention.

5. *Remaining Claim Terms*

No further explicit constructions of any claim terms are needed to resolve the issues presented by the arguments and evidence of record. *See Nidec*, 868 F.3d at 1017. This includes, for example, the term “sensor recognition point” in claim 11. *See* Pet. 18–20 (proposing this term should be construed as “a movable element configured to be detected by a sensor”).

B. Obviousness over Padiak and Anderson

Petitioner asserts claims 11–15 and 17 of the '795 patent are unpatentable under 35 U.S.C. § 103(a) as having been obvious over Padiak and Anderson. Pet. 8, 28–56. Petitioner cites the Declarations of John D. Pratt, Ph.D., in support. Exs. 1003, 1028. Patent Owner opposes. PO Resp. 27–36. Patent Owner cites the Declaration of Mr. Kilbourne in support. Ex. 2014.

We have reviewed the arguments and evidence of record. We conclude a preponderance of the evidence establishes claims 11–15 and 17 are unpatentable as having been obvious over Padiak and Anderson. We begin our analysis with a brief summary of the law of obviousness, then we consider the level of ordinary skill in the art, next we briefly summarize the Padiak and Anderson disclosures, and finally we address Petitioner's and Patent Owner's contentions.

1. Law of Obviousness

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of

nonobviousness, if made available in the record. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

2. *Level of Ordinary Skill in the Art*

Petitioner contends a person having ordinary skill in the art pertaining to the '795 patent “would have had (i) a bachelor’s degree in mechanical engineering or a related field, and at least 2–3 years of practical experience in mechanical design; (ii) a masters or Ph.D. degree in mechanical engineering or a related field; or (iii) at least 4–5 years of practical experience in mechanical design, including involvement in or exposure to the technological issues in the field.” Pet. 16; Ex. 1003 ¶ 28. Further according to Petitioner, “a higher level of education or skill might make up for less experience, and vice-versa.” Pet. 16; Ex. 1003 ¶ 28.

The Patent Owner Response does not take a position as to the level of ordinary skill in the art.

We determine the level of ordinary skill proposed by Petitioner, and unopposed by Patent Owner, is consistent with the '795 patent and the asserted prior art. We, therefore, adopt that level in the present Decision. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1354–55 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579–80 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

3. *Padiak Disclosure*

Padiak discloses a method of retrofitting an existing deadbolt assembly with an electrically operated actuator. *See* Ex. 1004, Abstract. One such actuator 800 is illustrated in Figure 13, which is reproduced below:

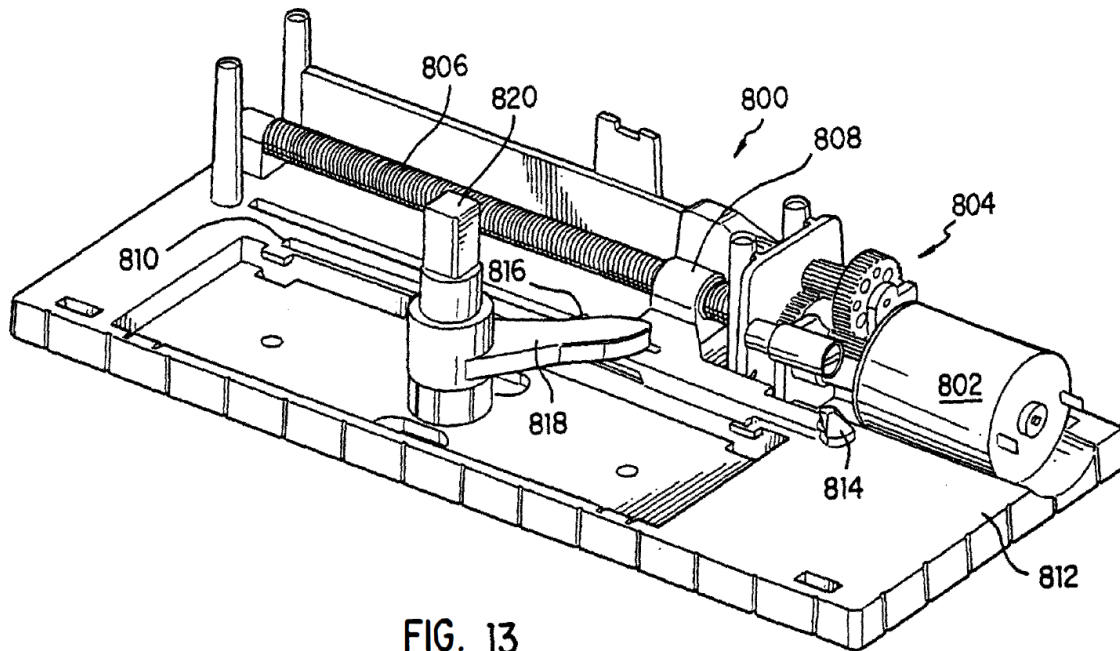


FIG. 13

**Figure 13 of Padiak
(perspective view of electrically operated actuator 800).**

Id. at Abstract, 5:40–42, 9:62–64. When activated, motor 802 rotates gear reduction assembly 804, which in turn rotates threaded rod 806, which in turn causes actuating arm 808 to travel along the length of rod 806. *Id.* at 9:64–10:5. In this way, protrusions 814, 816 on arm 808 engage and rotate lever 818, which in turn rotates drive bar 820, which rotates a conventional deadbolt assembly to lock or unlock the deadbolt assembly. *Id.* at 10:5–8, 10:19–25.

Figure 22 of Padiak is reproduced below:

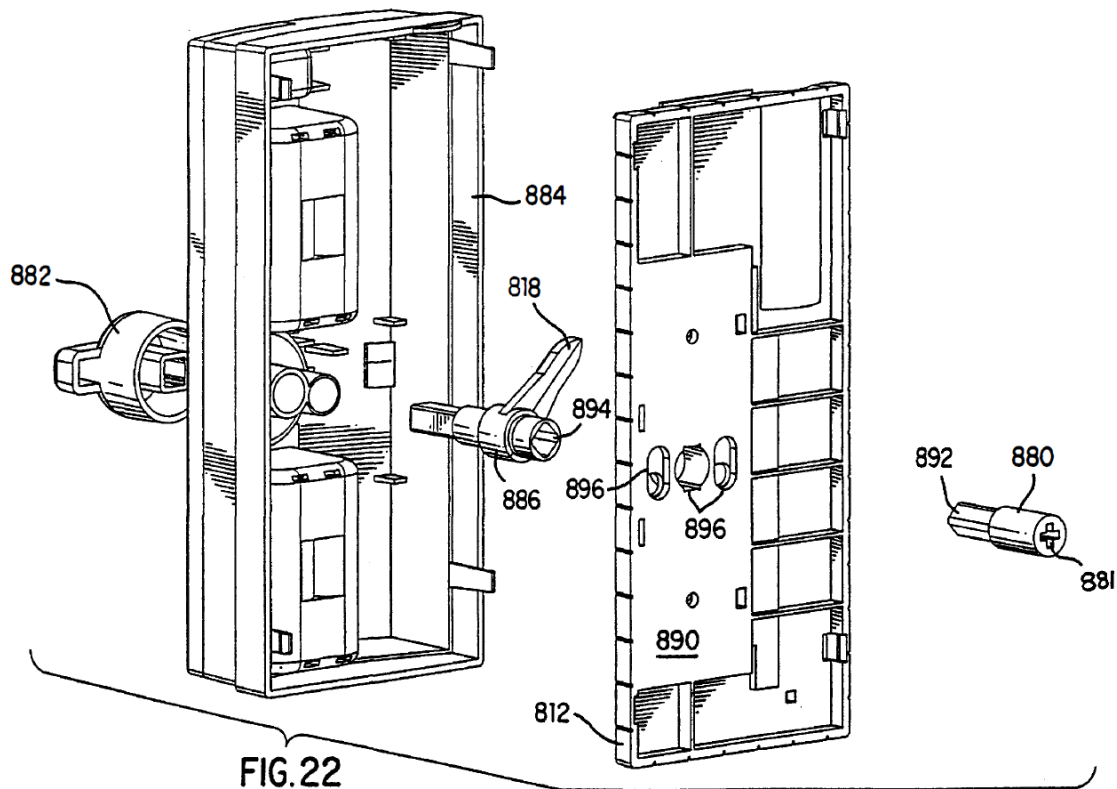


**Figure 22 of Padiak
(exploded perspective view of actuator 800 with adaptor 880).**

Id. at 5:66–67, 17:16–20. Figure 22 illustrates an alternate embodiment to Figure 13, in which drive bar 820 of Figure 13 is replaced with adaptor 880. *Id.* at 17:33–41. Many of the drive actuation components of Figure 13, discussed above, are not seen in Figure 22 because they are located on the side of base plate 812 facing away from the perspective of the viewer in Figure 22. *Id.* at Figs. 13 & 22–23, 17:16–20. Adaptor 880 is placed between lever assembly 886 and the drive bar of an existing lock (not shown in Figure 22). *Id.* at 17:33–50. Drive bar extension 892 of adaptor 880 is received in a correspondingly shaped bore 894 of lever assembly 886. *Id.* at 17:39–45. Aperture 881 of adaptor 880 is “sized and configured to fit a drive bar.” *Id.* at 17:33–34. Further, “[a]perture 881 may be varied in size and configuration to fit drive bars from different lock manufacturers,” such

that “the appropriate adaptor, i.e., one that fits the drive bar, is placed over the drive bar of the existing lock.” *Id.* at 17:34–39; *see also id.* at 8:58–65, Figs. 4C–4E (illustrating different drive bar interaction arrangements 331a, 331b, and 331c).

Padiak identifies the elements illustrated in Figures 22 and 23, apart from adaptor 880, as together comprising a “preassembled actuator assembly.” *Id.* at 17:16–28 (describing Figs. 22 and 23 as “exploded views” of actuator 800 and adaptor 880), 17:29–52 (identifying interactions between the “preassembled actuator assembly” and adaptor 880). Padiak discloses two alternative methods of retrofitting the preassembled actuator assembly to an existing lock having a drive bar, using an adaptor 880. *Id.* at 17:29–30, 17:36–52. In the first method, an adaptor 880 having aperture 881 that matches the drive bar is placed over the drive bar, and then the preassembled actuator assembly “is aligned over the adaptor [880] such that the drive bar extension 892 fits in a bore 894 of lever assembly 886,” and the preassembled actuator assembly is secured in place. *Id.* at 17:36–47. In the second method, an adaptor 880 having aperture 881 that matches the drive bar is “placed in the preassembled actuator prior to placing the adaptor [880] and preassembled actuator over the drive bar,” which “advantageously allows the actuator to remain concealed within its housing during installation.” *Id.* at 17:47–52. Regardless of which method is used, “drive bar extension 892 may snugly fit within bore 894 such that rotation of lever assembly 886 causes rotation of adaptor 880.” *Id.* at 17:41–45.

4. *Anderson Disclosure*

Anderson discloses a hand tool, such as a Swiss army knife, having a screwdriver. Ex. 1005, Abstract, 1:10–17. Figure 12 is reproduced below:

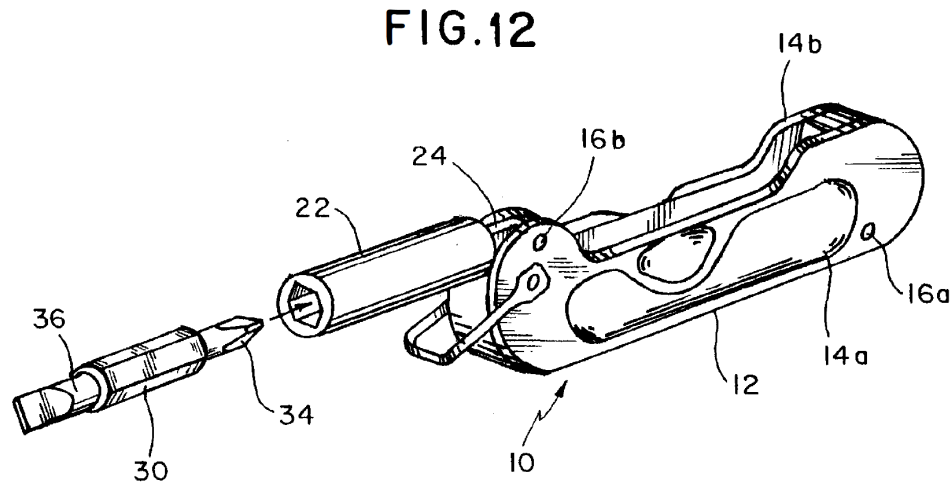


**Figure 12 of Anderson
(perspective view of folding knife with interchangeable bit screwdriver).**

Id. at 2:40–42. Figure 12 illustrates folding knife and interchangeable bit screwdriver 10, including hollow tube 22 which receives reversible screwdriver bit 30. *Id.* at 4:24–26, 4:39–46. “Each end of reversible bit 30 has a screwdriver drive,” such as “a Phillips drive end 34 and a crosscut drive end 36” as shown in Figure 12. *Id.* at 4:46–50.

5. *Claim 11*

Petitioner provides arguments and evidence in support of contending claim 11 is unpatentable as having been obvious over Padiak and Anderson. Pet. 28–51; Ex. 1003 ¶¶ 79–139; Ex. 1028 ¶¶ 17–20. Patent Owner provides arguments and evidence in opposition. PO Resp. 28–30, 35; Ex. 2014 ¶¶ 15–16, 19.

a) Undisputed Padiak Disclosures

Petitioner contends Padiak discloses each and every limitation of claim 11, including an elongated member (i.e., adaptor 880), with the sole exception being that adaptor 880 is not “reversible” as claimed. *See* Pet. 28 (“Overview” of Petitioner’s contentions); *id.* at 28–33, 42–51 (detailed contentions comparing Padiak disclosure with subject matter of claim 11).

Patent Owner opposes only one aspect of Petitioner’s contentions comparing the Padiak disclosure to claim 11: whether Padiak’s elongated member is housed in Padiak’s deadbolt activating system. PO Resp. 27–30; Ex. 2014 ¶¶ 15–16, 19. We discuss that opposition in the next section of this Decision. Here in this section, we provide the reasons why we determine Petitioner’s undisputed contentions comparing the Padiak disclosure with the subject matter of claim 11 are supported by a preponderance of the evidence.

Claim 11 recites “attaching a deadbolt activating system to [a] pre-existing deadbolt system with internal mechanisms and a deadbolt.” Ex. 1001, 14:7–9. We find Padiak correspondingly discloses a deadbolt activating system as a “preassembled actuator assembly,” which is composed of the elements illustrated in Figures 22 and 23 apart from adaptor 880. Ex. 1004, 17:16–52; Ex. 1003 ¶¶ 86–87, 128; Pet. 31, 45. Padiak indicates the preassembled actuator assembly is “for retrofitting” to “an existing lock,” where the existing lock has a deadbolt driven by a drive bar actuated by the preassembled actuator assembly via adaptor 880. Ex. 1004, 17:16–17, 17:29, 17:37–52; *id.* at Fig. 13, 9:62–10:7 (describing operation of actuator 800, which is also used in Figures 22–23); *id.* at Fig. 1,

6:6–10 (indicating the existing lock comprises dead-bolt assembly 10 with bolt 14); Ex. 1003 ¶¶ 68–69, 81–87; Pet. 29–31, 46–47.

Claim 11 also recites “determining the cross-sectional shape of a tailpiece member of [the] pre-existing deadbolt system,” “selecting the end of [an] . . . elongated member which matches the determined cross-sectional shape of [the] tailpiece member,” and “releasably and directly” attaching the elongated member to the tailpiece. Ex. 1001, 14:5–6, 14:9–13, 14:25–28.

We find Padiak’s adaptors 880 are elongated members, and each adaptor 880 has an outer end including aperture 881 that is shaped differently from the apertures 881 of the other adaptors 880, for selection to match different tailpiece members (i.e., drive bars) of different deadbolt systems. Ex. 1004, Fig. 22, 17:33–41; *id.* at Figs. 4C–4E, 8:58–65; Ex. 1003 ¶¶ 81–85, 88–92, 132; Pet. 29–31, 46–47. The aperture 881 of the selected adaptor 880 is “placed over” the tailpiece, forming a releasable and direct attachment. Ex. 1004, 17:37–39; Ex. 1003 ¶¶ 81–87, 132; Pet. 29–31, 46–47.

Claim 11 further recites “sending a signal via a transmitter,” and thereby “electronically activating an electronic input card housed in the deadbolt activating system” to “signal[] a motor” which “activat[es] a gear . . . housed in the deadbolt activating system to rotate.” Ex. 1001, 14:14–21. We find Padiak correspondingly discloses an electronic input card (i.e., printed circuit board 876) activated by receiving a signal sent from a remote control transmitter. Ex. 1004, 10:43–67 (Fig. 7), 17:26–28 (Fig. 23); Ex. 1003 ¶¶ 122–124; Pet. 42–43. Upon receipt of an appropriate signal, electronic card 876 signals motor 802 to rotate gear assembly 804, which is housed within the preassembled actuator assembly. Ex. 1004,

Figs. 13 & 22–23, Abstract, 3:54–57, 9:62–66, 10:43–49, 15:55–58, 20:50–61; Ex. 1003 ¶¶ 126–127; Pet. 44–45.

Claim 11 next recites that the reversible elongated member is “in mechanical communication with the gear . . . whereby the rotation of the gear causes the rotation of the reversible elongated member . . . causing the deadbolt to extend.” Ex. 1001, 14:22–28. We find Padiak correspondingly discloses that adaptor 880 is in mechanical communication with gear assembly 804, applying the uncontested claim construction set forth above. *See supra* Section III.A.3; Ex. 1004, Figs. 13 & 22–23, 9:62–10:23, 17:16–52; Ex. 1003 ¶¶ 128–133; Pet. 45–47. In particular, rotation of the gears in gear assembly 804 causes rotation of adaptor 880, in order to extend and retract the deadbolt. Ex. 1004, 9:64–10:8; Ex. 1003 ¶¶ 131–133; Pet. 46–47.

Claim 11 further recites “a tracking system comprising a sensor and a sensor recognition point,” which “indicate[s] a specific position of [the] pre-existing deadbolt lock,” and “tracking” the sensor recognition point and “indicating if [the] recognition point has been detected by [the] sensor.” Ex. 1001, 14:29–35. Claim 11 finally recites “transmitting [the] indication to a sound emitting module,” and “emitting a sound from [the] sound emitting module to indicate when the deadbolt is in the locked position and/or in the unlocked position . . . based on [the] indication.” *Id.* at 14:35–40. We find Padiak correspondingly discloses that electronic card 876 tracks the locked / unlocked status of actuator 800 using sensors 618, 620, and notifies the remote control transmitter of such status “to generate a visual or audible indication of status to the user.” Ex. 1004, Fig. 8, 10:67–11:13, 11:30–52; Ex. 1003 ¶¶ 134–139; Pet. 47–51.

Thus, we find a preponderance of the evidence supports Petitioner's contentions that Padiak discloses each and every limitation of claim 11, except for housing an elongated member in a deadbolt activating system (which is discussed in the next Section III.B.5.b of this Decision), and a reversible elongated member (which is discussed in the succeeding Section III.B.5.c of this Decision). Moreover, we reiterate that Patent Owner did not dispute these contentions during the trial, thereby waiving any such arguments. *See* Paper 14, 7 ("Patent Owner is cautioned that any arguments for patentability not raised in the response may be deemed waived.").

b) Whether Padiak Discloses Housing an Elongated Member In a Deadbolt Activating System

Petitioner contends Padiak discloses, as is required by claim 11, housing an elongated member in the deadbolt activating system. Pet. 45. Petitioner asserts Padiak's adaptor 880 is an elongated member, and Padiak's preassembled actuator assembly¹² is a deadbolt activating system. *Id.* (citing Ex. 1004, Figs. 22–23, 9:62–10:8, 17:25–52); Ex. 1003 ¶ 128. Petitioner particularly contends adaptor 880 "is housed . . . within the housing 884 of the" preassembled actuator assembly. Pet. 45; Ex. 1003 ¶ 128. Petitioner also asserts that, when Padiak's adaptor 880 and preassembled actuator assembly are installed on a door, "section 892 of the adaptor [880] fits snugly into bore 894 of the lever assembly [886]," which is part of the preassembled actuator assembly. Pet. 45; Ex. 1003 ¶ 128.

¹² As discussed in Sections III.B.3 and III.B.5.a above, Padiak's "preassembled actuator assembly" is composed of the elements illustrated in Figures 22 and 23, apart from adaptor 880.

Patent Owner firstly argues Padiak's adaptor 880 is not housed in Padiak's preassembled actuator assembly, because extension 892 of adaptor 880 is merely **releasably attached** to lever assembly 886 of the preassembled actuator assembly. PO Resp. 28 (annotating Padiak's Fig. 22, bolded emphasis by Patent Owner); *id.* at 1–2, 28–30 (citing Ex. 1004, Figs. 22–23; Ex. 2011, 47:6–21, 50:1–21); Sur-reply 6–7; Ex. 2014 ¶¶ 15–16, 19. This argument rests upon a claim construction that we have rejected above. *See supra* Section III.A.2.b. We have construed claim 11 to permit a releasable housing of the elongated member inside the deadbolt activating system. *See id.* Thus, the fact that extension 892 of adaptor 880 is releasably retained within bore 894 of lever assembly 886 does not distinguish Padiak's disclosure from claim 11, because this relies on an unclaimed limitation.¹³

Patent Owner secondly argues Padiak's adaptor 880 is not housed in Padiak's preassembled actuator assembly, because adaptor 880 is **outside** of the preassembled actuator assembly. PO Resp. 28 (annotating Padiak's Fig. 22, bolded emphasis by Patent Owner); *id.* at 1–2, 28–30 (citing Ex. 1004, Figs. 22–23); Ex. 2014 ¶¶ 15–16, 19. Patent Owner particularly contends adaptor 880 is “*primarily* positioned outside (not ‘in’)” the preassembled actuator assembly, because adaptor 880 “is coupled to the

¹³ Petitioner argues that, even applying Patent Owner's narrower construction of the “housing . . . in” limitation, adaptor 880 satisfies the limitation because adaptor 880 cannot be withdrawn without opening the assembly when the assembly and adaptor are installed on a door, or alternatively it would have been obvious to modify adaptor 880 to satisfy the limitation. *See* Pet. Reply 20–22. We do not reach these arguments.

deadbolt's tailpiece while [adaptor 880] is *external to* the preassembled actuator.” PO Resp. 29–30 (emphases added) (citing Ex. 1004, Figs. 22–23).

In reply, Petitioner¹⁴ maintains that Padiak describes and illustrates adaptor 880 as being housed inside of Padiak's preassembled actuator assembly. Pet. Reply 17–22 (citing Ex. 1004, Fig. 22, 9:62–10:8, 17:25–52); Ex. 1003 ¶ 128; Ex. 1028 ¶¶ 17–19. Petitioner firstly relies on Padiak's disclosures that “the drive bar extension 892 [of adaptor 880] *fits in* a bore 894 of lever assembly 886,” “*snugly*,” and lever assembly 886 is part of Padiak's preassembled actuator assembly. Pet. Reply 18, 19–20 (quoting Ex. 1004, 17:37–45 (emphases added)); *id.* at 17 (annotating Ex. 1004, Fig. 22, to identify extension 892 (purple) and bore 894 (aqua blue)); Ex. 1003 ¶ 128; Ex. 1028 ¶¶ 17–19. Petitioner secondly relies on Padiak's disclosure that “the adaptor [880] *may be placed in* the preassembled actuator prior to placing the adaptor and preassembled actuator over the drive bar of the existing lock.” Pet. Reply 18–19 (quoting Ex. 1004, 17:47–50 (emphasis added), and citing Ex. 2011, 83:21–84:4, 89:3–90:11); Ex. 1028 ¶¶ 18–19.

We find that Padiak's adaptor 880 is housed in Padiak's preassembled actuator assembly, in two ways. First, we find extension 892 is a portion of

¹⁴ Patent Owner contends portions of this reply, and supporting testimony from Dr. Pratt, exceed the proper scope of reply under 37 C.F.R. § 42.23(b). *See* Paper 33, 4–5 (citing Ex. 1028 ¶¶ 18–19). We disagree, because these reply arguments and testimony are proper responses to arguments raised in the Patent Owner Response concerning whether Padiak's adaptor 880 is housed in Padiak's deadbolt activating system. *See* Paper 34, 5–6, 8–9. They also amplify, rather than materially alter, arguments made in the Petition. *See* Pet. 45; Ex. 1003 ¶ 128.

adaptor 880 that is positioned or enclosed inside bore 894 of lever assembly 886. Ex. 1004, Fig. 22, 17:39–45; Ex. 1003 ¶ 128; Ex. 1028 ¶¶ 17–19. Lever assembly 886, in turn, is part of Padiak’s preassembled actuator assembly. Ex. 1004, Figs. 22–23, 17:16–32; *id.* at Fig. 13, 9:62–10:8 (describing how lever 818 is part of and integral to operation of actuator 800, which is used in the preassembled actuator assembly of Figs. 22–23). Because of these relationships, Padiak’s adaptor 880 is housed in Padiak’s preassembled actuator assembly, even if adaptor 880 does not extend inside the space enclosed by Padiak’s base plate 812 and cover 884.

Second, we find extension 892 is a portion of adaptor 880 that is positioned or enclosed inside the space enclosed by base plate 812 and cover 884 of Padiak’s preassembled actuator assembly. For example, Padiak expressly describes that “the adaptor [880] *may be placed in the preassembled actuator prior to placing the adaptor and preassembled actuator over the drive bar of the existing lock,*” which “advantageously allows the actuator [880] *to remain concealed within its housing during installation.*” Ex. 1004, 17:47–52 (emphases added); Ex. 1003 ¶ 128; Ex. 1028 ¶¶ 17–19. This finding is also supported by Figures 22 and 23 of Padiak. These figures illustrate how lever assembly 886 is disposed behind base plate 812, inside the space enclosed by base plate 812 and cover 884, so that lever 818 of lever assembly 886 may interact with arm 808 to lock and unlock the deadbolt system. Ex. 1004, Figs. 22–23; *id.* at Fig. 13, 9:62–10:8 (describing how lever 818 is actuated by arm 808). Based on the disclosed disposition of lever assembly 886 behind base plate 812, and the length of extension 892 of adaptor 880 to be received within lever assembly 886 to allow for mutual rotation, it is apparent that extension 892 will extend into

the space enclosed by base plate 812 and cover 884. *See, e.g.*, PO Resp. 29 (“[I]n the proposed combination [of Padiak and Anderson] the reversible elongated member would be *primarily* positioned outside (not ‘in’) the deadbolt activating system.” (emphasis added)).

Thus, we conclude a preponderance of the evidence establishes Padiak’s adaptor 880 is housed in Padiak’s preassembled actuator assembly.

c) Undisputed Obviousness of Combining Padiak and Anderson

Petitioner contends it would have been obvious, in light of Anderson, to modify Padiak’s adaptor 880 to be “reversible.” *See* Pet. 28, 32–42. Patent Owner does not dispute this contention. *See* PO Resp. 27–30. Nonetheless, we provide here the reasons why we determine Petitioner’s undisputed contentions of obviousness are supported by a preponderance of the evidence.

Petitioner first asserts Padiak discloses determining the cross-sectional shape of a tailpiece member of a pre-existing deadbolt system, and attaching an elongated member (i.e., adaptor 880) to the tailpiece member, because Padiak “teaches the use of *interchangeable* adaptors [880] with *differently shaped openings* to fit” the varying “size[s] and configuration[s]” of drive bars (i.e., tailpieces) used by different deadbolt apparatus manufacturers. Pet. 29–33 (emphases added) (citing Ex. 1004, Abstract, Figs. 4D, 4E, & 22, 2:32–38, 6:6–10, 6:14–16, 8:58–65, 10:7–8, 17:29–46); Ex. 1003 ¶¶ 69, 72, 82–87, 89–92. We find this contention to be supported by a preponderance of the evidence, as cited by Petitioner and Dr. Pratt. Ex. 1004, Figs. 4D, 4E, & 22, 2:32–37, 6:6–10, 6:14–16, 8:58–65, 10:7–8, 17:29–52.

We further agree with Petitioner’s contention that it would have been “obvious to make Padiak’s adaptor reversible” by “includ[ing] a different shaped opening on each end to accept the different cross-sectional shapes of different tailpieces,” in light of Anderson. Pet. 33, 42; Ex. 1003 ¶¶ 88, 93–117. We find Padiak’s plurality of adaptors 880 and Anderson’s reversible adaptor 30 solve the same problem of “the need to provide adaptors that can accommodate interfaces that are known to vary.” Pet. 33–34, 37; *see also id.* at 36 (describing the problem as “how to engage and rotate objects with different shaped interfaces”); Ex. 1003 ¶¶ 93–94, 105, 108, 113. Further, Anderson and Padiak represent “two practicable solutions” to that problem in the context of “a simple linear mechanical communication,” both of which were known prior to the ’795 patent. Pet. 33–35, 37; Ex. 1003 ¶¶ 93–105 (additionally discussing various other references, as summarized in the Petition), 113–114.

We determine a person of ordinary skill in the art would have been motivated to use a reversible adaptor in Padiak, in light of Anderson’s teaching that “[i]ncorporation of multiple tool functions or abilities into a single tool device is a well-known convenience.” Pet. 36 (quoting Ex. 1005, 1:18–22); Ex. 1003 ¶ 109. Also, “[t]he reversible adaptor design would reduce the number of different parts needed for Padiak’s system . . . making the installation kit less bulky and easier to manage,” and “reduc[ing] the risk of loss” of parts. Pet. 36–37; Ex. 1003 ¶¶ 109–110. This would, further, “reduce material costs” for the manufacturer. Pet. 37; Ex. 1003 ¶ 111.

As to expectation of success, Anderson’s reversible screwdriver bit and Padiak’s adaptor are “highly similar in structure and function . . . making it easy to apply Anderson’s teachings to Padiak.” Pet. 35–36, 38;

Ex. 1003 ¶¶ 106–108, 115. Both structures are elongated members having an exterior polygonal surface to fit slidably within a correspondingly configured recess of a drivingly rotated element, with a protruding end configured to interface with another element to transmit the driving torque force thereto. *See* Pet. 35–36, 38; Ex. 1003 ¶¶ 106–108, 115. Thus, Dr. Pratt testifies as to multiple ways Padiak’s adaptor 880 could be made reversible in light of Anderson, in order to achieve the advantages of a reversible adaptor as disclosed in Anderson and as set forth above. *See* Pet. 39–40; Ex. 1003 ¶¶ 116–117.

For the foregoing reasons, we determine Petitioner’s undisputed contentions as to the obviousness of modifying Padiak’s adaptor 880 to be reversible, with a differently shaped opening on each end to accept the different cross-sectional shapes of different tailpieces, are supported by a preponderance of the evidence.

d) Conclusion as to Claim 11

We determine a preponderance of the evidence establishes claim 11 of the ’795 patent is unpatentable under 35 U.S.C. § 103(a) as having been obvious over Padiak and Anderson.

6. Claim 14

Claim 14 of the ’795 patent recites: “The method of claim 11, further comprising composing the deadbolt activating system of a gear carriage, a motor and battery carriage and a gear base.” Ex. 1001, 14:45–47.

In addition to the analysis of claim 11 set forth above, Petitioner contends Padiak’s preassembled actuator assembly comprises a gear carriage, a motor and battery carriage, and a gear base, and annotates

Padiak's Figures 13 and 22 in various colors to illustrate this contention. Pet. 52–54; Ex. 1003 ¶ 142. Petitioner contends Padiak discloses a gear carriage, as a structure (red) that “supports” gears (dark blue) in gear assembly 804. Pet. 52–54 (citing Ex. 1004, Figs. 13 & 23, 9:64–66); Ex. 1003 ¶ 142. Petitioner contends Padiak discloses a motor and battery carriage, as the combination of base plate 812 (yellow) and cover 884 (light blue), because those components together “enclose and house” motor 802 (pink) and two batteries (orange). Pet. 52–54 (citing Ex. 1004, Figs. 13 & 22–23, 3:66–4:1, 9:64–66, 17:16–28); Ex. 1003 ¶ 142. Petitioner contends Padiak discloses a gear base, as base plate 812 (yellow) that “supports” gear assembly 804 (red and dark blue). Pet. 52–54 (citing Ex. 1004, Figs. 13 & 22–23, 9:64–66); Ex. 1003 ¶ 142.

Patent Owner firstly argues Petitioner errs in asserting the motor and battery carriage of claim 14 may be found in the combination of Padiak's base plate 812 and cover 884. PO Resp. 2, 31–32, 35–36. According to Patent Owner: “There is no ‘motor and battery carriage’ that supports both a motor and a battery in Padiak, since the motor and battery are supported by separate components,” base plate 812 and cover 884. *Id.* at 31–32 (citing Ex. 1004, Figs. 13 & 21–23); Ex. 2014 ¶¶ 16–18, 20–22, 24–25. That is, base plate 812 supports motor 802 but not the batteries, whereas cover 884 supports the batteries but not motor 802, so motor 802 and the batteries “can be moved independently of” each other. PO Resp. 31–32 (citing Ex. 1004, Figs. 13 & 21–23); *id.* at 8–9 (citing Ex. 1004, 9:62–66); Ex. 2014 ¶¶ 16–18, 20–22.

Petitioner replies that: “When Padiak's actuator is assembled, the pieces 884 and 812 are attached to one another and together form a housing

that encloses both the motor and batteries of the system.” Pet. Reply 24 (citing Ex. 1004, 17:26–31); Ex. 1003 ¶ 142. In Petitioner’s view, “the assembled housing (884, 812) supports and contains both” motor 802 and batteries, so “the assembled housing is properly considered a motor and battery carriage.” Pet. Reply 24, 26 (citing Ex. 1003 ¶ 142); Ex. 1028 ¶ 21.

Upon consideration of the foregoing, we determine a preponderance of the evidence supports Petitioner’s contention that Padiak’s base plate 812 and cover 884 combine to form a motor and battery carriage, as required by claim 14. It is undisputed that base plate 812 carries motor 802, and cover 884 carries batteries. Ex. 1004, Figs. 13 & 22–23, 3:66–4:1, 9:64–66, 17:16–32; Ex. 1003 ¶ 142; Ex. 1028 ¶ 21. It is apparent from Figures 22 and 23 that, when the various components of Padiak’s actuator assembly are assembled together into an operating unit, base plate 812 is attached directly to cover 884. Ex. 1004, Figs. 22–23, 17:29–32. In particular, a person of ordinary skill in the art would appreciate base plate 812 has four slots disposed around its periphery, which respectively receive one of four corresponding tabbed extensions disposed around the periphery of cover 884. *Id.*; Ex. 1028 ¶ 21. Thus, base plate 812 and cover 884 are attached together to form a component that supports and provides movement of both a motor and a battery.

Patent Owner’s rebuttal, that two separate and distinct structures may not combine to form the claimed motor and battery carriage, rests upon a claim construction that we have rejected above. *See supra* Section III.A.4.a. We have construed claim 14 to permit forming the component as two separate structures that are attached together. *See id.* Thus, the fact that base plate 812 and cover 884 together form the motor and battery carriage

does not distinguish Padiak's disclosure from claim 14, because this relies on an unclaimed limitation.¹⁵

Patent Owner secondly argues Petitioner errs in asserting Padiak's base plate 812 corresponds to *both* the motor and battery carriage of claim 14 (because it supports motor 802) *and* the gear base of claim 14 (because it supports gear assembly 804). PO Resp. 2–3, 31, 32–33, 35–36; Ex. 2014 ¶¶ 16–17, 20, 23–24. This argument rests upon a claim construction that we have rejected above. *See supra* Section III.A.4.b. Thus, the fact that Padiak's base plate 812 forms a part of the motor and battery carriage of claim 14, and the gear base of claim 14, does not distinguish Padiak's disclosure from claim 14, because this relies on an unclaimed limitation.

For the foregoing reasons, we determine a preponderance of the evidence establishes claim 14 of the '795 patent is unpatentable under 35 U.S.C. § 103(a) as having been obvious over Padiak and Anderson.

7. *Claims 12, 13, 15, and 17*

Petitioner provides arguments and evidence in support of contending claims 12, 13, 15 and 17 of the '795 patent, each of which depends from claim 11, are unpatentable as having been obvious over Padiak and Anderson. Pet. 51–52, 54–56; Ex. 1003 ¶¶ 140–141, 143–147. In addition to the analysis of claims 11 and 14 set forth above, Petitioner contends Padiak discloses each and every limitation added by these dependent claims.

¹⁵ Petitioner argues that, even applying Patent Owner's construction of claim 14, the claim still would have been obvious "because it is merely an obvious design choice to place the motor and battery on a common surface." Pet. Reply 26. We do not reach this argument.

Pet. 51–52, 54–56; Ex. 1003 ¶¶ 140–141, 143–147. Patent Owner does not dispute these contentions, apart from arguments we have already considered above. *See, e.g.*, PO Resp. 1–3, 28, 35–36. Nonetheless, we provide here the reasons why we determine Petitioner’s undisputed contentions as to claims 12, 13, 15 and 17 are supported by a preponderance of the evidence.

Claim 12 recites: “The method of claim 11, whereby the rotation of the internal mechanisms causes the deadbolt to retract.” Ex. 1001, 14:41–42. Petitioner contends Padiak discloses this limitation. Pet. 51 (citing Ex. 1004, 2:32–37, 17:52–58, 17:66–18:3, 18:38–43, 19:18–23, 20:42–47, 20:66–21:4, 21:25–30, 21:54–58); Ex. 1003 ¶ 140. We find this contention to be supported by a preponderance of the evidence as cited by Petitioner and Dr. Pratt. Ex. 1004, 2:32–37, 17:52–58, 17:66–18:3.

Claim 13 recites: “The method of claim 11, further comprising providing a plurality of gears housed in the deadbolt activating system.” Ex. 1001, 14:43–44. Petitioner contends Padiak discloses this limitation, because gear assembly 804 includes a plurality of gears, and gear assembly 804 is housed within cover 884 of Padiak’s preassembled actuator assembly. Pet. 52 (citing Ex. 1004, Figs. 13 & 22–23, 9:62–66, 17:16–28); Ex. 1003 ¶ 141. We find this contention to be supported by a preponderance of the evidence as cited by Petitioner and Dr. Pratt. Ex. 1004, Figs. 13 & 22–23, 9:62–66, 17:16–20.

Claim 15 recites: “The method of claim 14, further comprising attaching the deadbolt activating system to a door by use of existing deadbolt screws.” Ex. 1001, 14:48–50. Petitioner contends Padiak discloses this limitation, because Padiak discloses attaching base plate 812 to a door using “existing mounting hardware.” Pet. 54 (quoting Ex. 1004, 4:16–21,

also citing *id.* at Fig. 22, 17:45–46); Ex. 1003 ¶ 143. We find this contention to be supported by a preponderance of the evidence as cited by Petitioner and Dr. Pratt. Ex. 1004, 4:16–21.

Claim 17 recites: “The method of claim 15, further comprising removing the deadbolt activating system from a door; whereby the removal of the deadbolt activating system does not damage the door.” Ex. 1001, 14:57–60. Petitioner contends Padiak discloses this limitation because, based on how Padiak’s preassembled actuator assembly and adaptor 880 are installed on to a door, it is apparent to a person of ordinary skill in the art that the system can be removed without damaging the door, which it would have been obvious to do in order to replace or perform maintenance on the deadbolt system. Pet. 55–56 (citing Ex. 1004, Figs. 22–23, 4:12–21, 16:44–46, 17:23–26, 17:45–46); Ex. 1003 ¶¶ 144–147. We find these contentions to be supported by a preponderance of the evidence as cited by Petitioner and Dr. Pratt. Ex. 1004, Figs. 22–23, 4:12–21, 16:44–46, 17:23–26, 17:45–46.

For the foregoing reasons, we determine a preponderance of the evidence establishes claims 12, 13, 15 and 17 of the ’795 patent are unpatentable under 35 U.S.C. § 103(a) as having been obvious over Padiak and Anderson.

*C. Obviousness over Padiak, Anderson, and
Admitted Prior Art and/or the 2000 International Building Code*

Petitioner asserts claim 16 of the ’795 patent is unpatentable under 35 U.S.C. § 103(a) as having been obvious over Padiak, Anderson, and Admitted Prior Art and/or the 2000 International Building Code. Pet. 56–57; Ex. 1003 ¶¶ 148–150. Patent Owner does not dispute these

contentions, apart from arguments we have already considered above. *See, e.g.*, PO Resp. 1–3, 28, 35–36. Nonetheless, we provide here the reasons why we determine Petitioner’s undisputed contentions as to the obviousness of claim 16 are supported by a preponderance of the evidence.

Claim 16 recites: “The method of claim 15, further comprising: constructing the door or barrier with a top and a bottom; and attaching the deadbolt activating system to a door or barrier at a distance between thirty six inches and forty eight inches from the bottom of the door or barrier.” Ex. 1001, 14:52–57.

We agree with Petitioner’s contention that “Padiak discloses retrofitting a deadbolt activating system to an existing lock installed on a door, without changing the location of the pre-existing lock.” Pet. 56 (citing Ex. 1004, 4:8–21, 17:29–58); Ex. 1003 ¶ 148. We find also that “[t]he ’795 patent admits that the claimed installation height — a distance between thirty six inches and forty eight inches from the bottom of the door — was known to be the conventional height at which deadbolt locks are installed.” Pet. 56 (citing Ex. 1001, 2:34–36). Further, the 2000 International Building Code discloses that “locks and other operating devices shall be installed 34 inches (864 mm) minimum and 48 inches (1219 mm) maximum above the finished floor.” Pet. 56–57 (quoting Ex. 1023 § 1003.3.1.8.3); Ex. 1003 ¶ 149. We determine these various disclosures “rendered it obvious to . . . attach [Padiak’s] deadbolt activating system to the door or barrier at a distance between thirty six inches and forty eight inches from the bottom of the door or barrier,” as required by claim 16. Pet. 57; Ex. 1003 ¶ 150.

Thus, we determine a preponderance of the evidence establishes claim 16 of the ’795 patent is unpatentable under 35 U.S.C. § 103(a) as

having been obvious over Padiak, Anderson, and Admitted Prior Art and/or the 2000 International Building Code.

D. Patent Owner's Motion to Exclude Evidence

Patent Owner filed a Motion to Exclude Evidence (Paper 33). However, Patent Owner later “concede[d] that the filing of [the Motion] was improper,” and “request[ed] that the [M]otion be deemed withdrawn.” Paper 35, 2. Accordingly, we dismiss Patent Owner’s Motion to Exclude Evidence as having been withdrawn.

IV. SUMMARY OF CONCLUSIONS¹⁶

In summary, we determine a preponderance of the evidence establishes claims 11–17¹⁷ of the ’795 patent are each unpatentable, as shown in the following table:

Reference(s)	35 U.S.C. §	Claims	Claims Shown Unpatentable	Claims Not Shown Unpatentable
Padiak, Anderson	103(a)	11–15, 17	11–15, 17	

¹⁶ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

¹⁷ As explained above in Section II.B, we do not address Petitioner’s challenge to claims 18–20 under 35 U.S.C. § 103(a), because Patent Owner disclaimed those claims prior to institution of trial.

Padiak, Anderson, Admitted Prior Art, 2000 International Building Code	103(a)	16	16	
Overall Outcome			11–17	

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 11–15 and 17 of the '795 patent have been shown to be unpatentable under 35 U.S.C. § 103(a) over Padiak and Anderson;

FURTHER ORDERED that claim 16 of the '795 patent has been shown to be unpatentable under 35 U.S.C. § 103(a) over Padiak, Anderson, and Admitted Prior Art and/or the 2000 International Building Code; and

FURTHER ORDERED that Patent Owner's Motion to Exclude Evidence is *dismissed* as having been withdrawn.

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