

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHANGER & DRESSER, INC.,
Petitioner,

v.

002152706 ONTARIO LIMITED,
Patent Owner.

Case IPR2017-00341
Patent 9,393,639 B2

Before KRISTINA M. KALAN, CHRISTOPHER M. KAISER, and
ELIZABETH M. ROESEL, *Administrative Patent Judges*.

KAISER, *Administrative Patent Judge*.

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

INTRODUCTION

A. Background

Changer & Dresser, Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1, 17, and 35 of U.S. Patent No. 9,393,639 B2 (Ex. 1001, “the ’639 patent”). 002152706 Ontario Limited (“Patent Owner”) filed a Preliminary Response (Paper 7, “Prelim.

Resp.”). On May 25, 2017, we instituted trial to review the patentability of claims 1 and 35 on two of Petitioner’s asserted grounds of unpatentability. Paper 8 (“Inst. Dec.”). Subsequently, Patent Owner filed a Response (Paper 19 (“PO Resp.”)), and Petitioner filed a Reply (Paper 22). Patent Owner filed a Motion to Exclude Evidence (Paper 25 (“Mot.”)), to which Petitioner filed an Opposition and Patent Owner filed a Reply. Paper 26; Paper 28. We held an oral hearing on February 28, 2018, and a transcript of the hearing has been entered into the record of this proceeding. Paper 30 (“Tr.”).

After the Supreme Court’s decision in *SAS Inst., Inc. v. Iancu*, No. 16-969, 2018 WL 1914661, at *10 (U.S. Apr. 24, 2018), we issued an order instituting trial on claim 17 and the remaining asserted grounds of unpatentability that were presented in the Petition but on which we did not originally institute trial. Paper 31. Neither party requested additional briefing or argument on the added grounds and claim. Ex. 3001 (“the parties do not believe any additional procedures are necessary in view of the modified institution decision”).

We have jurisdiction under 35 U.S.C. § 6, and we issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. We conclude that Petitioner has not established by a preponderance of the evidence that any challenged claim of the ’639 patent is unpatentable.

B. Related Matters

A petition for *inter partes* review of U.S. Patent No. 8,742,281 B2, which is related to the ’639 patent, was filed and assigned case number IPR2015-01137. Pet. 2; Paper 4, 1–2. The Board denied institution of review in that case. *Id.* In addition, an action alleging infringement of the

'639 patent is ongoing in *002152706 Ontario Limited v. Changer & Dresser Corp.*, Case No. 1:15-cv-00020-WMS-LGF (W.D.N.Y.). *Id.*

C. The Instituted Grounds of Unpatentability

We instituted review of claims 1, 17, and 35 of the '639 patent based on the following grounds:

Statutory Ground	Basis	Challenged Claims
§ 103	Takaba ¹ and Lilley ²	1 and 35
§ 103	Takaba and Koch ³	1 and 35
§ 102	Lilley	1 and 35
§ 103	Lilley	1 and 35
§ 103	Lilley and AAPA ⁴	17
§ 103	Takaba and Lilley	17
§ 103	Takaba and Koch	17

We instituted trial on the first two of these grounds in our original Decision on Institution. Paper 8, 27. We instituted trial on the remaining grounds following the Supreme Court's decision in *SAS*. Paper 31, 3.

¹ Takaba et al., Japanese Patent Application Publication No. P2002-79381A, published March 19, 2002 (certified English translation provided as Ex. 1011, "Takaba") (original Japanese version provided as Ex. 1010).

² Lilley, U.S. Patent No. 4,986,251, issued Jan. 22, 1991 (Ex. 1009, "Lilley").

³ Koch, German Patent Application Publication No. DE 199 05 477 A1, published Aug. 31, 2000 (certified English translation provided as Ex. 1014, "Koch") (original German version provided as Ex. 1013).

⁴ Petitioner contends that certain statements in the '639 patent are Applicant Admitted Prior Art ("AAPA"). Pet. 48–51 (citing Ex. 1001, 1:3–8, 1:15–17, 1:53–55).

In arguing the unpatentability of these claims of the '639 patent, Petitioner also relies on a declaration of Vernon L. Mangold, Jr. Ex. 1002. Due to health reasons resulting in Mr. Mangold's unavailability, Petitioner substituted Stephen J. Derby, Ph.D. as Petitioner's declarant in this proceeding. Dr. Derby later adopted Mr. Mangold's Declaration. Ex. 1028.

D. The '639 Patent

The '639 patent relates to removable welding caps that are used with spot welders, and it relates more specifically "to a spot welding cap changer." Ex. 1001, at [57]. Figure 1 of the '639 patent is reproduced below:

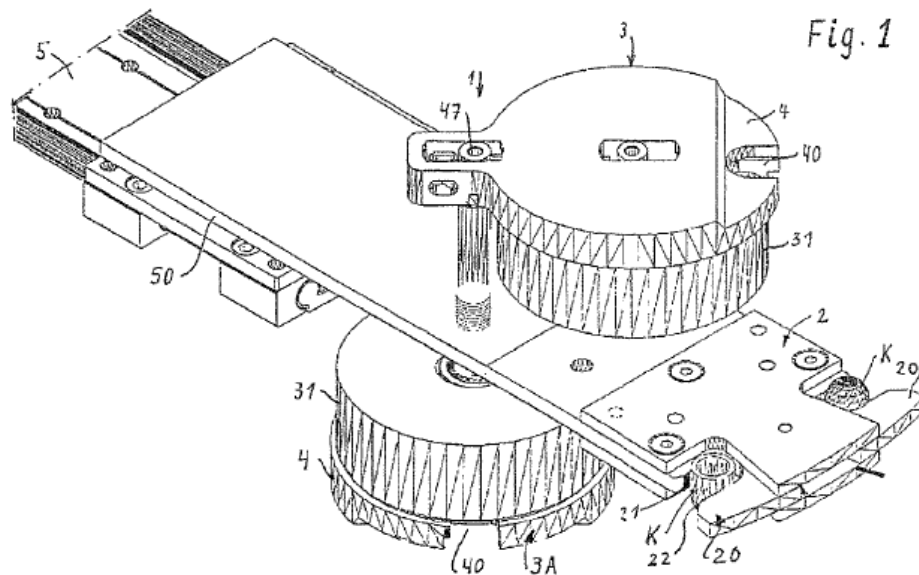


Figure 1 depicts "a complete spot welding cap changer 1, which is movably held on a support rail 5 at a robot arm." *Id.* at 2:49–50. Cap extractor 2 is located at one end of the changer, and cap magazines 3 and 3A are mounted to the top and bottom of the changer. *Id.* at 2:52–64.

Figure 5 of the '639 patent is reproduced below:

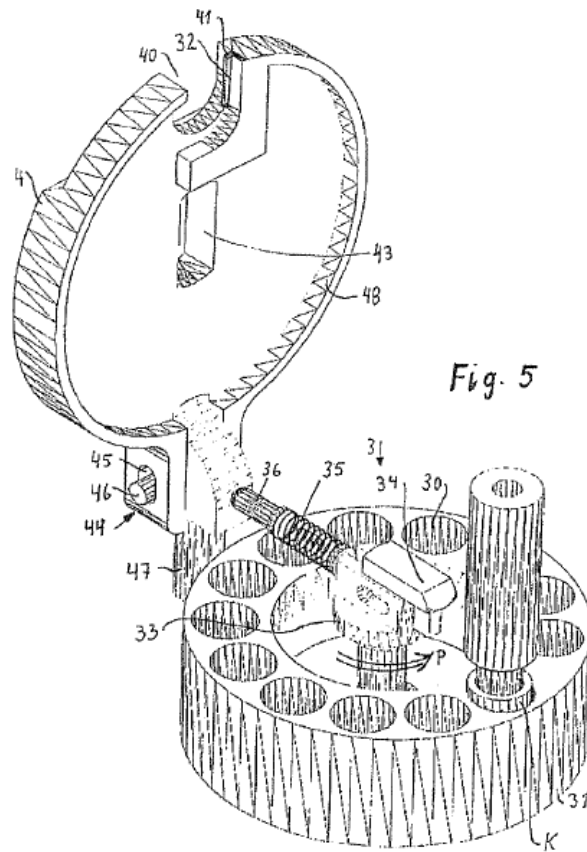


Figure 5 depicts one of the cap magazines of Figure 1 in an open position. *Id.* at 2:46–47. The cap magazine has a cylindrical cap carrier 31 with drill holes 30 in a circular arrangement. *Id.* at 3:36–38, Fig. 5. Welding caps K can be inserted into drill holes 30, with each cap “protruding by a few millimeters” when inserted. *Id.* at 3:36–38. Spring box 33 exerts a torsion force on cap carrier 31, causing the cap carrier to be “pressed . . . in the direction of the stop 32, which extends radially on the magazine cover.” *Id.* at 3:38–46.

E. Challenged Claims

Independent claims 1, 17, and 35 of the '639 patent are challenged:

1. A cap magazine for spot welding caps, the cap magazine comprising:
a cap carrier having a plurality of holes sized and shaped to receive a plurality of spot welding caps in a circular arrangement; and
a spring for driving the cap carrier, the spring providing an advancing force to advance the caps one by one so that one of the caps bears against a stop in the cap magazine in an access position, the access position allowing one of the spot welding caps to be attached axially to a shaft of a pincer spot welding head and to be extracted from the cap carrier, and when the cap in the access position is extracted from the cap carrier, the spring advances another one of the caps into the access position.

Ex. 1001, 4:57–5:3.

17. A spot welding cap changer comprising:
a cap extractor having a gripper which in response to an extraction movement detaches a spot welding cap of a pincer spot welding head inserted into the gripper from a shaft of the pincer spot welding head; and
a cap magazine comprising a cap carrier having a plurality of holes sized and shaped to receive a plurality of spot welding caps in a circular arrangement, and a spring for driving the cap carrier, the spring providing an advancing force to advance the caps one by one so that one of the caps bears against a stop in the cap magazine in an access position, the access position allowing one of the spot welding caps to be attached axially to a shaft of a pincer spot welding head and to be extracted from the cap carrier, and when the cap in the access position is extracted from the cap carrier, the spring advances another one of the caps into the access position.

Id. at 5:43–59.

35. A cap magazine for spot welding caps, the cap magazine comprising:

a cap carrier having a plurality of holes sized and shaped to receive a plurality of spot welding caps in a circular arrangement;

a spring for advancing the caps one by one; and

a stop for successively retaining each cap in an access position, the access position for allowing one of the spot welding caps to be extracted from the cap carrier;

wherein, when the cap in the access position is extracted from the cap carrier, the spring advances another one of the caps into the access position.

Id. at 6:44–55.

ANALYSIS

A. Claim Construction

In an *inter partes* review, we construe claim terms in an unexpired patent according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see Cuozzo Speed Techs. LLC v. Lee*, 136 S. Ct. 2131, 2144 (2016) (upholding the use of the broadest reasonable interpretation standard). Claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

Petitioner proposes constructions for seven terms: (1) “cap carrier having a plurality of holes sized and shaped to receive a plurality of spot welding caps in a circular arrangement”; (2) “spring for driving the cap carrier, the spring providing an advancing force to advance the caps one by one”; (3) “spring for advancing the caps one by one”; (4) “access position

allowing one of the spot welding caps to be attached axially to a shaft of a pincer spot welding head”; (5) “access position for allowing one of the spot welding caps to be extracted from the cap carrier”; (6) “stop” against which a cap bears in the access position; and (7) “stop for successively retaining each cap in an access position.” Pet. 19–21. In our Institution Decision, we construed “access position [for] allowing one of the spot welding caps to be attached axially to a shaft of a pincer welding head and to be extracted from the cap carrier” and “access position for allowing one of the spot welding caps to be extracted from the cap carrier.” Inst. Dec. 8–11. Patent Owner adopts our constructions and does not propose construing any other terms.⁵ PO Resp. 9–10.

In our Institution Decision, we construed “access position [for] allowing one of the spot welding caps to be attached axially to a shaft of a pincer welding head and to be extracted from the cap carrier” and “access position for allowing one of the spot welding caps to be extracted from the cap carrier” as “a position in which one of the spot welding caps can be pulled from the cap carrier.” Inst. Dec. 8–11. Neither party subsequently challenged this construction, so we maintain it here. PO Resp. 9–10; Reply

⁵ Patent Owner “reserves the right to rely . . . on the constructions and arguments in its Preliminary Patent Owner’s Response.” PO Resp. 10 n.1. Although Patent Owner did not attempt to exercise its “reserve[d] . . . right,” we note that such an attempt would have been improper. 37 C.F.R. § 42.6(a)(3) (“Arguments must not be incorporated by reference from one document into another document.”). Moreover, the reservation of rights itself is inconsistent with our orders in this case. Paper 9, 3 (“The patent owner is cautioned that any arguments for patentability not raised in the response will be deemed waived.”). Accordingly, we do not accept Patent Owner’s reservation of rights.

1–29. We determine that no further claim terms require construction to determine whether Petitioner has proven the unpatentability of the challenged claims. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).”

B. Asserted Obviousness of Claims 1 and 35 over Takaba and Lilley

Petitioner argues that the subject matter of claims 1 and 35 would have been obvious to a person of ordinary skill in the art given the teachings of Takaba and Lilley. Pet. 51–62.

1. Takaba

Takaba relates to “a structure for an electrode tip exchanging device for a welding gun.” Ex. 1011, at [57]. The invention of Takaba “has an upper and lower pair of tip removing devices 10 that have a tip removing tool 13 . . . and an upper and lower pair of tip installing devices 11.” *Id.* The tip removing devices of Takaba are shown in Figure 3, reproduced below:

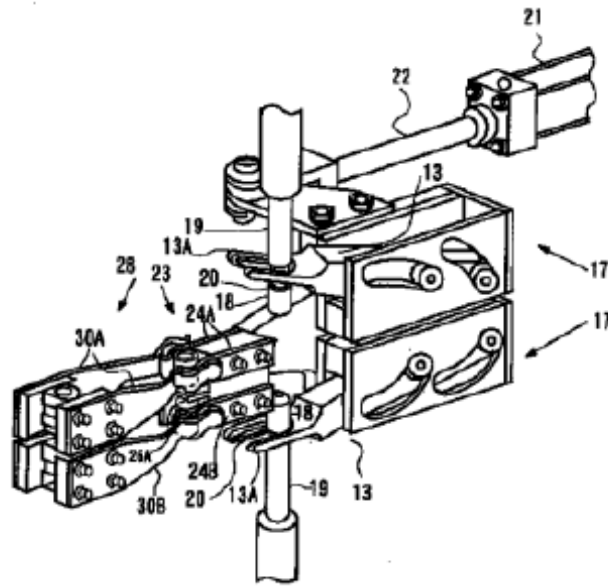


Figure 3 depicts the tip removing device of Takaba. *Id.* ¶ 20. The tip removing device has two hook parts 13A formed in two levers 13. *Id.* The hook parts are U-shaped, so that they “can be inserted into a gap 20 between a shank 19 and a tip 18.” *Id.* During tip removal, hook 13A and lever 13 contact “the shoulder part of tip 18, and thus the tip 18 is pried” and removed from shank 19. *Id.* ¶ 25.

The tip installing devices of Takaba are depicted in Figures 5 and 9 of Takaba, reproduced below:

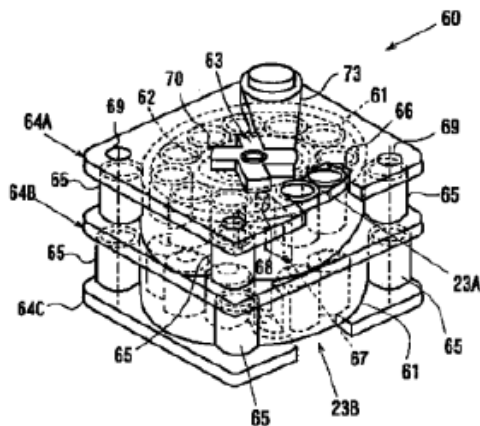


Figure 5

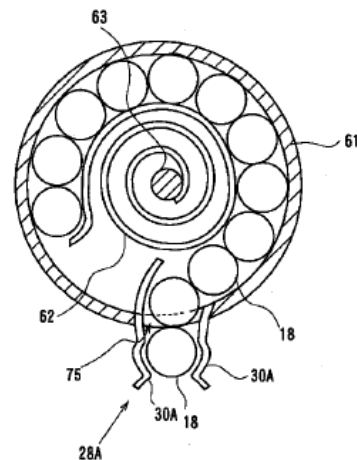


Figure 9

Figure 5 depicts one embodiment of the cartridge of the tip installing device of Takaba. *Id.* ¶¶ 28–29. This embodiment is referred to in Takaba as the “Second Example.” *Id.* ¶ 28. The cartridge contains two cylinders 61 inserted between three partitioning plates 64A, 64B, and 64C. *Id.* ¶ 29. Spiral spring 62 “biases and rotates the cylinder 61 clockwise.” *Id.* Welding tips 18 are stored in and “pressed against an inner circumferential surface of the cylinder” by the spring. *Id.* At locations 23A and 23B, the tips are made available for attachment to the shanks of welding electrodes. *Id.*

Figure 9 depicts another embodiment of the cartridge of the tip installing device of Takaba. *Id.* ¶¶ 38–39. Takaba refers to this embodiment as the “Fourth Example.” *Id.* ¶ 38. In this embodiment, cylinder 61 “is fastened between the partitioning plates,” so it “does not rotate” as cylinder 61 does in the Figure 5 embodiment. *Id.* Welding tips 18 are “pressed by a rotating force of the spiral spring 62” so that that they “move[] in the clockwise direction along the outer circumference of the cylinder 61.” *Id.*

2. *Lilley*

Lilley is directed to “[a] magazine for an air gun [that] comprises an outer case, a circular pellet carrier rotatably mounted in the outer case, and a cover that is pivotally mounted on the outer case.” Ex. 1009, at [57]. “A coil spring resiliently biases the pellet carrier towards an end position.” *Id.* Figure 1 of Lilley is reproduced below:

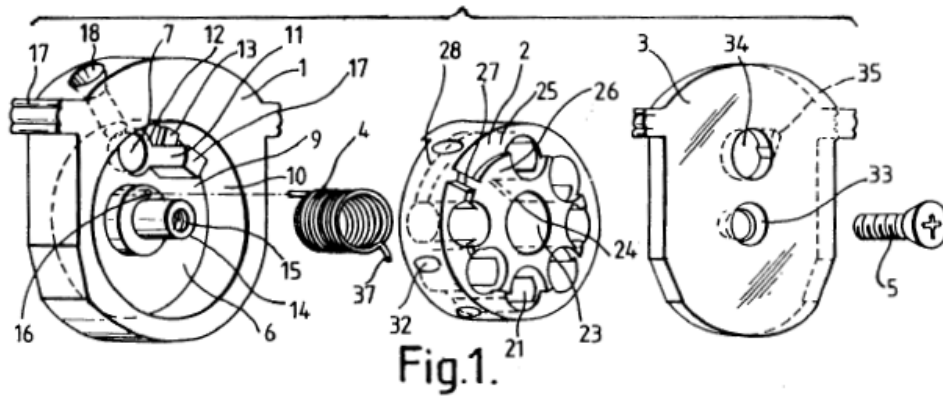


Figure 1 depicts an exploded view of a circular magazine according to Lilley. *Id.* at 4:29–30. Inner pellet carrier 2 contains a series of chambers 21 that can receive air gun pellets. *Id.* at 5:1–2. Outer case 1 has pellet stop post 8 (not labeled in Figure 1) with vertical face 11 “curved and aligned to match the adjacent edge 12 of the exit hole 7.” *Id.* at 4:53–58. In operation, pellets placed in chambers 21 bear one by one against abutment face 11 of stop post 8, preventing carrier 2 from rotating under spring pressure. *Id.* at 5:44–52. After the pellet bearing against the abutment face is removed, “the carrier 2 will rotate clockwise under spring pressure, with the post 8 passing through the [annular] channel 22 [(not shown or labeled in Figure 1)], until the next pellet is brought up against the abutment face 11.” *Id.* at 5:3–6, 6:19–22.

Figure 8 of Lilley is reproduced below:

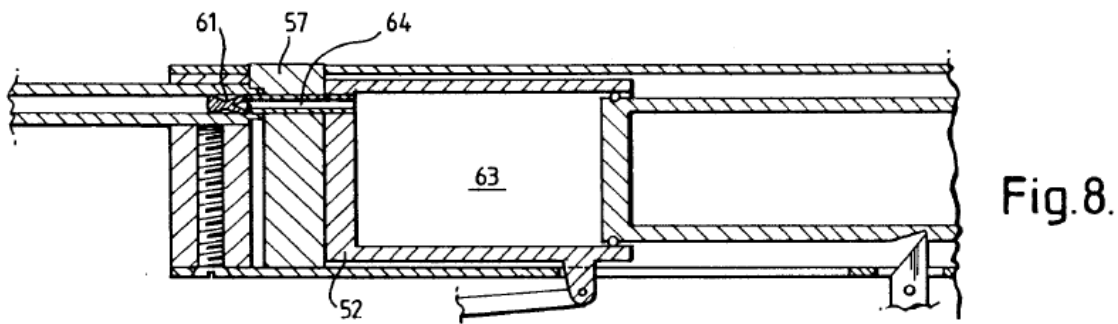


Figure 8 of Lilley depicts “part of an air rifle in section,” including magazine 57, for example, of the type illustrated in Figure 1. *Id.* at 4:35, 6:47–47. In Figure 8, compression cylinder 52 “is fully forward, leaving compression chamber 63 fully open and a hollow combination probe and transfer port 64, mounted in the end cap of compression cylinder 52, has passed through magazine 57 and pushed the pellet 61 into the barrel.” *Id.* at 6:63–68. Thus, Lilley discloses that the removal of the pellets occurs when “a hollow combination probe and transfer port 64” pushes the pellet into the air gun’s barrel via exit hole 7 of magazine 57. *Id.* at 6:53–56, 6:63–68, Figs. 6–8.

3. *Analysis*

Petitioner relies on Takaba’s Second Example to teach or suggest all limitations of claims 1 and 35 except for “a cap carrier having a plurality of holes sized and shaped to receive a plurality of spot welding caps in a circular arrangement.” Pet. 51–60 (citing Ex. 1011 ¶¶ 1, 5, 6, 29–31, Figs. 5, 6). Petitioner argues that this limitation is taught or suggested by Lilley. *Id.* In addition, Petitioner argues that a person of ordinary skill in the art would have combined the teachings of Lilley with those of Takaba to help solve problems that were known in the art to stem from the use of previous “gravity-fed, tube magazines.” Pet. 55–56 (quoting Ex. 1009, 1:25–30). Among other arguments, Patent Owner argues that Petitioner fails to identify adequately why a person of ordinary skill in the art would have combined the teachings of Lilley and Takaba. PO Resp. 32–39.

Petitioner directs us to evidence that Lilley’s purpose was to overcome several known disadvantages with gravity-fed air gun pellet magazines. Pet. 55–56 (citing Ex. 1009, 1:25–30). The problems

experienced by gravity-fed magazines, according to Koch, were known to include operational errors, such as jamming of welding caps during rolling and improper positioning of welding caps for transfer. *Id.* (citing Ex. 1014, 1:20–24). Petitioner argues that a person of ordinary skill in the art would have understood that the same types of problems might plague Takaba’s spring-driven magazines and would have combined the teachings of Lilley with those of Takaba to help solve those problems. *Id.*

Although Takaba does not rely on gravity to feed its welding caps to its access position, we note that there is some evidence of record that a person of ordinary skill in the art would have understood that the problems that occur with gravity-fed magazines might also affect Takaba’s spring-loaded design. Specifically, Mr. Mangold testifies that space for the welding tips “to move within the cylinder . . . could lead to the same problems known in the art with . . . gravity-fed magazines.” Ex. 1002 ¶ 88; *see* Ex. 1028 ¶ 15 (Dr. Derby adopting paragraph 88, *inter alia*, of Mr. Mangold’s Declaration). This evidence presupposes the presence of sufficient space within Takaba’s cylinder for the tips stored therein to move in an unintended way and become misaligned. Ex. 1002 ¶ 88 (in the magazine of Takaba, “the welding tips 18 still have some space to move within the cylinder 61, which could lead to the same problems known in the art with . . . gravity-fed magazines”; “providing individual holes for . . . [the caps] would reduce the chance that the welding caps could move in an unintended way or become misaligned”).

This evidence is contradicted, however, by other evidence of record. Takaba discloses that, in the Second Example, “tip 18 is pressed against an inner circumferential surface of the cylinder 61 due to a pressing force in the

outer circumferential direction of the spiral spring 62.” Ex. 1011 ¶ 29. According to Takaba, the force pressing the tips against the inner wall of cylinder 61 is sufficiently strong to prevent the tips from falling out of Takaba’s lower storing part. *Id.* (“pressing force of the spiral spring 62 is a strength where the tip 18 inside the storing part on the lower side does not fall”). Dr. Derby concedes Takaba’s constraint of the tips ensures that “the tip is not free to rattle around.” Ex. 2004, 28:1–12. Instead, Takaba keeps the tips “all in contact one next to the other with no gaps or space to try to minimize what might be a jam.” *Id.* Thus, even Petitioner’s own declarant does not testify consistently that Takaba teaches that “the welding tips 18 still have some space to move within the cylinder 61, which could lead to the same problems known in the art with . . . gravity-fed magazines.” Ex. 1002 ¶ 88.

Moreover, Patent Owner’s declarant, Robert H. Wagoner, Ph.D., testifies that a person of ordinary skill in the art would not have combined Lilley and Takaba in the manner proposed by Petitioner because the “sensitive tailoring of rotation and pressing forces of the Takaba spring design is a key feature of its operation” and that “spring 62 is specifically configured to prevent tips 18 from becoming misaligned or jammed during operation.” Ex. 2002 ¶ 66; *see also* Ex. 2002 ¶ 111 (“the Petition fails to identify a motivation that would have prompted one of ordinary skill in the art to combine the teachings of Takaba with either Lilley or Koch”; “all of the evidence available to me indicates that the cap magazines in Takaba would not malfunction as speculated by Dr. Derby”).

Petitioner argues that Dr. Wagoner’s testimony relates only to the Fourth Example of Takaba, not to the Second Example of Takaba, on which

Petitioner relies to argue that Takaba's spring-driven magazine would experience the same problems as a gravity-fed magazine. Reply 12–15. According to Petitioner, the two Examples differ in that the end of spring 62 is attached to cylinder 61 in the Second Example (Figure 5) but not in the Fourth Example (Figure 9), in which spring 62 presses directly against one of the tips stored in the cylinder. *Id.*

We agree that the Second and Fourth Examples of Takaba differ structurally. In the Second Example, “[t]he spiral spring 62 biases and rotates the cylinder 61 clockwise.” Ex. 1011 ¶ 29; *see also id.* ¶ 38 (“in Example 2, the cylinder 61 is rotated in a state storing the tip 18”). In the Fourth Example, spring 62 is present, but “the cylinder itself does not rotate.” *Id.* ¶ 38. But we disagree with Petitioner that Dr. Wagoner's testimony relates solely to the Fourth Example. Although the first sentence of paragraph 66 of Dr. Wagoner's testimony refers to the Fourth Example, the remainder of the paragraph relates to the function of spring 62 in both the Second and Fourth Examples of Takaba. Paragraph 66 cites paragraph 31 of Takaba, which relates to Takaba's Second Example. In addition, paragraph 67 of Dr. Wagoner's declaration begins “Returning to *other aspects of the Second Example . . .*” Ex. 2002 ¶ 67 (emphasis added). This strongly suggests that paragraph 66 was discussing the Second Example, at least in part. Regarding the Second Example, Wagoner also testifies that “spiral spring 62 also securely holds electrode tips 18 within supply cylinder 61 in alignment” and that spiral spring 62 holds tips 18 in alignment with each ‘tip 18 . . . pressed against an inner circumferential surface of the cylinder 61 due [to] a pressing force in the outer circumferential direction of the spiral spring 62.’” *Id.* ¶ 58; *see also id.* ¶ 64 (discussing spring 62 in

both Examples and identifying differences between the two Examples, none of which pertains to how spring 62 holds tips in alignment). Because Dr. Wagoner's testimony relates to both the Second and Fourth Examples of Takaba, Ex. 2002 ¶ 66, we agree with Patent Owner that Dr. Wagoner's testimony addresses Petitioner's proposed combination of Takaba and Lilley and supports Patent Owner's position that Petitioner fails to show sufficiently a reason to combine these references.

As described above, even without Dr. Wagoner's testimony, the evidence is only equivocal on the question of whether the spring-driven magazine described in the Second Example of Takaba would experience the same problems as a gravity-fed magazine. The evidence to support Petitioner's view—Mr. Mangold's Declaration—is contradicted by the evidence against such a view—Dr. Derby's deposition testimony. *Compare* Ex. 1002 ¶ 88 (testifying that a person of ordinary skill in the art would understand that Takaba's "welding tips 18 still have some space to move within the cylinder 61"), *with* Ex. 2004, 27:22–28:12 (testifying that paragraph 29 of Takaba, which refers to Takaba's Second Example, teaches keeping tips 18 "all in contact one next to the other with no gaps or space"). In view of Dr. Wagoner's testimony, Ex. 2002 ¶¶ 54–66, the evidence is not merely equivocal; the preponderance of the evidence contradicts Petitioner's position that Takaba's welding tips are subject to the same problems as tips in a gravity-fed magazine. Because Petitioner's argument for a reason to combine Takaba with Lilley relies on such a finding, Pet. 55–56, we are not persuaded that Petitioner has demonstrated an adequate reason to combine those references. Accordingly, we conclude that Petitioner has not shown

that the combination of Takaba and Lilley would have rendered claims 1 and 35 of the '639 patent obvious.

C. Asserted Obviousness of Claims 1 and 35 over Takaba and Koch

Petitioner argues that the subject matter of claims 1 and 35 would have been obvious to a person of ordinary skill in the art given the teachings of Takaba and Koch. Pet. 62–65.

1. Koch

Koch “relates to a device for the delivery of electrode caps for welding electrodes of automatic welding machines, wherein the electrode caps are made available in an error-free manner at a defined position for transfer.” Ex. 1014, 1:1–4. Figure 5 of Koch is reproduced below:

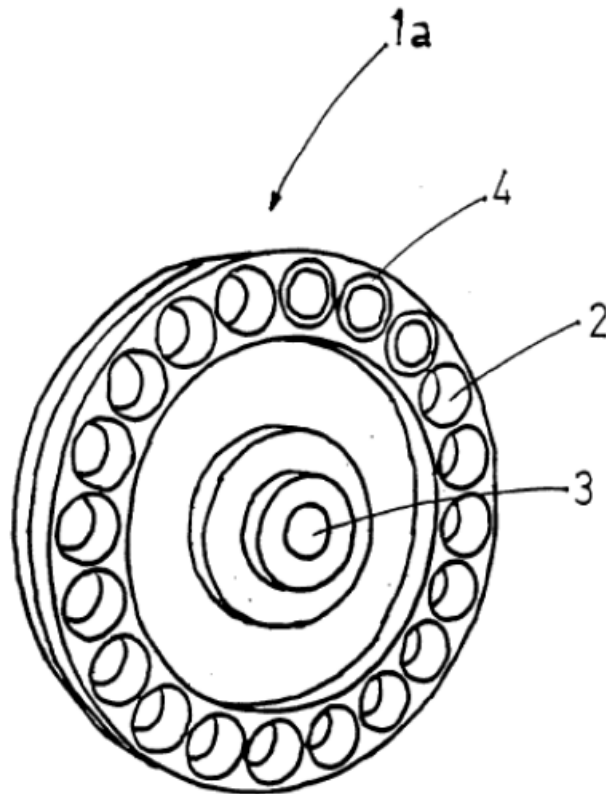


Fig.5

Figure 5 of Koch depicts an “embodiment of a device for the delivery of electrode caps 20.” *Id.* at 10:17. Magazine 1a “is formed by a circular disc having receptacles 2 on both sides that are arranged around the disc midpoint 3.” *Id.* at 10:17–19. Each receptacle contains scraper ring 4, which acts as a “holding member[] for the electrode caps 20.” *Id.* at 10:21–22. The disc can be turned by a “step motor,” not depicted in Figure 5, that rotates the disc to present a new cap once a cap has been removed. *Id.* at 11:4–6.

2. *Analysis*

Petitioner relies on Takaba’s Second Example to teach or suggest all limitations of claims 1 and 35 except for “a cap carrier having a plurality of holes sized and shaped to receive a plurality of spot welding caps in a circular arrangement.” Pet. 62–65 (citing to earlier discussion of the Takaba/Lilley combination for teachings of Takaba). Petitioner argues that this limitation is taught or suggested by Koch. *Id.* Patent Owner argues that Petitioner fails to identify adequately why a person of ordinary skill in the art would have combined the teachings of Koch and Takaba. PO Resp. 32–39.

As with the combination of Takaba and Lilley, Petitioner argues that a person of ordinary skill in the art would have combined the teachings of Koch with those of Takaba because Takaba’s spring-driven magazine might experience the same problems as gravity-fed magazines, and Koch was intended to solve the problems experienced by gravity-fed magazines. Pet. 64–65. According to Petitioner, the combination of Koch and Takaba would “reduce errors caused during cap transfer and provide caps at a defined position for transfer.” *Id.* at 64. Petitioner directs us to evidence

that Koch's purpose was to overcome disadvantages of cap magazines in which caps were allowed to roll through the magazine toward an access position. *Id.* (citing Ex. 1014, 1:20–27). The problems experienced by gravity-fed magazines were known to include operational errors such as jamming of welding caps during rolling and improper positioning of welding caps for transfer. Ex. 1014, 1:20–24. Petitioner argues that a person of ordinary skill in the art would have understood that the same types of problems might plague Takaba's spring-driven magazines and would have combined the teachings of Koch with those of Takaba to help solve those problems. Pet. 64–65.

Although Takaba does not rely on gravity to feed its welding caps to its access position, we note that there is some evidence of record that a person of ordinary skill in the art would have understood that the problems that occur with gravity-fed magazines might also affect Takaba's spring-loaded design. Specifically, Mr. Mangold testifies that "some degree of mobility within the cylinder" for the welding tips to move within the cylinder would allow the tips to "become misaligned." Ex. 1002 ¶ 98; *see* Ex. 1028 ¶ 15 (Dr. Derby adopting paragraph 98, *inter alia*, of Mr. Mangold's Declaration). This evidence presupposes the presence of sufficient space within Takaba's cylinder for the tips stored therein to move in an unintended way and become misaligned. Ex. 1002 ¶ 98 ("one of ordinary skill in the art would also understand that Takaba would suffer from the . . . problems identified by Koch," because "the welding tips 18 of Takaba have some degree of mobility within the cylinder 61," which would allow them to "become misaligned").

As discussed above with respect to the combination of Takaba and Lilley, however, this evidence is contradicted by other evidence of record. Takaba discloses that, in the Second Example, “tip 18 is pressed against an inner circumferential surface of the cylinder 61 due [to] a pressing force in the outer circumferential direction of the spiral spring 62.” Ex. 1011 ¶ 29. According to Takaba, the force pressing the tips against the inner wall of cylinder 61 is sufficiently strong to prevent the tips from falling out of Takaba’s lower storing part. *Id.* (“pressing force of the spiral spring 62 is a strength where the tip 18 inside the storing part on the lower side does not fall”). Dr. Derby concedes Takaba’s constraint of the tips ensures that “the tip is not free to rattle around.” Ex. 2004, 28:1–12. Instead, Takaba keeps the tips “all in contact one next to the other with no gaps or space to try to minimize what might be a jam.” *Id.* Thus, even Petitioner’s own declarant does not testify consistently that Takaba teaches that “the welding tips 18 still have some space to move within the cylinder 61, which could lead to the same problems known in the art with . . . gravity-fed magazines.” Ex. 1002 ¶ 88.

Moreover, Patent Owner’s declarant, Robert H. Wagoner, Ph.D., testifies that a person of ordinary skill in the art would not have combined Lilley and Koch in the manner proposed by Petitioner because the “sensitive tailoring of rotation and pressing forces of the Takaba spring design is a key feature of its operation” and that “spring 62 is specifically configured to prevent tips 18 from becoming misaligned or jammed during operation.” Ex. 2002 ¶ 66; *see also* Ex. 2002 ¶ 111 (“the Petition fails to identify a motivation that would have prompted one of ordinary skill in the art to combine the teachings of Takaba with either Lilley or Koch”; “all of the

evidence available to me indicates that the cap magazines in Takaba would not malfunction as speculated by Dr. Derby”).

Petitioner argues that Dr. Wagoner’s testimony relates only to the Fourth Example of Takaba, not to the Second Example of Takaba, on which Petitioner relies to argue that Takaba’s spring-driven magazine would experience the same problems as a gravity-fed magazine. Reply 12–15. According to Petitioner, the two Examples differ in that the end of spring 62 is attached to cylinder 61 in the Second Example (Figure 5) but not in the Fourth Example (Figure 9), in which spring 62 presses directly against one of the tips stored in the cylinder. *Id.*

We agree that the Second and Fourth Examples of Takaba differ structurally. In the Second Example, “[t]he spiral spring 62 biases and rotates the cylinder 61 clockwise.” Ex. 1011 ¶ 29; *see also id.* ¶ 38 (“in Example 2, the cylinder 61 is rotated in a state storing the tip 18”). In the Fourth Example, spring 62 is present, but “the cylinder itself does not rotate.” *Id.* ¶ 38. But we disagree with Petitioner that Dr. Wagoner’s testimony relates solely to the Fourth Example. Although the first sentence of paragraph 66 refers to the Fourth Example, the remainder of the paragraph relates to the function of spring 62 in both the Second and Fourth Examples of Takaba. Paragraph 66 cites paragraph 31 of Takaba, which relates to the Second Example. In addition, paragraph 67 of Dr. Wagoner’s declaration begins “Returning to *other aspects of the Second Example . . .*” Ex. 2002 ¶ 67 (emphasis added). This strongly suggests that paragraph 66 was discussing the Second Example, at least in part. Regarding the Second Example, Wagoner also testifies that “spiral spring 62 also securely holds electrode tips 18 within supply cylinder 61 in alignment” and that spiral

spring 62 holds tips 18 in alignment with each ‘tip 18 . . . pressed against an inner circumferential surface of the cylinder 61 due [to] a pressing force in the outer circumferential direction of the spiral spring 62.’” *Id.* ¶ 58; *see also id.* ¶ 64 (discussing spring 62 in both Examples and identifying differences between the two Examples, none of which pertains to how spring 62 holds tips in alignment). Because Dr. Wagoner’s testimony relates to both the Second and Fourth Examples of Takaba, Ex. 2002 ¶ 66, we agree with Patent Owner that Dr. Wagoner’s testimony addresses Petitioner’s proposed combination of Takaba and Koch and supports Patent Owner’s position that Petitioner fails to show sufficiently a reason to combine these references.

As described above, even without Dr. Wagoner’s testimony, the evidence is only equivocal on the question of whether the spring-driven magazine described in the Second Example of Takaba would experience the same problems as a gravity-fed magazine. The evidence to support Petitioner’s view—Mr. Mangold’s Declaration—is contradicted by the evidence against such a view—Dr. Derby’s deposition testimony. *Compare* Ex. 1002 ¶ 98 (testifying that a person of ordinary skill in the art would understand that “the welding tips 18 of Takaba have some degree of mobility within the cylinder 61,” making it “possible that they will also become misaligned”), *with* Ex. 2004, 27:22–28:12 (testifying that paragraph 29 of Takaba, which refers to Takaba’s Second Example, teaches keeping tips 18 “all in contact one next to the other with no gaps or space”). In view of Dr. Wagoner’s testimony, Ex. 2002 ¶¶ 54–66, the evidence is not merely equivocal; the preponderance of the evidence contradicts Petitioner’s position that Takaba’s welding tips are subject to the same problems as tips

in a gravity-fed magazine. Because Petitioner's argument for a reason to combine Takaba with Koch relies on such a finding, Pet. 64–65, we are not persuaded that Petitioner has demonstrated an adequate reason to combine those references. Accordingly, we conclude that Petitioner has not shown that the combination of Takaba and Koch would have rendered claims 1 and 35 of the '639 patent obvious.

D. Asserted Anticipation of Claims 1 and 35 by Lilley

Petitioner argues that claims 1 and 35 are anticipated by Lilley. Pet. 22–36. Anticipation of a claim under 35 U.S.C. § 102 requires proof that each claimed limitation and the claimed arrangement or combination of those limitations is disclosed, inherently or expressly, by a single prior art reference. *Therasense, Inc. v. Becton, Dickinson & Co.*, 593 F.3d 1325, 1332 (Fed. Cir. 2010). Patent Owner argues that several limitations of claims 1 and 35 are not disclosed by Lilley. Prelim. Resp. 35–43.

Claim 1 recites a limitation requiring an “access position allowing one of the spot welding caps . . . to be extracted from the cap carrier.” Ex. 1001, 4:65–5:1. Claim 35 similarly recites an “access position for allowing one of the spot welding caps to be extracted from the cap carrier.” *Id.* at 6:51–52. As noted above, we have construed these limitations as “a position in which one of the spot welding caps can be pulled out from the cap carrier.”

Lilley, however, does not disclose a mechanism in which its pellets are pulled from its magazine. Ex. 1009, 6:63–68, Fig. 8 (“a hollow combination probe and transfer port . . . has passed through magazine 57 and pushed the pellet 61 into the barrel”). Petitioner also does not show that a person of ordinary skill in the art would understand Lilley's disclosure to include an access position in which a pellet could be pulled from the

magazine. Pet. 31–34. In fact, Petitioner acknowledges that Lilley discloses only removing a pellet by pushing it out of the pellet carrier. Pet. 33 (“just like the shaft of the pincer spot welding head of the ‘639 Patent that extracts the welding cap in the axial direction, the probe 64 [of Lilley] engages the pellet 61 in an axial direction *to push the pellet 61 out of the magazine 57*” (emphasis added)). Accordingly, Petitioner has not shown that Lilley discloses the recited “access position allowing one of the spot welding caps . . . to be extracted from the cap carrier” (claim 1) or “access position for allowing one of the spot welding caps to be extracted from the cap carrier” (claim 35). We determine that Petitioner has not established by a preponderance of the evidence the anticipation of claims 1 and 35 by Lilley.

E. Asserted Obviousness of Claims 1 and 35 over Lilley

Petitioner argues that the subject matter of claims 1 and 35 would have been obvious to a person of ordinary skill in the art given the teachings of Lilley. Pet. 37–48. The challenged claims recite: “access position allowing one of the spot welding caps . . . to be extracted from the cap carrier” (claim 1) or an “access position for allowing one of the spot welding caps to be extracted from the cap carrier” (claim 35). Ex. 1001, 4:65–5:1, 6:51–52. Regarding these claim limitations, Petitioner relies on the same disclosure in Lilley and the same analysis as it relied upon for anticipation. Pet. 46 (citing Pet. 31–34). As discussed above, Petitioner has not shown that Lilley discloses these limitations, because Lilley teaches only removing pellets from the pellet carrier by pushing them out, not removing pellets from the pellet carrier by pulling them out. Petitioner does not argue that a person of ordinary skill in the art would have modified Lilley by substituting a pulling motion for a pushing motion. Accordingly, we determine that

Petitioner has not established by a preponderance of the evidence that Lilley renders claims 1 and 35 obvious.

F. Asserted Obviousness of Claim 17 over Lilley and AAPA

Petitioner argues that the subject matter of claim 17 would have been obvious to a person of ordinary skill in the art given the teachings of Lilley and AAPA. Pet. 48–51.

1. AAPA

The portions of the '639 patent upon which Petitioner relies describe an

invention [that] relates to a spot welding cap changer with a cap extractor and two cap magazines, the cap extractor having a gripper with spring-loaded, pivoting jaws, which in response to a turning and axial extraction movement detaches a spot welding cap of a pincer spot welding head inserted into it from a shaft of the pincer welding head.

Ex. 1001, 1:3–8. The '639 patent also notes that “[s]uch a mechanical electrode cap changer is known” in the prior art. *Id.* at 1:16–17.

2. Analysis

Claim 17 recites “a cap extractor having a gripper which in response to an extraction movement detaches a spot welding cap of a pincer spot welding head inserted into the gripper from a shaft of the pincer spot welding head.” Ex. 1001, 5:43–59. With the exception of that extra limitation, the language of claim 17 is identical to that of claim 1. *Compare id.* at 4:57–5:3, *with id.* at 5:43–59. Thus, every limitation of claim 1 is also a limitation of claim 17. Petitioner argues that the limitations of claim 17 that are identical to the limitations of claim 1 are taught or suggested by Lilley, for the same reasons discussed with respect to its anticipation and

single-reference-obviousness grounds. Pet. 48. That is, Petitioner relies on AAPA only to teach or suggest the cap extractor limitation of claim 17, which does not appear in claim 1. *Id.* at 48–51. Accordingly, Petitioner does not argue that AAPA teaches or suggests an “access position allowing one of the spot welding caps . . . to be extracted from the cap carrier.” *Id.* As discussed above, we conclude that Petitioner has not shown sufficiently that Lilley teaches or suggests this limitation. Therefore, Petitioner has not shown that either Lilley or AAPA teaches or suggests this limitation, so we determine that Petitioner has not established by a preponderance of the evidence that the combination of Lilley and AAPA renders claim 17 obvious.

G. Asserted Obviousness of Claim 17 over Takaba and Lilley

Petitioner argues that the subject matter of claim 17 of the ’639 patent would have been obvious over the combination of Takaba and Lilley. Pet. 60–62. Petitioner relies on the same reasons to combine for claim 17 as it relies upon for claim 1. *Id.* at 60 (“ . . . Takaba and Lilley . . . would have been obvious to combine, for the reasons discussed with respect to claim 1.”). As discussed above with respect to claims 1 and 35, Petitioner has not demonstrated an adequate reason to combine Takaba and Lilley, because Petitioner’s proffered reason to combine relies on a problem with Takaba that is not supported by a preponderance of the evidence. Accordingly, we conclude that Petitioner has not shown that the combination of Takaba and Lilley would have rendered claim 17 of the ’639 patent obvious.

H. Asserted Obviousness of Claim 17 over Takaba and Koch

Petitioner argues that the subject matter of claim 17 of the ’639 patent would have been obvious over the combination of Takaba and Koch. Pet.

62–65. Petitioner relies on the same reasons to combine for claim 17 as it relies upon for claim 1. *Id.* (addressing claims 1, 17, and 35 together). As discussed above with respect to claims 1 and 35, Petitioner has not demonstrated an adequate reason to combine Takaba and Koch, because Petitioner’s proffered reason to combine relies on a problem with Takaba that is not supported by a preponderance of the evidence. Accordingly, we conclude that Petitioner has not shown that the combination of Takaba and Koch would have rendered claim 17 of the ’639 patent obvious.

I. Patent Owner’s Motion to Exclude

Patent Owner filed a Motion to Exclude Evidence. Paper 25. The motion seeks to exclude paragraphs 34, 47–49, 51, 53–60, 68–69, 71, 74, 83, and 87–89 of Exhibit 1002, Mr. Mangold’s opening declaration. *Id.* at 9. As discussed above, even without excluding this evidence from the record, we conclude that Petitioner has not demonstrated the unpatentability of any of the challenged claims. Accordingly, even were we to grant Patent Owner’s motion, it would not change the outcome of this proceeding. Therefore, we dismiss Patent Owner’s Motion to Exclude Evidence as moot.

CONCLUSION

Upon consideration of the Petition, the Response, the Reply, and the evidence before us, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claims 1, 17, and 35 of the ’639 patent are unpatentable on any ground asserted in the Petition. In addition, we dismiss Patent Owner’s Motion to Exclude Evidence as moot.

ORDER

It is hereby

ORDERED that Petitioner has not proven by a preponderance of the evidence that claims 1, 17, and 35 of U.S. Patent No. 9,393,639 B2 are unpatentable;

FURTHER ORDERED that, pursuant to 35 U.S.C. § 318(b), upon expiration of the time for appeal of this decision, or the termination of any such appeal, a certificate shall issue confirming the patentability of claims 1, 17, and 35 of U.S. Patent No. 9,393,639 B2;

FURTHER ORDERED that Patent Owner's Motion to Exclude is dismissed as moot; 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.

IPR2017-00341
Patent 9,393,639 B2

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