

NOTE: This disposition is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

PAVO SOLUTIONS LLC,
Appellant

v.

KINGSTON TECHNOLOGY COMPANY, INC.,
Cross-Appellant

2016-2209, 2016-2328, 2016-2391

Appeals from the United States Patent and Trade-
mark Office, Patent Trial and Appeal Board in Nos.
IPR2015-00149, IPR2015-00559.

Decided: November 6, 2017

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HOPKINS, CHRISTINE H. YANG, Law Offices of S. J. Christine Yang, Fountain Valley, CA.

Before LOURIE, O'MALLEY, and TARANTO, *Circuit Judges*.

LOURIE, *Circuit Judge*.

Pavo Solutions LLC (“Pavo”) appeals from the final written decisions of the U.S. Patent and Trademark Office (“USPTO”) Patent and Trial and Appeal Board (“the Board”) in two *inter partes* review (“IPR”) proceedings concluding that claims 8, 9, 11, 12, 14, and 16–23 of its U.S. Patent 6,926,544 (“the ’544 patent”) are unpatentable as obvious. *See Kingston Tech. Co. v. CATR Co.*, IPR 2015-00149, 2016 Pat. App. LEXIS 1666, at *3 (P.T.A.B. Apr. 14, 2016) (“’149 Decision”) (evaluating claims 8, 11, 12, 16, 18, and 20); *Kingston Tech. Co. v. CATR Co.*, IPR 2015-00559, 2016 WL 2641477, at *1 (P.T.A.B. May 10, 2016) (“’559 Decision”) (evaluating claims 1, 2, 4, 5, 7, 9, 13, 14, 17, 19, and 21–24).

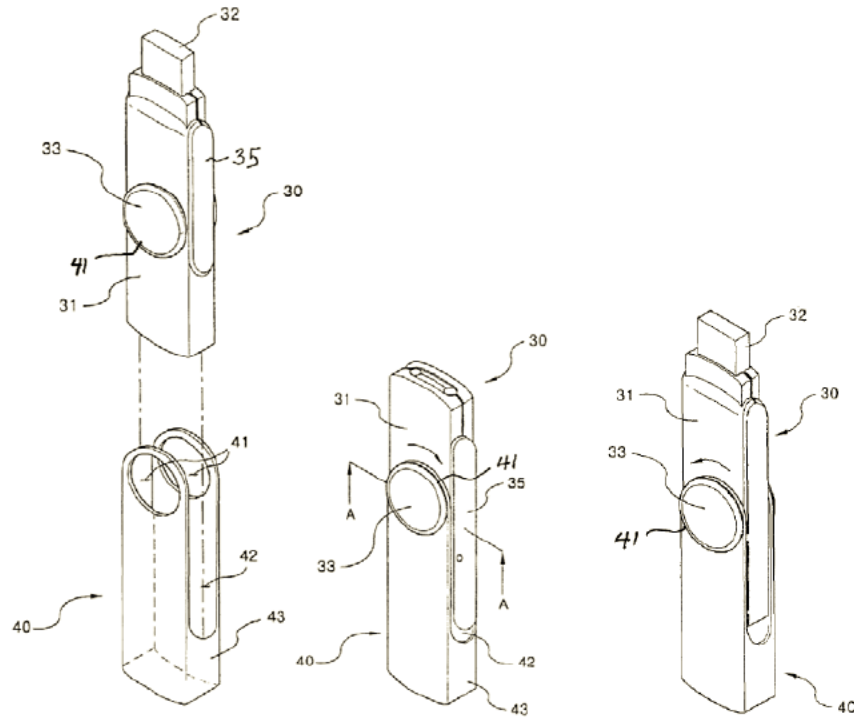
Kingston Technology Company (“Kingston”) cross-appeals from the final written decision in the second IPR proceeding concluding that claims 1, 2, 4, 5, 7, 13, and 24 of the ’544 patent are not unpatentable as obvious. ’559 Decision, 2016 WL 261477, at *21. For the reasons that follow, we *affirm in part and reverse in part*.

BACKGROUND

Pavo owns the ’544 patent, which is directed to a “flash memory apparatus” having a “rotary cover.” ’544 patent col. 2 ll. 24–28. The ’544 patent discusses that the prior art flash memory devices having a Universal Serial Bus (“USB”) port and a separate protective cover suffer from certain disadvantages, such as loosening or misplacement of the protective cover. *Id.* col. 1 ll. 37–47, col. 2 ll. 11–21. The ’544 patent describes a USB memory device having, instead, a rotating cover that is not sepa-

rated from the memory device body when its USB port is in use. *Id.* col. 4 ll. 9–15.

Figures 2, 3a, and 3b of the '544 patent illustrate the flash memory device and its rotating cover described in the specification:



Id. figs. 2, 3a, 3b.

The '544 patent generally describes the flash memory main body as a “case 31” that contains a “memory element.” *Id.* col. 3 ll. 4–20. It also describes how the case and a rotating “cover 40” are connected to each other. *Id.* col. 3 ll. 20–49. It describes a “hinge protuberance 33,” which functions as a “rotation shaft,” and a “hinge hole 41,” which “receiv[es] the hinge protuberance 33.” *Id.* col. 3 ll. 20–23, 33–36. The specification describes an embodiment where the “hinge protuberance” is “provided on an appropriate position of a front side and a rear side of the case 31,” and states that the “hinge protuberance” can be

“formal [*sic*] integrally with the case 31” or “manufactured in form of a separate element so that the hinge protuberance 33 is assembled by means of an adhesive agent.” *Id.* col. 3 ll. 20–26. The specification also describes that a “U shaped” “cover 40” has a “circular hinge hole 41 for receiving the hinge protuberance 33 formed on the flash memory main body.” *Id.* col. 3 ll. 31–36. The ’544 patent further describes that a “hooking groove” and a “hooking threshold” can be respectively “formed on” the hinge protuberance and the hinge hole so that the hinge protuberance and the hinge hole can be “hooked” and not be “easily detached from” each other. *Id.* col. 3 ll. 36–43. The patent describes that the hinge protuberance can alternatively be “formed on the cover” and the hinge hole can be “formed on the flash memory main body.” *Id.* col. 4 ll. 26–29.

Claims 1, 7, 8, and 24 are independent claims, and claims 8 and 11 are illustrative of the claims at issue in the main appeal. Claim 8 reads as follows:

8. A flash memory apparatus comprising:

a flash memory main body including a case within which a memory element is mounted, an USB (Universal Serial Bus) terminal piece electrically connected with the memory element and installed at a front end of the case in a projecting manner; and

a cover including a pair of parallel plate members facing each other and spaced by an interval corresponding to the thickness of the case, the cover having an open front end, a closed rear end and a pair of lateral side openings; the parallel plate members defining an inner space receiving the case and *being hinged to the case* wherein the USB terminal piece is positioned within

the inner space of the cover or exposed outside the cover by rotating the cover and case with respect to one another.

Id. col. 5 ll. 41–56 (emphasis added). Claim 8, along with dependent claims 9, 10, and 16–23, require the cover be “hinged to” the case but do not specify how the cover is so hinged.

A subset of claims that depend from claim 8 includes different claim language further specifying how the cover and the case are hinged together. Claim 11 reads as follows:

11. The apparatus according to claim 8 wherein the cover and case are hinged by *a hinge protuberance on at least one side of the case* and at least one hinge hole in one of the parallel plate members that receives the hinge protuberance.

Id. col. 6 ll. 5–8 (emphasis added). Claims 12–15 depend from claim 11.

Claim 1, which is at issue in the cross-appeal, as corrected by the certificate of correction, reads as follows:

1. A flash memory apparatus comprising:

a flash memory main body including a rectangular shaped case within which a memory element is mounted, a USB (Universal Serial Bus) terminal piece electrically connected with the memory element and installed at a front end of the case in a projecting manner, and *a hinge protuberance formed on at least one side of the case*; and

a cover including a pair of parallel plate members facing each other and spaced by an interval corresponding to the thickness of the case, the cover having an open front

end and a closed rear end with a pair of lateral side openings; the parallel plate members having at least one hinge hole receiving the hinge protuberance on the case for pivoting the case with respect to the flash memory main body, whereby the USB terminal piece is received in an inner space of the cover or exposed outside the cover.

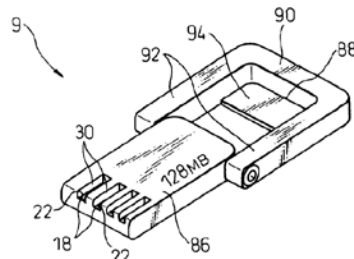
Id. col. 4 ll. 42–59 (emphasis added). Independent claims 7 and 24, also at issue in the cross-appeal, include similar language, *i.e.*, “hinge element *formed on* at least one side of the case.” *Id.* col. 5 ll. 28–29, col. 6 ll. 52–53 (emphasis added).

Kingston filed two petitions for IPR of the ’544 patent, challenging its claims based on the following obviousness grounds: (1) claims 1–3, 7–12, and 14–24 over U.S. Patent 6,480,390 (“Matsumiya”) and U.S. Patent 6,829,672 (“Deng”); (2) claims 4–6 and 13 over Matsumiya, Deng, and U.S. Patent 6,019,238 (“Kindig”); (3) claims 1, 2, 4–9, 11–14, and 16–24 over U.S. Patent 6,522,534 (“Wu”) and either U.S. Design Patent D199,589 (“Hoogesteger”) or U.S. Patent 4,854,045 (“Schaub”); and (4) claims 3, 6, 10, and 15 over Wu, either Hoogesteger or Schaub, and U.S. Patent 3,407,636 (“Kovacevic”). J.A. 127 (’149 petition); J.A. 2184 (’559 petition).

The Board instituted review of claims 1, 2, 7–9, 11, 12, 14, and 16–24 over Matsumiya and Deng, claims 4, 5, and 13 over Matsumiya, Deng, and Kindig, and claims 1, 2, 4, 5, 7–9, 11–14, and 16–24 over Wu and Hoogesteger. ’149 *Decision*, 2016 Pat. App. LEXIS 1666, at *5; ’559 *Decision*, 2016 WL 2641477, at *2. Kingston, after its notice of cross-appeal, no longer challenges the Board’s decision regarding claims 4, 5, and 13 based on Kindig, which we do not discuss further. Appellee’s Br. 7.

A brief description of these references follows:

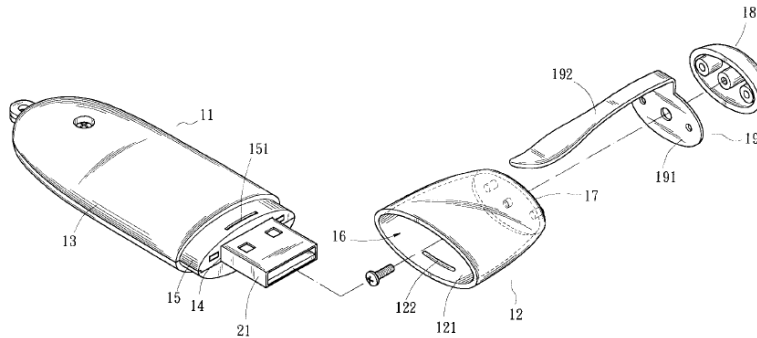
Matsumiya, entitled “Card-type Peripheral Device,” is directed to card-type devices having a housing for a circuit board with a “connector element” and “openings for exposing the contact portion.” Matsumiya col. 1 ll. 46–54. Matsumiya discusses that its described invention allows “shielding [of] the contacts to prevent the accumulation of dust and dirt on the contacts when the device is not in use.” *Id.* col. 1 ll. 41–45. Matsumiya discloses various embodiments, including one that employs a “dust proof cover 88 mounted swingably on the outside of the housing 86” as shown below:



Id. fig. 15a, col. 12 ll. 41–43.

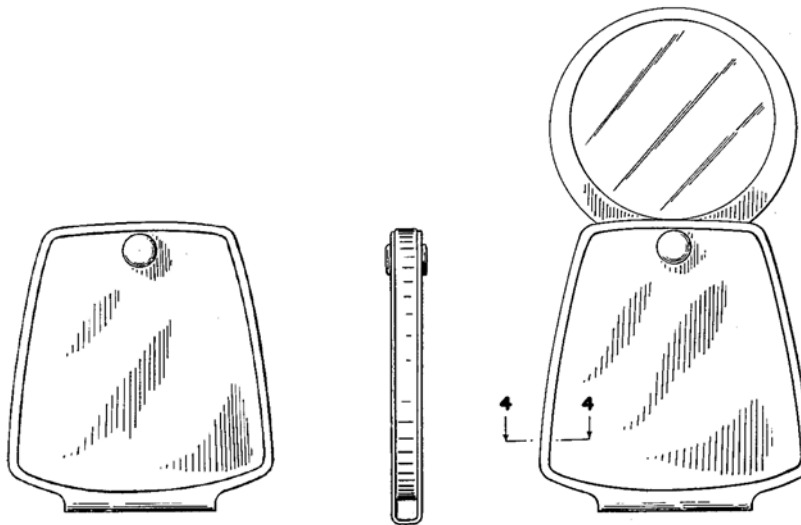
Deng, entitled “Electronic Flash Memory External Storage Method and Device,” is generally directed to an external data storage device and method employing a “plug-and-play” technology, such as the USB interface. Deng col. 2 ll. 12–15, col. 2 l. 65–col. 3 l. 14. It is undisputed that Deng does not disclose a cover for the USB terminal. *'149 Decision*, 2016 Pat. App. LEXIS 1666, at *37 & n.8.

Wu, entitled “Pen-type Portable Memory Device,” is directed to a portable memory device including “a chamber 11,” which holds a memory unit inside, and “a cap member 12,” which is “detachably fitted with the chamber 11” so that the “USB plug” can be “well protected from being deformed or damaged” and “the USB plug can still be conveniently plugged in to the computer.” Wu col. 1 ll. 41–46, 50–52, col. 2 ll. 30–34. Figure 3 of Wu, for example, illustrates its described device:



Id. fig. 3.

Hoogesteger, entitled “Hand Magnifier,” is a design patent directed to a magnifier having a swivel cover. Hoogesteger figs. 1–4. Hoogesteger’s claimed design is shown below:



Id. figs. 1–3.

It its final written decisions, the Board determined that claims 8, 9, 11, 12, 14, and 16–23 are unpatentable but that claims 1, 2, 4, 5, 7, 13, and 24 are not unpatentable. *'149 Decision*, 2016 Pat. App. LEXIS 1666, at *75; *'559 Decision*, 2016 WL 2641477, at *21. As relevant on

appeal and cross-appeal, the Board concluded that: (1) claims 8, 9, and 16–23 (“the ‘hinged to’ claims”), which require the cover to be “hinged to” the case, would have been obvious; (2) claims 11, 12, and 14 (“the ‘protuberance on’ claims”), which require a “hinge/hinged protuberance on” the case, would also have been obvious; and (3) claims 1, 2, 7, and 24 (“the ‘protuberance formed on’ claims”), which require a “hinge protuberance” or “hinge element” be “formed on” the case, would not have been obvious. *Id.*

As relevant here, the Board construed “hinge protuberance,” as a “hinging structure that bulges out, protrudes, or projects, beyond the surrounding surface,” *'149 Decision*, 2016 Pat. App. LEXIS 1666, at *21; *'559 Decision*, 2016 WL 2641477, at *4, and “hinge element” as “encompass[ing] at least a hinge protuberance and a hinge hole,” *'559 Decision*, 2016 WL 2641477, at *6. The Board rejected the patent owner’s contention that the term “hinge protuberance” should be understood to “not extend through the case like an axle would,” *'149 Decision*, 2016 Pat. App. LEXIS 1666, at *17–20; instead, the Board noted that the patent owner’s arguments regarding particular hinge structures are better addressed by interpreting the terms that follow “hinge protuberance,” *i.e.*, “on at least one side of the case,” *id.* at *20, and “formed on at least one side of the case,” *see '559 Decision*, 2016 WL 2641477, at *6–7.

The Board then drew a distinction between a hinge protuberance “on” at least one side of the case and a protuberance or element “formed on” at least one side of the case. In particular, the Board determined that “on at least one side of the case” indicates “the relative position of the protrusion” without regard to whether or how the hinge protuberance is attached to the case, *'149 Decision*, 2016 Pat. App. LEXIS 1666, at *30, but that “formed on at least one side of the case” indicates “integration and attachment of the protrusion or element,” *'559 Decision*, 2016 WL 2641477, at *7. The Board stated that “[t]he

phrase ‘formed on’ is narrower than the term ‘on’” because of the patentee’s use of different terms in the claims and the use of the word “formed” in describing the embodiments with an attached or integrated hinge protuberance or element. *Id.* at *7.

Applying its claim constructions, the Board concluded that the “protuberance on” claims would have been obvious over both of the instituted combination grounds of (1) Matsumiya and Deng; and (2) Wu and Hoogesteger, but that the “protuberance formed on” claims would not have been obvious over either of the combinations. As for the “hinged to” claims, the Board noted that Matsumiya and Hoogesteger disclose the cover being hinged “in some manner” to the case, which met the claim requirement. *’149 Decision*, 2016 Pat. App. LEXIS 1666, at *45.

Pavo and Kingston timely appealed and cross-appealed, respectively. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

We review the Board’s factual findings for substantial evidence and its legal determinations *de novo*. *PPC Broadband, Inc. v. Corning Optical Commc’ns RF, LLC*, 815 F.3d 747, 751 (Fed. Cir. 2016). Substantial evidence is “such relevant evidence as a reasonable mind might accept as adequate to support a conclusion.” *In re Gartside*, 203 F.3d 1305, 1312 (Fed. Cir. 2000) (quoting *Consol. Edison Co. v. NLRB*, 305 U.S. 197, 229 (1938)). In IPR proceedings, the Board gives claim terms their broadest reasonable interpretation in light of the claim and specification. *See Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142–46 (2016). We review the Board’s ultimate claim constructions *de novo* and underlying factual determinations involving extrinsic evidence for substantial evidence. *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1297 (Fed. Cir. 2015) (citing *Teva Pharm. U.S.A., Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841–42 (2015)).

Obviousness is a question of law based on underlying factual findings relating to “the scope and content of the prior art, differences between the prior art and the claims at issue, the level of ordinary skill in the pertinent art, and any objective indicia of non-obviousness.” *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) (citing *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) and *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)).

On appeal, Pavo argues that the Board erred in adopting a construction of “on” that is broader than that of “formed on,” and urges that the narrower construction, requiring that the protuberance be attached to or integrated into the side of the case, should be adopted for both terms. Pavo further argues that the challenged claims are not unpatentable as obvious even under the Board’s claim construction because a person of ordinary skill in the art would not have been motivated to combine or modify the prior art references. On cross-appeal, Kingston argues the opposite: that the Board erred in adopting a narrower construction of “formed on” than “on,” that the broader construction, *i.e.*, that the protuberance need not be attached to or integrated into the side of the case, should be adopted for both terms, and that the challenged claims are unpatentable even under the Board’s claim construction. We discuss claim construction and obviousness in turn.

I. Claim Construction

The claim construction arguments in this appeal and cross-appeal both concern two closely related terms, “on” and “formed on,” which we discuss together. Pavo and Kingston seem to agree that “hinge protuberance on at least one side of the case” and “hinge protuberance formed on at least on side of the case” should be construed in the same way. Appellant’s Br. 41–42; Appellee’s Br. 27–28. However, their arguments differ with respect to how both of those terms should be interpreted.

Pavo argues that both “on” and “formed on” require attachment or integration of the protuberance to the case. Pavo faults the Board for engaging in a “hyper-linguistic analysis,” Appellant’s Br. 33, and failing to read the ’544 patent from a skilled artisan’s perspective. When read properly, Pavo contends, the ’544 patent uses “on” as a “shorter equivalent to ‘formed on,’” Appellant’s Br. 41, and both should be interpreted to mean attachment to or integration into the side of the case, and not be read to include axle-based hinge designs.

As for the “hinged to” claims, Pavo does not argue that the Board erred in its claim construction but contends that it erred in concluding that the claims are unpatentable as obvious for other reasons, which we discuss below. *See* Oral Argument at 6:51–7:50, *Pavo Sols. LLC v. Kingston Tech. Co.*, Nos. 16-2209, -2328, -2391 (Fed. Cir. Oct. 3, 2017), <http://oralarguments.cafc.uscourts.gov/default.aspx?fl=2016-2209.mp3>.

Kingston responds that both “on” and “formed on” merely denote the location of the hinge protuberance as being on the side of the case. Giving the terms their broadest reasonable interpretation as required in IPR proceedings, Kingston contends that neither “on” nor “formed on” requires attachment to or integration into the case or excludes axle-based hinge designs.

As an initial matter, we agree with both parties that the Board erred in distinguishing between “on” and “formed on” in the context of the ’544 patent. As to how they both should be interpreted, we agree with Pavo that “hinge protuberance on at least one side of the case” and “hinge protuberance formed on at least one side of the case” both denote that the hinge protuberance is attached to or integrated into the side of the case.

The Board here erred by parsing the claim language to solely focus on “on” versus “formed on” without regard to the surrounding language in the claims and the written

description of the invention. As a result, the Board reached an unreasonably broad reading of the expression “hinge protuberance on at least one side of the case” to infer a scope distinguishable from that of “hinge protuberance formed on at least one side of the case” and created a distinction that does not exist in the specification, solely because the words “on” and “formed on” are literally different.

As the Board correctly determined when construing “hinge protuberance formed on at least one side of the case,” the specification consistently describes that a “hinge protuberance,” if it is on the case rather than the cover, is attached to or integrated into the side of the case. *See, e.g.*, ’544 patent col. 3 ll. 20–36. Similarly, if “hinge protuberance on at least one side of the case” is properly construed in context, the ’544 patent reveals that it does not distinguish “on” and “formed on” when used in the context of the relationship between “hinge protuberance” and the “side of the case.” It is particularly notable that in claims 1 and 24, which read “a hinge protuberance formed on” and “a hinge element formed on,” respectively, later refer to the same hinge protuberance or hinge element as the one being “on” the case. ’544 patent col. 4 ll. 47–48, 55, col. 6 ll. 52–53, 59. In other words, in the ’544 patent, “on” and “formed on” are used interchangeably in referring to “hinge protuberance” and “hinge element” and how they physically relate to the case. The literal difference in the claim terms, in the context of its surrounding language and the specification, does not give rise to the substantive distinction the Board found.

We therefore conclude that the claim terms “hinge protuberance on at least one side of the case” and “hinge protuberance formed on at least one side of the case” in the context of the ’544 patent both indicate that the hinge protuberance is attached to or integrated into the side of the case.

II. Obviousness

Pavo argues that neither Matsumiya nor Hoogesteger teaches the claimed hinge design having the protuberance attached to or integrated into the case. Furthermore, Pavo argues that, to the extent that its claim construction argument were to be unsuccessful or inapplicable to the “hinged to” claims, there was no motivation to combine or modify the cited references because they tout the benefits of complete dust-proof coverage of USB terminals, unlike the flash drive covers in the ’544 patent, and that the Board failed to properly consider its expert testimony to this effect.

Kingston responds that even if both “on” and “formed on” are construed to require attachment or integration of the hinge protuberance to the side of the case, a person of ordinary skill in the art would have modified Matsumiya to implement what was known in the art as a “snap-on hinge.” Appellee’s Br. 33–34. Kingston does not make a similar argument with respect to the Hoogesteger reference.

First, as for the “hinged to” claims at issue on appeal, Pavo does not argue that the Board erred in its claim construction, and its nonobviousness argument solely depends on the alleged lack of motivation to combine or modify the references to implement a less than complete cover for a USB terminal. However, contrary to Pavo’s contention, the Board did consider the lack of motivation argument, and properly reasoned that a less than optimal result from a combination or modification does not necessarily defeat a finding of such motivation. *’149 Decision*, 2016 Pat. App. LEXIS 1666, at *52–56. We find no error in the Board’s analysis and conclude that claims 8, 9, and 16–23 at issue on appeal are unpatentable as obvious over Matsumiya in view of Deng.

Applying the correct construction of “hinge protuberance on at least one side of the case,” we also conclude

that the “protuberance on” claims, *i.e.*, claims 11, 12, and 14, are not unpatentable as obvious over the cited reference because, as the Board found, neither Matsumiya nor Hoogesteger teaches the hinge protuberance attached to or integrated into the side of the case. *See ’559 Decision*, 2016 WL 2641477, at *9–10, *18. Although we have found that the Board erred in the construction of the “protuberance on” claims, we nonetheless determine that remand is not necessary to reapply the claims as correctly construed because the Board’s underlying factual findings supporting nonobviousness of the “protuberance formed on” claims also support the conclusion of nonobviousness of the “protuberance on” claims with equal force. We therefore conclude that claims 11, 12, and 14 are not unpatentable as obvious.

As for the “protuberance formed on” claims at issue on cross-appeal, we conclude that the Board did not err in its claim construction and obviousness conclusions. Applying the correct claim construction, the Board determined that the “protuberance formed on” claims are not unpatentable as obvious because neither Matsumiya nor Hoogesteger teaches the hinge protuberance attached to or integrated into the side of the case. *’559 Decision*, 2016 WL 2641477, at *9–10, *18. The Board declined to consider Kingston’s “snap-on hinge” modification argument, noting that Kingston did not argue modification of Matsumiya in its IPR petitions. We find no error in the Board’s analysis and its underlying factual findings and conclude that claims 1, 2, 4, 5, 7, and 24 at issue on cross-appeal are not unpatentable as obvious.

In sum, claims 1, 2, 7, 11, 12, 14, and 24 are not unpatentable as obvious over the cited references and claims 8, 9, and 16–23 are unpatentable as obvious over Matsumiya in view of Deng. Because we affirm the Board’s obviousness ruling with respect to those references, we do not address the Board’s findings with respect to Hoogesteger and Wu. We do not disturb the Board’s

decision that claims 4, 5, and 13 are not unpatentable as obvious. We have considered the remaining arguments but find them unpersuasive.

CONCLUSION

For the foregoing reasons, the decisions of the Board are affirmed in part and reversed in part.

AFFIRMED IN PART, REVERSED IN PART

COSTS

No costs.