

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CANON INC., and CANON U.S.A., INC.,

Petitioner,

v.

HS ASSET AND TECHNOLOGY, LLC,

Patent Owner.

Case IPR2018-00501
Patent 9,264,614 B2

Before MICHAEL R. ZECHER, STACEY G. WHITE, and
JOHN P. PINKERTON, *Administrative Patent Judges*.

PINKERTON, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
Inter Partes Review
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Canon Inc. and Canon U.S.A., Inc. (collectively “Petitioner”) filed a Petition for *inter partes* review of claims 1–9 of U.S. Patent No. 9,264,614 B2 (Ex. 1001, “the ’614 patent”). Paper 1 (“Pet.”). In the Decision on Institution (Paper 9, “Dec. on Inst.”), we instituted trial as to claims 1–9 of the ’614 patent on all asserted grounds of unpatentability. HS Asset and Technology, LLC (“Patent Owner”) filed a Patent Owner Response (Paper 12, “PO Resp.”), and Petitioner filed a Reply (Paper 13, “Pet. Reply”). An oral hearing was held on April 2, 2019, and the transcript of the hearing is included in the record. Paper 18 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–9 of the ’614 patent are unpatentable.

A. *Related Proceedings*

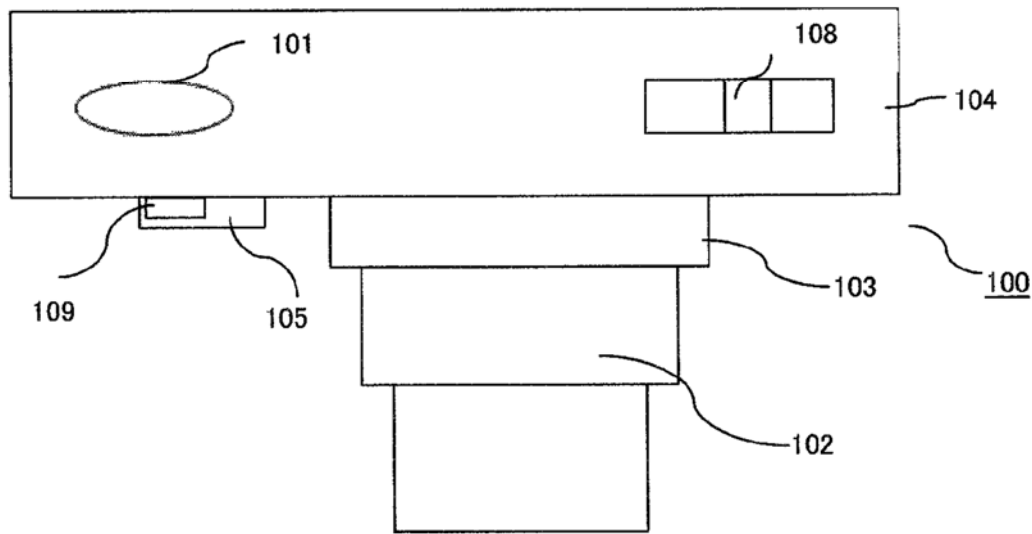
Petitioner has filed a separate petition for *inter partes* review of claims 1–9 of the ’614 patent. Pet. 2 n.1 (see IPR2018–00499). We address that Petition in a separate decision issued concurrently. Patent Owner and Petitioner are also involved in a pending district court action (*HS Asset & Tech., LLC v. Canon USA, Inc.*, 1:16-cv-06339 (E.D.N.Y.)). See Ex. 1002 ¶ 65 n.4.

B. *The ’614 Patent*

The ’614 patent generally is directed to a digital camera that includes a rotary switch, a state changing switch, and a restricting member. Ex. 1001,

2:29–32.¹ The specification explains that the “switching unit is configured to independently switch between two states.” *Id.* at 2:34–35. Figure 1B of the ’614 is shown below.

FIG.1B



¹ The specification discloses that the “switching unit” switches between two states, restricted and non-restricted. Ex. 1001, 2:34–38. The specification also discloses that the “selector switch” is configured to switch between a restricted and non-restricted state. *See, e.g., id.* at 3:14–18. Although the terms “switching unit” and “selector switch” are used in the specification, the claims use the term “state changing switch” and recite “the state changing switch is configured to switch between two states.” *See, e.g.,* Ex. 1001, 11:9, 16, 25–26, 46; 12:43–53. Consistent with the claim language, our analysis refers to the term “state changing switch.”

Figure 1B is a schematic diagram of a top view of digital camera 100 according to the first embodiment. Ex. 1001, 4:33–35. Figure 1B shows a “rotary switch” as ring 103 around lens-barrel 102. *Id.* at 2:66–67, 4:35–39. Figure 1B also shows shutter 101 for photographing, power switch 108, selector switch (“state changing switch”) 105 for switching a mode for continuous or discrete output values in the rotary ring, and function button 109 for further mode switching disposed on the outer surface of chassis 104. *Id.* at 4:39–46.

The ’614 patent explains that digital cameras may use a number of functions, such as focusing, zooming, exposure, shutter speed, ISO (sensitivity), and switching of imaging modes. *Id.* at 1:26–29. The patent acknowledges that rotary switches, such as ring 103, that control these various camera functions were well known prior to the invention of the ’614 patent. *Id.* at 1:50–2:1. The ’614 patent also acknowledges that camera functions typically known to have discrete values were controlled using a rotary switch whose “rotation is locked in a specific position,” whereas functions known to have continuous values were controlled using a rotary switch that “continuously rotates” without locking in a specific position. *Id.* at 2:13–18.

In the ’614 patent, the state changing switch is configured to independently switch between “a restricted state where an operation of the rotary switch causes a clicking feel; and a non-restricted state where an operation of the rotary switch does not cause a clicking feel.” *Id.* at 3:41–45. The ’614 patent explains that “[a] function with discrete output values [such as one of a shutter speed and aperture] is assigned to the restricted state, and a function with continuous output values [such as one of focusing and zoom

magnification of a lens] is assigned to the non-restricted state.” *Id.* at 3:50–53, 2:41–46.

The '614 patent describes that the restricted state (*i.e.*, clicking feel) and non-restricted state (*i.e.*, smooth feel) are generated mechanically by restricting member 107 engaging or disengaging a trough or depressed portion between the projecting portions 201 on rotary switch 103. *Id.* at 2:38-41. Figures 3A and 3B of the '614 patent are reproduced below.

FIG.3A

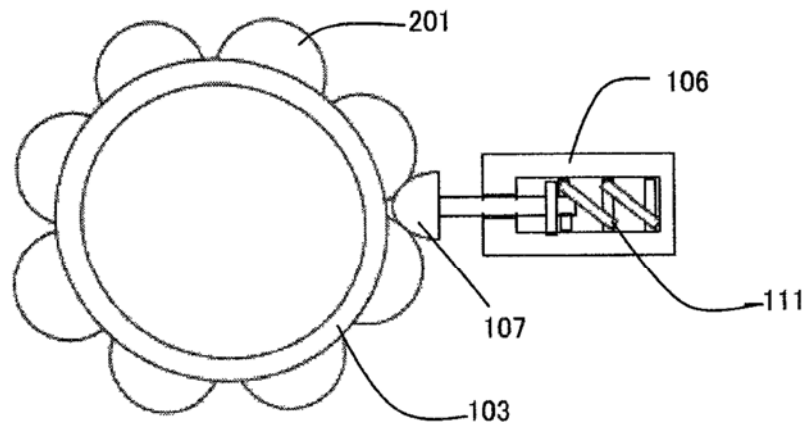
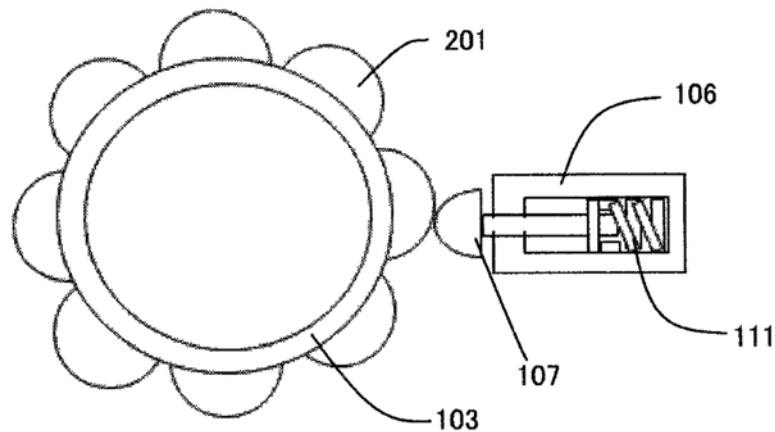


FIG.3B



Figures 3A and 3B are conceptual diagrams illustrating the operation when selector switch 105 (not illustrated in Figures 3A and 3B) is set to a restricted state. *Id.* at 5:16–19. These figures show projecting portions 201 in semi-circular shapes evenly disposed on the periphery of rotary ring 103. *Id.* at 5:9–11. They also show fixed portion 106 disposed adjacent, and to the right of, ring 103, in which restricting portion 107 is coupled to the fixed portion via spring 111. *Id.* at 5:1–3. The '614 patent explains that, when selector switch 105 is set to a restricted state, fixed portion 106 moves to approach rotary ring 103 inside chassis 104. *Id.* at 5:19–23. Fixed portion 106 includes restricting portion 107 that is projected by spring 111. *Id.* at 5:21–23. When rotary ring 103 is rotated, the rotary ring is in a fixed position, as shown in Figure 3A. *Id.* at 5:23–25. When restricting portion 107 has a position other than the trough between the projecting portions, as shown in Figure 3B, restricting portion 107 moves to the closest trough by the pressing force of spring 111, causing the clicking feel to the user. *Id.* at 5:25–33.

C. Illustrative Claim

Among the challenged claims, claims 1 and 9 are independent; claims 2–8 depend directly from claim 1. Claim 1 is illustrative of the claimed subject matter and is reproduced below (with paragraph lettering added as in the Petition):

1. (a) A digital camera, comprising:
 - (b) a rotary switch,
 - (c) a state changing switch, and
 - (d) a restricting member,

wherein

(e) the rotary switch has a surface with a plurality of depressed portions or trough portions, and the restricting member engages with the depressed portion or the trough portion of the rotary switch in a case where a restricted state is set by the state changing switch so as to restrict rotation of the rotary switch, such that engagement and disengagement of the restricting member with the depressed portion or the trough portion of the rotary switch mechanically generate[s] a clicking feel;

(f) a rotating operation of the rotary switch causes a control corresponding to first and second functions respectively assigned to two states selected by the state changing switch;

(g) the state changing switch is configured to switch between two states, independently of a third function other than the first and second functions assigned to the respective states of the rotary switch, the two states including the restricted state and a non-restricted state;

(h) in the restricted state, the rotation of the rotary switch is restricted with the clicking feel, and a function of at least one of a shutter speed and an aperture as the first function with discrete output values is related to the rotating operation of the rotary switch;

(i) in the non-restricted state, the rotation of the rotary switch is not restricted and does not generate the clicking feel, and a function of at least one of focusing, and a zoom magnification of a lens, as the second function with continuous output values, is related to the rotating operation of the rotary switch; and

(j) the restricting member comprises a mechanical structure that restricts rotation of the rotary switch in a case where the restricted state is set by the state changing switch.

Ex. 1001, 11:6–46.

D. Evidence of Record

Petitioners rely upon the following references, as well as the Declaration of William Plummer, Ph.D. (Ex. 1002):

Reference	Exhibit(s)	Printed Publication
Yuge	1003	U.S. Patent Application Publication No. 2013/0335589 A1 to Yuge, published Dec. 19, 2013, from U.S. Serial No. 13/688,989, filed on Nov. 29, 2012, and claims priority to a Japanese Application filed on Nov. 29, 2011
Hayashi	1004 and 1005	Japanese Patent Publication No. 2014/0178644 to Hayashi (Ex. 1004 and Ex. 1005 (certified English translation)), published Sept. 25, 2014, from Japanese Patent Application No. P2013-54254, filed on Mar. 15, 2013
Ishigaki	1006	U.S. Patent Application Publication No. 2008/0197004 A1 to Ishigaki et al., published on Aug. 21, 2008, from U.S. Serial No. 12/071,242, filed on Feb. 19, 2008

E. Instituted Grounds of Unpatentability

As discussed further *infra*, Petitioner contends the effective filing date of the '614 patent claims is no earlier than January 16, 2015, the actual filing date in the United States. Pet. 9. Petitioner also contends that, because the '614 patent's proper effective filing date is later than March 16, 2013, the

'614 patent is subject to the Leahy-Smith America Invents Act ("AIA"). *Id.* (citing Manual of Patent Examining Procedure ("MPEP") § 2159.02). Thus, we instituted trial based on the following grounds of unpatentability ("grounds") under 35 U.S.C. §§ 102 and 103, which were all the grounds raised in the Petition:

Reference(s)	Basis	Claim(s) Challenged
Yuge	§ 102(a)(2)	1–4 and 6–9
Yuge and knowledge of a person of ordinary skill in the art (POSA)	§ 103	1–4 and 6–9
Hayashi	§ 102(a)(1)	1–5 and 7–9
Hayashi and knowledge of POSA	§ 103	1–5 and 7–9
Yuge and Ishigaki	§ 103	5
Hayashi and Yuge	§ 103	6

F. Person of Ordinary Skill in the Art

Petitioner asserts a person of ordinary skill in the art before the effective filing date of the claimed invention of the '614 patent would have a bachelor's degree in optical engineering, mechanical engineering, electrical engineering, optics or physics with at least three years of experience working in optical engineering, a master's degree in one of the above disciplines with at least two years of experience working in optical engineering, a Ph.D. in one of the above disciplines focusing on optical engineering, or other equivalent experience. Pet. 28–29 (citing Ex. 1002 ¶ 55). Patent Owner has not expressed a position on the level of ordinary

skill in the art. *See generally* PO Resp. After reviewing the full record in this case, we adopt Petitioner’s description of the person of ordinary skill in the art because it is consistent with the asserted prior art and the ’614 patent, and we apply this level of ordinary skill in our analysis below.

II. DISCUSSION

A. *Claim Construction*

In this *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b) (2017).² Under that standard, and absent any special definitions, we give claim terms their ordinary and customary meaning, as they would be understood by one of ordinary skill in the art, in the context of the entire patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

² The recent revisions to our claim construction standard do not apply to this proceeding because the new “rule is effective on November 13, 2018 and applies to all . . . petitions filed on or after the effective date.” 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). Although Patent Owner argues that the broadest reasonable interpretation standard should be replaced with the standard applied in district court proceedings “in the interest of achieving a just result of this proceeding” (PO Resp. 6), Patent Owner provides no explanation or argument as to how the result here would change if the claim construction standard were changed. Thus, consistent with the version of 37 C.F.R. § 42.100(b) in effect at the time this particular Petition was filed on January 15, 2018, we apply the broadest reasonable interpretation standard.

Petitioner and Patent Owner disagree on the interpretation of two limitations of claims 1 and 9 of the '614 patent: “independently of a third function other than the first and second functions”; and “a rotating operation of the rotary switch causes a control corresponding to first and second functions respectively assigned to two states selected by the state changing switch.” See Ex. 1001, 11:20–27, 12:39–45. In the Decision on Institution, we determined, for purposes of that decision, that the broadest reasonable interpretation of the “independently” limitation is “free of and not subject to any camera functions other than at least one of the first and second functions.” Dec. on Inst. 13. We also determined, as Petitioner argued, that the “independently” limitation is a “negative limitation” because it excludes state changing switches configured to switch between two states that are subject to any camera functions other than the first and second functions. *Id.* at 17. In the Decision on Institution, we did not construe expressly the “rotating operation” limitation. We address both of the disputed limitations below.

1. *“independently of a third function other than the first and second functions”*

Independent claim 1 recites “the state changing switch is configured to switch between two states, independently of a third function other than the first and second functions assigned to the respective states of the rotary switch, the two states including the restricted state and a non-restricted state.” Ex. 1001, 11:25–29. Similarly, independent claim 9 recites “the state changing switch is configured to switch two states independently of a third function other than the first and second functions assigned to the rotary switch.” *Id.* at 12:43–45.

Claims 1 and 9 recite that, in the “restricted state,” the “first function” is “at least one of a shutter speed and an aperture.” Ex. 1001, 11:30–34, 12:47–49. Claim 1 also recites that, in the “non-restricted state,” the “second function” is “at least one of focusing, and a zoom magnification of a lens.” *Id.* at 11:37–41. The Abstract of the ’614 patent explains that “[t]he [state changing switch] switches between two states independently of a function other than functions assigned to the respective states of the rotary switch.” *Id.* at [57]. The specification explains that the state changing switch is configured to switch between two states—a restricted state (with a clicking feel) and a non-restricted state (without a clicking feel)—and that “[a] function with discrete output values is assigned to the restricted state, and a function with continuous output values is assigned to the non-restricted state.” *Id.* at 3:41–45, 3:50–52; *see also, id.* at 2:34–35, 3:15–16.

Petitioner argues the ordinary meaning of the word “independently” is “free” of or “not subject to the control of others.” Pet. 17 (citing Ex. 1002 ¶ 64 (citing Ex. 1015 (*Merriam-Webster’s Collegiate Dictionary*), 5; Ex. 1028 (*The Oxford English Dictionary*), 3–4)). Thus, Petitioner contends that the “independently” limitations of claims 1 and 9 should be construed to require that “the state changing switch does not affect any function other than the first and second assigned functions.” *Id.* at 17–18. Petitioner also argues that the claimed “third function” is not described by the ’614 patent and the specification does not “limit[] the third function to a particular type of function other than that it cannot be the first and second functions.” *Id.* (citing Ex. 1002 ¶ 63).

Patent Owner does not propose a specific definition for the “independently” limitation. *See* PO Resp. 6–8. Instead, Patent Owner

argues that, in the Decision on Institution, we interpreted “the state changing switch out of context with the operation control process disclosed in the ’614 Patent for which it is configured to operate in combination” with other features recited in each of independent claims 1 and 9. *Id.* at 6. In particular, Patent Owner argues that Figure 4 shows, and the ’614 patent describes, a control operation process that executes a function based on a state of a selector switch and a state of a function button. *Id.* Patent Owner argues that, as an example, when the selector switch selects a restricted state, and the function button is in an “on” state, the process executes an aperture mechanism control (i.e., a first function). *Id.* at 7 (citing Ex. 1001, Fig. 4, S300, S401, S601). When the selector switch selects a non-restricted state, and the function button is in the “on” state, the process executes a zoom-motor drive control (i.e., a second function). *Id.* (citing Ex. 1001, Fig. 4, S300, S402, S604). Thus, according to Patent Owner, “the selector switch selects between two states, and as a result, two functions, independently of a third function, such as the focus mechanism control, which is only accessible when the function button is in the ‘off’ state.” *Id.*

Patent Owner also disagrees with our preliminary finding in the Decision on Institution that “the ‘third function’ is not defined expressly in the specification and that nothing in the specification or the claims limits the third function to a particular camera function, other than it cannot be the first or second function.” *Id.* (citing Dec. on Inst. 10–11). Specifically, Patent Owner argues that “this finding ignores the role of the function button in further selecting between additional states in the camera operation control process.” *Id.* at 8. Patent Owner further argues as follows:

FIG. 4 itself expressly discloses that when the function button is, for example, in an “on” state, the state changing switch can affect selection between two functions that are not the focus mechanism control function, i.e., a third function. Patent Owner respectfully submits that Petitioner’s construction, as adopted by the Board, is based on a misinterpretation of the claims and a failure to account for the role of the function button in the operation control process that the claimed camera is configured to carry out.

Id.

Based on the record developed during trial, we are not persuaded by Patent Owner’s arguments for two reasons. First, we are not persuaded by Patent Owner’s argument that we interpreted the state changing switch “out of context” with the process disclosed in Figure 4 of the ’614 patent that executes a function based on a state of a selector switch “and a state of a function button” or that we ignored or failed to account for the role of the function button in selecting additional states in that process. See PO Resp. 6–9. As Petitioner argues, and we agree, the claims of the ’614 patent do not recite or require a function button. Pet. Reply 3. As Petitioner also argues, the specification makes it clear that the function button used in Figure 4 is optional because it states the “function button can be removed corresponding to the number of functions.” *Id.* at 4 (citing Ex. 1001, 7:28–29). Petitioner further argues, and we agree, “the claims expressly cover [] a two-function embodiment, which would **not** require a function button, because they only require that ‘at least **one function**’ be assigned to each of the two states (restricted and non-restricted)” of the rotary switch. *Id.* (citing Ex. 1001, 11:33–34, 11:40–41).

Second, we are not persuaded by Patent Owner’s arguments concerning the claimed “third function.” *See* PO Resp. 7–8. Although Patent Owner disagrees with our preliminary finding in the Decision on Institution that the “third function” is not defined expressly in the specification, Patent Owner did not cite to an express definition in the specification of the term “third function” in its Response. Instead, Patent Owner argues that the first or second functions shown in Figure 4, and recited in the claims, such as the “focus” function, are also the claimed “third function.” *Id.* We disagree. As Petitioner argues, this argument “must be rejected” because it contradicts the express language independent claims 1 and 9—namely a “third function” “***other than*** the first and second functions.” Pet. Reply 6 (citing Ex. 1001, 11:26–27 (emphasis added)); *see also* Ex. 1001, 12:44–45. That is, the express language of these independent claims provides that the “third function” is a function “other than” the first functions (shutter speed and aperture) and the second functions (focusing and zoom). Thus, contrary to Patent Owner’s argument, we agree with Petitioner that “in an embodiment where there are only two functions, *e.g.*, focusing and shutter speed, focusing must be the ‘second function’ and cannot be the ‘third function.’” Pet. Reply 6.

Thus, considering the language of claims 1 and 9 in light of the specification, and Petitioner’s dictionary definition of “independently,” we maintain that the broadest reasonable interpretation of the limitations of claims 1 and 9 reciting that the state changing switch is configured to switch between two states “independently of a third function other than the first and second functions” is that the state changing switch is configured to switch

between two states “free of and not subject to any camera functions other than at least one of the first and second functions.” See Dec. on Inst. 13.

a. Negative limitation

Petitioner contends that the “independently” limitation “is a negative limitation that excludes embodiments in which the switching of the state changing switch affects a third function.” Pet. 11 (citing Ex. 1002 ¶ 50); Pet. Reply 5 (arguing the same).

Patent Owner argues that Petitioner’s position is unreasonable and illogical. PO Resp. 10. According to Patent Owner, the “independently” limitation “merely requires that the state changing switch be configured to switch between two states without the need for involvement of a third function that is not one of two functions respectively assigned to the two states,” as shown in Figure 4 of the ’614 patent. *Id.* at 10–11. Patent Owner also argues that the state changing switch is a “positively recited feature” of claims 1 and 9, and the recitations that the switch be configured to function independent of a third function do not render the positively recited structural feature they modify, i.e., the state changing switch, a negative limitation. *Id.* at 13. Moreover, Patent Owner argues that the relevant feature is a state changing switch that affects selection between two functions assigned to a rotary ring “without affecting a third function,” as expressly disclosed in Figure 4. *Id.* at 14.

We are not persuaded by Patent Owner’s arguments. Although the “state changing switch” is positively recited in claims 1 and 9, these claims also recite that the switch “is configured to switch between two states, independently of a third function other than the first and second functions.” We maintain that it is reasonable and logical to conclude that the

“independently” phrase is a negative limitation because it defines the claimed state changing switch by what it is not—“free of and not subject to any camera functions other than at least one of the first and second functions”—rather than what it is. In that regard, Petitioner argues, and we agree, that the state changing switch is limited “by the ‘independently’ negative claim limitation, which limits the ‘state changing switch’ by describing what it is not, rather than what it is.” Pet. Reply 5. In other words, the “independently” limitation is a negative limitation because it excludes any embodiment in which the state changing switch is “dependent” on a third function or is subject to any camera functions other than the first and second functions. See Dec. on Inst. 17. Petitioner argues, and we agree, that Patent Owner’s Response confirms this by arguing that the state changing switch operates “without” the need for involvement of, or “without” affecting, a third function. Pet. Reply 5 (citing PO Resp. 11, 14). By describing the state changing switch in terms of operating “without” involvement of, or affect on, a third function, we determine Patent Owner also describes the state changing switch with a negative limitation by describing what it does not do, rather than what it does.

2. *“a rotating operation of the rotary switch causes a control corresponding to first and second functions respectively assigned to two states selected by the state changing switch”*

Patent Owner argues that the ’614 patent is directed to a digital camera having “rotary switch, i.e., a ring that can rotate to change the value of camera functions, and a restricting member that restricts rotation of the rotary switch depending upon a state of a state changing switch.” PO Resp. 8. According to Patent Owner, the claims require that “one of a plurality of

functions to be assigned to each state.” *Id.* Patent Owner also argues that, although the camera executes a process based on the detected state of the selector switch, “the switch itself does not necessarily change a function. Rather, the position of the switch affects selection of a first or second function, independently of a third function, in an operation control process, as shown in FIG. 4.” *Id.* at 8–9. Thus, Patent Owner argues that “this limitation covers a camera control ring to which at least two functions can be assigned, and a state changing switch that can change a tactile feedback of the ring.” *Id.* at 9. Patent Owner further argues “[t]he state changing switch does not itself change a function, but operation by the control ring to select and execute a function in a control process is affected by a state selected by changing switch.” *Id.* Moreover, Patent Owner argues that “Petitioner’s asserted construction that the ring selects function completely independent of the state changing switch is unreasonable, and ignores a plain and ordinary meaning interpretation of the claims.” *Id.*

Petitioner argues that Patent Owner does not offer its own construction for this limitation, but attempts to “square its position in the parties’ co-pending infringement litigation.” Pet. Reply 8. According to Petitioner, in the pending district court action, Patent Owner “asserts that the state changing switch does **not** change the function assigned to the rotary ring,” but in this proceeding, Patent Owner “asserts that both the state changing switch and the function button are required to change camera function.” *Id.* Petitioner also argues that it “has consistently taken the position that the state changing switch determines which of the first or second functions is assigned to the ring.” *Id.* (citing Pet. 34–35, 53–54). Petitioner further argues that, although it asserted one ground in Case

IPR2018–00499 under a theory that the state changing switch merely changed feel, but not function, that argument was based on Patent Owner’s litigation position and “is irrelevant to the present Petition.” *Id.* at 8–9. Moreover, Petitioner argues that Patent Owner’s distinction between the state changing switch “affecting” the function assigned to the rotary ring and “changing” the functions assigned to the ring are irrelevant to the prior art disputes and need not be addressed. *Id.* at 9.

Petitioner contends that Patent Owner’s argument that the claims should be limited to the “control process” or the embodiment of Figure 4 is “completely unsupported by the ‘rotating operation’ claim limitation.” *Id.* at 9. Petitioner argues that the “rotating operation” limitation “only requires that ‘a rotating operation of the rotary switch causes a **control** corresponding to first and second functions.’” *Id.* (citing Ex. 1001, 11:21–24). Petitioner further argues that the term “control” provides no basis to limit the claim to the specific process illustrated in Figure 4. *Id.* at 10. Rather, according to Petitioner, the claim language merely describes “that rotation of the rotary switch changes the values, *i.e.*, controls, whichever of the two camera control functions is assigned to the ring.” *Id.* (citing Ex. 1001, 2:46–51). Thus, Petitioner further argues that, if the Board finds it necessary to construe this limitation, “it merely requires that the rotating operation of the rotary switch causes control of values corresponding to first and second functions respectively assigned to two states, and the state changing switch determines whether the first or second function is controlled by the ring.” *Id.*

Having considered the parties’ arguments with respect to this limitation, and based on the full record developed during trial, we agree with

Petitioner's arguments. More specifically, we agree with Petitioner that the "rotating operation" limitation should be construed according to its plain and ordinary meaning consistent with the specification. In that regard, we note the specification of the '614 patent states "a rotating operation of the rotary switch causes an output corresponding to a function assigned to a state selected by the switching unit to a digital camera system." Ex. 1001, 2:46–49. Thus, the plain and ordinary meaning of the limitation "a rotating operation of the rotary switch causes a control corresponding to first and second functions respectively assigned to two states selected by the state changing switch" is that (1) rotation of the rotary switch "controls" the first and second functions respectively assigned to two states by changing the value of the function and outputting the values, and (2) the state changing switch determines whether the first or second function is controlled by the rotary switch.

B. Effective Filing Date of '614 Patent

The '614 patent matured from a continuation application (U.S. Serial No. 14/599,397), filed on January 16, 2015, of the national stage entry of PCT/JP2013/069228 ("the PCT application"), filed on July 14, 2013. Ex. 1001, [22], [63]. According to the '614 patent, the PCT application "is based upon and claims the benefit of priority from the prior Japanese Patent Application No. 2012-159132 ["the Japanese '132 application"], filed on Jul[y] 18, 2012." *Id.* at 1:6–10.

1. Petitioner's Arguments

Petitioner contends that the challenged claims of the '614 patent are not entitled to a filing date earlier than January 16, 2015, because the priority claims fail as neither the Japanese '132 application nor the PCT application

“supports the limitation ‘the state changing switch is configured to switch between two states, independently of a third function other than the first and second functions assigned to the respective states of the rotary switch’ (Ex. 1001, 11:25–28, 12:43–45) of claims 1–9.” Pet. 9 (underlining omitted); *see also* Pet. Reply 10 (arguing the same).

Petitioner argues that the Japanese ’132 application and the PCT application do not contain any reference to a “third function” or a statement that the switching of the state changing switch must not affect any other functions. Pet. 11 (citing Ex. 1017 (the English translation of the Japanese ’132 application); Ex. 1027 (the English translation of the PCT application)). Petitioner also argues the Japanese ’132 application lacks the term “independently” and that the term was first introduced in the PCT application, but in the context of “independence between the state changing switch and rotary switch.” Pet. 11 (citing Ex. 1027 ¶¶ 13, 19–20, claims 1, 14, 15; Ex. 1002 ¶ 51).

As discussed *supra*, Petitioner also contends, and we agree, the “independently” limitation is a “negative limitation that excludes embodiments in which the switching of the state changing switch affects a third function.” *Id.* at 11 (citing Ex. 1002 ¶ 50). Petitioner acknowledges that, corresponding to Figure 4 and column 6, line 56 to column 7, line 37 of the U.S. application, the priority applications disclose an exemplary embodiment in Figure 4, described in the Japanese ’132 application (Ex. 1017 ¶ 32) and the PCT application (Ex. 1027 ¶ 32), which shows the state changing switch switching between a first and second function. Pet. 11–12. Petitioner argues, however, that “disclosing switching between these two functions is not sufficient to provide written description support for the

additional concept that the switching of the state changing switch also must not [affect] some other third function.” *Id.* at 12 (citing *CaptionCall, L.L.C. v. Ultratec, Inc.*, Case IPR2015-00636, slip op. at 108–09 (PTAB Sept. 7, 2016) (Paper 98) (“A patentee cannot necessarily claim the absence of something just because that something was not disclosed in the written description. What is required is an indication that the inventor invented a device that did not have that something.”); *see also* Pet. Reply 11 (arguing the same)).

2. Patent Owner’s Arguments

Patent Owner argues that the “’614 Patent properly claims priority to the PCT application filed July 14, 2013, and the Japanese ’132 application filed July 18, 2012.” PO Resp. 10. As discussed above, Patent Owner argues that the “independently” limitation should not be construed as a negative limitation and that the claimed configuration “is readily apparent in the embodiment shown in FIG. 4 of the ’614 [p]atent.” *Id.* at 10–11. Regarding Figure 4, Patent Owner argues: (1) “when the selector switch selects a restricted state, and the function button is in an ‘on’ state, the operation control process executes an aperture mechanism control, i.e., a first function”; (2) “[w]hen the selector switch selects a non-restricted state, and the function button is in the ‘on’ state, the operation control process executes a zoom-motor drive control, i.e., a second function”; and (3) “[t]hus, the selector switch selects between two states, and as a result, two functions, independently of a third function” such as image focus. *Id.* at 11. Patent Owner further argues that, in the embodiment illustrated in Figure 4, the focus mechanism control is expressly unavailable when the function button is in the “on” state and, therefore, Figure 4 expressly discloses an

embodiment where a third function is unaffected by a selection of a state changing switch. *Id.* at 12–13.

3. *Applicable Law*

Under 35 U.S.C. § 311(b), a petitioner in an *inter partes* review may challenge the claims of a patent based only on “prior art consisting of patents or printed publications.” 35 U.S.C. § 311(b). It is well-settled that, except in limited circumstances not present here, Petitioner has the ultimate burden of persuasion to prove unpatentability by a preponderance of the evidence. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378–79 (Fed. Cir. 2015).

“Under [35 U.S.C.] section 119, the claims set forth in a United States application are entitled to the benefit of a foreign priority date if the corresponding foreign application supports the claims in the manner required by section 112, ¶ 1.” *In re Gosteli*, 872 F.2d 1008, 1010 (Fed. Cir. 1989). Moreover, when a priority claim involves a chain of priority documents, “each application in the chain leading back to the earlier application must comply with the written description requirement of 35 U.S.C. § 112.” *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1571 (Fed. Cir. 1997).

As the U.S. Court of Appeals for the Federal Circuit has noted, however, “[i]n order to satisfy the written description requirement, the disclosure as originally filed does not have to provide *in haec verba* support for the claimed subject matter at issue.” *Purdue Pharma L.P. v. Faulding Inc.*, 230 F.3d 1320, 1323 (Fed. Cir. 2000). Rather, “the test for sufficiency is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed

subject matter as of the filing date.” *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010).

“Negative claim limitations are adequately supported when the specification describes a reason to exclude the relevant limitation.” *Inphi Corp. v. Netist, Inc.*, 805 F.3d 1350, 1355 (Fed. Cir. 2015) (quoting *Santarus, Inc. v. Par Pharm., Inc.*, 694 F.3d 1344, 1351 (Fed. Cir. 2012)). “[P]roperly describing alternative features—without articulating advantages or disadvantages of each feature—can constitute a ‘reason to exclude’ under the standard articulated in *Santarus*.” *Inphi*, 805 F.3d at 1355.

4. Analysis

As discussed *supra*, we have construed the “independently” limitation to mean “free of and not subject to any camera functions other than at least one of the first and second functions.” As also discussed *supra*, we conclude this is a “negative” limitation because it defines the state changing switch by what it does not do, rather than by what it does. In other words, the claims do not cover all digital cameras with a “state changing switch,” but only those in which the state changing switch is configured to switch between two states and is not subject to any camera functions other than at least one of the first and second functions.

Based on the full record developed during trial, we find Petitioner has shown by a preponderance of the evidence that the priority documents fail to provide written description support for the “independently” limitation required by independent claims 1 and 9. Patent Owner argues that “[e]mbodiments of the priority documents and U.S. application disclose such a state changing switch in combination with the recited features of each of claims 1–9, as supported by, *inter alia*, FIG. 4.” PO Resp. 14. In that

regard, Patent Owner relies on Figure 4, and its corresponding description, in the U.S. application for the '614 patent (Ex. 1001, Fig. 4, 6:56–7:13), the Japanese '132 application (Ex. 1017, Fig. 4, ¶¶ 32–33), and the PCT application (Ex. 1027, Fig. 4, ¶ 32).

As an initial matter, we agree with Patent Owner that each priority application discloses an exemplary embodiment illustrated in Figure 4, and related descriptions, corresponding to Figure 4 and its description in the '614 patent. In particular, the exemplary embodiment illustrated in Figure 4 of each priority application shows the state changing switch switching between a first function (“aperture control”) and a second function (“zoom control”) when the function button is in the “on” state, and each exemplary embodiment also shows “focus control.” See Ex. 1017, Fig. 4, ¶ 32; Ex. 1027, Fig. 4, ¶ 32; Ex. 1001, Fig. 4, 6:56–7:37). Petitioner, however, has shown by a preponderance of the evidence that the disclosure in Figure 4 of switching between these two functions when the function button is set to “on” is not sufficient to provide written description support for the additional requirement in claims 1 and 9 that the state changing switch is configured to switch between two states “free of and not subject to a third function other than at least one of the first and second functions.”

We agree with Petitioner for three reasons. First, Petitioner has shown that Patent Owner’s reliance on Figure 4 is unavailing because, as discussed *supra*, the claims expressly cover a two-function embodiment that does not recite or require a function button and only requires at least one function be assigned to each of the two states (restricted and non-restricted) of the rotary switch. See Pet. Reply 3–4 (citing Ex. 1001, 11:33–34, 11:40–41). In the embodiment of Figure 4, on the other hand, one function button

is required and two functions are assigned to each of the two states: aperture and shutter, in the restricted state; and, zoom and focus, in the non-restricted state. *See* Ex. 1001, 6:62–7:13.

Second, Petitioner has shown that Patent Owner’s reliance on Figure 4 is unavailing because, as also discussed *supra*, neither Figure 4 nor its corresponding description in the specification, or in the priority documents, mentions the term “third function.” Moreover, as further discussed *supra*, Petitioner has shown that the first or second functions shown in Figure 4, and recited in independent claims 1 and 9, including the “focus” function, are not the claimed “third function” because the express language of these claims provides that the “third function” is “other than” the first functions (shutter speed and aperture) and the second functions (focusing and zoom). Pet. Reply 6 (citing Ex. 1001, 11:26–27); *see also* Ex. 1001, 12:44–45.

Third, Petitioner has shown by a preponderance of the evidence that the priority documents do not disclose any reason to exclude state changing switches configured to switch states that are subject to camera functions other than the first and second functions. As Petitioner correctly argues, “[t]he mere absence of a feature excluded by a negative limitation does **not** provide written description support.” Pet. Reply 12 (citing *CaptionCall*, Case IPR2015-00636, slip op. at 108–09). Referring to the citation to *Inphi* in the Decision on Institution, Patent Owner argues that “*Inphi* does not . . . stand for the rule that negative claim limitations must be supported by reasons to exclude.” PO Resp. 13. However, as Petitioner argues, and we agree, “*Inphi* unequivocally stands for the proposition that a negative limitation must be supported by a reason to exclude.” Pet. Reply 13 (citing *Inphi*, 805 F.3d at 1357 (“We affirm the Board’s finding . . . that the

‘original ’537 patent disclosure reasonably conveys a reason to exclude the relevant limitations.’’’)). We further agree with Petitioner’s argument that the issue in *Inphi* was “**how** reasons to exclude could be shown in a disclosure.” Pet. Reply 13. In that regard, Petitioner argues, and we agree, *Inphi* holds that “disclosure of a negative limitation does not require disclosing advantages or disadvantages of the negative limitation but also could be accomplished by disclosing a number of distinct alternatives and claiming some alternatives to the exclusion of the other alternatives.” *Id.* (citing *Inphi*, 805 F.3d at 1366–57).

Patent Owner argues that “the alleged negative limitation is expressly supported, and, therefore, Patent Owner need not cite to a specific advantage of the claimed configuration.” PO Resp. 14. Patent Owner also argues that it “does, however, expressly state an advantage in reduction of external operating controls.” *Id.*; *see also id.* at 3 (arguing the same). Petitioner, however, has shown by a preponderance of the evidence that the priority documents do not provide a reason to exclude the “independently” negative limitation in either manner authorized in *Inphi*—by disclosing (1) advantages or disadvantages, or (2) distinct alternatives.

Beginning with Patent Owner’s assertion of the “advantage” of reducing operating controls, such as buttons, we agree with Petitioner that this argument is conclusory and not supported by any evidence linking this supposed advantage to the “independently” limitation. Pet. Reply 12. We also agree with Petitioner that this argument is illogical because “the ’614 patent’s stated desire to reduce the number of buttons on the exterior of a camera would encourage use of the state changing switch to affect more functions not fewer.” *Id.* at 11–12 (citing Ex. 1001, 10:29–32).

Turning to the disclosure of “distinct alternatives,” Petitioner argues, and we agree, Patent Owner provides no argument or evidence suggesting that the ’614 priority documents “disclose alternatives where a third function is affected and distinguish those embodiments from alternative embodiments where the third function is not affected.” *Id.* at 13. We also agree with Petitioner that Patent Owner cannot make this showing “because there is no discussion of a third function at all in the ’614 priority documents.” *Id.* at 14. Instead, as Petitioner correctly notes, Patent Owner argues that the “independently” limitation is expressly supported in Figure 4 of the priority arguments. *Id.* For the reasons discussed above, however, Petitioner has shown that Figure 4 and its related description in each priority document does not disclose or support the “independently” limitation because they do not mention a “third function” and the “focus” function cannot be the claimed “third function” because the claims specifically recite “a third function other than the first and second functions.” Moreover, Petitioner argues, and we agree, that Figure 4 and its related disclosure in each priority document “[are] silent on whether the state changing switch does not affect any function.” *Id.* Although drawings alone can in some circumstances provide adequate written description support, Petitioner has shown by a preponderance of the evidence that Figure 4 and its related description in each priority document do not support the “independently” limitation because they do not provide a sufficient disclosure that would have informed one of ordinary skill in the art as to the impact (or lack thereof) of “third functions” on the recited state changing switch.

In summary, we agree with Petitioner that the disclosure of each of the priority documents, including Figure 4 and its related description, does

not reasonably convey to those skilled in the art that the inventor had possession of the claimed “independently” limitation as of the filing dates of such documents. *Ariad Pharms.*, 598 F.3d at 1351. Accordingly, Petitioner has shown by a preponderance of the evidence that Patent Owner’s priority claim fails. Thus, Patent Owner’s earliest effective priority date is January 16, 2015, the filing date of the United States application, and as a result, Yuge and Hayashi both qualify as prior art with respect to the ’614 patent.³

C. Asserted Anticipation of Claims 1–4 and 6–9 by Yuge

Petitioner contends claims 1–4 and 6–9 of the ’614 patent are anticipated by Yuge. Pet. 29–48. Patent Owner argues that Yuge does not disclose “in the non-restricted state, the rotation of the rotary switch is not restricted *and* does not generate the clicking feel,” as recited in claims 1 and 9. PO Resp. 16. Patent Owner also argues that Petitioner fails to show that Yuge discloses the “independently” limitation of claims 1 and 9. *Id.* As outlined below, we conclude that Petitioner has shown by a preponderance of evidence that claims 1–4 and 6–9 are anticipated by Yuge.

1. Principles of Law

To prevail in challenging the claims of the ’614 patent, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

35 U.S.C. § 102(a) as amended by the AIA provides that:

³ Because the earliest effective priority date of the ’614 patent is after March 16, 2013, we agree with Petitioner that the ’614 patent is subject to the provisions of the AIA, including the amendments to 35 U.S.C. §§ 102 and 103. Pet. 9; see MPEP § 2159.02 (9th ed. 2018) (the amended sections “apply to any patent application that contains . . . a claimed invention that has an effective filing date that is on or after March 16, 2013”).

[a] person shall be entitled to a patent unless--(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention; or (2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987). The elements must be arranged as recited in the challenged claim, but this is not an *ipsissimis verbis* test (i.e., identical terminology is not required). *In re Bond*, 910 F.2d 831, 832 (Fed. Cir. 1990).

“[A]nticipation by inherent disclosure is appropriate only when the reference discloses prior art that must *necessarily* include the unstated limitation” *Transclean Corp. v. Bridgewood Servs., Inc.*, 290 F.3d 1364, 1373 (Fed. Cir. 2002). “Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient.” *Cont’l Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1269 (Fed. Cir. 1991) (quoting *In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981)).

2. Overview of Yuge

A colored annotated version of Figure 1 of Yuge (Ex. 1003) is reproduced below. Pet. 21.

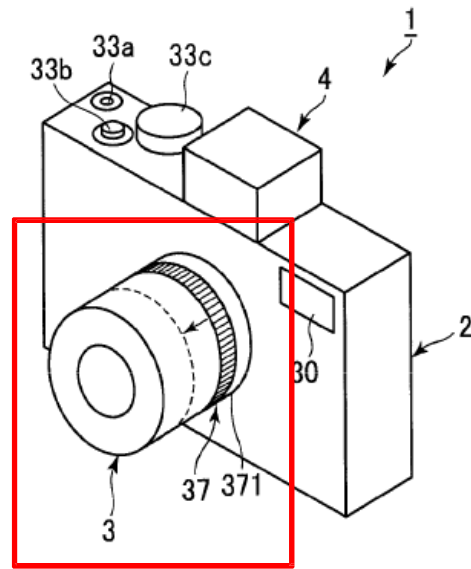


Figure 1 of Yuge is a diagram illustrating a front-side perspective view of a digital camera. Ex. 1003 ¶ 10. Yuge discloses a digital camera that has a rotary switch called “operation unit 37,” depicted above in Fig. 1 in red,⁴ that allows a user to control camera functions such as zoom and aperture through a rotational operation. Ex. 1003 ¶¶ 50–51, 95, 98, 156–158. Operation unit 37 includes operation ring 371 located at an outer periphery of the lens barrel that performs the rotational operation. *Id.* at Fig. 1, ¶¶ 51, 83. In addition to performing a rotational operation, operation ring 371 is capable of moving forward/backward along the direction of the optical axis (i.e., operation ring 371 slides back and forth) enabling a user to switch between different operations of the camera. *Id.* ¶ 51.

Yuge’s operation unit 37 is capable of switching between different tactile sensations depending on the function it controls. *Id.* ¶¶ 154–156,

⁴ All colored annotations to the figures of Yuge reproduced herein were made by Petitioner. See Pet. 21–23.

132–133. Specifically, Yuge discloses two distinct tactile sensations: one where rotation of the operation unit 37 produces a clicking feel, and another where the rotation is smooth. *Id.* ¶¶ 133, 155. Based on these two sensations, Yuge’s operation ring 371 can have two “operating states”: one with the clicking feel that performs “digital operations,” where aperture and shutter speed are controlled; and another with the smooth feel that performs “analog operations,” where focusing and zooming are controlled. *Id.* ¶¶ 93–98, 132, 133, 154–158.

Colored annotated versions of Figures 23 and 25 of Yuge are reproduced below. Pet. 22.

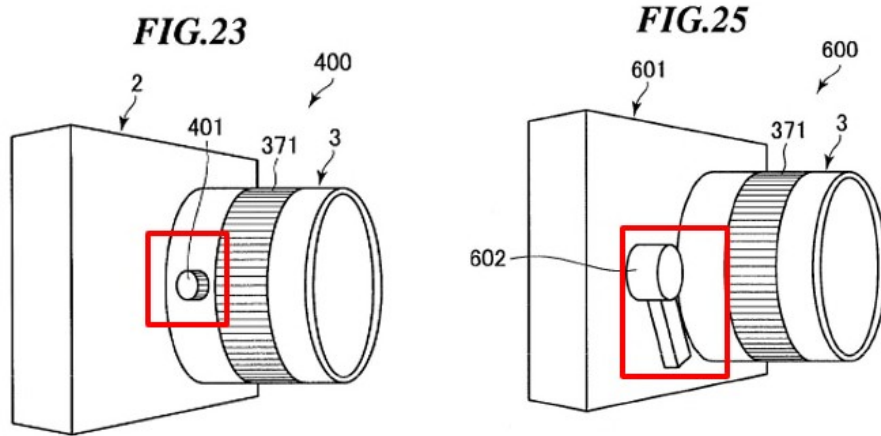


Figure 23 of Yuge is a diagram illustrating a front-side perspective of a digital camera in which push button 401 (shown in red) changes an operating state of the rotational ring. Ex. 1003 ¶ 32. Figure 25 of Yuge is a diagram illustrating a front-side perspective of a digital camera in which lever type input unit 602 (shown in red) changes an operating state of the rotational ring. *Id.* ¶ 33.

Yuge provides a “switching unit” for switching back and forth between the two operating states. *Id.* ¶¶ 130, 154. Yuge discloses that the

switching unit may work electrically or mechanically, and can be configured on the side of the lens barrel, as shown in Figure 23, or at a side of the housing, as shown in Figure 25. *Id.* ¶¶ 131, 135–136, 139.

A colored annotated version of Figure 9 of Yuge is reproduced below.
Pet. 23.

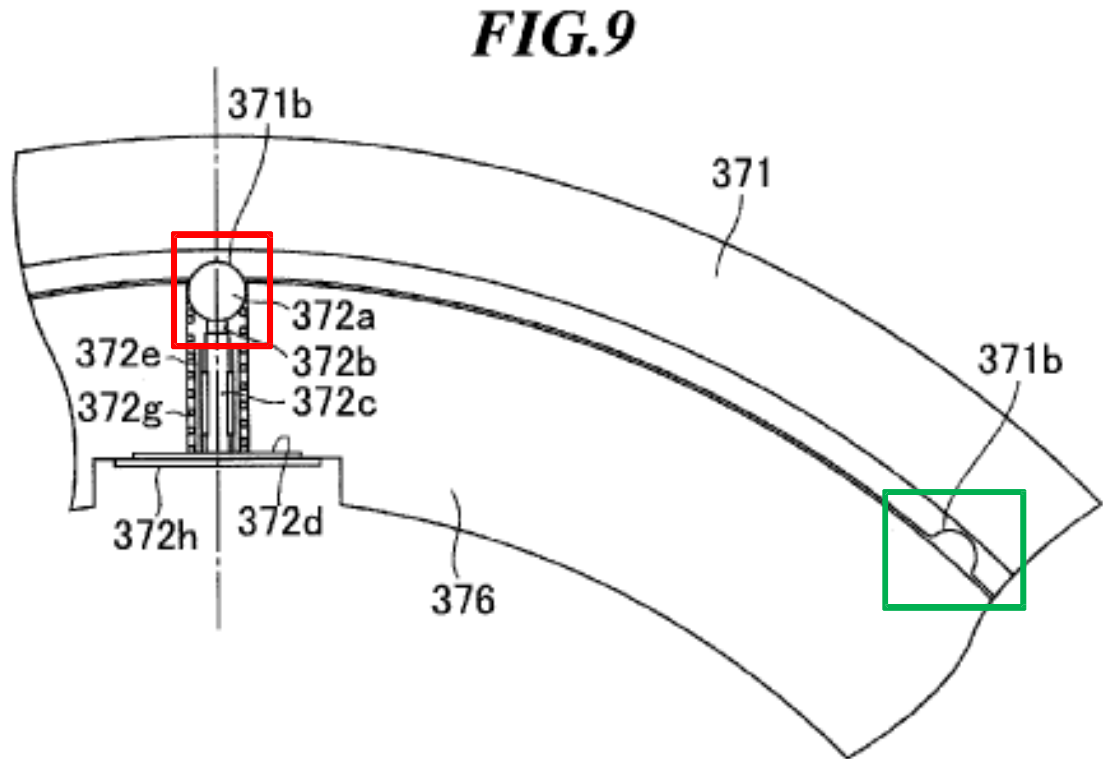


Figure 9 is a sectional diagram of the principal part of the operation unit from the optical axis direction. *Id.* ¶ 18. Yuge's operation unit 37 mechanically generates a clicking feel when ball 372a (shown in red in Figure 9) inside operation frame 376 comes into contact with a plurality of notches 371b (shown in green in Figure 9) disposed on the surface of the inner periphery of the operation ring 371, when operation ring 371 is rotated. *Id.* ¶¶ 84–86. Ball 372a is constantly pressured by spring 372g, and is moved closer to the plurality of notches 371b to make contact with them

when element 372c supporting ball 372a expands in the radial direction from the inner to the outer circumference of operation ring 371. *Id.* ¶¶ 85–86, Fig. 9.

3. *Analysis Regarding Independent Claim 1*

First, Petitioner contends, and we agree, Yuge discloses a “digital camera,” as recited in the preamble (a). Pet. 29 (citing Ex. 1003 ¶¶ 3, 34, Fig 1; Ex. 1002 ¶ 101).

Second, Petitioner contends Yuge discloses a “rotary switch,” as recited in limitation (b), called “operation unit 37.” *Id.* (citing Ex. 1003 Fig. 1, ¶¶ 50, 83; Ex. 1002 ¶101). Petitioner also contends operation unit 37 includes operation ring 371 located at “an outer periphery of the lens barrel” that performs the rotational operation. *Id.* (citing Ex. 1003 ¶ 51). For the reasons set forth in the Petition, we agree.

Third, Petitioner contends Yuge discloses “a state changing switch,” as recited in limitation (c), referred to as “switching unit.” *Id.* at 30–31 (citing Ex. 1003, Figs. 23, 25, ¶ 154). Petitioner also contends Yuge’s “input unit 401,” which is located on the side of the lens barrel, and “input unit 602,” which is located at a side of the housing, are each an embodiment of the switching unit. *Id.* (citing Ex. 100, Figs. 23, 25, ¶¶ 131, 138). For the reasons set forth in the Petition, we agree.

Fourth, Petitioner contends Yuge discloses “a restricting member,” as recited in limitation (d), comprising ball 372a and spring 372g. *Id.* at 31 (citing Ex. 1003 Fig. 8, ¶ 85; Ex. 1002 ¶ 105). Petitioner also contends Yuge discloses that, when the operation ring 371 is rotated by the user, ball 372a comes in contact with notch 371b, causing a click sound, and “the rotation direction and amount of the operation ring 371 can be understood by

the user.” *Id.* (citing Ex. 1003, Fig. 9, ¶ 86). We agree for the reasons set forth in the Petition.

Fifth, Petitioner contends Yuge discloses

the rotary switch has a surface with a plurality of depressed portions or trough portions, and the restricting member engages with the depressed portion or the trough portion of the rotary switch in a case where a restricted state is set by the state changing switch so as to restrict rotation of the rotary switch, such that engagement and disengagement of the restricting member with the depressed portion or the trough portion of the rotary switch mechanically generate a clicking feel,

as recited in limitation (e). *Id.* at 32–34 (citing Ex. 1003, Figs. 8, 9, ¶ 84; Ex. 1002 ¶ 107). In that regard, Petitioner also contends Yuge discloses a plurality of recesses 371a and a plurality of notches 371b that are each a plurality of depressed portions or trough portions disposed in the inner surface of operation ring 371. *Id.* at 32–33 (citing Ex. 1002 ¶ 107).

Petitioner also contends Yuge discloses that, when operation ring 371 is rotated, ball 372a comes in contract with notch 371b causing a click sound. *Id.* at 33–34 (citing Ex. 1003 ¶¶ 85–86). Thus, Petitioner further argues Yuge discloses engagement and disengagement of ball 372a with notches 371b mechanically generating a clicking feel. *Id.* at 34 (citing Ex. 1002 ¶ 108). Moreover, Petitioner argues Yuge discloses the restricting member engages with the depressed portions of the rotary switch where a restricted state is set by the state changing switch “so as to restrict rotation of the rotary switch.” *Id.* (citing Ex. 1002 ¶ 109). For these reasons, we agree.

Sixth, Petitioner contends Yuge discloses “a rotating operation of the rotary switch causes a control corresponding to first and second

functions respectively assigned to two states selected by the state changing switch,” as recited in limitation (f). In that regard, Petitioner contends Yuge discloses the “switching unit” (i.e., the state changing switch) switches the operation ring “between the first operating state [restricted] and the second operating state [non-restricted].” *Id.* at 35 (citing Ex. 1003 ¶¶ 154, 131); *see also* Ex. 1003 ¶¶ 93, 137.

Petitioner also contends Yuge discloses two operating states of the operation ring: a first state that performs an analog operation, including focusing and zooming; and a second state that performs a digital operation, including shutter speed and aperture. Pet. 34–35 (citing Ex. 1003 ¶¶ 93, 95–96, 131, 133, 154, 156–158). Thus, Petitioner contends Yuge discloses

an analog operation (a first function) and a digital operation (a second function) are respectively assigned to the first and the second operating state (two states) selected by the switching unit (the state changing switch) and rotation of the rotary switch causes control corresponds to the function assigned to the s[t]ate selected by the state changing switch.

Id. at 35 (citing Ex. 1002 ¶ 110). For the reasons set forth in the Petition, we agree.

Seventh, Petitioner contends Yuge discloses “the state changing switch is configured to switch between two states, independently of a third function other than the first and second functions assigned to the respective states of the rotary switch, the two states including the restricted state and a non-restricted state,” as recited in limitation (g) (“the ‘independently’ limitation”). *Id.* at 35–36 (citing Ex. 1002 ¶ 112; Ex. 1003 ¶¶ 154–158). In that regard, as discussed *supra*, Petitioner contends Yuge discloses the

“switching unit” (i.e., the state changing switch) switches the operation ring “between the first operating state [non-restricted] and the second operating state [restricted].”⁵ *Id.* at 35 (citing Ex. 1003 ¶¶ 93, 131, 137, 154).

Petitioner also contends Yuge discloses that “using the ‘switching unit’ to switch between the two states changes between the functions assigned to these respective states, *e.g.*, shutter speed and focus,” without affecting any other function and is, therefore, “independent of a third function.” *Id.* at 35–36 (citing Ex. 1002 ¶ 112; Ex. 1003 ¶¶ 154–158). Petitioner further contends Yuge also discloses the “independently” limitation because Yuge discloses other functions that qualify as a “third function” and that are unaffected by the state changing switch changing states. *Id.* at 36 (citing Ex. 1003 ¶¶ 44, 63, 114; Ex. 1002 ¶¶ 113–114).

Patent Owner argues that Petitioner fails to show the alleged state changing switch “affects selection and operation of only one of a first function and a second function in a control process, without affecting a third such as a focus mechanism control when a function button is in an ‘on’ state.” PO Resp. 16 (citing Ex. 1001, claims 1 and 9, Fig. 4). Patent Owner also argues that “Petitioner merely alleges that the asserted state changing switch changes a state of restriction of the alleged rotary switch.” *Id.*

Beginning with Patent Owner’s first argument, Petitioner disagrees because it is based on Patent Owner’s assertion that the “independently” limitation requires the claims to be construed based on the embodiment

⁵ Petitioner’s contentions regarding Yuge disclosing that the first operating state is a non-restricted state and that the second operating state is a restricted state are discussed *infra* with respect to limitations (i) and (h), respectively.

illustrated in Figure 4. Pet. Reply 19. We agree with Petitioner that Patent Owner's argument in this regard is based on an interpretation of the "independently" limitation that is inconsistent with our construction of the two-function embodiment of claim 1, which does not require a function button, and is unlike the embodiment illustrated in Figure 4 with a function button.

Turning to Patent Owner's second argument, Petitioner argues, and we agree, that this argument is conclusory and ignores the evidence in the Petition, including corresponding expert testimony "demonstrating that this limitation is met." *Id.* (citing Pet. 35–36; Ex. 1002 ¶¶ 111–114). In that regard, Petitioner's expert, Dr. Plummer, testifies that "[a] person of ordinary skill in the art would have understood that Yuge switches between the two functions assigned to the states without affecting any other function and is, therefore, independent of a third function." Ex. 1002 ¶ 112. Dr. Plummer also testifies that Yuge discloses several functions that would qualify as "third functions," including face detector, clock, shooting date, setting on/off of the finder display unit, and switching playback mode, that remain in use and are unaffected regardless of the state of the state changing switch. *Id.* at ¶¶ 113–14 (citing Ex. 1003 ¶¶ 42, 44, 58, 63, 95, 98, 114, 133, 156–158). We find Dr. Plummer's testimony to be credible because it is consistent with the disclosure in Yuge. Thus, for the reasons set forth in the Petition, including Dr. Plummer's supporting testimony, we agree that Yuge discloses the claimed "state changing switch is configured to switch between two states, independently of a third function other than the first and second functions assigned to the respective states of the rotary switch."

Eighth, Petitioner contends Yuge discloses, “in the restricted state, the rotation of the rotary switch is restricted with the clicking feel, and a function of at least one of a shutter speed and an aperture as the first function with discrete output values is related to the rotating operation of the rotary switch,” as recited in limitation (h). Pet. 37 (citing Ex. 1003 ¶¶ 95, 133, 158; Ex. 1002 ¶ 115). In that regard, Petitioner contends, as discussed *supra*, Yuge discloses a restricted state and, in this restricted state, operation ring 371 controls a function having a “digital operation” (a discrete output), including shutter speed and aperture. *Id.* Petitioner also contends that Yuge describes this restricted state as a “second operating state.” *Id.* (citing Ex. 1003 ¶¶ 154, 156). We agree for the reasons set forth in the Petition.

Ninth, Petitioner contends Yuge discloses, “in the non-restricted state, the rotation of the rotary switch is not restricted and does not generate the clicking feel, and a function of at least one of focusing, and a zoom magnification of a lens, as the second function with continuous output values, is related to the rotating operation of the rotary switch,” as recited in limitation (i). *Id.* at 37–38 (citing Ex. 1003 ¶¶ 98, 154–157; Ex. 1002 ¶ 116). In that regard, Petitioner also contends Yuge refers to this non-restricted state as a “first operating state” in which rotation of the operating ring “provides a smooth sensation to the operator.” *Id.* at 38 (citing Ex. 1003 ¶¶ 154–156). Petitioner further contends that Yuge discloses that the first operating state performs an analog operation that performs at least one of focusing and zooming in accordance with the manual operation of the operation ring. *Id.* (citing Ex. 1003 ¶¶ 98, 154–157).

Patent Owner contends Yuge does not disclose, “in the non-restricted state, the rotation of the rotary switch is not restricted *and* does not generate

the clicking feel.” PO Resp. 16. In that regard, Patent Owner argues Yuge discloses switching between two restricted states and, in the least restricted first operating state, “the ball 372a *hardly* comes in contact with the notch 371b and the click sound can be avoided.” *Id.* (citing Ex. 1003 ¶ 86). Patent Owner also argues that, although “this configuration may ‘provide[] a smooth sensation to the operation,’ it does not necessarily require the state to be non-restricted.” *Id.*

In response, Petitioner argues that Patent Owner “fixates on the word ‘hardly’ and argues it generates a ‘less restrictive state,’” which is purely attorney argument unsupported by “intrinsic, extrinsic evidence, or expert evidence to show how a [person of ordinary skill in the art] would have interpreted Yuge’s disclosure.” Pet. Reply 17. Petitioner also argues Patent Owner ignores the remainder of the cited paragraph “in which Yuge recites ‘the ball [372a] moves to the center side and is *apart* from the notch [371b].’” *Id.* (citing Ex. 1003 ¶ 86 (emphasis added)). According to Petitioner, Yuge contrasts this to the ball 372a “com[ing] into *contact* with the notch [371b] such that] a click sound is caused,” and thereby “distinguishes between states where there is and is not a restriction.” *Id.* at 17–18. Petitioner also argues that the word “hardly” in this context means scarcely, insignificant, and even possibly “no” or “not.” *Id.* at 18 (citing Ex. 1030, 3–4). Petitioner further argues that Yuge’s ball that scarcely or insignificantly comes into contact with the notch structure is consistent with the claim that “does *not* require *no contact* between the restricting member

and the depressed portions,” but merely that “rotation is not restricted.” *Id.* (citing Ex. 1001, 11:38–39⁶).

For the reasons set forth in the Petition and the Reply, we find Petitioner has shown by a preponderance of the evidence that Yuge discloses a “second operating state,” which is a restricted state, and a “first operating state,” which is a non-restricted state and in which the rotation of the rotary switch “is not restricted and does not generate the clicking feel,” as recited in claim 1. In particular, considering the entirety of paragraphs 86 and 154–157 of Yuge, and Petitioner’s dictionary definition of “hardly,” we find that Yuge discloses and distinguishes a “first operating state,” providing “a smooth sensation to the operator” in which “the click sound can be avoided” and ball 372a is scarcely in contact with notch 372b (i.e., “non-restricted state”), and a “second operating state,” in which ball 372a comes in contact with notch 372b and “a click sound is caused” (i.e., “restricted state”).

Tenth, Petitioner contends Yuge discloses “the restricting member comprises a mechanical structure that restricts rotation of the rotary switch in a case where the restricted state is set by the state changing switch,” as recited in limitation (j). Pet. 38 (citing Ex. 1002 ¶ 117, Ex. 1003 ¶ 86). In that regard, Petitioner contends Yuge’s restricting member comprises ball 372a (a mechanical structure) that restricts rotation of the operation ring 372 (rotary switch) and the second operating state (the restricted state) is set by the switching unit (state changing switch). *Id.* For the reasons set forth in the Petition, we agree.

⁶ We believe Petitioner mistakenly cited Exhibit 1001, column 11, line 31. See Pet. Reply 18.

In summary, based on the full record developed during trial, we determine Petitioner has established that Yuge discloses all of the limitations of claim 1. Accordingly, we determine Petitioner has demonstrated by a preponderance of the evidence that claim 1 is anticipated by Yuge.

5. *Analysis Regarding Claims 2–4 and 6–9*

Petitioner further contends that dependent claims 2–4 and 6–8, and independent claim 9, are anticipated by Yuge. Pet. 38–48. Patent Owner’s Response does not contain arguments directed expressly to dependent claims 2–4 and 6–8, apart from those directed to independent claim 1 from which claims 2–4 and 6–8 depend. *See generally* PO Resp. 15–18. We have reviewed Petitioner’s contentions and determine that Petitioner has shown by a preponderance of the evidence that claims 2–4 and 6–8 are anticipated by Yuge.

For example, claim 6 depends from claim 1 and adds the limitation, “wherein the state changing switch is configured to perform switching by an operation of pressing the rotary switch into a chassis side or pulling the rotary switch.” Ex. 1001, 12:4–7. Petitioner contends that “Yuge’s operation ring 371 is ‘capable of moving forward/backward along the direction of the optical axis O within a predetermined range.’” Pet. 41 (citing Ex. 1003 ¶ 51). Petitioner also contends that the sliding feature of operation ring 371 can be used to switch between discrete and continuous functions and to change the ring’s tactile sensation (between restricted and non-restricted states). *Id.* at 41–42 (citing Ex. 1002 ¶¶ 124–125). In that regard, Petitioner contends that, when Yuge’s operation ring 371 is in a first position (i.e., the ring is pulled back), a clicking feel is generated and aperture or shutter speed is controlled. *Id.* (citing Ex. 1003 ¶¶ 84, 93–95;

Ex. 1002 ¶ 125). Petitioner further contends that, when Yuge’s operation ring 371 is in a second position (i.e., the ring is pushed forward), a smooth sensation is generated, and the click sound can be avoided, and focus or zoom is controlled. *Id.* (citing Ex. 1003 ¶¶ 86, 97, 98; Ex. 1002 ¶ 125). For the reasons set forth in the Petition, we agree that Yuge discloses the limitation of claim 6.

Regarding claim 9, Patent Owner makes the same arguments it makes with respect to claim 1 that Yuge does not disclose “in the non-restricted state, the rotation of the rotary switch is not restricted *and* does not generate the clicking feel” and Petitioner fails to show the alleged state changing switch selects only one of a first and second function “without affecting a third such as a focus mechanism control when a function button is in an ‘on’ state.” PO Resp. 16. Based on our analysis of Petitioner’s arguments and supporting evidence regarding limitations (g) and (i) of claim 1 above, we determine that Petitioner has demonstrated that Yuge discloses the corresponding limitations of claim 9. Thus, for same reasons identified above with respect to claim 1, Petitioner has shown by a preponderance of the evidence that claim 9 is anticipated by Yuge.

D. Asserted Anticipation of Claims 1–5 and 7–9 by Hayashi

Petitioner contends claims 1–5 and 7–9 of the ’614 patent are anticipated by Hayashi. Pet. 48–68. Patent Owner argues Petitioner fails to show that Hayashi discloses the “state changing switch” as described in limitations (c) and (g) of claims 1 and 9. PO Resp. 19–20. For the reasons discussed below, we find that Petitioner has shown by a preponderance of evidence that claims 1–5 and 7–9 are anticipated by Hayashi.

1. Overview of Hayashi

Hayashi discloses a digital camera (Ex. 1005 ¶ 2) that has a rotary switch called the “operation ring 22a” that a user rotates to control camera functions, such as zoom and aperture. *Id.* ¶ 15. Hayashi’s operation ring 22a can switch between two different “clicking sensations,” one with a clicking feel (*id.* ¶ 42) and another with a non-clicking smooth feel (*id.* ¶ 48). *See also id.* ¶ 8 (stating that “operational feelings can be obtained that differ depending on the operation being performed, even with the same operation member”).

Hayashi discloses an exemplary internal mechanism, as shown in Fig. 7 below, for imparting a changeable clicking sensation comprising a spring biased restricting member engaging a ring with depressions and protrusions. *Id.* ¶¶ 55–56.

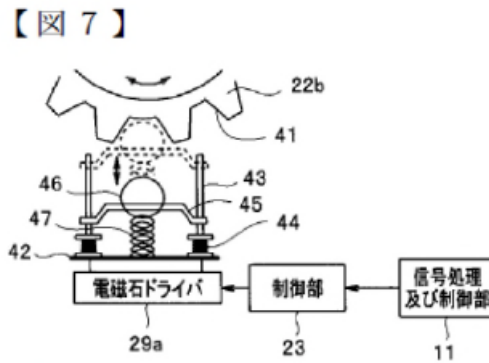


Fig. 7.

11: signal processing and control unit; 23: control unit; 29a: electromagnetic driver

As shown in Figure 7, gear 22b, having protrusions (i.e., teeth 41) and intervening depressions, “rotates with the rotation of the [operation ring] 22a.” *Id.* ¶ 54. A restricting member comprising ball 46 fixed to base part 42 by spring 47 “moves up and down” between teeth 41 of gear 22b. *Id.* ¶¶ 54–58. In a restricting position, shown in dotted lines of Figure 7, “each

time the gear 22b rotates by one pitch of the teeth 41, a clicking sensation is imparted.” *Id.* ¶ 58. In a non-restricted position, shown in solid line 45 above, ball 46 does not engage teeth 41 and a smooth rotation is provided. Electromagnets 44, in cooperation with spring 47, are used to control the extension and retraction of ball 46. *Id.* ¶¶ 56–57.

In its first embodiment, Hayashi discloses controlling the function and feel of the operation ring with an on-screen user interface as shown in Fig. 4 below.

Fig. 4

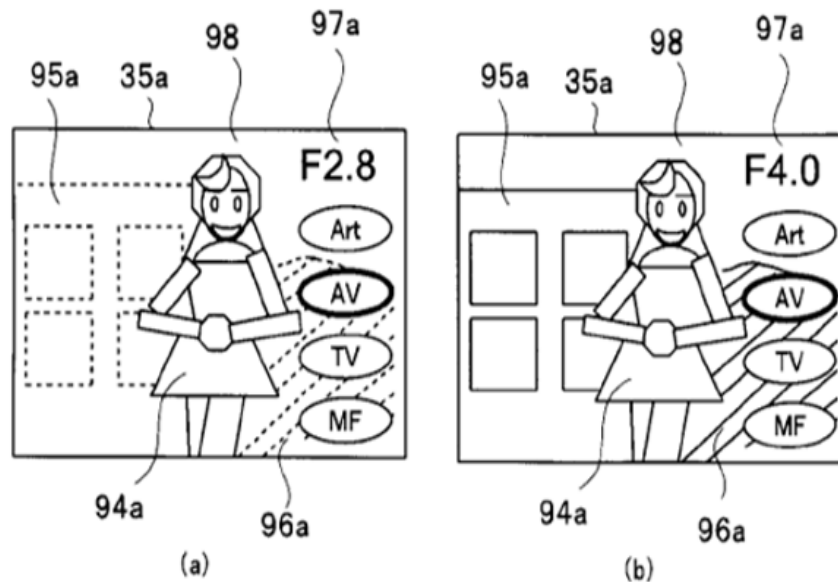


Figure 4 depicts on-screen user interface 35a of the disclosed camera with assorted mode-switching buttons labeled Art, AV, TV, and MF on the user interface. Ex. 1005, Fig. 4, ¶ 38. When the user selects the AV mode button, rotation of operation ring 22a controls the camera's aperture and has a clicking sensation, indicating to the user that the function has discrete values. *Id.* ¶¶ 41–44. When the user selects the MF mode button, rotation

of operation ring 22a controls the camera's focus and has a smooth feel, indicating to the user that the function has continuous values. *Id.* ¶¶ 46–49.

Hayashi discloses a second embodiment that includes physical switch 51 on the body of the camera “for switching between a click mode and a smooth mode.” *Id.* ¶¶ 59, 61. When switch 51 is used, Hayashi's operation ring 22a switches between the click mode and the smooth mode, regardless of the function it is controlling. Under the MF mode, for example, if the smooth mode is set by the user with switch 51, the user can control the focus by rotating operation ring 22a with a smooth sensation. *Id.* ¶¶ 71–72. On the other hand, if the click mode is set, the user can control the focus in a stepwise manner, moving the focus position one step at a time. *Id.* ¶ 73.

2. *Analysis Regarding Independent Claim 1*

First, Petitioner contends, and we agree, Hayashi discloses a “digital camera,” as recited in the preamble (a). Pet. 48 (citing Ex. 1005 ¶¶ 2, 88; Ex. 1002 ¶ 138).

Second, Petitioner contends, and we agree, Hayashi discloses a “rotary switch,” as recited in limitation (b), “comprising an operation ring 22a, a gear 22b that rotates with the operation ring 22a, and an operation detection unit 27 that detects rotation of the operation ring 22a and sends the detection result to the control unit 23.” *Id.* at 49 (citing Ex. 1005 ¶¶ 44, 54; Ex. 1002 ¶ 139).

Third, Petitioner contends Hayashi discloses “a state changing switch,” as recited in limitation (c), comprising “Hayashi's on-screen user interface and the ‘assorted mode-switching buttons 99,’” including an Art button, an AV button, a TV button, and an MF button located on the display screen. *Id.* at 49 (citing Ex. 1005, Fig. 4, ¶ 38; Ex. 1002 ¶ 140). Petitioner

argues that Hayashi’s disclosure of this limitation is further discussed regarding limitation (g). *Id.*; see also *id.* at 54–55 (citing Ex. 1005 ¶¶ 38, 41, 46; Ex. 1002 ¶¶ 151–153). According to Petitioner, the ’614 patent similarly discloses an on-screen embodiment of the claimed “state changing switch.” *Id.* (citing Ex. 1001, 6:9–23). Alternatively, Petitioner contends that Hayashi’s second embodiment discloses “switching switch 51,” which is also “a state changing switch,” as explained further regarding limitation (g). *Id.* at 50; see *id.* at 56 (citing Ex. 1005 ¶¶ 61, 71–73; Ex. 1002 ¶ 155).

Patent Owner argues the ’614 patent “distinguishes between on-screen controls and physical switches or buttons” and does not refer to “on-screen controls as switches.” PO Resp. 19. According to Patent Owner, “Hayashi discloses on-screen controls, not a physical switch that is configured to change states as claimed” and, therefore, Hayashi fails to disclose the “state changing switch” required by claim 1. *Id.*

Based on the record developed during trial, we are not persuaded by Patent Owner’s arguments. Claim 1 broadly recites “a state changing switch.” Ex. 1001, 11:9, 12:27. As Petitioner argues, dependent claim 5 recites that “the state changing switch enables switching **from an operation setting screen.**” Pet. Reply 20 (citing Ex. 1001, 12:1). As discussed *supra*, the specification broadly refers to the claimed “state changing switch” as the “switching unit” that switches between two states, restricted and non-restricted. Ex. 1001, 2:34–38. The specification also specifically discloses that, although selector switch 105 functions by a mechanical operation, “the present invention is not limited to this” and “[i]t is possible to employ the configuration where switching is set from an operation setting screen of the digital camera.” Ex. 1001, 6:9–13. This disclosure undermines Patent

Owner's argument that the '614 patent "does not refer to on-screen controls as switches." See PO Resp. 19. Thus, we determine that the claimed "state changing switch" in view of the claim language and specification encompasses devices that switch between states both mechanically and electronically. Accordingly, we determine that Hayashi's on-screen user interface and assorted mode-switching buttons, which switch between restricted and non-restricted states electronically depending on which button is pushed, disclose the claimed "state changing switch." We also note, as Petitioner argues, that Patent Owner "has failed to rebut" Petitioner's alternative argument that "Hayashi's 'switching switch 51' meets the 'state changing switch' limitation." Pet. Reply 19. For the reasons set forth by Petitioner in the Petition and Reply regarding limitation (c), and limitation (g) *infra*, we determine that Petitioner has shown by a preponderance of the evidence that Hayashi discloses the "state changing switch" of limitation (c).

Fourth, Petitioner contends Hayashi discloses "a restricting member," as recited in limitation (d), comprising ball 46 and spring 47. Pet. 50 (citing Ex. 1005, Fig. 7, ¶¶ 54–55; Ex. 1002 ¶ 142). Petitioner argues that ball 46 advances into and retracts from the space between adjacent teeth 41 of gear 22b, and "[a]s a result, either a smooth sensation or a clicking sensation is generated when the operation ring 22a is rotated." *Id.* (citing Ex. 1005 ¶¶ 54–55). For the reasons set forth in the Petition, we agree.

Fifth, Petitioner contends Hayashi discloses

the rotary switch has a surface with a plurality of depressed portions or trough portions, and the restricting member engages with the depressed portion or the trough portion of the rotary switch in a case where a restricted state is set by the state changing switch so as to restrict rotation of the

rotary switch, such that engagement and disengagement of the restricting member with the depressed portion or the trough portion of the rotary switch mechanically generate a clicking feel,

as recited in limitation (e). *Id.* at 51–52 (citing Ex. 1003, Fig. 7, ¶¶ 18, 54; Ex. 1002 ¶¶ 143–145). In particular, Petitioner argues that Hayashi discloses that protrusions in the form of a plurality of teeth 41, with depressed portions or troughs between them, are disposed on the outer surface of ring gear 22b that rotates with operation ring 22a. *Id.* at 51 (citing Ex. 1003, Fig. 7, ¶¶ 18, 54; Ex. 1002 ¶ 143). Petitioner also argues that with each rotation of gear 22b, ball 46, which is part of the restricting member, moves up and down between teeth 41 by virtue of spring 7, and “each time the gear 22b rotates by one pitch of the teeth 41, a clicking sensation is imparted.” *Id.* at 52 (citing Ex. 1005 ¶ 58). Thus, Petitioner further argues that engagement and disengagement of the ball with the space between teeth 41 “mechanically generate[s] a clicking feel.” *Id.* (citing Ex. 1002 ¶ 144). Moreover, Petitioner argues Hayashi discloses that ball 46 engages with the trough portion of the rotary switch, where a restricted state is set by the state changing switch, “so as to restrict rotation of the rotary switch.” *Id.* (citing Ex. 1002 ¶ 145). For the reasons set forth in the Petition, we agree.

Sixth, Petitioner contends Hayashi discloses “a rotating operation of the rotary switch causes a control corresponding to first and second functions respectively assigned to two states selected by the state changing switch,” as recited in limitation (f). *Id.* at 53–54. In particular, Petitioner contends Hayashi discloses rotation of operation ring 22a causes a camera control corresponding to at least two functions, aperture (in the AV mode)

and manual focus (in the MF mode). *Id.* at 53 (citing Ex. 1002 ¶ 146). In that regard, Petitioner argues Hayashi discloses that, when the user touches the AV button on display screen 35a, mode setting unit 11c sets the aperture-setting mode, which corresponds to the digital function. *Id.* (citing Ex. 1005 ¶ 41; Ex. 1002 ¶ 147). Petitioner also argues that, when the user touches the MF button on display screen 35a, mode setting unit 11c sets the manual focus mode, which corresponds to the analog function. *Id.* (citing Ex. 1005 ¶ 46; Ex. 1002 ¶ 148). Thus, according to Petitioner, “first and second functions are respectively assigned to two states of the ‘assorted mode-switching buttons,’ user interface element (*i.e.*, the state changing switch of the first embodiment).” *Id.* at 54 (citing Ex. 1002 ¶149).

Alternatively, Petitioner contends that this limitation is disclosed by Hayashi’s second embodiment in which two functions are assigned to switching switch 51. *Id.* (citing Ex. 1002 ¶ 150). In that regard, Petitioner contends Hayashi discloses that, in one state of switch 51, a discrete mode is provided in which discrete functions are selectable and controlled by operation ring 22a, and in another state of switch 51, a smooth mode is provided and focus can be assigned to operation ring 22a. *Id.* (citing Ex. 1005 ¶¶ 61–62, 71–72). For the reasons set forth in the Petition, we agree that Hayashi’s first and second embodiments disclose limitation (f).

Seventh, Petitioner contends Hayashi discloses “the state changing switch is configured to switch between two states, independently of a third function other than the first and second functions assigned to the respective states of the rotary switch, the two states including the restricted state and a non-restricted state,” as recited in limitation (g). As discussed *supra* regarding limitation (c) (*i.e.*, “state changing switch”), Petitioner contends

Hayashi's on-screen user interface and assorted mode-switching buttons—Art, AV, TV, and MF—are a state changing switch. Pet. 49 (citing Ex. 1001, Fig. 4, 6:9–23; Ex. 1002 ¶ 140). Petitioner also contends that the mode switching buttons enable a user to switch between two states, AV mode and MF mode. *Id.* at 54. In particular, as discussed *supra* regarding limitation (f) (“rotating operation of rotary switch”), Petitioner argues that, “[w]hen the AV user interface button is selected . . . a first function (aperture) is assigned to one state (AV mode).” *Id.* at 53 (citing Ex. 1005 ¶ 41; Ex. 1002 ¶ 147). Petitioner further contends that, “[w]hen the MF user interface button is selected from the assorted mode switching- buttons, a second function (focus) is assigned to second state (MF mode).” *Id.* (citing Ex. 1005 ¶ 46; Ex. 1002 ¶ 148). Thus, Petitioner contends Hayashi discloses the camera is in a “restricted state” with the AV button pushed, and in a “non-restricted state” with the MF button pushed. *Id.* at 55 (citing Ex. 1002 ¶¶ 152–153). Moreover, Petitioner contends “Hayashi switches between the digital and analog functions assigned to the AV and MF modes, respectively, without affecting any other function and is, therefore, independent of a third function.” *Id.* (citing Ex. 1002 ¶ 154). In that regard, Petitioner argues that the switching between AV and MF modes does not affect Hayashi's “playback” function or the “list-display of thumbnails” function, which would qualify as “third functions.” *Id.* (citing Ex. 1005, Fig. 2, ¶ 35; Ex. 1002 ¶ 154).

Alternatively, Petitioner contends Hayashi's second embodiment discloses this limitation because “switching switch 51' switches between the restricted state (click mode) and the non-restricted state (smooth mode)”

without affecting any function and, therefore, is independent of a third function. *Id.* at 56 (citing Ex. 1005 ¶¶ 61, 71–73; Ex. 1002 ¶ 155).

Besides Patent Owner’s argument that Hayashi’s on-screen controls are not a physical “state changing switch,” Patent Owner argues that Petitioner fails to show that the alleged state changing switch affects selection and operation of only one of a first and second function, without affecting a third function. PO Resp. 20. In response, Petitioner argues, and we agree, that this argument is unpersuasive because it is conclusory and ignores the evidence in the Petition (citing Pet. 54–56), and corresponding expert testimony (citing Ex. 1002 ¶¶ 151–155) demonstrating that this limitation is met. Pet. Reply 20. Accordingly, for the reasons set forth in the Petition, we agree that Hayashi’s first and second embodiments disclose limitation (g).

Eighth, Petitioner contends Hayashi discloses, “in the restricted state, the rotation of the rotary switch is restricted with the clicking feel, and a function of at least one of a shutter speed and an aperture as the first function with discrete output values is related to the rotating operation of the rotary switch,” as recited in limitation (h). Pet. 56–57. In particular, Petitioner argues, as discussed in regard to limitations (f) and (g) above, “Hayashi discloses an AV mode, which is a ‘restricted state’ in which the rotation of the operation ring 22a is restricted with a clicking feel and the operation ring 22a controls an aperture function having a discrete output.” *Id.* at 56 (citing Ex. 1005 ¶¶ 40–45; Ex. 1002 ¶ 156). Petitioner also argues that this limitation is disclosed by the second embodiment of Hayashi because, once the click mode is set, the sensation switch control unit turns off electromagnets 44 and ball 46 engages with the space between teeth 41 so

the rotary switch is restricted with the clicking feel and controls discrete functions selectable using the control screen. *Id.* at 57 (citing Ex. 1005 ¶¶ 56, 61–62, 69; Ex. 1002 ¶ 157). For the reasons set forth in the Petition, we agree.

Ninth, Petitioner contends Hayashi discloses, “in the non-restricted state, the rotation of the rotary switch is not restricted and does not generate the clicking feel, and a function of at least one of focusing and a zoom magnification of a lens, as the second function with continuous output values, is related to the rotating operation of the rotary switch,” as recited in limitation (i). *Id.* at 58–59. In particular, Petitioner argues, as discussed in regard to limitations (f) and (g) above, “Hayashi discloses an MF mode, which is a ‘non-restricted state’ in which the rotation of the operation ring 22a is not restricted and does not generate a clicking feel and the operation ring 22a controls a focus function having a continuous output.” *Id.* at 58 (citing Ex. 1005 ¶ 49; Ex. 1002 ¶ 158). Petitioner also argues that this limitation is disclosed by the second embodiment of Hayashi because, once the manual focus is set and the smooth mode is selected using switch 51, the sensation switch control unit turns on electromagnets 44 and causing a smooth sensation to be generated as the operational feeling of the operation ring 22a. *Id.* at 59 (citing Ex. 1005 ¶¶ 71–72; Ex. 1002 ¶ 159). We agree for the reasons set forth in the Petition.

Tenth, Petitioner contends Hayashi discloses “the restricting member comprises a mechanical structure that restricts rotation of the rotary switch in a case where the restricted state is set by the state changing switch,” as recited in limitation (j). Pet. 59. Specifically, Petitioner argues that, as explained in regard to limitations (d) and (e) above, Hayashi

discloses ball 46 and spring 47 are mechanical structures that restrict rotation of operation ring 22a when the restricted state is set by the assorted mode switching buttons or switching switch 51. *Id.* (citing Ex. 1002 ¶ 160). We agree for the reasons set forth in the Petition.

In summary, based on the full record developed during trial, we determine Petitioner has established that Hayashi discloses all of the limitations of claim 1. Accordingly, we determine Petitioner has demonstrated by a preponderance of the evidence that claim 1 is anticipated by Hayashi.

3. *Analysis Regarding Claims 2–5 and 7–9*

Petitioner further contends that dependent claims 2–5, 7, and 8, and independent claim 9, are anticipated by Hayashi. Pet. 59–68. Patent Owner’s Response does not contain arguments directed expressly to dependent claims 2–5, 7, and 8, apart from those directed to independent claim 1 from which claims 2–5, 7, and 8 depend. *See generally* PO Resp. 18–20. We have reviewed Petitioner’s contentions and determine that Petitioner has shown by a preponderance of the evidence that claims 2–5, 7, and 8 are anticipated by Hayashi.

For example, claim 5 depends from claim 1 and adds the limitation, “wherein the state changing switch enables switching from an operation setting screen.” Ex. 1001, 12:1–3. As discussed *supra* regarding limitations (c) and (g) of claim 1, Petitioner contends, and we agree, Hayashi discloses “a state changing switch” comprising Hayashi’s on-screen user interface and assorted mode-switching buttons, including an Art button, an AV button, a TV button, and an MF button located on the display screen. Pet. 62 (citing Ex. 1005 ¶ 38). Petitioner contends that Hayashi discloses adjusting the

aperture by allowing “the photographer [to] touch[] the AV button on the display screen 35a using the thumb 93a of his right hand” and, therefore, Hayashi’s mode switching buttons enable a user to switch from an operation setting screen. *Id.* at 63 (citing Ex. 1005 ¶ 41). For the reasons set forth in the Petition, we agree that Hayashi discloses the limitation of claim 5.

Regarding claim 9, Patent Owner makes the same arguments it makes with respect to claim 1 that Hayashi does not disclose (1) a mechanical “state changing switch” and (2) the alleged state changing switch selects only one of a first and second function “without affecting a third such as a focus mechanism control when a function button is in an ‘on’ state.” PO Resp. 19–20. Based on our analysis of Petitioner’s arguments and supporting evidence regarding limitations (c) and (g) of claim 1, we determine that Petitioner has demonstrated that Hayashi discloses the corresponding limitations of claim 9. Thus, for the same reasons identified above with respect to claim 1, Petitioner has shown by a preponderance of the evidence that claim 9 is anticipated by Hayashi.

E. *Asserted Obviousness of Claims 1–4 and 6–9 Over Yuge and Knowledge of Person of Ordinary Skill, and of Claims 1–5 and 7–9 Over Hayashi and Knowledge of Person of Ordinary Skill*

Petitioner contends that claims 1–4 and 6–9 would have been obvious under 35 U.S.C. § 103 over Yuge and the knowledge of a person of ordinary skill in the art. Pet. 15. In support of this contention, Petitioner relies on Yuge as disclosing all of the limitations of claims 1–4 and 6–9, for the same reasons that Petitioner contends Yuge anticipates these claims under 35 U.S.C. § 102(a)(2), except with respect to limitation (g) of claims 1 and 9. *Id.* at 29–48.

As set forth above, limitation (g) of claim 1 recites, in relevant part, “the state changing switch is configured to switch between two states, independently of a third function other than the first and second functions.” Claim 9 recites a similar limitation. Regarding limitation (g) of claim 1, Petitioner argues “requiring that a two state switch only affects two functions is an obvious arrangement in view of the knowledge of a person of ordinary skill in the art.” *Id.* at 36 (citing Ex. 1002 ¶ 112); *see also id.* at 68 (arguing that, with one exception, “[i]ndependent claim 9 is materially identical to independent claim 1”). Petitioner also argues that “[t]wo state switches typically would control two functions.” *Id.*

Petitioner also contends that claims 1–5 and 7–9 would have been obvious under 35 U.S.C. § 103 over Hayashi and the knowledge of a person of ordinary skill in the art. *Id.* at 15. In support of this contention, Petitioner relies on Hayashi as disclosing all of the limitations of claims 1–5 and 7–9, for the same reasons that Petitioner contends Hayashi anticipates these claims under 35 U.S.C. § 102(a)(1), except with respect to limitation (g) of claims 1 and 9. *Id.* at 48–68. Regarding limitation (g) of claim 1, Petitioner makes the same arguments in support of its contention based on Hayashi and the knowledge of a person of ordinary skill as stated above with respect to its contention based on Yuge and the knowledge of a person of ordinary skill—namely, “requiring a two state switch only affects two functions is an obvious arrangement in view of the knowledge of a person of ordinary skill in the art”; and “[t]wo state switches typically would control two functions.” *Id.* at 56 (citing Ex. 1002 ¶ 154).

Patent Owner argues Petitioner’s assertion that “requiring that a two state switch only affects two functions is an obvious arrangement in view of

the knowledge of a person of ordinary skill in the art” is “merely a conclusion, unsupported by factual findings.” PO Resp. 19; *see also id.* at 17. Patent Owner also argues there is no basis for Petitioner’s conclusion “that two state switches typically would control two functions.” *Id.* at 19–20.

For the reasons discussed *supra*, we determine that Yuge discloses all of the limitations of claims 1–4 and 6–9, including limitation (g) of claims 1 and 9, and, therefore, we determine Petitioner has demonstrated by a preponderance of the evidence that claims 1–4 and 6–9 are anticipated by Yuge. For the reasons discussed *supra*, we also determine that Hayashi discloses all of the limitations of claims 1–5 and 7–9, including limitation (g) of claims 1 and 9, and, therefore, we determine Petitioner has demonstrated by a preponderance of the evidence that claims 1–5 and 7–9 are anticipated by Hayashi. Because we determine that claims 1–4 and 6–9 are unpatentable under 35 U.S.C. § 102(a)(2) as anticipated by Yuge and that claims 1–5 and 7–9 are unpatentable under 35 U.S.C. § 102(a)(1) as anticipated by Hayashi, we need not separately assess the patentability of these claims under the asserted obviousness grounds. *Cf. In re Gleave*, 560 F.3d, 1331, 1338 (not reaching an obviousness rejection after affirming an anticipation rejection covering the same claims).

F. Asserted Obviousness of Claim 5 Over Yuge and Ishigaki and Claim 6 Over Hayashi and Yuge

Petitioner contends that claim 5 of the ’614 patent is unpatentable under 35 U.S.C. § 103 as obvious over Yuge in view of Ishigaki. Pet. 68–71. Petitioner also contends that claim 6 of the ’614 patent is unpatentable under 35 U.S.C. § 103 as obvious over Hayashi in view of

Yuge. *Id.* at 71–73. Relying on the testimony of Dr. Plummer, Petitioner contends that the combined references teach or suggest the subject matter of the challenged claims and that a person of ordinary skill in the art would have been motivated to combine the teachings of the references in the manner asserted in the Petition. *Id.* at 68–73; Ex. 1002 ¶¶ 181–186, 188–190. Because we determine that claim 5 is unpatentable under 35 U.S.C. § 102(a)(1) as anticipated by Hayashi and that claim 6 is unpatentable under 35 U.S.C. § 102(a)(2) as anticipated by Yuge, we need not separately assess the patentability of these claims under the asserted obviousness grounds. *Cf. Gleave*, 560 F.3d at 1338.

III. CONCLUSION

Petitioner has demonstrated by a preponderance of the evidence that claims 1–4 and 6–9 are unpatentable under 35 U.S.C. § 102(a)(2) as anticipated by Yuge and that claims 1–5 and 7–9 are unpatentable under 35 U.S.C. § 102(a)(1) as anticipated by Hayashi. In view of our determination that claims 1–4 and 6–9 are unpatentable as anticipated by Yuge, we decline to address whether these claims are unpatentable under 35 U.S.C. § 103 as obvious over Yuge and the knowledge of a person of ordinary skill in the art. In addition, in view of our determination that claims 1–5 and 7–9 are unpatentable as anticipated by Hayashi, we decline to address whether these claims are unpatentable under 35 U.S.C. § 103 as obvious over Hayashi and the knowledge of a person of ordinary skill in the art. Moreover, in view of our determination of unpatentability of claims 5 and 6 as being anticipated by Hayashi and Yuge, respectively, we decline to address whether these

claims are also unpatentable under 35 U.S.C. § 103 as obvious over the combination of Yuge and Ishigaki, and Hayashi and Yuge, respectively.

IV. ORDER

Accordingly, it is

ORDERED that claims 1–9 of the '614 patent have been shown to be unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2018-00501
Patent 9,264,614 B2

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