

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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NHK SEATING OF AMERICA, INC.,  
Petitioner,

v.

LEAR CORPORATION,  
Patent Owner.

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Case IPR2014-01079  
Patent 6,631,949 B2

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Before NEIL T. POWELL, MITCHELL G. WEATHERLY, and  
CARL M. DeFRANCO, *Administrative Patent Judges*.

WEATHERLY, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318(a)*

I. INTRODUCTION

A. BACKGROUND

NHK Seating of America, Inc. (“NHK”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–4, 6–17, 20, 21, and 25 of U.S. Patent No. 6,631,949 B2 (Ex. 1001, “the ’949 patent”). NHK supported the Petition with a declaration from Richard W. Kent, PhD (Ex. 1010). Lear Corporation (“Lear”) timely filed a Preliminary Response.

Paper 6 (“Prelim. Resp.”). On January 13, 2015, based on the record before us at the time, we instituted an *inter partes* review of claims 1–4, 6–17, 20, 21, and 25, Paper 7 (“Institution Decision” or “Dec.”), on the following grounds:

<b>References</b>	<b>Basis</b>	<b>Claims challenged</b>
Japanese Unexamined Patent Application Publication No. H11-34708 (“Nakano”) (Ex. 1004 with certified translation at Ex. 1005)	§ 102(b)	1, 3, 6–11, 20, and 21
European Patent Application No. 1,053,907 A1 (“Kage”) (Ex. 1006)	§ 102(a)	1, 3, and 6–9
International Publication No. WO 98/09838 A1 (“Wiklund”) (Ex. 1007)	§ 102(b)	1, 3, 4, 6–9, 12–17, 20, and 21
Wiklund and Tim Seitzer, “Simple cams deliver no-nonsense motion control,” <i>Machine Design</i> , August 7, 1997 (“Seitzer”) (Ex. 1008)	§ 103	2 and 25

Dec. 29.

After we instituted this review, Lear filed a Patent Owner Response in opposition to the Petition (Paper 11, “Resp.”) that was supported by the declaration of David C. Viano, PhD (Ex. 2010<sup>1</sup>). NHK filed a Reply in support of the Petition (Paper 14, “Reply”) that was supported by an additional declaration from Dr. Kent (Ex. 1012).

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<sup>1</sup> Throughout its Response, Lear cites Dr. Viano’s declaration as Exhibit 2009. However, our review of the record reveals that Dr. Viano’s declaration was submitted as Exhibit 2010, which we cite throughout this Decision as appropriate.

Lear also filed a Motion to Strike and/or Exclude the Testimony of NHK's Expert, Richard W. Kent. Paper 19 ("Motion" or "Motion to Exclude"). NHK opposed the Motion to Exclude. Paper 22 ("Mot. Opp."). Lear filed a Reply in support of the Motion. Paper 23 ("Mot. Reply"). Lear did not move to amend any claim in the '949 patent.

We heard oral argument on September 10, 2015. A transcript is entered as Paper 29 ("Tr.").

For the reasons expressed below, we conclude that NHK has demonstrated, by a preponderance of evidence, that claims 1, 3, 6–9, 12–16, 20, and 21 are unpatentable, but NHK has failed to demonstrate that claims 2, 4, 10, 11, 17, and 25 are unpatentable. We also deny Lear's Motion to Exclude.

#### B. RELATED MATTERS

NHK identified as a related proceeding the co-pending district court litigation of *Lear Corporation v. NHK Seating of America, Inc.*, No. 2:13-cv-12937-SJM-RSW (E.D. Mich.), filed July 5, 2013. Pet. 1.

#### C. THE '949 PATENT

The '949 patent relates to "a variable movement headrest arrangement for providing support to the head of an occupant of a vehicle upon vehicle impact." Ex. 1001, 1:13–15. Among the challenged claims, claims 1, 12, 20, and 25 are independent and are directed to a "seat and headrest arrangement." Claims 1 and 12, which are illustrative, recite:

1. A vehicle seat and headrest arrangement for use with a seat having a seatback in a vehicle, the vehicle seat and headrest arrangement comprising:

a headrest arrangement including a headrest, an impact target, and one of a guide member and a follower;

the seatback having the other one of a guide member and follower, the guide member having a guideway and the follower extending laterally and engaging the guideway of the guide member such that upon impact to the vehicle a rearward load by the occupant upon the impact target will cause the follower to engage the guideway in such a manner to cause the headrest to be moved in a first manner and a second manner to support a head of an occupant.

*Id.* at 11:6–19.

12. A vehicle seat and headrest arrangement for use with a seat having a seatback in a vehicle, the vehicle seat and headrest arrangement comprising:

a headrest arrangement including a headrest and a headrest extension, the headrest extension having one of a guide member and a follower and an impact target located below the one of a guide member and a follower;

a seatback frame of the seatback having side members and an upper cross frame member, the upper cross frame member having the other of a guide member and follower, the guide member having a guideway and the follower extending laterally and slidably engaging the guideway of the guide member such that upon impact to the vehicle a rearward load by an occupant upon the impact target will cause the follower to be slidably guided by the guideway such that the headrest is moved in a first manner and a second manner.

*Id.* at 12:18–35.

The Specification describes an embodiment of the claimed seat by referring to Figures 2 and 3. We reproduce below versions of Figures 2 and 3 that are colorized to aid understanding of the seat with a headrest arrangement recited in the claims.

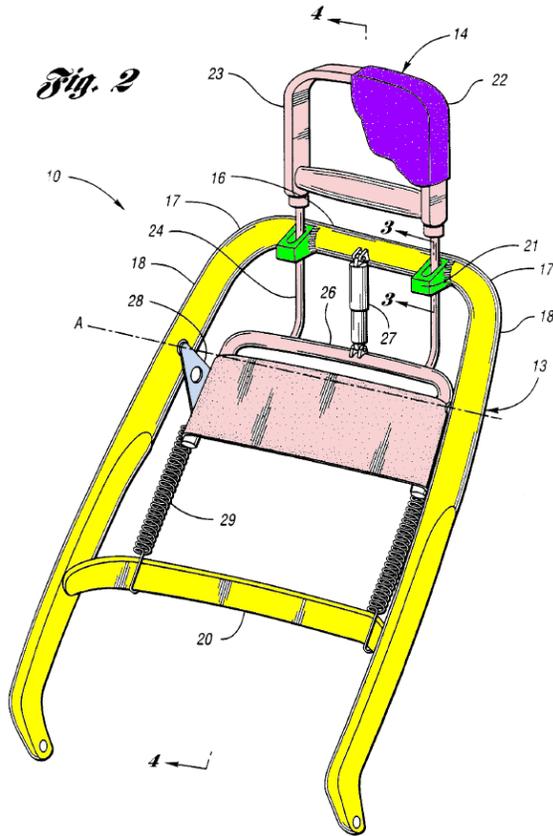


Figure 2 of the '949 patent is a perspective schematic view of headrest arrangement 14 incorporated into seatback frame 13.

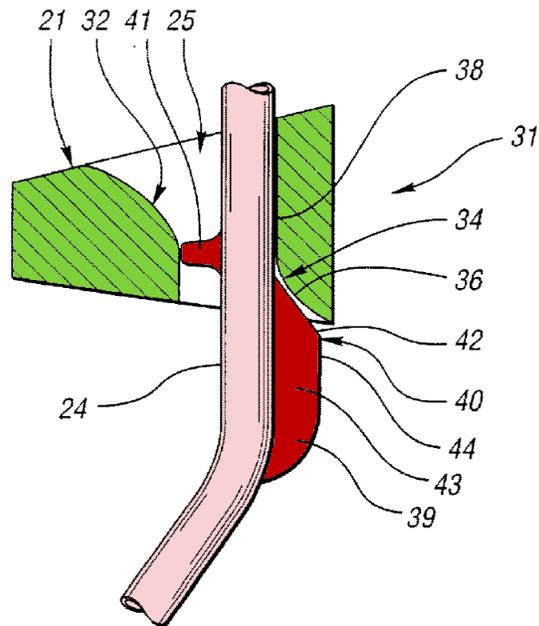


Fig. 3

Figure 3 of the '949 patent is a detailed cross section view of follower 39 and guide (unnumbered but green) with guideway 25.

Upon a rearward load being applied to impact target 26 (pink), connectors 28 (blue) pivot about axis A and impact target 26 (pink) moves rearward and upward. *Id.* at 6:49–53. Movement of impact target 26 (pink) causes headrest extensions 24 (pink) to slide upward through guideway 25 of guide members 21 (green). *Id.* at 6:53–58. Follower 39 (red) on headrest extension 24 (pink) slides along the interior walls of guideway 25 as headrest extension 24 (pink) carrying headrest 22 (purple) moves upward, which results in headrest 22 (purple) moving with first and second velocities along first and second trajectories. *Id.* at 8:10–45.

## II. CLAIM INTERPRETATION

“A claim in an unexpired patent shall be given its broadest reasonable construction in light of the specification of the patent in which it appears.” 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278 (Fed. Cir. 2015) (“We conclude that Congress implicitly approved the broadest reasonable interpretation standard in enacting the AIA.”). When applying that standard, we interpret the claim language as it would be understood by one of ordinary skill in the art in light of the specification. *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010). Thus, we give claim terms their ordinary and customary meaning. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) (“The ordinary and customary meaning ‘is the meaning that the term would have to a person of ordinary skill in the art in question.’”). Only terms which are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

After our Institution Decision, the parties dispute only the meaning of “first manner” and “second manner.” Resp. 10–17; Reply 6. All four independent claims require that the headrest moves “in a first manner and a second manner.” Ex. 1001, 11:18–19 (claim 1), 12:34–35 (claim 12), 13:37–38 (claim 20), and 14:39–40 (claim 25).

For purposes of instituting this trial, we found that NHK’s proposed interpretation of movement in “a first and second manner” as referring to movement in “any two different ways” was appropriate. Dec. 6–8. We also rejected Lear’s attempt to limit “first and second manner” to mean “[a]t least one of the first forward velocity and first trajectory of the first manner is

different than one of the second forward velocity and second trajectory of the second manner.” *Id.* at 7–8. We rejected Lear’s preliminary argument because it improperly attempted to incorporate limitations of preferred embodiments into the claims without express limitations to those embodiments. *Id.*

After institution, Lear argues that movement in “a first and a second manner” refers to movement “in a first trajectory and a second trajectory.” Resp. 10–17. NHK counters that, because “trajectory” is recited in dependent claim 10 and was to distinguish prior art, we must interpret “a first manner and a second manner” more broadly than “a first trajectory and a second trajectory.” Reply 6. We are persuaded by NHK’s counter argument, but must consider whether our prior interpretation of “first manner and second manner” as meaning “any two different ways” is too broad. For the reasons that follow, we determine that “in a first manner and a second manner” does refer to movement in “any two different ways.”

The Specification broadly introduces the concepts of “first manner” and “second manner” as follows:

As will be described in greater detail below, headrest 22 moves variably upon vehicle impact. In the embodiment shown, such variable movement occurs in first and second manners wherein the first and second manners relate to first and second forward velocities respectively, those being the velocities of the headrest 22 forward toward the occupant or the front of the vehicle, and first and second trajectories respectively, those being the trajectories or paths of headrest 22. *Such variable movement could be along any suitable combination of trajectories and velocities. As long as at least one of the first forward velocity and first trajectory is different than one of a second forward velocity and second trajectory, movement in first and second manners, variable movement, has been achieved.*

Ex. 1001, 5:12–26 (emphasis added). This passage is consistent with interpreting “first manner and second manner” as meaning “any two different ways.” As described in this quoted passage, if either the forward velocity or the trajectory of the headrest, or both changes, then movement in a first and second manner has occurred. For example, if the headrest were to move forward at one velocity and then merely slow down (or speed up) on the same trajectory, then movement would occur in a first and second manner.

Lear bases its argument for equating “manner” with “trajectory” on quoted portions of the Specification that are altered to remove broadening language indicating that a first and second manner refers to a change in velocity or a change in trajectory. Resp. 12–13 (quoting with alterations Ex. 1001, 5:9–18; 8:25–33, 8:42–46, 9:8–19).<sup>2</sup> Lear, by altering its selected portions of the Specification, ignores the clearly broader description of first and second manner quoted above as referring to any change in forward velocity or trajectory or both.

Other portions of the Specification, however, indicate a preferred relationship between the first and second manner in which the headrest moves quickly immediately upon impact (i.e., in a first manner) and slows down as it approaches the occupant’s head (i.e., in a second manner). For example, the Specification states in the sentence immediately following the broad description quoted above:

However, as will be explained in more detail, in the event of a vehicle impact, it is preferable that the headrest move in a first manner so as to more quickly lessen the gap between the

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<sup>2</sup> We interpret Lear’s citations to the ’949 patent to be to Ex. 1001, 5:12–21, 8:23–30, 8:39–43, 9:11–15.

head of an occupant and the headrest 22 and move in a second manner so as to decrease the forward velocity and provide support upon contact with the occupant's head.

Ex. 1001, 5:28–33. In this passage, the headrest first moves quickly toward the head and then slows down to support the head as it contacts the head. In the more detailed remaining portions of the Specification relating to “first and second manner,” the Specification describes the first manner as moving more quickly toward the head and the second manner as moving more slowly to support the head. *E.g., id.* at 9:5–10, 9:15–16, 9:42–46. In all these portions, the headrest slows as it approaches the occupant's head because both the forward velocity and the trajectory change. *Id.*

The claims are not expressly limited, however, to these preferred types of movement in a first and second manner. We interpret claims according to their broadest reasonable interpretation that is consistent with the specification, but we take care not to incorporate limitations that appear only in the specification. *In re Prater*, 415 F.2d 1393, 1404–05 (CCPA 1969). Additionally, the U.S. Court of Appeals for the Federal Circuit has noted that:

To act as its own lexicographer, a patentee must “clearly set forth a definition of the disputed claim term” other than its plain and ordinary meaning. . . . It is not enough for a patentee to simply disclose a single embodiment or use a word in the same manner in all embodiments, the patentee must “clearly express an intent” to redefine the term.

*Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (internal citations omitted). Lear does not identify any portion of the Specification indicating a clear intent to limit “manner” as Lear proposes. Citing to examples in the Specification of preferred “first and second manners” while ignoring broader descriptions of them does not redefine

“first manner and second manner,” which has a plain and ordinary meaning. Because the Specification broadly introduces the concepts of “first manner” and “second manner” to encompass movements in any two different ways, we maintain our preliminary interpretation of “in a first manner and a second manner” as meaning “in any two different ways.”

### III. THE CHALLENGES TO PATENTABILITY

We instituted a review of the patentability of claims 1–4, 6–17, 20, 21, and 25 of the ’949 patent on the grounds that those claims may be anticipated or obvious in light of various prior art references including: Nakano, Kage, Wiklund, and Seitzer. Dec. 10–29.

“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. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987). The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007) reaffirmed the framework for determining obviousness as set forth in *Graham v. John Deere Co.*, 383 U.S. 1 (1966). As observed by the Court in *KSR*, the factual inquiries set forth in *Graham* that are applied for establishing a background for determining obviousness under 35 U.S.C. § 103(a) are summarized as follows:

1. Determining the scope and content of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

*KSR*, 550 U.S. at 406. With these standards in mind, we address each challenge below.

A. THE PARTIES' POST-INSTITUTION ARGUMENTS

In our Institution Decision, we concluded that the argument and evidence adduced by NHK demonstrated a reasonable likelihood that: (1) Nakano anticipated claims 1, 3, 6–11, 20, and 21, Dec. 14–20; (2) Kage anticipated claims 1, 3, and 6–9, *id.* at 20–21; (3) Wiklund anticipated claims 1, 3, 4, 6–9, 12–17, 20, and 21, *id.* at 21–24; and (4) the combination of Wiklund and Seitzer rendered claims 2 and 25 obvious, *id.* at 24–29. We must now determine whether NHK has established by a preponderance of the evidence that the specified claims are unpatentable over the cited prior art. 35 U.S.C. § 316(e). In this connection, we previously instructed Lear that “any arguments for patentability not raised in the [Patent Owner Response] will be deemed waived.” Paper 8, 2–3; *see also* 37 C.F.R. § 42.23(a) (“Any material fact not specifically denied may be considered admitted.”). Additionally, the Board’s Trial Practice Guide states that the Patent Owner Response “should identify all the involved claims that are believed to be patentable and state the basis for that belief.” Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012).

Accordingly, with regard to all limitations of the claims other than those that Lear identifies in the Response as being novel over the prior art, the record now contains unrebutted arguments and evidence presented by NHK regarding the merits of the teachings of Nakano, Kage, Wiklund, and Seitzer. We agree with and adopt NHK’s factual contentions set forth in the Petition and the Reply with regard to these limitations. We find that the preponderance of the evidence of record developed at trial supports our

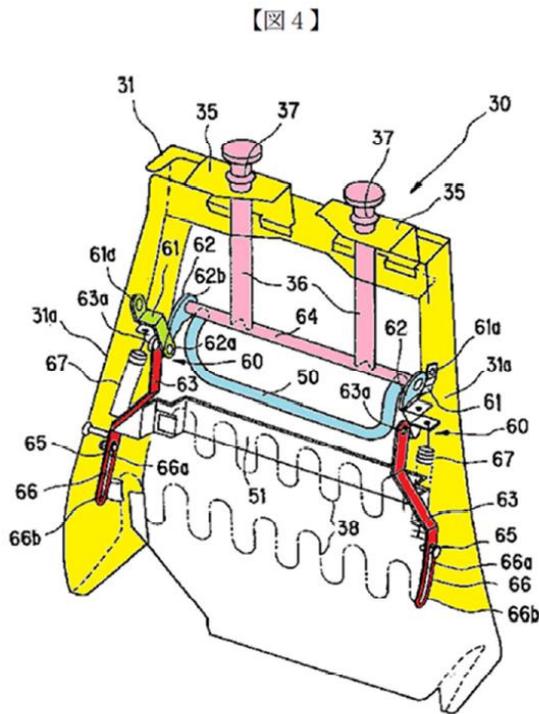
conclusion that NHK has set forth how the alleged prior art teaches or suggests the uncontested limitations of the reviewed claims. Accordingly, we do not address these uncontested limitations in our discussion below.

B. ANTICIPATION OF CLAIMS 1–3, 6–11, 20, AND 21 BY NAKANO

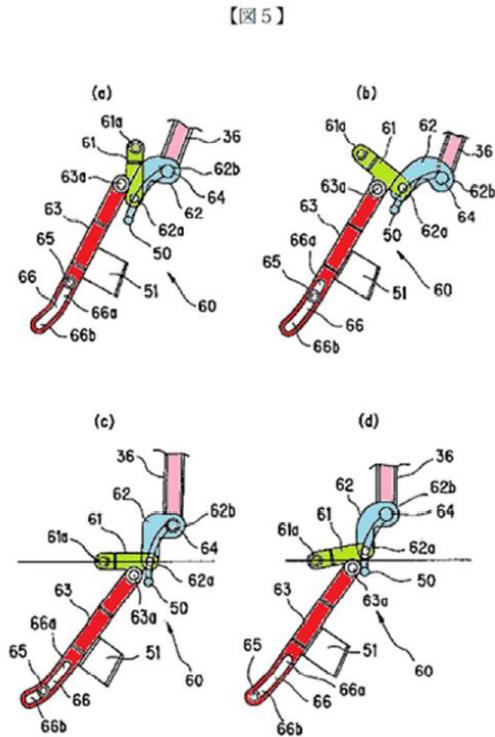
We preliminarily determined that NHK had established a reasonable likelihood of showing that Nakano anticipates claims 1, 3, 6–11, 20, and 21. Dec. 14–20. For the reasons expressed below, NHK persuades us by a preponderance of evidence that Nakano anticipates claims 1, 3, 6–9, 20, and 21, but has failed to do so for claims 10 and 11.

1. Overview of Nakano

The operation of Nakano is illustrated in the colorized versions of Nakano’s Figure 4 (reproduced below left) and Figures 5(a)–(d) (reproduced below right).



Nakano’s Fig. 4 is a perspective view of a linkage for actuating a head



Nakano’s Figs. 5(a)–(d) are schematic illustrations of Nakano’s

restraint during a collision.

linkage in the design position (Fig. 5(a)), the actuated position (Fig. 5 (d)), and intermediate positions (Figs. 5(b) and 5(c)).

Nakano's linkage includes frame 31 (yellow), first link arm 61 (green), second link arm 62 (blue), third link arm 63 (red), load receiving member 50 (blue), and head rest holder brackets 36 (pink). Ex. 1005 ¶¶ 16–20. During impact, load bearing members 50, 51 receive load and transfer that load through link arms 61, 62, 63 to raise head rest 40 (*id.*, Fig. 6) to an actuated position. *Id.* ¶ 19. Under normal conditions, coil spring 67 biases first link arm 61 (green) clockwise as seen in Figures 5(a)–(d) so that the linkage is held in the design position. *Id.* ¶¶ 23, 25, Figs. 4, 5(a). During impact, forces extend coil spring 67 and move the linkage to an actuated position in which first link arm 61 and second link arm 62 rotate counterclockwise and third link arm 63 rotates clockwise and slides upward. *Id.* ¶¶ 25–29. The sliding of third link arm 63 is constrained and guided by pin 65, which projects from side portion 31a of frame 31 and engages guide hole 66 in third link arm 63. *Id.* ¶ 22. Head rest holder brackets 36 (pink) are supported within and slide through brackets 35 (yellow), which are attached to frame 31 (yellow), as the linkage moves the headrest from the design to the actuated position. *Id.* ¶ 17, Figs. 2, 6.

Nakano describes the way in which its linkage moves the headrest as follows:

[A]s shown in Fig. 5 (b), . . . the coordinated operation of the first, second and third link arms 61, 62, 63 raises the holder bracket 36 fastened to the joint bar 64 between the second link arms 62, 62, *lifting up the head rest 40.*

\* \* \*

Subsequently, as shown in Fig. 5 (d), the third link arm 63, 63 is moved by the lower load-bearing member 51, and in particular, guide pin 65 slides through the arc-shaped portion 66b of guide hole 66, causing the third link arm 63, 63 to rise along this arc-shaped trajectory, accompanying which the first link arm 61, 61 rotates counterclockwise in the drawing and the second link arm 62, 62 operates in coordination, *lifting the holder bracket 36 fastened to the second link arm 62, 62 and the head rest 40 obliquely forward*, carrying it to a position where it is close to the passenger's head, thereby ensuring that support is provided to the head.

*Id.* ¶¶ 26, 29 (emphasis added).

## 2. *Lear's Arguments*

Lear argues that Nakano does not anticipate some or all of claims 1, 3, 6–11, 20, and 21 for five reasons. First, Lear contends that Nakano fails to describe a headrest that moves in a first and second manner as required in all these claims. Resp. 20–25. Second, Lear argues that Nakano's guide pins 65 and guide holes 66 do not “cause the headrest to be moved in a first and a second manner” as recited in claims 1, 3, and 6–11. *Id.* at 25–26. Third, Lear argues that Nakano's frame brackets 35 and the combination of holders 36 with their extensions do not cause the headrest to be “moved in a first manner and a second manner” as recited in claims 20 and 21. *Id.* at 27–28. Fourth, Lear argues that Nakano fails to describe a follower that extends laterally and slidingly engages the guideway as required in claims 20 and 21. *Id.* at 28–32. Fifth, Lear argues that Nakano fails to describe a headrest that moves more slowly toward the occupant's head during its movement in a second manner than while moving in a first manner as required in claims 10 and 11. *Id.* at 32–34. We address each argument below.

a) Claims 1–3, 6–11, 20, and 21: First and Second Manners

NHK provides argument and evidence explaining how Nakano describes all elements of claims 1–3, 6–11, 20, and 21. Pet. 19–34. To establish movement of the headrest in first and second manners, NHK relies in part upon testimony of Dr. Kent explaining his kinematic model of Nakano’s linkage that purportedly illustrates the path through which Nakano’s headrest moves during actuation. *Id.* at 20–21 (citing Ex. 1010 ¶ 54). Dr. Kent used the drawings in Nakano as the input for his kinematic modeling effort. Ex. 1010 ¶ 54, Attachment B. NHK also relies upon Nakano’s description of the movement of its headrest as being raised by “a designated stroke” and “subsequently” lifted “obliquely forward.” *Id.* at 19–20 (citing Ex. 1005 ¶¶ 29, 33, Figures 5a–d); Reply 9 (citing Ex. 1005 ¶¶ 22, 26, 29). Nakano describes the movement of its headrest as follows:

[A]s shown in Fig. 5 (b), . . . the coordinated operation of the first, second and third link arms 61, 62, 63 raises the holder bracket 36 fastened to the joint bar 64 between the second link arms 62, 62, *lifting up the head rest 40.*

Ex. 1005 ¶ 26 (emphasis added).

Subsequently, as shown in Fig. 5 (d), the third link arm 63, 63 is moved by the lower load-bearing member 51, and in particular, guide pin 65 slides through the arc-shaped portion 66b of guide hole 66, causing the third link arm 63, 63 to rise along this arc-shaped trajectory, accompanying which the first link arm 61, 61 rotates counterclockwise in the drawing and the second link arm 62, 62 operates in coordination, *lifting the holder bracket 36 fastened to the second link arm 62, 62 and the head rest 40 obliquely forward*, carrying it to a position where it is close to the passenger’s head, thereby ensuring that support is provided to the head.

*Id.* ¶ 29 (emphasis added).

Lear argues that NHK failed to demonstrate that Nakano describes a headrest that moves in a first manner and a second manner because Dr. Kent's original modeling of Nakano's headrest failed to account for the constraint imposed by brackets 35. Resp. 20–23. Lear further contends that its expert, Dr. Viano, “correctly model Nakano” and determined that brackets 35 were “essential” to predicting the motion of Nakano's headrest. *Id.* at 23. Lear also argues that movement of Nakano's headrest may be defined mathematically by a single equation, which allegedly demonstrates that Nakano's headrest moves along “a single trajectory.” *Id.* at 23–24 (citing Ex. 2010 ¶¶ 112–15). Lear contends that Dr. Kent “admits” that a path of motion that can be expressed by a single equation establishes movement in only one manner. *Id.* at 25 (citing Ex. 2012, 17:3–14). Our review of the cited testimony, reveals that it does not support Lear's contention. We also do not understand Dr. Viano's testimony to support a conclusion that a “single equation” defines the movement of Nakano's headrest. Dr. Viano refers to Exhibit 2018 as reflecting his derivation of the mathematical relationships that define movement of Nakano's headrest. Ex. 2010 ¶ 112 (citing Ex. 2018). Exhibit 2014 demonstrates that one equation defines the movement of Nakano's headrest in the x-direction and another equation defines it in the y-direction. Ex. 2018, 1. Dr. Viano never provides an exemplary output of these two equations to illustrate how Nakano's headrest would actually move. More importantly, however, Lear does not explain how Nakano's express description that the coordinated operation of links 61, 62, and 63 lifts its headrest (as shown in Figure 5b) and subsequently lifts the headrest obliquely forward (as shown in Figure 5d) fails to constitute movement in a first and second manner.

NHK persuades us by a preponderance of evidence that Nakano describes a headrest that moves in a first and second manner. More specifically, Nakano expressly states that it lifts the headrest (a first manner) and then subsequently lifts the headrest obliquely forward (a second manner). We need not determine whether Dr. Kent's first or second kinematic model or Dr. Viano's kinematic or geometric model accurately depicts the movement of Nakano's headrest because Nakano expressly describes movement in first and second manners.

b) Claims 1, 3, and 6–11: Whether Nakano's Guide Pins and Guide Holes Cause the Headrest to Move in First and Second Manners

Claims 1, 3, and 6–11 require that a follower engage a guide member such that the headrest moves in first and second manners. *See* Ex. 1001, 11:6–18. NHK identifies Nakano's guide holes 66 and guide pins 65 as the claimed guide member and follower that cause the headrest to move in the first and second manners. Pet. 21–24. Lear argues that guide holes 66 and guide pins 65 do not cause movement in the first and second manners. Resp. 25–26. Instead, Lear contends that link arms 61 (green), which rotate around fixed fulcrum 61a, completely define the movement of the headrest and that guide pins 65 moving in guide holes 66 have no effect on how the headrest moves. *Id.* Lear cites testimony from Drs. Viano and Kent as support for its contention. *Id.* (citing Ex. 2010 ¶¶ 127–33; Ex. 2012 73:21–76:15, 78:24–79:7).

We determine that both experts undermine Lear's contention by testifying that movement of guide pin 65 through guide hole 66 constrains movement of link 63 and defines the length of the path through which Nakano's headrest travels. Ex. 2010 ¶ 133; Ex. 2012, 75:1–21, 78:24–79:7.

Additionally, Nakano repeatedly describes that it is the coordinated movement of link arms 61, 62, and 63 that affects how the headrest moves. *E.g.*, Ex. 1005 ¶¶ 8–10, 12, 13, 19, 26, 27, 30–33. Accordingly, NHK persuades us by a preponderance of evidence that Nakano’s guide hole 66 and guide pin 65 constitute a claimed guide member and follower that are among the elements of Nakano that causes the headrest to move in a first and a second manner as required in claims 11 and 14.

c) Claims 20 and 21: Whether Nakano’s Brackets 35/ HOLDERS 36 and Headrest Extensions Cause the Headrest to Move in First and Second Manners

Claims 20 and 21 require that a follower slidingly engage a guide member such that the headrest moves in a first and second manner. *See* Ex. 1001, 13:33–38. NHK identifies Nakano’s bracket 35 and the combination of headrest extension 36 and holder 37 as the claimed guide member and follower that cause the headrest to move in the first and second manner. Pet. 31–33. Lear argues that Dr. Kent’s initial modeling of how Nakano’s headrest moves, which does not constrain movement of the headrest by bracket 35, demonstrates that bracket 35 does not influence movement of Nakano’s headrest and thus cannot cause the headrest to move in a first and second manner. Resp. 27–28.

Lear’s argument is unpersuasive. Nakano’s bracket 35 indisputably constrains the manner in which headrest extension 36 slides through bracket 35 and thus, at least in part, causes headrest to move in a first and second manner. *See* Ex. 1005 ¶ 14 (stating that Figures 1–7 depict “same vehicle seat”), ¶ 17 (brackets 35 support pipe-shaped holder bracket 36); Ex. 2010 ¶ 109 (“bracket 35 is essential to control the movement of the head restraint”); Ex. 2011, 107:2–16 (bracket 35 constrains lateral movement of

headrest extensions 36). Accordingly, NHK persuades us by a preponderance of evidence that Nakano's bracket 35 constitutes a claimed guide member and the combination of holder 36 and stay holder 37 constitutes a claimed follower that are among the elements of Nakano that cause the headrest to move in a first and second manner as required in claims 20 and 21.

d) Claims 20 and 21: Follower Extending Laterally and Slidingly Engaging the Guideway

Independent claim 20 recites, among other limitations, “a laterally extending follower . . . and the follower slidingly engaging the guideway of the guide member . . . .” Ex. 1001, 14:5–12. NHK identifies bracket 35 as the guide member and the combination of holder 36 and stay holder 37 as the follower that extends laterally. Pet. 31–33. Lear argues that the prosecution history of the '733 patent precludes any structure having a constant diameter from constituting a follower that is “extending laterally.” Resp. 29–30. If we were to accept Lear's argument about the scope of “extending laterally,” Lear contends that holder 36 cannot be a follower because it has a constant diameter and stay holder 37 cannot be a follower because it does not slidingly engage the identified guideway (bracket 35). *Id.* at 30–31.

We are persuaded that the combination of holder 36 and stay holder 37, which NHK identifies as the follower constitutes the claimed follower that extends laterally and engages the guideway. Our conclusion remains the same even if we were to accept Lear's argument that constant diameter structures cannot constitute the claimed “follower.” The combined structure of holder 36 and stay holder 37 is not a constant diameter structure because stay holder 37 is of greater diameter than holder 36 and extends

laterally from holder 36. Lear does not contest that holder 36 slidingly engages bracket 35. Accordingly, we are persuaded by a preponderance of evidence that Nakano describes the follower of claims 20 and 21.

e) Claims 10 and 11: Whether the Forward Velocity of Nakano's Headrest Decreases as It Moves in the Second Manner

Claims 10 and 11 require that the forward velocity of the headrest decrease as the headrest moves in the second manner. Claim 10 recites: "movement in the first manner is movement on a first trajectory and at a first forward velocity and movement in the second manner is movement on a second trajectory and at a second forward velocity which is less than the first forward velocity." Ex. 1001, 12:7–11. Claim 11 recites: "movement in the first manner quickly decreases a distance between the headrest and the head of the occupant, while movement in the second manner decreases a velocity of the headrest forward (sic, toward) the head of the occupant . . . ." *Id.* at 12:13–16. Lear contends that Nakano fails to describe a movement of the headrest in accordance with either claim 10 or claim 11. We agree.

Nakano describes the way in which its linkage moves the headrest as follows:

[A]s shown in Fig. 5 (b), . . . the coordinated operation of the first, second and third link arms 61, 62, 63 raises the holder bracket 36 fastened to the joint bar 64 between the second link arms 62, 62, *lifting up the head rest 40.*

\* \* \*

Subsequently, as shown in Fig. 5 (d), the third link arm 63, 63 is moved by the lower load-bearing member 51, and in particular, guide pin 65 slides through the arc-shaped portion 66b of guide hole 66, causing the third link arm 63, 63 to rise along this arc-shaped trajectory, accompanying which the first link arm 61, 61 rotates counterclockwise in the drawing

and the second link arm 62, 62 operates in coordination, *lifting* the holder bracket 36 fastened to the second link arm 62, 62 and *the head rest 40 obliquely forward*, carrying it to a position where it is close to the passenger's head, thereby ensuring that support is provided to the head.

Ex. 1005 ¶¶ 26, 29 (emphasis added).

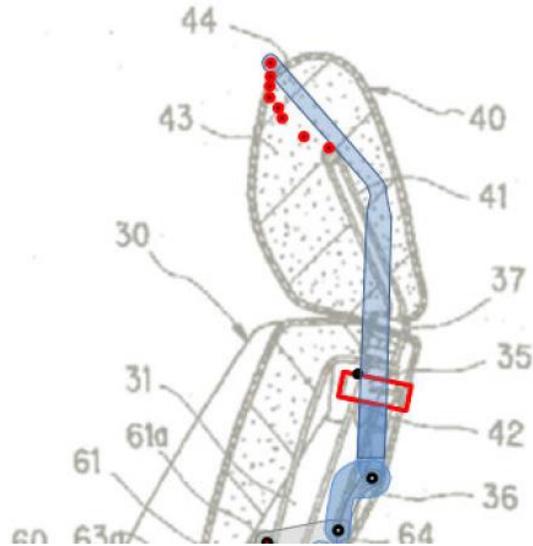
*(1) NHK's Reliance on Kinematic Models of Nakano's Headrest*

NHK proffers Dr. Kent's testimony based upon his kinematic modeling of the movement of Nakano's headrest as evidence of how Nakano's headrest moves. Pet. 20–21 (citing Ex. 1010 ¶ 54). Dr. Kent based his kinematic model of Nakano's headrest upon Nakano's illustrations. Ex. 1010 ¶ 54. NHK also relies upon Dr. Viano's kinematic model of the movement of Nakano's headrest and his "admission" that Nakano "necessarily" reduces the forward velocity of the headrest. Reply 17 (citing Ex. 1020). Dr. Viano's kinematic model of Nakano's headrest is also derived from an analysis of Nakano's illustrations. Ex. 2010 ¶ 107.

Drs. Kent and Viano use kinematic modeling techniques to reach similar conclusions about the path through which Nakano's headrest moves. The figures reproduced below illustrate those conclusions with the output of Dr. Viano's model shown on the left and the output of Dr. Kent's second model shown on the right.



The figure above is a portion of an illustration of the path (shown as a red line) through which a point on Nakano's headrest moves as determined by Dr. Viano.



The figure above is a portion of an illustration of the path (shown as a series of red dots) through which a point on Nakano's headrest moves as determined by Dr. Kent.

Dr. Kent's second model differs significantly from his first model of Nakano because, when generating his first model, he did not consider bracket 35 as constraining the movement of post 36. Ex. 1013 ¶ 15. The variability in the results among all three kinematic models undermines the reliability of the technique the experts used to determine the precise path through which Nakano's headrest moves. Dr. Kent testifies that others, including Dr. Viano, often use graphical representations of linkages as input for creating reliable kinematic models. *Id.* ¶¶ 9–13.

Lear argues, however, that we cannot rely on kinematic models because the accuracy of those models depends upon using drawings that are to scale. Resp. 9 (citing *Nystrom v. TREX Co.*, 424 F.3d 1136, 1148–49 (Fed. Cir. 2005) (holding that because “patent drawings do not define the precise proportions of the elements” the district court erred in determining invalidity based on “models made from [such] drawings”); *In re Olson*, 212

F.2d 590, 592 (C.C.P.A. 1954) (“drawings which accompany an application for a patent are merely illustrative of the principles embodied in the alleged invention”). Under *Nystrom*, we may not rely on evidence based solely upon patent illustrations to establish precise proportions of a disclosed structure. The proponent of the modeling must establish that the reference containing the illustrations provides at least some indication that the illustrations are to scale. *Nystrom*, 424 F.3d at 1149.

Just as in *Nystrom*, NHK attempts to transform static images that are not established as being drawn to scale into a model that reveals undisclosed details about the illustrated structure. NHK goes even farther than the *Nystrom* defendant, however, because NHK uses Nakano’s static images to generate a dynamic model of Nakano’s headrest to derive the path through which the headrest moves. Accordingly, under *Nystrom*, NHK fails to persuade us that we can rely upon any of the modeling performed by either expert as persuasive evidence of the path through which Nakano’s headrest would move.

*(2) Nakano’s Express Description of the Forward Velocity of Its Headrest*

Lear persuasively argues that Nakano’s express description of the movement of its headrest is insufficient to establish whether the first forward velocity of the headrest is greater than the second forward velocity.

Resp. 32–34. As explained above, Nakano describes first “lifting up the head rest,” Ex. 1005 ¶ 26, and subsequently lifting the headrest “‘obliquely forward’ . . . to a position where it is close to the passenger’s head,” *id.* ¶ 29. Nakano’s description says nothing about the velocity of the headrest.

Based on our review of the evidence of record, NHK fails to persuade us that Nakano describes a headrest that moves with a first forward velocity

along a first trajectory that is greater than a second forward velocity along a second trajectory as required in claims 10 and 11. Accordingly, we are not persuaded that Nakano anticipates claim 10 and 11.

### *3. Conclusion*

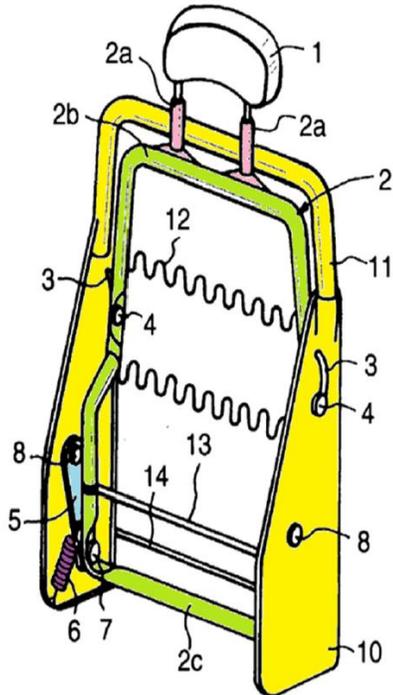
For the reasons described above, NHK persuades us by a preponderance of evidence that Nakano describes a headrest that moves in a first manner and a second manner as required in claims 1–3, 6–9, 20, and 21. NHK also persuades us by a preponderance of evidence that Nakano describes a follower that extends laterally and slidingly engages the guide member as required in claims 19 and 20. NHK also persuades us that the structures it identifies in Nakano cause the headrest to move in first and second manners as required in claims 1–3, 6–9, 20, and 21. As stated in part III.A above, we also are persuaded that NHK has established by a preponderance of evidence that Nakano describes all other elements of claims 1–3, 6–9, 20, and 21. Accordingly, we conclude that NHK has established by a preponderance of evidence that Nakano anticipates claims 1–3, 6–9, 20, and 21 under 35 U.S.C. § 102(b). NHK has failed to persuade us by a preponderance of evidence that Nakano describes a headrest that moves in the ways recited in claims 10 and 11.

#### C. ANTICIPATION OF CLAIMS 1, 3, AND 6–9 BY KAGE

Claims 1, 3, and 6–9 all require that the headrest move in a first and second manner. Ex. 1001, 11:17–19. We preliminarily determined that NHK had established a reasonable likelihood of showing that Kage anticipates claims 1, 3, and 6–9. Dec. 20–21. Lear argues that Kage does not anticipate these claims because Kage fails to describe a headrest that moves in a first and second manner. Resp. 34–39.

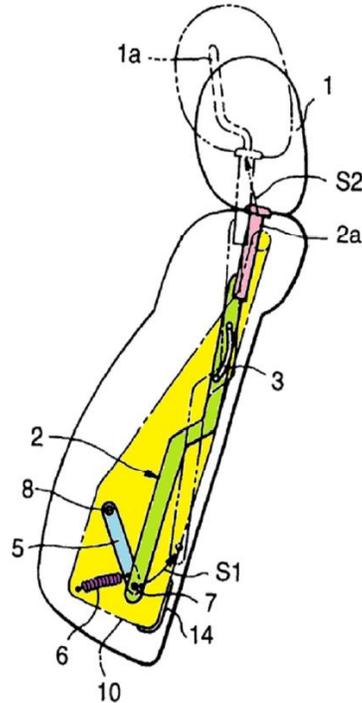
*1. Overview of Kage*

The operation of Kage is illustrated in the colorized versions of Kage's Figures 1 and 2 (reproduced below).



*Kage Fig. 1*

Kage's colorized Figure 1 depicts movable frame 2 with headrest supports 2a mounted within fixed frame 10.



*Kage Fig. 2*

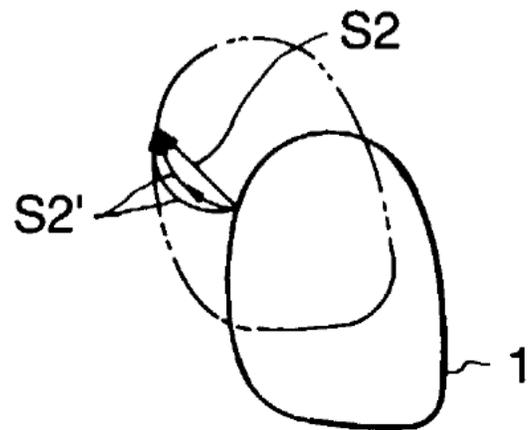
Kage's colorized Figure 2 depicts how movable frame 2 and headrest supports 2a move within fixed frame 10 upon impact.

Kage relates to a seat that “can receive a load from [a] passenger’s waist and the headrest can be quickly and stably moved forward.” Ex. 1006, 2:42–44. Kage’s seat includes stationary seat frame 10, 11, 14 (yellow) and movable seat frame 2 (green) from which headrest support guides 2a (pink) extend to support headrest 1. *Id.* at 7:21–36, 7:55–8:1. Guide shafts 4 extend from moveable frame 2 (green) and slidably engage guide holes 3. *Id.* at 7:42–50. Link members 5 (blue) are pivotally connected to movable

frame 2 (green) at pivot axes 7 and to fixed frame 10 (yellow) at link shafts 8. *Id.* at 8:8–15.

When rearward force is applied to seat frame 2c (green), link members 5 (blue) pivot upward and frame 2c (green) is guided along moving path S1. *Id.* at 8:43–48. Guide shafts 4 slide within guide holes 3 as movable frame 2 moves upward. *Id.* As a result, the headrest 1 moves along linear moving path S2, which is defined by a combination of moving path S1 and the shape of guide holes 3. *Id.* at 8:49–54.

Kage illustrates its linear path S2 in the pertinent portion of its Figure 3, which is reproduced at right, as the path through which a point on the front-facing surface of headrest 1 moves as link members 5 move along moving path S1. *Id.* at 8:39–42, 8:49–54. The pertinent portion of Kage's Figure 3 also illustrates an alternative



moving path S2' for the same point on headrest 1, which Kage describes as follows:

[I]f the guide holes 3 are formed to have a linear shape or a shape which is convex toward the front side of the vehicle body, the headrest 1 is displaced forward with respect to the vehicle body at an early timing of its movement, and is then displaced upward, as indicated by a path S2' in Fig. 3. *In such case, the distance between the passenger's head and headrest can be shortened quickly at an early timing of movement of the headrest 1, and when the passenger's head contacts the headrest in practice, the relative speed between the passenger's head and headrest can be minimized (since the moving direction of the headrest has changed in the upward direction).*

*Id.* at 8:58–9:5 (emphasis added). The emphasized portion of the quotation establishes that Kage’s headrest moves differently at the beginning and end of its path S2'. Namely, Kage’s headrest moves quickly toward the occupant’s head at the beginning of path S2' and more slowly toward the occupant’s head at the end of path S2'.

## 2. *Analysis*

NHK provides argument and evidence explaining how Kage describes all elements of claims 1, 3, and 6–9. Pet. 34–42. NHK relies upon the variable movement of Kage’s headrest along path S2' as describing movement of the headrest in first and second manners. Lear argues that Kage fails to describe a headrest that moves in a first trajectory and a second trajectory because paths “S2 and S2' are each single trajectories.” Resp. 38. Lear also argues that both experts confirm that the alleged “single trajectory” path S2' constitutes movement in “one way.” *Id.* (citing Ex. 2010 ¶¶ 150–63; Ex. 2012, 33:14–35:5).

Lear’s argument is unpersuasive because it relies upon Lear’s interpretation of “a first manner and a second manner” as meaning “a first trajectory and a different second trajectory.” Resp. 21–24. We reject Lear’s interpretation for the reasons discussed in part II above. Additionally, we are not persuaded by Lear’s reliance on expert testimony to establish that Kage’s headrest moves in “one way” along path S2' for two reasons. First, and most importantly, the testimonial evidence plainly contradicts Kage’s explanation of how headrest 1 moves along path S2' in one way early in its travel and another way later in its travel (i.e., “*the moving direction of the headrest has changed in the upward direction.*”). Ex. 1006, 9:8–12. Second, Lear’s cited portion of Dr. Kent’s testimony fails to establish that path S2' constitutes

movement in one way. Dr. Kent's testimony merely establishes that Kage's headrest moves more forwardly early in path S2' and more upwardly in the latter part of path S2'. Ex. 2012, 34:20–35:5. We, therefore, conclude that Dr. Kent's testimony fails to establish that movement along path S2' is movement in "one way."

### *3. Conclusion*

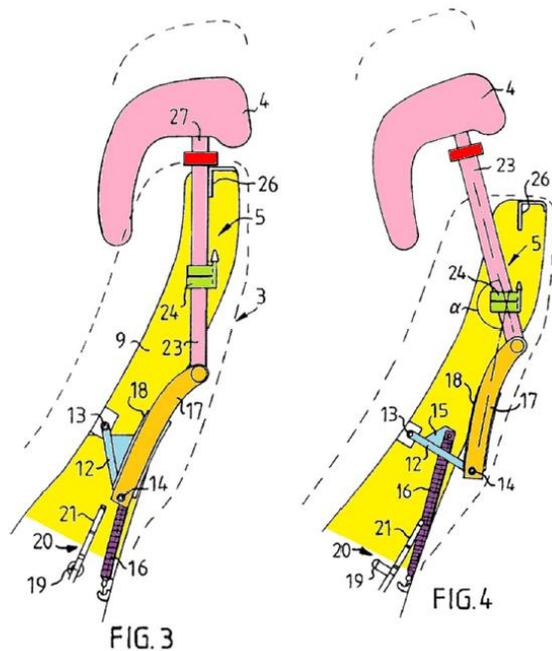
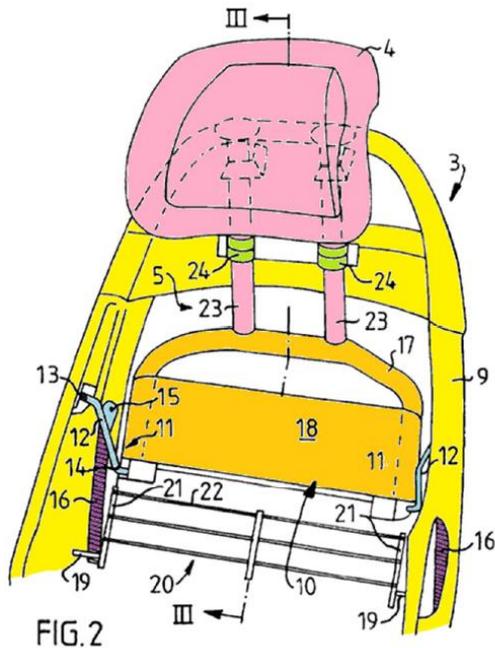
For the reasons described above, NHK persuades us by a preponderance of evidence that Kage describes a headrest that moves in a first manner and a second manner. As stated in part III.A above, we also are persuaded that NHK has established by a preponderance of evidence that Kage describes all other elements of claims 1, 3, and 6–9. Accordingly, we conclude that NHK has established by a preponderance of evidence that Kage anticipates claims 1, 3, and 6–9 under 35 U.S.C. § 102(a).

#### **D. ANTICIPATION OF CLAIMS 1, 3, 4, 6–9, 12–17, 20, AND 21 BY WIKLUND**

We preliminarily determined that NHK had established a reasonable likelihood of showing that Wiklund anticipates claims 1, 3, 4, 6–9, 12–17, 20, and 21. Dec. 21–24. For the reasons expressed below, NHK persuades us by a preponderance of evidence that Wiklund anticipates claims 1, 3, 6–9, 12–16, 20, and 21, but NHK fails to do so for claims 4 and 17.

#### *1. Overview of Wiklund*

The colorized versions of Wiklund's Figures 2–4 (shown below) illustrate Wiklund's active head restraint system and the manner in which Wiklund's headrest moves during a collision.



Wiklund's Fig. 2 is a perspective view of elements that move headrest 4 during a collision.

Wiklund's Figs. 3 and 4 are side views illustrating the manner in which headrest 4 moves during a collision.

During a rear collision, the occupant is forced backwards against Wiklund's maneuvering means 10 (orange). Ex. 1007, 5:28–30. Movement of means 10 causes link arms 12 (blue) to rotate counterclockwise (as shown in Figs. 3 and 4), which lifts and rotates frame part 17 (orange). *Id.* at 5:28–6:1. This movement of frame part 17 slides holders 23 upward through supports 24 to lift headrest 4 and rotates holders 23 to move headrest 4 forward. *Id.*

## 2. Lear's Arguments

Lear argues that Wiklund does not anticipate some or all of claims 1, 3, 4, 6–9, 12–17, 20, and 21 for three reasons. Resp. 39–52. First, Lear contends that Wiklund fails to describe a headrest that moves in a first and second manner as required in all these claims. *Id.* at 39–45. Second, Lear argues that Wiklund fails to describe the “follower” extending laterally or

slidingly engaging the guideway as recited in all these claims. *Id.* at 45–47. Third, Lear argues that the structures in Wiklund that NHK identifies as the follower and guideway of claims 4 and 17 do not have the claimed first and second surface portions. *Id.* at 47–52. We address each argument below.

a) Claims 1, 3, 4, 6–9, 12–17, 20, and 21: First and Second Manners

NHK contends that Wiklund’s movement of its headrest upward while rotating forward constitutes movement in a “first and second manner.” Pet. 45–46, 51–52 (citing Ex. 1007, 5:25–6:4). Wiklund describes the movement of its headrest as follows:

[D]uring a rear end collision, the support mechanism 5 can be made to take up the position shown in Fig. 4, where the neck support 4 has been moved forwards and upwards relative to the back 3 in order to support the head 6 of the person in the chair. During such a rear end collision the manoeuvring means 10 is subjected to such a large force backwards relative to the frame 9 by the back of the person that it is moved and, with the help of the link arms 12, guided in such a way that the *holders 23 slide upwards in the support 24 at the same time as they are bent forwards.*

Ex. 1007, 5:25–6:1 (emphasis added).

Lear cites the same passage from Wiklund as establishing that Wiklund’s headrest moves “simultaneously upward and forward along a single trajectory.” Resp. 42–44. Lear also relies upon Dr. Viano’s testimony to support its contention that Wiklund’s headrest moves along a single trajectory. *Id.* (citing Ex. 2010 ¶¶ 170–79, 184–89). Dr. Viano concludes that Wiklund moves in a single trajectory based on two models of the movement of Wiklund’s headrest. Ex. 2010 ¶¶ 170–93. Dr. Viano’s first model is a kinematic model of Wiklund’s linkage derived using dimensions in Wiklund’s figures as input data that simulates the movement of Wiklund’s

headrest as the linkage moves. Ex. 2010 ¶ 170. Dr. Viano's second model is a mathematical model of a "simplified linkage that is analogous" to Wiklund's arrangement. *Id.* ¶ 176.

We determine Dr. Viano's modeling to be inconclusive on the issue of how Wiklund's headrest would actually move. Lear criticizes Dr. Kent's use of patent illustrations as a basis for a kinematic model of a prior art linkage as being improper. Resp. 10–11 (citing *Nystrom v. TREX Co., Inc.*, 424 F.3d 1136, 1148 (Fed. Cir. 2005) (holding that because "patent drawings do not define the precise proportions of the elements" the district court erred in determining invalidity based on "models made from [such] drawings."); *In re Olson*, 212 F.2d 590, 592 (C.C.P.A. 1954) ("drawings which accompany an application for a patent are merely illustrative of the principles embodied in the alleged invention.")). Lear never explains why we should reject Dr. Kent's reliance on patent illustrations as input for his kinematic modeling while simultaneously relying upon Dr. Viano's reliance on patent illustrations as input for his kinematic modeling of Wiklund. Accordingly, we do not rely upon Dr. Viano's kinematic modeling of Wiklund's headrest.

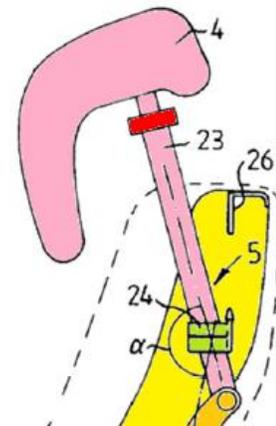
NHK contends that Dr. Viano's mathematical modeling is "improper" based on testimony by Dr. Kent. Reply 20 (citing Ex. 1013 ¶¶ 16–22). According to NHK, Dr. Viano's mathematical modeling oversimplifies Wiklund's linkage. *Id.* Even if we were to assume that Dr. Viano's mathematical model of Wiklund's linkage were valid, Lear never proffers evidence of the shape of the path through which Wiklund's headrest would actually move according to Dr. Viano's mathematical model.

Nevertheless, even if we were to accept Dr. Viano's modeling as accurate and Lear's contention that Wiklund's headrest moved in a "single

trajectory” as true, Lear’s argument would be unpersuasive because it is based on Lear’s argument that we should equate “manner” with “trajectory.” As explained in part II above, we interpret moving in a first manner and a second manner broadly to cover movement in two different ways. Wiklund plainly states its headrest moves in two different ways because holders 23 of headrest 4 simultaneously slide upward through support 24 and bend forward. Accordingly, NHK persuades us by a preponderance of evidence that Wiklund describes a headrest that moves in first and second manners.

b) Claims 1, 3, 4, 6–9, 12–17, 20, and 21: Follower Extending Laterally and Slidingly Engaging the Guideway

Claims 1, 3, 4, 6–9 recite a “follower extending laterally and engaging the guideway of the guide member.” Ex. 1001, 11:13–14. Claims 12–17 recite “the headrest extension having one of a guide member and a follower . . . the follower extending laterally and slidingly engaging the guideway of the guide member.” *Id.* at 12:22–31. Claims 20 and 21 recite “a laterally extending follower . . . the follower slidingly engaging the guideway of the guide member . . .” *Id.* at 13:24–34. NHK identifies the combination of holder 23 (pink) holder part 27 (pink) and unnumbered stay (red), which are illustrated in the portion of the colorized version of Wiklund’s Figure 4 reproduced at right, to be the follower extending laterally and slidingly engaging the guideway of the guide member (support 24 (green)). Pet. 45–46 (claim 1), 52 (claim 12), 56 (claim 20).



Lear argues that holder 23 and holder parts 27 cannot be the claimed follower because no portion of holder part 27 ever contacts support 24 and, therefore, holder parts 27 do not engage the guide member. Resp. 45–46.

Lear also contends that holders 23 do not extend laterally because they have a constant diameter. *Id.* at 47

Lear's argument is unpersuasive because it fails to address the entire combination of elements that NHK identifies as the follower, namely holder 23, holder parts 27, and the unnumbered stay (red). NHK persuades us that the stay (red) extends laterally from holder 23, which slides within support 24. Our conclusion remains the same even if we were to accept Lear's argument that constant diameter structures cannot constitute the claimed "follower." The combined structure of holder 23 and stay (red) is not a constant diameter structure because the stay is of greater diameter than holder 23 and it extends laterally from holder 23. Lear does not contest that holder 23 slidingly engages support 24. Accordingly, NHK persuades us by a preponderance of evidence that Nakano describes the follower of claims 1, 3, 4, 6–9, 12–17, 20, and 21.

c) Claims 4 and 17: Guideway Wall with First and Second Portions and Follower with First and Second Surface Portions

Claim 4, which depends from claim 3, which depends from claim 1, recites details of how the follower engages the guideway within the guide member as follows:

the guideway has a first guideway wall and a second guideway wall and the follower has a first follower portion and a second follower portion which engage the first guideway wall and second guideway wall respectively . . . .

Ex. 1001, 11:27–30;

the second guideway wall has a first contact portion and a second contact portion and the second follower portion has a first surface portion and a second surface portion such that upon impact to the vehicle, the first surface portion slidingly engages

the first contact portion while the first follower portion slidingly engages the first guideway wall so as to cause the headrest to move in a first manner before the second surface portion slidingly engages the second contact portion as the first follower portion continues to slidingly engage the first guideway wall so as to cause the headrest to move in a second manner.

*Id.* at 11:34–44.

Claim 17, which depends from claim 16, which depends from claim 12, recites similar limitations to those of claim 4 as follows:

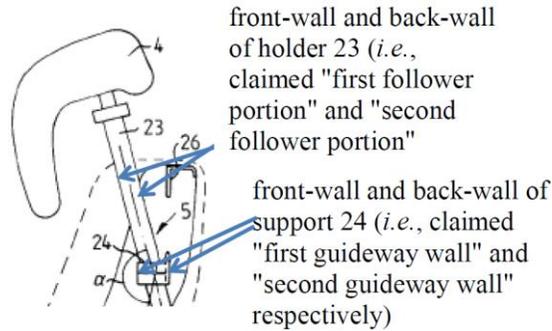
the guide member is fixedly attached to the seatback frame and has a first guideway wall and a second guideway wall and the follower is fixedly attached to the headrest extension and has a first follower portion and a second follower portion which slidingly engage the first guideway wall and second guideway wall respectively.

*Id.* at 12:54–59;

the second guideway wall has a first contact portion and a second contact portion and the second follower portion has a first surface portion and a second surface portion such that upon impact to the vehicle, the first surface portion slidingly engages the first contact portion while the first follower portion slidingly engages the first guideway wall so as to cause the headrest to move in the first manner before the second surface portion slidingly engages the second contact portion as first follower portion continues to slidingly engage the first guideway wall so as to cause the headrest to move in the second manner.

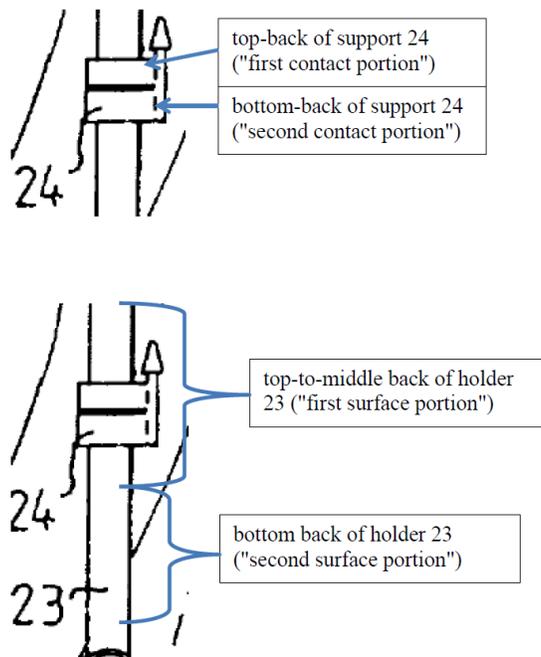
*Id.* at 12:61–13:4.

NHK identifies various parts of Wiklund's support 24 as meeting the limitations on the guide member and various parts of holders 23 as meeting the limitations on the follower as shown in the two annotated versions of portions of Wiklund's Figure 3 reproduced below. Pet. 47–48 (claim 4), 55 (claim 17).



The annotated version of a portion of Wiklund's Figure 3 illustrates the alleged follower and guideway.

NHK identifies the respective front and back wall portions of Wiklund's support 24 and holder 23 as the limitations directed to first and second walls of the guideway and first and second portions of the follower that are introduced in claims 3 and 16. *Id.* at 47 (claim 3), 54–55 (claim 16).



The annotated portion of Wiklund's Figure 3 illustrates portions of holder 23 and support 24 allegedly corresponding to the claimed follower and guideway.

NHK identifies the specific portions of support 24 and holder 23 as meeting the detailed limitations on the guideway within the guide member and the

follower that are introduced in claims 4 and 17. *Id.* at 47–48 (claim 4), 55 (claim 17). NHK proffers Dr. Kent’s testimony to explain how holder 23 and support 24 function in accordance with these limitations on the follower and guide member. *Id.* at 37–38 (citing Ex. 1010 ¶¶ 88, 89). The only evidence that Dr. Kent cites to support his testimony is the annotated figures from Wiklund reproduced above and Wiklund’s description of how holder 23 slides within support 24. Ex. 1010 ¶¶ 88, 89.

Lear recognizes that support 24 must permit holder 23 to tilt forward within the opening inside support 24. Resp. 50. Nevertheless, Lear argues that Dr. Kent’s testimony about the internal details of support 24 reflects “speculative assumptions” and that Wiklund’s Figure 3 fails to show any specific type of contact between the exterior of holder 23 and the internal surfaces of support 24. *Id.* Dr. Kent’s deposition testimony illustrates Dr. Kent’s uncertainty about the internal structure of support 24. For example, Dr. Kent testifies:

Q And the interior surface of 24, whether it’d be a bushing or otherwise, we don’t know if it’s a cylindrical shape, or it may be some other shape, correct?

A I believe that’s correct.

Ex. 2012, 197:11–15; *see also id.* at 148:12–20, 149:13–150:7, 195:2–6 (describing possible different internal configurations of support 24).

Because of the uncertainties about the internal structure of support 24, Lear argues that Wiklund fails to describe either explicitly or inherently the required two sequential types of contact between the claimed follower and guide member. Resp. 50–51. Lear’s argument is persuasive.

“An expert’s conclusory testimony, unsupported by the documentary evidence, cannot supplant the requirement of anticipatory disclosure in the

prior art reference itself.” *Motorola, Inc. v. Interdigital Tech. Corp.*, 121 F.3d 1461, 1473 (Fed. Cir. 1997). Dr. Kent admits that the internal structure of support 24 may take a number of different forms that permit holder 23 to tilt within support 24. Ex. 2012, 148:12–20, 149:13–150:7, 195:2–6, 197:11–15. NHK responds to Lear’s arguments by proffering an additional declaration from Dr. Kent in which he describes the specific way in which parts of holder 23 contact the internal structure of support 24 in the way required by claim 15. Reply 21–22 (citing Ex. 1013 ¶ 49). Dr. Kent cites nothing but the same ambiguous portions of Wiklund’s description to support his testimony. Additionally, Dr. Kent’s additional declaration contradicts his deposition testimony and is therefore entitled to little if any weight. We are not persuaded by NHK’s argument and evidence relating to the manner in which Wiklund’s holder 23 contacts the undisclosed internal surfaces of support 24. To demonstrate anticipation, “the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art.” *Motorola*, 121 F.3d at 1473. “Although this disclosure requirement presupposes the knowledge of one skilled in the art of the claimed invention, that presumed knowledge does not grant a license to read into the prior art reference teachings that are not there.” *Id.* We find Dr. Kent’s testimony to be speculation that is insufficient to demonstrate that Wiklund explicitly or inherently describes the type of contact between the follower and guide member that is required in claims 4 and 17. Accordingly, we are not persuaded by a preponderance of evidence that Wiklund anticipates claims 4 and 17.

### 3. Conclusion

For the reasons described above, NHK persuades us by a preponderance of evidence that Wiklund describes a headrest that moves in a first manner and a second manner as required in claims 1, 3, 6–9, 12–16, 20, and 21. NHK also persuades us by a preponderance of evidence that Wiklund describes a follower that extends laterally and slidingly engages the guide member as required in claims 1, 3, 6–9, 12–16, 20, and 21. NHK fails to persuade us by a preponderance of evidence, however, that Wiklund describes all the limitations of claims 4 and 17. As stated in part III.A above, we also are persuaded that NHK has established by a preponderance of evidence that Wiklund describes all other elements of claims 1, 3, 6–9, 12–16, 20, and 21. Accordingly, we conclude that NHK has established by a preponderance of evidence that Wiklund anticipates claims 1, 3, 6–9, 12–16, 20, and 21 under 35 U.S.C. § 102(b), but NHK has failed to do so with regard to claims 4 and 17.

#### E. OBVIOUSNESS OF CLAIMS 2 AND 25 IN VIEW OF WIKLUND AND SEITZER

We preliminarily determined on the record before us at the time that NHK had established a reasonable likelihood of showing that the combination of Wiklund and Seitzer renders claims 2 and 25 unpatentable as obvious. Dec. 24–29. We cautioned, however, that “a more complete record developed over the course of a trial may warrant a different result.” *Id.* at 28. For the reasons expressed below, NHK fails to persuade us by a preponderance of evidence that the combination of Wiklund and Seitzer renders claims 2 and 25 unpatentable as obvious.

1. *Claims 2 and 25*

Claim 2 depends from claim 1. Ex. 1001, 11:20–25. Claim 25 is an independent claim. *Id.* at 14:30–47. Both claims recite “the guide member is a bushing having a cam configuration and the follower is a cam such that engagement of the cam and cam configuration together with a forward momentum of the headrest causes<sup>3</sup> the headrest to move in the first manner and the second manner.” *Id.* at 11:20–25 and Certificate of Correction (claim 2), 14:42–47 (claim 25).

2. *NHK’s Argument and Evidence*

NHK contends that the combination of Wiklund and Seitzer renders claims 2 and 25 obvious and sets forth the evidence from Wiklund and Seitzer to support its contentions in claim charts. Pet. 57–60. NHK also proffers Dr. Kent’s testimony to explain the manner in which the combination of Wiklund and Seitzer describes the requirements recited in these claims. *Id.* (citing Ex. 1010 ¶¶ 102, 104, 105, 108). NHK relies upon Wiklund as describing all elements of claim 2 and all elements of claim 25 except for the use of a bushing having a cam configuration and a follower that is a cam. *Id.* at 59–60. NHK relies upon Seitzer as describing the desirability of using mechanical cams as “motion systems.” *Id.* at 58. NHK also contends that Seitzer suggests using cams “when applications demand accuracy, durability and speed . . . because they precisely control position, velocity, and acceleration with no discontinuity or jerk.” *Id.* (citing Ex. 1008, 1). NHK points out that Seitzer describes advantages of using

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<sup>3</sup> Claim 2 recites “cause” rather than “causes” as recited in claim 25. *Compare* Ex. 1001, 11:24 *with* 14:45. We do not consider the difference to be material to our Decision.

cams as offering “the accuracy of electromechanical servosystems in simpler, more economical packages and require less maintenance than fluid-power systems.” *Id.* (citing Ex. 1008, 1).

In view of Seitzer’s express suggestion of the types of applications for which cams are suited and the expressly stated advantages of using them, NHK contends that:

it would have been obvious to include a cam configuration in Wiklund’s bushing type support 24. Similarly, it would have been obvious for Wiklund’s follower type holder 23, which slidingly engages with the bushing type support 24, to have a cam that follows the cam configuration in order to provide a more precise motion profile of the headrest and to reduce the speed of the headrest toward the occupant's head before impacting the occupant’s head.

*Id.* NHK supports its conclusions of obviousness with Dr. Kent’s testimony. *Id.* (citing Ex. 1010 ¶ 105).

### 3. *Lear’s Arguments*

Lear argues that NHK fails to establish that one or both of claims 2 and 25 are unpatentable as obvious for three reasons. Resp. 52–60. First, Lear argues that the combination of Wiklund and Seitzer fails to describe all elements of claim 2, namely, the elements in base claim 1 that Lear previously identifies as being missing from Wiklund’s teachings. *Id.* at 52. Second, Lear argues that Seitzer is not “analogous art” and therefore not properly considered in combination with Wiklund when evaluating whether claims 2 and 25 are obvious. *Id.* at 56–60. Third, Lear argues that because Seitzer fails to describe the types of cams recited in claims 2 and 25, the combination of Wiklund and Seitzer does not support a finding that those claims would have been obvious. *Id.* at 53–56. We address each argument below.

a) Claim 2: Neither Wiklund nor Seitzer Describe Elements of Base Claim 1

Lear argues that the combination of Wiklund and Seitzer fails to render claim 2 unpatentable as obvious because the combination fails to describe elements recited within intervening base claim 1. Resp. 52. For the reasons expressed in part III.D above, we are not persuaded by Lear’s argument.

b) Claims 2 and 25: Whether Seitzer Is Analogous Art

Lear argues that Seitzer does not qualify for consideration in an obviousness analysis of the claimed subject matter because Seitzer is not analogous to the claimed invention. Resp. 56–60. Whether a prior art reference is “analogous art” that is proper to consider in an obviousness analysis is a question of fact. *In re Bigio*, 381 F.3d 1320, 1324 (Fed. Cir. 2004); *In re Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992). Courts apply a two-pronged test to determine whether a prior art reference is “analogous art” that is properly considered in an obviousness analysis.

Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.

*Bigio*, 381 F.3d at 1325. The appropriate field of endeavor is determined by referring to the specification of the patent at issue “including the embodiments, function, and structure of the claimed invention.” *Id.* at 1325–26. “A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor’s endeavor, it is one which, because of the matter with which it deals, logically would have commended

itself to an inventor's attention in considering his problem.” *Clay*, 966 F.2d at 659.

*(1) Field of Endeavor*

Regarding the first prong of the analysis, Lear contends that testimony from both experts establishes that Seitzer is directed to “manufacturing machinery,” which is a different field of endeavor than the field of active head restraint systems to which the '949 patent is directed. Resp. 58 (citing Ex. 2010 ¶¶ 210–11, 217; Ex. 2012, 198:12–14, 200:17–21, 206:22–25). In response, NHK proffers no evidence or argument to establish that Seitzer and the '949 patent are directed to the same field of endeavor. *See* Reply 24–25 (addressing “analogous art” issue). Accordingly, we determine that the preponderance of the evidence establishes that Seitzer is directed to a different field of endeavor than the '949 patent and thus fails the first prong of the analysis.

*(2) Reasonably Pertinent Problem*

Lear contends that Seitzer is not reasonably pertinent to a skilled artisan involved with designing a “variable movement headrest arrangement for providing support to the head of an occupant of a vehicle upon vehicle impact.” Resp. 58–60. Lear cites testimony from Dr. Viano explaining that because Seitzer is directed to machinery used in manufacturing processes, it would not have commended itself to the attention of an inventor considering the problem of moving an active head restraint in a particular manner. *Id.* at 59 (citing Ex. 2010 ¶¶ 211–16); *see also* Ex. 2012, 206:22–25 (Dr. Kent agreeing that Seitzer does not address the field of active head restraint designs). Dr. Kent also testifies that Seitzer is directed to the use of rotating

cams to control motion within the context of packaging, assembly, and production machines. Ex. 2012, 198:12–14, 200:17–21, 204:15–24.

NHK counters by first characterizing the “problem” to which the ’949 patent is directed as being supporting the head of an occupant “in a reliable, accurate, and quick manner.” Reply 24 (citing Ex. 1001, 1:13–15). Our review of the cited portion of the ’949 patent reveals that it does not support NHK’s characterization of the “problem.” The cited portion wholly fails to mention reliability, accuracy, or speed of supporting the occupant’s head as being among the problems facing the inventor of the subject matter of the ’949 patent. Ex. 1001, 1:13–15. Nevertheless, NHK contends that because Seitzer describes using “mechanical cams” as the “best option” for applications that demand “accuracy, durability and speed,” a skilled artisan would consult Seitzer when determining how to move Wiklund’s headrest. Reply 24. At best, NHK’s cited evidence supports the uncontroversial finding that cams are known devices for controlling mechanical movement generally. NHK fails to persuade us, however, that a skilled artisan concerned with designing an active head restraint system would look to Seitzer for information about controlling movement of a headrest. Accordingly, NHK fails to persuade us that Seitzer is analogous art that is properly considered in a determination of whether claims 2 and 25 are directed to obvious subject matter.

c) Claims 2 and 25: Whether a Skilled Artisan Would Be Motivated by Wiklund and Seitzer to Add the Claimed Bushing and Cam to Wiklund

Even if we were to consider Seitzer to be analogous to the art addressed by the ’949 patent, Lear persuades us that Seitzer fails to describe the guide member and follower of claims 2 and 25. Lear persuasively

argues that Wiklund and Seitzer would not motivate a skilled artisan to incorporate a “bushing having a cam profile” into Wiklund’s support 24 (the alleged guideway) because Seitzer describes only rotating cams used in reciprocating machinery, not the claimed version of the guide member, a bushing having a cam configuration. *Id.* at 54–56. Drs. Viano and Kent agree that Seitzer describes rotating cams, Ex. 2010 ¶¶ 212–15; Ex. 2012, 198:12–14, 200:17–21. Both experts also agree that Seitzer does not describe the types of non-rotating cams to which the ’949 patent refers. Ex. 2010 ¶ 214; Ex. 2012, 205:3–5. We determine that a preponderance of the evidence establishes that Seitzer fails to describe the types of non-rotating cam configurations discussed in the ’949 patent. Accordingly, we conclude that the combination of Wiklund and Seitzer does not render the guide member and follower of claims 2 and 25 obvious. Resp. 52–56.

#### 4. Conclusion

For the reasons expressed above, we conclude that NHK fails to persuade us by a preponderance of evidence that the combination of Wiklund and Seitzer renders claims 2 and 25 unpatentable as obvious under 35 U.S.C. § 103.

#### IV. LEAR’S MOTION TO EXCLUDE

We have reviewed Lear’s Motion to Exclude, NHK’s Opposition to the Motion, and Lear’s Reply in support of the Motion. Based on our review, we deny the Motion in all respects for one or both of the following reasons: (1) the Motion is moot because it seeks to exclude evidence not considered or relied upon in rendering this Decision or (2) the Motion addresses issues more appropriate to determining the weight ascribed to the evidence rather than the admissibility of evidence. In rendering this

Decision, we determine and ascribe the appropriate weight to all proffered evidence and, when appropriate, comment upon the weight ascribed.

#### V. CONCLUSION

For the reasons expressed above, we determine that NHK has shown by a preponderance of the evidence that:

- (1) Nakano anticipates claims 1–3, 6–9, 20, and 21 of the '949 patent;
- (2) Kage anticipates claims 1, 3, and 6–9 of the '949 patent; and
- (3) Wiklund anticipates claims 1, 3, 6–9, 12–16, 20, and 21 of the '949 patent.

We also determine that NHK has failed to establish by a preponderance of evidence that claims 4, 10, 11, and 17 are unpatentable as anticipated and that claims 2 and 25 are unpatentable as obvious.

#### VI. ORDER

For the reasons given, it is:

ORDERED that claims 1, 3, 6–9, 12–16, 20, and 21 of the '949 patent are held *unpatentable*;

FURTHER ORDERED that claims 2, 4, 10, 11, 17, and 25 of the '949 patent are held *not unpatentable*;

FURTHER ORDERED that Lear's Motion to Exclude is *denied*; 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.

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Patent 6,631,949 B2

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