No. __-____

In the
Supreme Court of the United States

_____♦_____

RICHARD GRAMM,

Petitioner,

v.

DEERE & COMPANY,

Respondent.

ON PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

_____♦_____

APPENDIX FOR PETITION FOR A WRIT OF CERTIORARI

_____♦_____

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July 16, 2018 *Attorneys for Petitioner*

APPENDIX TABLE OF CONTENTS

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NOTE: This disposition is nonprecedential.

United States Court of Appeals
for the Federal Circuit

RICHARD GRAMM,

Appellant

v.

DEERE & COMPANY,

Appellee

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2015-00898, IPR2015-00899.

JUDGMENT

JOHN COTTER, Larkin Hoffman Daly & Lindgren, Ltd., Minneapolis, MN, argued for appellant. Also represented by GLENNA GILBERT, KATHERINE E. MULLER, THOMAS J. OPPOLD, DAVID P. SWENSON.

GARY M. ROPSKI, Brinks Gilson & Lione, Chicago, IL, argued for appellee. Also represented by JAFON FEARSON, JOSHUA HAMES, LAURA A. LUDIGSEN, JEFFRY M. NICHOLS.

Case: 17-1252 Document 55-2 Page 2 Filed 02-13-2018

This Cause Having been heard and considered, it is ORDERED and ADJUDGED:

PER CURIAM (LOURIE, DYK, and TARANTO, *Circuit Judges).*

AFFIRMED. *See* Fed. Cir. R. 36.

ENTERED BY ORDER OF THE COURT

February 13, 2018
Date

/s/ Peter R. Marksteiner
Peter R. Marksteiner
Clerk of Court

Trials@uspto.gov Paper No. 7

571.272.7822 Entered: September 23, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DEERE & COMPANY,
Petitioner,
v.
RICHARD GRAMM,
Patent Owner.

Case IPR2015-00899
Patent 6,202,395 B1

Before MICHAEL W. KIM, BART A. GERSTENBLITH, and TIMOTHY J. GOODSON, *Administrative Patent Judges.*

GERSTENBLITH, *Administrative Patent Judge*.

DECISION

Institution of *Inter Partes* Review

37 C.F.R. § 42.108

I. INTRODUCTION

A. Background

Deere & Company ("Petitioner") filed a Petition (Paper 2, "Pet.") requesting institution of *inter partes* review of claims 1–34 of U.S. Patent No. 6,202,395 B1 (Ex. 1001, "the '395 patent"). Richard Gramm ("Patent Owner") timely filed a Preliminary Response (Paper 6, "Prelim. Resp."). We have jurisdiction under 35 U.S.C. § 314.

Under 35 U.S.C. § 314(a), an *inter partes* review may be instituted only if "the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a); *accord* 37 C.F.R. § 42.108(c).

For the reasons given below, on this record, we determine that Petitioner has established a reasonable likelihood of prevailing with respect to claims 1–11 and 27–34 of the '395 patent. Accordingly, we institute an *inter partes* review of the '395 patent as to these claims on the grounds set forth below. We determine also that Petitioner has not established a reasonable likelihood of prevailing with respect to claims 12–26 of the '395 patent.

B. Related Proceedings

The parties represent that the '395 patent is asserted in the United States District Court for the Northern District of Illinois in *Richard Gramm and Headsight, Inc. v. Deere & Company*, No. 3-14-cv-00575 (N.D. Ill.). Pet. 1; Paper 5, 1. The '395 patent is also the subject of a petition for *inter partes* review in IPR2015-00898. Paper 5, 1.

C. The References

Petitioner relies on the following references:

U.S. Patent No. 5,761,893, issued June 9, 1998 ("Lofquist," Ex. 1005);

U.S. Patent No. 5,535,577, issued July 16, 1996 ("Chmielewski," Ex. 1006);

U.S. Patent No. 3,611,286, issued Oct. 5, 1971 ("Cleveland," Ex. 1007);

U.S. Patent No. 3,851,451, issued Dec. 3, 1974 ("Agness," Ex. 1008);

U.S. Patent No. 5,189,806, issued Mar. 2, 1993 ("McMurtry," Ex. 1009); and

U.S. Patent No. 4,211,057, issued July 8, 1980 ("Dougherty," Ex. 1010).

D. The Asserted Grounds of Unpatentability Petitioner raises the following grounds of unpatentability:[1]

References	Basis	Claims challenged
Lofquist, Chmielewski, Cleveland, and/or Dougherty	§ 103(a)	1–7, 10, 12–20, 23, 25–28, and 34
Lofquist, Chmielewski, Cleveland, Agness, and/or Dougherty	§ 103(a)	8, 9, 21, 22, and 29–33
Lofquist, Chmielewski, Cleveland, McMurtry, and/or Dougherty	§ 103(a)	11 and 24

Petitioner supports its challenge with a Declaration by James Lucas, dated March 20, 2015 (Ex. 1003, "the Lucas Declaration").

E. The '395 Patent

[1] *See infra* Section III discussing Petitioner's asserted grounds.

The ’395 patent is directed to an “apparatus for detecting and controlling the height about the soil of an agricultural machine as it traverses a field.” Ex. 1001, 1:11–13. In general, a “height sensor provides a control signal to a conventional height controller in [a] combine for controlling header height above the soil to prevent impact damage to the header, while maintaining the header a predetermined height above the soil.” *Id.* at 2:18– 22. Figure 1 of the ’395 patent is shown below:

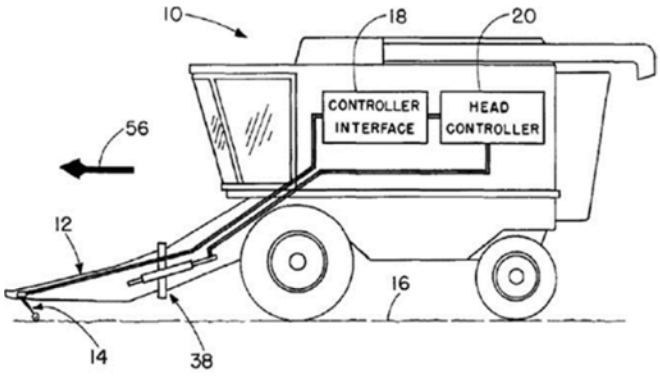

FIG. 1

Figure 1 of the ’395 patent shows “a simplified combined

schematic and block diagram of a combine [10] illustrating the location of the height sensor [14] in the combine header [12]." *Id.* at 2:65–67.

Figure 2 of the '395 patent is shown below:

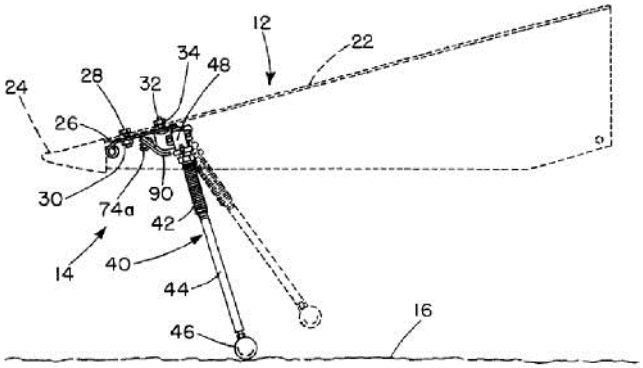

FIG. 2

Figure 2 of the '395 patent shows "a side elevation view shown partially in phantom of a height sensor mounted to a corn head." *Id.* at 3:1–2.

The '395 patent provides a general description of the invention as follows:

> The height sensor includes a pre-loaded flexible arm [generally shown by reference numeral 40] attached to a forward end of the

> head housing [22] . . . . The distal end of the flexible arm is provided with a ball-like member [46] which engages the soil, while the proximal end of the arm is coupled to an angular displacement detector. The detector determines the angular displacement of the arm as it is pivotally displaced upon encountering terrain irregularities or an obstacle in the field for providing the height control signal to the combine's height controller. A coil spring [42] in the sensor arm provides the arm with the flexibility necessary to avoid damage or breakage to the sensor upon impact with obstructions during operation or when the combine is reversed in direction. The height sensor is particular adapted for use with head housings comprised of polyurethane and may be retrofit on existing header assemblies by mounting it to existing structure on the head housing.

Id. at 6:65–7:17.

F. Illustrative Claim

Claims 1, 12, and 27 are the independent claims challenged in this proceeding. Independent claims 1 and 12 are illustrative of the claimed subject matter and are reproduced below:

> 1. Apparatus for maintaining a non-cut crop header disposed on a forward portion of a

combine a designated height above the soil as the combine traverses a field, said apparatus comprising:

a pre-loaded, generally linear flexible arm coupled to a forward portion of the header and having first and second opposed ends, wherein the first end of said flexible arm engages and is displaced over the soil as the header moves above the soil;

angular deflection sensing means coupled to the second end of said flexible arm for measuring a deflection of said flexible arm when the first end of said flexible arm encounters irregularities in the soil as the header moves above the soil and for providing a first signal representing the extent of deflection of said flexible and [sic]; and

control means coupled to said header and said angular deflection sensing means and responsive to said first signal for raising or lowering the header in accordance with said first signal in maintaining the header a designated height above the soil, wherein said flexible arm and angular deflection sensing means are attached to a head housing disposed on a forward portion of said combine and said head housing is comprised of polyurethane and includes a metal tip and a mounting bracket for attaching said metal tip

> to a forward end of said head housing, and wherein said mounting bracket further couples said flexible arm to a forward end of said head housing.

Ex. 1001, 7:29–56.[2]

> 12. Apparatus for maintaining a non-cut crop header in a crop harvester a designated height above the soil as the crop harvester traverses a field, said apparatus comprising:
>
> a generally linear arm coupled to the header and having first and second opposed ends, wherein the first end of said arm engages and is displaced over the soil as the header moves above the soil;
>
> angular deflection sensing means coupled to the second end of said arm for measuring a deflection of said arm when the first end of said arm encounters irregularities in the soil as the header moves above the soil and for providing a first signal representing the extent of deflection of said arm;
>
> biasing means for urging said arm to a selected inclined orientation relative to vertical, wherein said arm in said selected

[2] A Certificate of Correction at page 12 of Exhibit 1001 made a change to claim 1, which is reflected in the claim language quoted above.

inclined orientation extends below and aft of said angular deflection sensing means as the crop harvester moves in a forward direction, said biasing means allowing for forward displacement of the first end of said arm beyond vertical when the crop harvester is moved rearwardly while the first end of said arm engages the soil without damaging said arm, with said biasing means again urging said aim [sic] to said selected inclined orientation when the crop harvester is again moved in the forward direction or when the second end of said arm is removed from contact with the soil; and

control means coupled to said header and said angular deflection sensing means and responsive to said first signal for raising or lowering the header in accordance with said first signal in maintaining the header a designated height above the soil, wherein said flexible arm and angular deflection sensing means are attached to a head housing disposed on a forward portion of said combine and said head housing is comprised of polyurethane and includes a metal tip and a mounting bracket for attaching said metal tip to a forward end of said head housing, and wherein said mounting bracket further couples said flexible arm to a forward end of said head housing.

Id. at 8:22–61.

II. CLAIM CONSTRUCTION

Although Petitioner presents constructions for several claim terms, no terms require express construction for purposes of this Decision.

III. ANALYSIS

Each of Petitioner's asserted grounds includes the phrase "and/or." Pet. 5. For example, Petitioner's first ground asserts that the combination of "Lofquist, Chmielewski, Cleveland, *and/or* Dougherty" would have rendered obvious the subject matter of claims 1–7, 10, 12–20, 23, 25–28, and 34. *Id.* (emphasis added). Petitioner's use of the phrase "and/or" in each of its grounds results in ambiguity as to the bases for each ground. For example, if Petitioner's first ground is read with the conjunction "and," we would understand Petitioner to rely upon Dougherty in challenging each claim identified in this ground. Alternatively, if Petitioner's first ground is read with the conjunction "or," we would understand Petitioner to rely upon Dougherty instead of one of the other references, the most likely of which being Cleveland because it immediately precedes Petitioner's recitation of "and/or" in the asserted ground. Petitioner's analysis, however, does not appear to rely upon Dougherty instead of one of

the other references.[3] Rather, as explained further below, Petitioner's analysis appears to rely upon Lofquist, Chmielewski, Cleveland, and optionally Dougherty.

First, Petitioner asserts that "Dougherty is only relied upon for claims 12–26. To the extent that the PTAB views the reliance on Dougherty as a separate ground, [Petitioner] submits that this ground is not redundant for the reasons discussed in Footnote 8." Pet. 5 n.2. Second, footnote 8 is placed in the context of Petitioner's discussion of claim 12, and does not help to clarify the grounds upon which Petitioner intended to rely on Dougherty. Footnote 8 states: "To the extent that the PTAB views the reliance on Dougherty as a separate ground, [Petitioner] submits that this ground is not redundant because the structure of the biasing means of Dougherty is different than the structure in Cleveland." *Id.* at 29 n.8. Petitioner, however, never states which ground is not redundant in light of its reliance upon Dougherty. Third, as discussed further *infra*, Petitioner's analysis of claim 12 does not indicate expressly that Dougherty is relied upon instead of another reference, including Cleveland.

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[3] That Petitioner does not rely upon Dougherty instead of the reference immediately preceding its recitation of "and/or" is particularly evident with respect to Petitioner's second and third grounds, which recite "Agness, and/or Dougherty" and "McMurtry, and/or Dougherty," respectively, but do not evidence any indication that Agness or McMurtry is not relied upon for the respective ground.

Rather, Petitioner's analysis mixes discussion of Cleveland and Dougherty in such a manner that understanding precisely what Petitioner intended to rely upon is nearly an exercise in futility. To compound the issue, Petitioner relies upon the same arguments when addressing claims 13–26, which depend, directly or indirectly, from claim 12, whether those claims are challenged in Petitioner's first, second, or third ground. *See, e.g.*, Pet. 51 (challenging claim 21 and incorporating Petitioner's analysis of claim 12). Accordingly, this lack of clarity reverberates through each of the three identified grounds in the Petition.

In light of the above discussion, and as discussed further in the context of considering Petitioner's challenge to claim 12, the best we can discern from the Petition is that Petitioner's first ground relies upon the combination of Lofquist, Chmielewski, Cleveland, *and optionally Dougherty*. Accordingly, we construe the Petition as raising the following six grounds:

(1) Obviousness of claims 1–7, 10, 27, 28, and 34 over Lofquist, Chmielewski, and Cleveland;

(2) Obviousness of claims 12–20, 23, 25, and 26 over Lofquist, Chmielewski, Cleveland, and optionally Dougherty;

(3) Obviousness of claims 8, 9, and 29–33 over Lofquist, Chmielewski, Cleveland, and Agness;

(4) Obviousness of claims 21 and 22 over Lofquist, Chmielewski, Cleveland, Agness, and optionally Dougherty;

(5) Obviousness of claim 11 over Lofquist, Chmielewski, Cleveland, and McMurtry; and

(6) Obviousness of claim 24 over Lofquist, Chmielewski, Cleveland, McMurtry, and optionally Dougherty.

A. Obviousness of Claims 1–7, 10, 27, 28, and 34 over Lofquist, Chmielewski, and Cleveland

Petitioner asserts that the combination of the teachings of Lofquist, Chmielewski, and Cleveland would have rendered obvious the subject matter of claims 1–7, 10, 27, 28, and 34 to one of ordinary skill in the art at the time of the invention. Pet. 15–49.

1. Lofquist

Lofquist is directed to a crop saving attachment for the snouts of combines. Ex. 1005, [54]. Lofquist's Figures 1 and 2 are shown below:

Lofquist's Figure 1 shows "a front perspective view of a combine having a corn header with the crop saving attachment . . . affixed to the outermost snouts for deflecting down corn stalks inwardly into the snapping rollers of the corn head." *Id.* at 1:42–45. Lofquist's Figure 2 shows "a front fragmentary perspective view of the left corn head snout with the crop saving attachment . . . mounted thereon." *Id.* at 1:46–48. Lofquist explains that the crop saving attachment "is referred to generally in [Figures] 1 and 2 by reference numeral 10 and is shown mounted on the gathering point 12 of the left snout 14 of a corn head 16 of

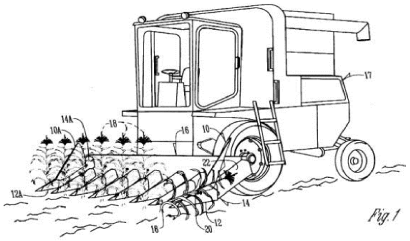


Fig 1

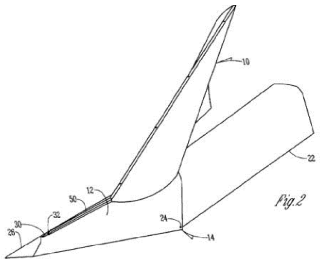


Fig 2

a JOHN DEERE combine 17." *Id.* at 2:7–10. Lofquist teaches that the gathering point includes "a wall made of plastic and has a metal tip 26 secured to it at its forward end." *Id.* at 2:24– 25.

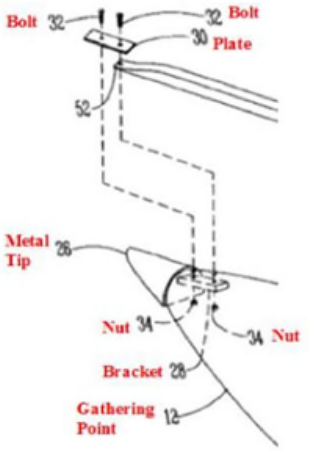


Fig. 8

Petitioner includes an annotated version of a portion of Lofquist's Figure 8, shown below:

Pet. 16. Lofquist's Figure 8 shows "an exploded perspective view of the component parts of FIGS. 3–7 in position for being fastened to the gathering point." Ex. 1005, 1:65–67. Petitioner's annotated version shows which elements correspond to which reference numerals, including gathering point 12, metal tip 26, bracket 28, plate 30, bolts 32, and nuts 34. Pet. 16. Lofquist teaches:

> metal tip 26 . . . include[s] a bracket 28 which extends under the plastic gathering point wall and is fastened thereto by a plate 30 positioned on top of the gathering point wall and affixed thereto by a pair of bolts 32 which extend through the plate 30, gathering point wall and bracket 28 for engagement with nuts 34.

Ex. 1005, 2:30–35.

2. Chmielewski

Chmielewski is directed to "the use of hydraulic control systems for regulating agricultural harvester header position and/or applied force of the header on the ground." Ex. 1006, 1:25–27. Chmielewski's Figure 1A is shown below:

Chmielewski's Figure 1A shows a schematic diagram of one embodiment of the invention. *Id.* at 3:59–60. Chmielewski teaches, "AHCS 216 receives . . . a position signal 236, 237 representing the position of header 202 relative to ground 220." *Id.* at 7:47–51. Chmielewski explains: "Position signal 208 may be provided by a variety of different types of sensors. The position signal may represent the position of the header relative to the ground, as measured by devices such as contact sensors 236, 237." *Id.* at 7:53–57.

Chmielewski's Figure 10 is shown below:

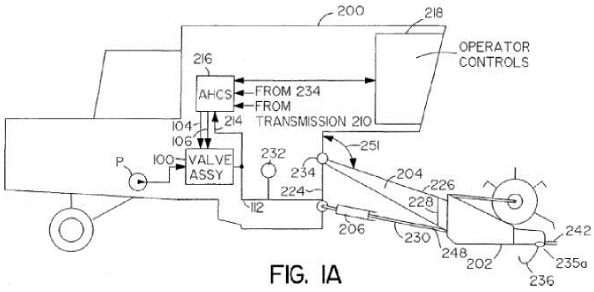


FIG. IA

Chmielewski's Figure 10 shows a front elevation view of a harvester with header height and lateral tilt functions. *Id.* at 4:16–18.

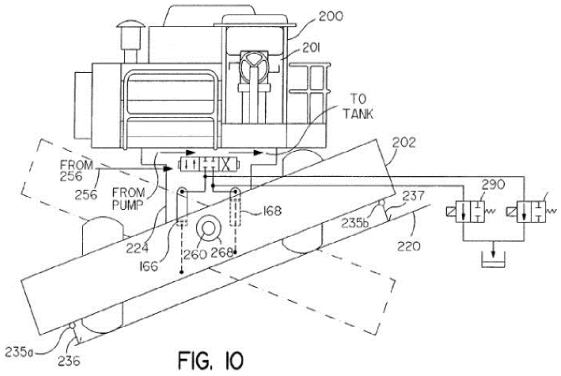


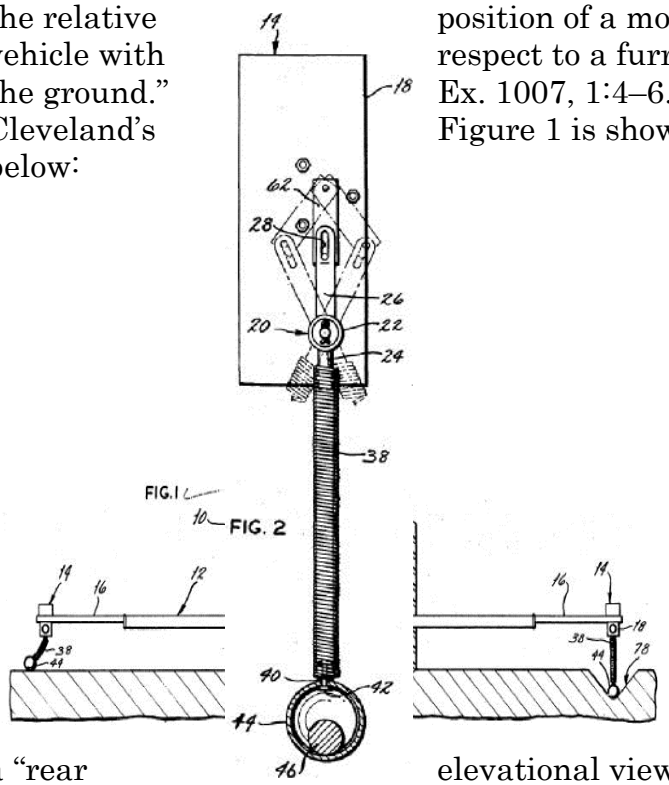
FIG. 10

Chmielewski explains that "[s]ensors 236 and 237 include hoops connected to respective potentiometers 235*a* and 235*b* (shown in FIG. 10). This type of sensor only provides information when contacting the ground . . . ." *Id.* at 35:37–40. Ground tracking sensors 236, 237, located on opposite ends of the headers, sample the height. *Id.* at 35:59–60. A header height function is used to maintain the position of header 202 relative

to the average surface of the ground 220. *See id.* at 35:54–58.

3. Cleveland

Cleveland is directed to "a device for sensing the relative position of a moving vehicle with respect to a furrow in the ground." Ex. 1007, 1:4–6. Cleveland's Figure 1 is shown below:



Cleveland's Figure 1 shows a "rear elevational view of a vehicle having the sensing probe mounted thereon." *Id.* at 2:19–20.

Cleveland's Figure 2 is shown below:

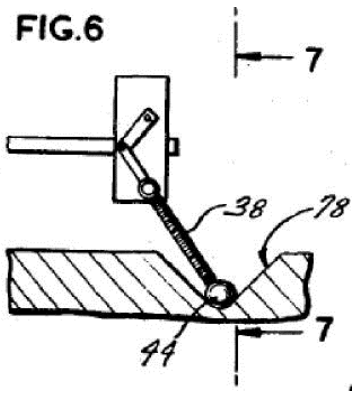
Cleveland's Figure 2 shows "an elevational view of the sensing probe showing the bearing member in section." *Id.* at 2:21–22.

Cleveland teaches:

> sensing probe 14 includes a mounting plate 18 adapted to be mounted rigidly with respect to boom 16. Pivotally mounted on plate 18 is a swing member 20 including a collarlike hub 22, a downwardly extending stub 24 and an upwardly extending swing lever 26, all of

which are welded together so that swing member 20 is a rigid member.

Id. at 2:44–49. Cleveland explains the following:



After the farmer has completed one trip across the field, he aligns one probe 14 with the last furrow formed by his first trip across the field. Bearing member 44 is positioned within furrow 78 so that it is in the deepest portion thereof. The probe 14 on the opposite end of implement frame 12 is inoperative at this point, and helical spring 38 of that probe is deflected due to the fact that there is no furrow in which bearing member 44 can ride. . . . One probe 14 will be switched on during the first trip across the field and the other will be switched on during the return trip.

Id. at 3:54–66.

Cleveland's Figure 6 is shown below:

Cleveland's Figure 6 shows "a rear elevational view . . . [of] the sensing probe in the bottom of a furrow." *Id.* at 2:27–28. Cleveland teaches that "[i]f vehicle 10 moves to the left from its position shown in FIG. 1, a result is obtained such as shown in FIG. 6." *Id.* at 4:5–6. Cleveland further explains:

> As vehicle 10 begins moving across the field, sensing probe 14 is aligned so that it is vertically disposed within furrow 78. If vehicle 10 moves laterally with respect to furrow 78, bearing member 44 remains within the deepest portion of furrow 78 as described above. This causes spring 38 and swing lever 26 to swing about hinge bolt 30 so that the longitudinal axes of spring 38 and swing lever 26 are displaced from a vertical position. Swinging of swing lever 26 causes cam shaft 58 to be rotated by means of switch link 62, thereby causing several microswitches 66 to actuate indicator lights 76 on instrument

> panel 74. Thus the moment that sensing probe 14 moves out of a vertically disposed attitude, the vehicle operator knows immediately from the indicator lights that he has deviated from a parallel path with respect to furrow 78. He is therefore able to take corrective steering measures.

Id. at 4:39–54.

4. Discussion

Petitioner provides a detailed discussion identifying where the elements of claims 1–7, 10, 27, 28, and 34 allegedly are disclosed by the references or why such elements would have been obvious to one of ordinary skill in the art. Pet. 15–49. With respect to claim 1, for example, Petitioner's analysis begins with the non-cut crop header of Lofquist's gathering point 12, which "has . . . metal tip 26 secured to it at its forward end." *Id.* at 16 (quoting Ex. 1005, 2:24–25) (citing Ex. 1003 ¶ 43; Ex. 1005, Fig. 2). Petitioner also asserts that Lofquist teaches that gathering point 12 is made out of plastic, *id.* at 21 (citing Ex. 1005, 2:24–25; Ex. 1003 ¶ 56), that one of ordinary skill in the art "would have understood that polyurethane is a plastic, and any plastic would have provided the same structural characteristics to the head housing, and therefore would have been interchangeable based on design choice[,]" *id.* (citing Ex. 1003 ¶ 56).

Relying on the Lucas Declaration, Petitioner contends it would have been obvious to one of ordinary skill in the art to incorporate the automated header height system of Chmielewski with the header of Lofquist (*id.* at 16), *inter alia*, because the '395 patent acknowledges that prior art header height control systems existed at the time of the invention and one of ordinary skill in the art would have recognized the importance of controlling the height of a header for the benefit of avoiding damage caused by uneven ground (*id.* at 42 (citing Ex. 1003 ¶ 130)).

Petitioner then turns to Cleveland, asserting that Cleveland discloses a pre-loaded, generally linear arm that is flexible, wherein one end engages the soil, and the other end is coupled to a sensor. *Id.* at 18. Petitioner contends that it would have been obvious to one of ordinary skill in the art to "replace each of . . . [Chmielewski's] contact sensors 236, 237 . . . with the sensor arm of Cleveland." *Id.* at 18–19. Relying on the Lucas Declaration, Petitioner asserts that replacing contact sensors 236, 237 with Cleveland's sensor arm "would have amounted to nothing more than a simple substitution of one known element for another." *Id.* at 45. Petitioner asserts that one of ordinary skill would have been prompted to use "the same sensor connecting pieces as Cleveland" and "secure the potentiometers 235a and 235b of Chmielewski so that . . . [they] could read the movement of Cleveland's swing member 20." *Id.* at 46 (citing Ex. 1003 ¶ 137).

Patent Owner raises several arguments in its Preliminary Response.[4] First, Patent Owner asserts that Petitioner fails to cite any reference "which discloses, teaches or suggests mounting a height sensor to the tip of a corn head point, let alone mounting a height sensor to a plastic corn head point using the mounting bracket for the metal tip as recited in claims 1, 12[,] and 27." Prelim. Resp. 18.

We agree with Patent Owner that Petitioner has not identified a single reference that discloses, teaches, or suggests a height sensor be mounted to a plastic corn head point using the mounting bracket for the metal tip. Thus, Patent Owner raises a difference between the claimed subject matter and the prior art, which is an important factual inquiry when considering the question of obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 18 (1966)). If the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to one of ordinary skill in the art, however, the claims are unpatentable. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007).

Here, Petitioner provided several reasons as to why such mounting arrangement would have been obvious, including that one of ordinary skill in the

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[4] Patent Owner "does not dispute that Lofquist discloses the 'plastic header housing' limitations recited in claims 1, 12[,] and 27." Prelim. Resp. 18.

art would have (1) "been motivated to utilize the existing hardware found on Lofquist['s] header when attaching the potentiometers 235a and 235b . . . of Chmielewski to avoid forming additional holes, which would have been understood to have an adverse effect on the structural integrity of the header housing[;]" (2) "understood that adding other attachment fasteners would make the entire header apparatus more bulky and heavier, which would have led to undesirable performance characteristics[;]" and (3) "would have recognized that the preexisting hardware is located at a forward portion of the header housing, which would have allowed for mounting the sensor on a forward portion of the header to allow for an early detection of the distance between the header and the ground." Pet. 44–45. On the record before us, in light of Petitioner's showing regarding this difference between the subject matter as a whole and the prior art, Patent Owner's argument is not persuasive.

Second, Patent Owner contends that Petitioner "has not met its obligation to provide concise, well-articulated reasoning with rational underpinnings to support its argument of obviousness." Prelim. Resp. 26. Rather, Patent Owner asserts that Petitioner "presented a complicated, interwoven petition with numerous cross-references camouflaging conclusory statements of obviousness by [Petitioner's] expert and rendering the Petition difficult to follow, at best." *Id.* Patent Owner contends that claims 1, 12, and 27 differ "in

material respects" and Petitioner's "approach leaves it to the reader to make out [Petitioner's] case of alleged obviousness as it is not concise, well organized or easy to follow." *Id.* at 26–27. Similarly, Patent Owner asserts that Petitioner "repeatedly makes conclusory statements . . . followed by a cross reference to other sections of the [P]etition, leaving the reader to review the other section and determine how it fits the particular section in which the cross reference occurs." *Id.* at 27.

Although we agree that the Petition contains numerous cross-references to other sections of the Petition and agree that there may have been ways to organize the Petition in a more "reader-friendly" manner, we disagree with Patent Owner's implication that Petitioner's use of cross-references to other sections of the Petition is impermissible. Patent Owner does not allege any instance where Petitioner cross-referenced a portion of the Petition that did not support Petitioner's argument, and while such use of cross-references results in additional paper flipping by the reader, it did not result globally in our inability to understand the positions put forth by Petitioner.[5]

Third, Patent Owner contends that the Lucas Declaration suffers from the same deficiencies alleged by Patent Owner with respect to the Petition.

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[5] As discussed supra and infra, it is not Petitioner's use of cross-references that results in difficulty in understanding Petitioner's challenge to claim 12.

Id. at 28. Patent Owner points to one statement in the Lucas Declaration regarding mounting a sensor to the header housing using the housing's preexisting hardware, and asserts that it lacks a rational underpinning. *Id.* Specifically, Patent Owner challenges the following testimony by Mr. Lucas:

> a POSITA [person of ordinary skill in the art] would have recognized that the preexisting hardware is located at a forward portion of the header housing, which would have allowed for mounting the sensor on a forward portion of the header to allow for an early detection of the distance between the header and the ground.

Id. (quoting Ex. 1003 ¶ 135).

On this record, we disagree with Patent Owner that the Lucas Declaration, by and large, contains conclusory testimony such that it is unsupported by articulated reasoning with rational underpinning. The specific instance cited by Patent Owner, and quoted above, indicates an additional benefit of using the existing hardware to mount the sensor—early detection. As quoted *supra*, however, this reason was but one of at least three that Mr. Lucas offered to support his testimony regarding the mounting arrangement. If Mr. Lucas's testimony, quoted above, were all that he had opined, we might be faced with a more difficult

determination. Mr. Lucas, however, provided additional reasoning with rational underpinning for the sensor's mounting location and his testimony above provides additional support for his opinion. On this record, we determine that Mr. Lucas's reasoning and underpinnings are adequate and persuasive for the purposes of institution.

Fourth, Patent Owner contends that the Petition and the Lucas Declaration rely upon an additional reference, referred to as "May-Wes," to support Petitioner's argument as to why one of ordinary skill in the art would have been prompted to incorporate the automated header height system of Chmielewski with the header of Lofquist. Prelim. Resp. 27 n.6 (referring to page 43 of the Petition), 28 (referring to Mr. Lucas's reliance upon May-Wes). Patent Owner asserts that Petitioner's use of May-Wes is improper because Petitioner did not identify May-Wes as a prior art reference upon which it relies in its challenges to the claims. *Id.* at 27 n.6, 28.

Although there may be times when one of ordinary skill in the art can rely upon a prior art reference that is not expressly included in an obviousness challenge, e.g., for the purpose of providing background on the state of the art, Petitioner's and Mr. Lucas's reliance upon May-Wes in this instance falls outside of that sphere. Rather, Petitioner appears to use an alleged admission by the named inventor of the '395 patent in combination

with May-Wes as additional support for its argument that one of ordinary skill in the art would have been prompted to incorporate an automated header height system with a non-cut crop header. Accordingly, aside from the discussion above, we have not considered Petitioner's or Mr. Lucas's arguments based solely on May-Wes in rendering this Decision. Nevertheless, we determine that even in the absence of considering May-Wes, on this record, Petitioner's and Mr. Lucas's assertions are adequately persuasive to show that one of ordinary skill in the art would have been prompted to incorporate an automated header height system with a non-cut crop header.

Fifth, Patent Owner contends that Petitioner relies upon impermissible hindsight in its obviousness challenges. Prelim. Resp. 29. In particular, Patent Owner asserts that Petitioner errs by defining the problem the inventor was attempting to solve in terms of its solution. *Id.* at 29–30. Patent Owner argues that, in so doing, "Petitioner misses the necessary antecedent question, namely, whether there is any teaching or suggestion in Chmielewski or Cleveland to mount the height sensors or probes to the tip mounting bracket of the plastic corn head points." *Id.* at 30. Patent Owner further notes the differences between Chmielewski and Cleveland on the one hand, and the claimed invention, on the other, particularly with respect to the respective sensors' mounting locations. *See id.* at 31–32.

We addressed, *supra*, Patent Owner's argument regarding the lack of an explicit disclosure in any one reference of the claimed mounting location. Additionally, Patent Owner's argument—that neither Chmielewski nor Cleveland provides a suggestion to mount a sensor in the claimed location— is too narrow an inquiry because "the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 550 U.S. at 418. On the present record, Petitioner's argument and evidence in support thereof appear to do just that—take account of the inferences and creative steps that one of ordinary skill in the art would employ. Thus, on the record before us, Petitioner's arguments do not appear to resort to impermissible hindsight reconstruction.

Accordingly, on this record, Petitioner has established a reasonable likelihood of prevailing on the assertion that the combination of the teachings of Lofquist, Chmielewski, and Cleveland would have rendered obvious the subject matter of claims 1–7, 10, 27, 28, and 34 to one of ordinary skill in the art at the time of the invention.

B. Obviousness of Claims 12–20, 23, 25, and 26 over Lofquist, Chmielewski, Cleveland, and optionally Dougherty

Petitioner asserts that the combination of the teachings of Lofquist, Chmielewski, Cleveland, and optionally Dougherty would have rendered obvious the subject matter of claims 12–20, 23, 25, and 26 to one of ordinary skill in the art at the time of the invention. Pet. 26–49.

1. Dougherty

Dougherty teaches "an improved combine harvester automatic table height control." Ex. 1010, 1:5–6. Dougherty explains that its height sensing assembly 66, includes "a finger support shaft 70 rotatably supported by a plurality of bearings 72[.]" *Id.* at 3:67–4:1.

Figure 5 of Dougherty is shown below:

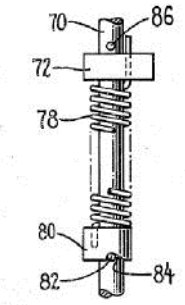


Fig. 5

Dougherty's Figure 5 "is a sectional view taken along lines 5—5 of FIG. 4 showing a portion of the table height sensing assembly." *Id.* at 2:51–53. In particular, Dougherty teaches:

> A torsion spring 78 surrounds the finger support shaft 70. . . . The torsion spring 78 biases the collar 80 toward a pin 82. The pin 82 engages a notch 84 in the side of the collar 80 to resist movement of the collar 80 relative to the finger support shaft 70. The collar 80 can be rotated relative to the finger support shaft 70 to load the torsion spring 78 so that it tends to rotate the finger support shaft 70 . . . .

Id. at 4:8–19.

2. Discussion

Claim 12 recites an apparatus for maintaining a non-cut crop header in a crop harvester a designated height above the soil as the crop harvester traverses a field, which comprises, *inter alia*, a "biasing means for urging said arm to a selected inclined orientation relative to vertical[.]" Ex. 1001, 8:22–61. Petitioner asserts that Cleveland's spring 38 teaches the recited "biasing means." Pet. 28. Petitioner, however, also contends:

> It would have been obvious to modify spring 38 in Cleveland so that a portion of the arm is held in a selected inclined orientation when the arm does not touch the ground or a torsion spring, such as disclosed in Dougherty, to hold the arm in a selected inclined orientation when the arm does not touch the ground.

Id. at 29. This assertion is the first time Petitioner raises Dougherty. In this discussion, Petitioner does not explain exactly what it is proposing with respect to Dougherty. Petitioner later contends that "adjusting the arm's orientation so that it is not touching the ground would have amounted to nothing more than design choice and the result of a simple substitution of known components to yield a predictable result." *Id.* at 30 (citing Ex. 1003 ¶ 83). It is unclear from this argument what precisely is proposed as a "substitution."

Petitioner later asserts the following with respect to "[i]ncorporat[ing] a [c]oiled [s]pring [t]o [b]ias the [a]rm":

> It would have been obvious *to add* a first coiled spring between the potentiometers 235a and 236b [sic] ("angular deflection sensing means") and the hub 22 ("second end of arm") of Cleveland such that the hinge bolt 30 would pass through the coil spring. (Ex. 1003, ¶ 142.) A POSITA would have understood that a coiled spring would exert a biasing force on the arm to prevent it from moving unintentionally or to exert a downward force. (*Id.*) *The location of the spring would have amounted to nothing more than design choice and the result of a simple substitution of known components to yield a predictable result.* (*Id.*) Indeed, a coiled spring disposed about a mounting bolt was already disclosed in the prior art. (Ex. 1003, ¶ 142; Ex. 1010, 4:8-23.).

Id. at 49 (emphases added). The above argument thus begins by asserting that one would "add" a first coiled spring in a location in which a coiled spring is not expressly disclosed in Cleveland. Petitioner's argument further relies upon design choice to explain why one of ordinary skill in the art would have chosen the particular location for the additional spring. *Id.* Petitioner, however, also contends that it would have been the result of a simple substitution

of known components to yield a predictable result, without explaining which components are being *substituted*.

The Lucas Declaration is nearly as unhelpful. Petitioner relies upon paragraphs 83 and 142. Paragraph 83 of the Lucas Declaration does not provide additional insight into this inquiry as it is essentially the same as Petitioner's argument stated above. Paragraph 142, however, states, in-part:

> It would have been obvious *to add* a first coiled spring between the potentiometers 235a and 236b [sic] ("angular deflection sensing means") and the hub 22 ("second end of arm") of Cleveland such that the hinge bolt 30 would pass through the coil spring. A POSITA would have understood that a coiled spring would exert a biasing force on the arm to prevent it from moving unintentionally or to exert a downward force. Indeed, the spring 38 in Cleveland is meant to "exert[] a force having a downward vertical component on bearing member 44" in certain configurations. (Ex. 1007, 3:71-72.) A POSITA would have understood that a coiled spring disposed between the second end of the arm and sensor would achieve the same function. Accordingly, *the location of the spring would have amounted to nothing more than design choice and the result of a simple substitution of*

> *known components to yield a predictable result*.

Ex. 1003 ¶ 142 (emphases added). Thus, Mr. Lucas's testimony is substantially similar to Petitioner's argument, in that it first proposes to "add" a coiled spring between the potentiometers and the hub, but then concludes that such would have been the result of a simple substitution of known components, without explaining which components are being *substituted*.

Ultimately, we are left with what appear to be two options by Petitioner: (1) modify spring 38 of Cleveland, so that a portion of the arm is held in a selected inclined orientation when the arm does not touch the ground, based on design choice; or (2) add a coiled spring between the potentiometers and the hub because the location of the spring is a design choice and the result of a simple substitution. Each position, however, is lacking. First, Petitioner relies upon design choice for modifying Cleveland's spring 38, but fails to explain how one of ordinary skill in the art would do so in light of Cleveland's placement of the spring. Second, Petitioner proposes to add a coiled spring, but then contends that the location of the spring is a design choice and the result of a simple substitution without explaining which elements are substituted for one another.

Accordingly, on this record, Petitioner has not established a reasonable likelihood of prevailing on

the assertion that the combination of the teachings of Lofquist, Chmielewski, Cleveland, and optionally Dougherty would have rendered obvious the subject matter of claims 12–20, 23, 25, and 26 to one of ordinary skill in the art at the time of the invention.

C. Obviousness of Claims 8, 9, and 29–33 over Lofquist, Chmielewski, Cleveland, and Agness

Petitioner asserts that the combination of the teachings of Lofquist, Chmielewski, Cleveland, and Agness would have rendered obvious the subject matter of claims 8, 9, and 29–33 to one of ordinary skill in the art at the time of the invention. Pet. 49–56.

1. Agness

Agness teaches "an automatic height control system for a crop harvester having a vertically moveable crop-gathering unit." Ex. 1008, 1:12–14. Agness explains that each of its height sensing units includes reed switches 70. *See id.* at 4:31–32.

Agness's Figure 3 is reproduced below:

Agness's Figure 3 "is an enlarged side elevational view of a height sensor . . . attached to [a] crop-gathering unit of [a] combine[.]" *Id.* at 2:59–62. Agness teaches:

> Each of the height sensing units includes a short shaft 52 which is pivotally secured in position directly below the horizontal leg of the right-angle member 44 by a pair of spaced straps 54 . . . . A plurality of reed switches 70 are clamped between the legs of an aluminum switch mounting clip 72 which is bolted to the bottom of the guard 48 . . . . [T]he reed switches 70 are each enclosed in an envelope which protects them from dust, moisture or any other elements which may affect their operation.

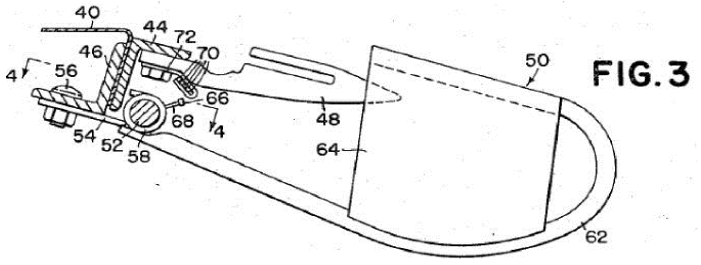


FIG. 3

Id. at 3:59–4:30.

2. Discussion

Claim 8 depends from claim 1 and further recites a "guard means for shielding said angular deflection sensing means from debris in or on the soil." Ex. 1001, 8:8–10. Claim 9 depends from claim 8 and further defines the "guard means" of claim 8. *Id.* at 8:11–13. Claim 29 depends from claim 28, which in turn depends from claim 27, and further recites a "plate" for attaching "guard means." *Id.* at 10:28–31. Claims 30–33 depend, directly or indirectly, from claim 29. *Id.* at 10:32–42.

Petitioner identifies where the elements of the claims allegedly are disclosed by the references or why such elements would have been obvious to one of ordinary skill in the art. Pet. 49–56. In particular, Petitioner relies upon Agness for its teaching of switch mounting clip 72, which Agness describes, at least in-part, as an "envelope," that encloses reed switches 70 to protect the switches from elements that may affect their operation. *See, e.g.*, *id.* at 50. Petitioner asserts several reasons as to why one of ordinary skill in the art would have sought to combine the teachings of Agness's switch mounting clip and plate for attaching said clip with the teachings of Lofquist, Chmielewski, and Cleveland, including "to protect the sensors disclosed in Chmielewski from the dirt, dust, and other debris that may affect the performance of the sensor." *Id.* at 55.

Patent Owner's Preliminary Response includes arguments that respond to all of the

Petitioner's challenges collectively, not to the specific grounds individually (*see* Prelim. Resp. 17–33), with the exception of Patent Owner's contentions regarding specific limitations of independent claims 1 and 27, from one of which each of claims 8, 9, and 29–33 depend ultimately (*id.* at 17–23). We addressed each of Patent Owner's arguments in Section III.A.5., and did not find them persuasive.

Accordingly, on this record, Petitioner has established a reasonable likelihood of prevailing on the assertion that the combination of the teachings of Lofquist, Chmielewski, Cleveland, and Agness would have rendered obvious the subject matter of claims 8, 9, and 29–33 to one of ordinary skill in the art at the time of the invention.

D. Obviousness of Claims 21 and 22 over Lofquist, Chmielewski, Cleveland, Agness, and Optionally Dougherty

Petitioner asserts that the combination of the teachings of Lofquist, Chmielewski, Cleveland, Agness, and optionally Dougherty would have rendered obvious the subject matter of claims 21 and 22 to one of ordinary skill in the art at the time of the invention. Pet. 51–52, 55–56. Claim 21 depends from claim 12, and claim 22 depends from claim 21. Petitioner relies upon its arguments directed to claim 12 in addressing the limitations that claims 21 and 22 have in common with claim 12, including claim 12's recitation of a *biasing means*. *Id.* at 51.

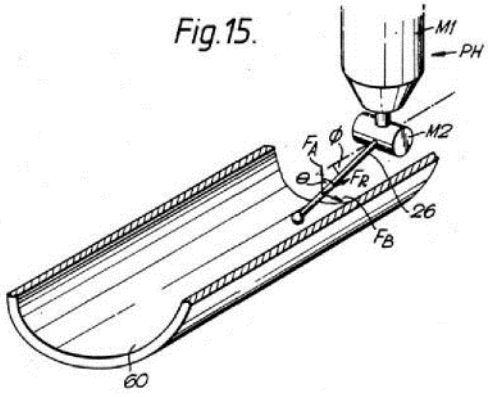
Accordingly, on this record and for the reasons explained in our discussion of Petitioner's challenge to claim 12, *see supra* Section III.B.2., Petitioner has not established a reasonable likelihood of prevailing on the assertion that the combination of the teachings of Lofquist, Chmielewski, Cleveland, Agness, and optionally Dougherty would have rendered obvious the subject matter of claims 21 and 22 to one of ordinary skill in the art at the time of the invention.

E. Obviousness of Claim 11 over Lofquist, Chmielewski, Cleveland, and McMurtry

Petitioner asserts that the combination of the teachings of Lofquist, Chmielewski, Cleveland, and McMurtry would have rendered obvious the subject matter of claim 11 to one of ordinary skill in the art at the time of the invention. Pet. 56–59.

1. McMurtry

McMurtry teaches "a method of and apparatus for scanning the surface of a workpiece." Ex. 1009, 1:9–10. McMurtry's Figure 15 is reproduced below:



McMurtry's Figure 15 shows "a further scanning operation with a mechanical stylus in which strain gauges are used on the stylus to determine stylus bending." *Id.* at 6:1–4. McMurtry explains:

> the probe head PH is positioned so that point 28 lies on the axis of the bore 60, and the motors M1 and M2 are driven so as to bring

> the stylus 26 into contact with the surface of the bore 60. A force F*D* is determined as the desired resultant force on the stylus. The torque applied to the stylus by each of the motors M1 and M2, which will move the stylus around the surface of the bore, and will cause a force F*D* to act on the stylus, is estimated, and the current fed to the motors are then varied to as to [sic] generate this torque.

Id. at 14:12–22.

2. Discussion

Claim 11 depends from claim 10, and further recites "wherein said calibration means includes an adjustable mounting arrangement for rotationally displacing said angular deflection sensing means so that said flexible arm engages the soil when in said full down position." Ex. 1001, 8:17–21.

Petitioner identifies where the elements of the claims allegedly are disclosed by the references or why such elements would have been obvious to one of ordinary skill in the art. Pet. 56–59. In particular, Petitioner asserts that Chmielewski teaches this claim limitation by disclosing "calibration means." *Id.* at 57. Petitioner also relies upon McMurtry as teaching "an adjustable mounting relationship." *Id.* Petitioner asserts that one of ordinary skill in the art would have sought to combine McMurtry's teaching

of an adjustable mounting arrangement because it "is an obvious design choice for calibration once a mounting bracket is used to couple a height sensor to a crop header." *Id.* at 58 (citing Ex. 1003 ¶ 179). Petitioner contends that "[a] sensing arm calibration means in a workpiece scanning device, as disclosed in McMurtry, would have led to the predictable variation of a sensing arm calibration means in a header height control system." *Id.* at 58–59 (citing Ex. 1003 ¶ 179).[6]

As discussed, Patent Owner's Preliminary Response includes arguments that respond to all of the Petitioner's challenges collectively, not to the specific grounds individually (*see* Prelim. Resp. 17–33), with the exception of Patent Owner's contentions regarding specific limitations of independent claim 1, from which claim 11 depends ultimately (*id.* at 17–23). We addressed each of Patent Owner's arguments in Section III.A.5., and did not find them persuasive.

Accordingly, on this record, Petitioner has established a reasonable likelihood of prevailing on the assertion that the combination of the teachings of Lofquist, Chmielewski, Cleveland, and McMurtry would have rendered obvious the subject matter of

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[6] Petitioner also explains that during prosecution of the '395 patent, the examiner rejected the claims based on a combination of teachings, including Chmielewski and McMurtry. Pet. 59.

claim 11 to one of ordinary skill in the art at the time of the invention.

F. Obviousness of Claim 24 over Lofquist, Chmielewski, Cleveland, McMurtry, and Optionally Dougherty

Petitioner asserts that the combination of the teachings of Lofquist, Chmielewski, Cleveland, McMurtry, and optionally Dougherty would have rendered obvious the subject matter of claim 24 to one of ordinary skill in the art at the time of the invention. Pet. 58–59.

Claim 24 depends from claim 23, which depends from claim 12. Petitioner relies upon its arguments directed to claim 12 in addressing the limitations that claim 23 has in common with claim 12, including claim 12's recitation of a "biasing means." Pet. 58 (referring to Petitioner's discussion of claim 23 and pages 36–37 of the Petition, which, in turn, refer to Petitioner's discussion of claim 12).

Accordingly, on this record and for the reasons explained in our discussion of Petitioner's challenge to claim 12, *see supra* Section III.B.2., Petitioner has not established a reasonable likelihood of prevailing on the assertion that the combination of the teachings of Lofquist, Chmielewski, Cleveland, McMurtry, and optionally Dougherty would have rendered obvious the subject matter of claim 24 to

one of ordinary skill in the art at the time of the invention.

G. Other Dependent Claims

Patent Owner does not raise a separate argument against Petitioner's challenges directed to the patentability of the dependent claims not addressed above; rather, Patent Owner generally contends that all dependent claims would not have been obvious because the independent claims are not obvious. Prelim. Resp. 32–33. For the reasons we discussed above, Patent Owner's argument is not persuasive.

H. Petitioner's Declarant's Claim Charts

Patent Owner asserts that we should "exclude all claim charts submitted by [Mr.] Lucas." Prelim. Resp. 15. In short, Patent Owner complains that Petitioner's inclusion of 133 pages of claim charts at the end of the Lucas Declaration is circumvention of our rules indicating that claim charts submitted as part of a petition count toward the applicable page limits. *Id.* at 16–17.

Mr. Lucas states, in several instances, that his "opinion is supported by the following analysis, as well as [various sections of] the claim chart[s] set forth" at the end of his declaration. *See, e.g.*, Ex. 1003 ¶¶ 41, 143, 171. In light of our rules limiting the page length for an *inter partes* review petition to 60 pages, the use of 133 pages of claim charts

appears, on its face, excessive. We have disregarded the claim charts for the purposes of this Decision to the extent that a position is taken in the claim charts that is not expressly reiterated in the Petition.

If Patent Owner chooses to object to the claim charts included in the Lucas Declaration beyond this stage of the proceeding, Patent Owner should proceed in accordance with 37 C.F.R. § 42.64.

IV. CONCLUSION

For the foregoing reasons, we institute trial on the indicated grounds. We, however, have not made a final determination with respect to the claim construction or the patentability of any challenged claim.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review of the '395 patent is hereby instituted on the following grounds:

(1) Whether claims 1–7, 10, 27, 28, and 34 are unpatentable under 35 U.S.C. § 103(a) over Lofquist, Chmielewski, and Cleveland;

(2) Whether claims 8, 9, and 29–33 are unpatentable under 35 U.S.C. § 103(a) over Lofquist, Chmielewski, Cleveland, and Agness; and

(3) Whether claim 11 is unpatentable under 35 U.S.C. § 103(a) over Lofquist, Chmielewski, Cleveland, and McMurtry; and FURTHER ORDERED that the trial is limited to the grounds identified above and no other grounds are authorized; and

FURTHER ORDERED that the *inter partes* review of the '395 patent commences on the entry date of this Decision, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial.

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Trials@uspto.gov Paper No. 40
571.272.7822 Entered: September 22, 2016

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DEERE & COMPANY,
Petitioner, v.

RICHARD GRAMM,
Patent Owner.

Case IPR2015-00899
Patent 6,202,395 B1

Before MICHAEL W. KIM, BART A. GERSTENBLITH,
and TIMOTHY J. GOODSON, *Administrative Patent Judges.*

GERSTENBLITH, *Administrative Patent Judge.*

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

I. INTRODUCTION

A. Background

Deere & Company ("Petitioner") filed a Petition (Paper 2, "Pet.") requesting institution of *inter partes* review of claims 1-34 of U.S. Patent No. 6,202,395 B1 (Ex. 1001, "the '395 patent"). Richard Gramm ("Patent Owner") timely filed a Preliminary Response (Paper 6, "Prelim. Resp."). Pursuant to 35 U.S.C. § 314, in our Decision to Institute, we instituted this proceeding as to claims 1-11 and 27-34 of the '395 patent. Paper 7 ("Dec.").

After the Decision to Institute, Patent Owner filed a Patent Owner Response (Paper 20, "Resp."), and Petitioner filed a Reply to the Patent Owner Response (Paper 25, "Reply"). A consolidated oral hearing was held on May 17, 2016, in this matter and *Deere & Co. v. Gramm,* IPR2015-00898. Paper 39 ("Tr.").

Petitioner relies on the testimony of James Lucas (Ex. 1003, "Lucas Declaration") in support of its contentions. Patent Owner relies on the testimony of named inventor and Patent Owner, Richard D. Gramm (Ex. 20116, "Gramm

Declaration"),[7] and Robert A. Matousek (Ex. 2117, "Matousek Declaration") in support of its contentions.

We have jurisdiction under 35 U.S.C. § 6(b). This Decision is a final written decision under 35 U.S.C. § 318(a) as to the patentability of the challenged claims. We determine that Petitioner has demonstrated, by a preponderance of the evidence, that claims 1-11 and 27-34 of the '395 patent are unpatentable.

B. Related Proceedings

The parties represent that the '395 patent is asserted in the United States District Court for the Northern District of Illinois in *Gramm v. Deere & Co.,* No. 3:14-cv-00575. Pet. 1; Paper 5, 1. The '395 patent is also the subject of a petition for *inter partes* review in IPR2015-00898. Paper 5, 1.

In that proceeding, we instituted an *inter partes* review of the '395 patent as to the same claims, claims 1-11 and 27-34. *Deere & Co. v. Gramm,* IPR2015-00898 (PTAB Sept. 23, 2015) (Paper 7).

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[7] Patent Owner relies upon the Gramm Declaration to discuss the technology background, field of invention, and what led Mr. Gramm to develop the combine header height control disclosed in the '395 patent. *See* Resp. 2-10.

C. Real Parties-in-Interest

The Petition identifies Petitioner, Deere & Company, as the real party-in-interest. Pet. 1. Patent Owner's Mandatory Disclosures identify Patent Owner, Richard Gramm, and Headsight, Inc. as the real parties-in-interest. Paper 5, 1.

D. The References

The references upon which we instituted review consist of the following:

U.S. Patent No. 5,761,893, issued June 9, 1998 ("Lofquist," Ex. 1005);

U.S. Patent No. 5,535,577, issued July 16, 1996 ("Chmielewski," Ex. 1006);

U.S. Patent No. 3,611,286, issued Oct. 5, 1971 ("Cleveland," Ex. 1007);

U.S. Patent No. 3,851,451, issued Dec. 3, 1974 ("Agness," Ex. 1008);

and

U.S. Patent No. 5,189,806, issued Mar. 2, 1993 ("McMurtry," Ex. 1009).

E. The Asserted Grounds of Unpatentability

We instituted this proceeding based on the following grounds of unpatentability:[8]

References	Basis	Claim(s) challenged
Lofquist, Chmielewski, and Cleveland	§ 103(a)	1-7, 10, 27, 28, and 34
Lofquist, Chmielewski, Cleveland, and Agness	§ 103(a)	8, 9, and 29-33
Lofquist, Chmielewski, Cleveland, and McMurtry	§ 103(a)	11

[8] The arguments and issues raised in this proceeding are very similar to those raised in IPR2015-00898. In particular, in IPR2015-00898, Petitioner relies upon references "DPC" and "DA" as disclosing the elements of the claims for which Petitioner relies upon Lofquist in the context of this proceeding. Aside from this difference in references, and the applicability of the parties' arguments to each, by and large the arguments raised by Patent Owner are nearly identical to those raised in IPR2015-00898. Because these cases have not been consolidated and to avoid the potential for confusion, we address each argument raised by the parties while avoiding or minimizing cross-references to our Final Written Decision in IPR2015-00898.

F. The '395 Patent

The '395 patent is directed to an "apparatus for detecting and controlling the height above the soil of an agricultural machine as it traverses a field." Ex. 1001, 1:11-13. In general, a "height sensor provides a control signal to a conventional height controller in [a] combine for controlling header height above the soil to prevent impact damage to the header, while maintaining the header a predetermined height above the soil." *Id.* at 2:18-22. Figure 1 of the '395 patent is shown below:

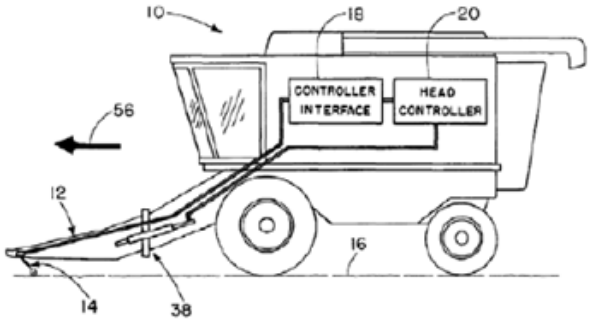

FIG. 1

Figure 1 of the '395 patent shows "a simplified combined schematic and block diagram of a combine

[10] illustrating the location of the height sensor [14]

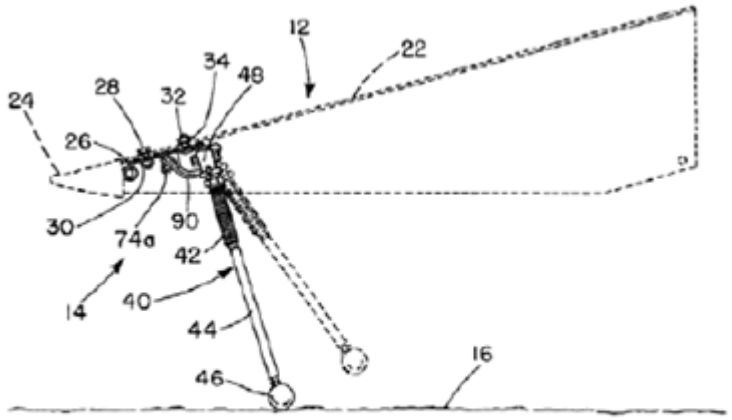

FIG. 2

in the combine header [12]." *Id.* at 2:65-67.

Figure 2 of the '395 patent is shown below:

Figure 2 of the '395 patent shows "a side elevation view shown partially in phantom of a height sensor mounted to a corn head." *Id.* as 3:1-2.

The '395 patent provides a general description of the invention as follows:

> The height sensor includes a pre-loaded flexible arm [generally shown by reference numeral 40] attached to a forward end of the head housing [22] . . . . The distal end of the

> flexible arm is provided with a ball-like member [46] which engages the soil, while the proximal end of the arm is coupled to an angular displacement detector. The detector determines the angular displacement of the arm as it is pivotally displaced upon encountering terrain irregularities or an obstacle in the field for providing the height control signal to the combine's height controller. A coil spring [42] in the sensor arm provides the arm with the flexibility necessary to avoid damage or breakage to the sensor upon impact with obstructions during operation or when the combine is reversed in direction. The height sensor is particularly adapted for use with head housings comprised of polyurethane and may be retrofit on existing header assemblies by mounting it to existing structure on the head housing.

Id. at 6:65-7:17.

G. Illustrative Claims

Claims 1 and 27 are the independent claims challenged in this proceeding. Independent claims 1 and 27 are illustrative of the claimed subject matter and are reproduced below:

> 1. Apparatus for maintaining a non-cut crop header disposed on a forward portion of a combine a designated height above the soil as

the combine traverses a field, said apparatus comprising:

a pre-loaded, generally linear flexible arm coupled to a forward portion of the header and having first and second opposed ends, wherein the first end of said flexible arm engages and is displaced over the soil as the header moves above the soil;

angular deflection sensing means coupled to the second end of said flexible arm for measuring a deflection of said flexible arm when the first end of said flexible arm encounters irregularities in the soil as the header moves above the soil and for providing a first signal representing the extent of deflection of said flexible and [sic]; and

control means coupled to said header and said angular deflection sensing means and responsive to said first signal for raising or lowering the header in accordance with said first signal in maintaining the header a designated height above the soil, wherein said flexible arm and angular deflection sensing means are attached to a head housing disposed on a forward portion of said combine and said head housing is comprised of polyurethane and includes a metal tip and a mounting bracket for attaching said metal tip to a forward end of said head housing, and wherein said mounting bracket further couples said flexible arm to a forward end of said head housing.

Ex. 1001, 7:29-56.[9]

> 27. For use on a plastic non-cut crop header housing disposed on a forward portion of a combine used in the harvesting of crops, said header housing have a tip mounted to a forward end thereof by means of a mounting bracket, an arrangement for determining the height of the header housing above the soil as the combine traverses a field, said arrangement comprising:
>
> a rotation sensor disposed in a lower, forward portion of the header;
>
> an elongated, linear shaft having first and second opposed ends, wherein said first end is coupled to said rotation sensor and said second end engages the soil, and wherein said shaft rotationally displaces said rotation sensor as the second end of said shaft engages and passes over irregularities in the soil; and
>
> a flange connecting said rotation sensor to the mounting bracket for mounting said rotation sensor on a lower portion of the forward end of the plastic header housing, wherein said mounting bracket includes a strap and a bracket respectively disposed on lower and upper surfaces of the header

[9] A Certificate of Correction at page 12 of Exhibit 1001 made a change to claim 1, which is reflected in the claim language quoted above.

housing and connected together by at least one nut and bolt combination.

Id. at 10:1-22.

II. CLAIM CONSTRUCTION

We interpret claims of an unexpired patent using the "broadest reasonable construction in light of the specification of the patent in which [they] appear[]." 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee,* 136 S. Ct. 2131, 2144-46 (2016). Claim terms are generally given their ordinary and customary meaning as would be understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *See In re Translogic Tech., Inc.,* 504 F.3d 1249, 1257 (Fed. Cir. 2007); *SASInstitute, Inc. v. ComplementSoft, LLC,* 825 F.3d 1341, 1347 (Fed. Cir. 2016) (citation omitted). We apply this standard to the claims of the '395 patent. *See* Pet. 11 (proposing to construe the claims of the '395 patent in accordance with the broadest reasonable interpretation standard); Resp. 17-18 (same). Only terms that are in controversy need to be construed, and these need be construed 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).

A. Claim Terms

1. "flexible"

Claim 1 recites "a pre-loaded, generally linear flexible arm." Ex. 1001, 7:33. Claim 32, which depends indirectly from claim 27 and directly from claim 30, recites "[t]he arrangement of claim 30 wherein said elongated, linear shaft includes a rigid shaft coupled to a flexible coiled spring." *Id.* at 10:37-39.

Patent Owner proposes that we construe the term "flexible" to mean "able to bend, deflect, or reverse in direction." Resp. 21-23. Petitioner proposes that we construe "flexible" to mean "not rigid, made to bend." Reply 15 n.3.

Petitioner's challenges rely on Cleveland as teaching a flexible arm or a flexible spring for the claims that recite those features. Petitioner asserts that Cleveland discloses a flexible arm regardless of which construction is adopted, but disagrees with Patent Owner's construction "because it improperly includes *rigid* arms that can simply rotate relative to other components." *Id.* at 16 n.3.

We agree with Petitioner that under either party's proposed construction, Cleveland's sensor arm, including spring 38, is flexible. *See infra* pages 42-43 (Section III.B.4.a.ii.b)2.b.). Accordingly, we need not choose between either party's proposed constructions.

2. Other Claim Terms

The parties propose constructions for several additional claim terms, including "pre-loaded," "angular deflection sensing means," "control means," "biasing means," "first stop means," "second stop means," "guard means," and "flange." Pet. 11-15; Resp. 18-23. Although the parties have some disagreement as to the meaning of several of these terms, there is no dispute that the references upon which we instituted review disclose these elements of the claims.[10] Accordingly, there is no controversy as to these terms that requires our resolution in order to ascertain whether the claims would have been obvious to one of ordinary skill in the art as of the time of the invention in light of the references and arguments before us.

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[10] Counsel for Patent Owner clarified, at the oral argument, that Patent Owner's argument, as it pertains to Cleveland's spring 38, is not "a claim construction issue" (Tr. 48:19-49:5); rather, the issue for Patent Owner is whether Cleveland's spring would function in a height control system (id. at 49:5-18). We address Patent Owner's arguments regarding the functionality of the combination *infra*.

III. ANALYSIS

A. Obviousness Overview

Under 35 U.S.C. § 103(a), an invention is not patentable if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *See KSR Int'l Co. v. Teleflex Inc.,* 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and, (4) where in evidence, so-called secondary considerations, including commercial success, long-felt but unsolved needs, failure of others, and unexpected results. *See Graham v. John Deere Co.,* 383 U.S. 1, 17-18 (1966).

1. Level of Ordinary Skill in the Art

The parties' proposals for the level of ordinary skill in the art are similar. Petitioner proposes the following:

> (1) a Bachelor of Science degree in engineering, such as mechanical or agricultural engineering, whose course of study would have included mechanical design, mechanical analysis, material selection and

> properties, and in addition, would have had approximately three years of experience in combine or agricultural equipment design, including components thereof, such as headers and header height control systems; or (2) five or more years of hands-on experience in combine or agricultural equipment design, including components thereof, such as headers and header height control systems.

Pet. 4-5 (citing Ex. 1003 | 17). Patent Owner proposes the following: "(1) a mechanical engineer having familiarity with hydraulic systems and sensors; or (2) a person having 10 or more years of experience working with combines." Resp. 24 (citing Ex. 2117 | 16). Patent Owner asserts that Petitioner's proposed level of skill exceeds the educational background and experience of Richard Gramm, the named inventor on the '395 patent. *Id.*

During the oral argument, counsel for Patent Owner clarified that, in Patent Owner's proposed second option for the level of ordinary skill in the art, the "experience working with combines" was intended to include working with combines, sensors, and hydraulic systems. Tr. 37:4-20. Patent Owner's counsel explained that Petitioner's inclusion of the term "design" in each of Petitioner's options for the level of ordinary skill would exclude Mr. Gramm and "literally eliminate farmers." *Id.* at 36:11-23. Additionally, during the oral argument, Petitioner's

counsel indicated that Patent Owner's ten or more years of experience was "fine." *Id.* at 66:9-10.

The parties' statements of the level of ordinary skill are not significantly different, and the differences between their proposed levels of ordinary skill would not affect the outcome of this proceeding.[11] In light of our review of the record, including the '395 patent, the competing expert testimony, and the issues discussed during the oral argument, we agree with different aspects of the parties' proposals. First, as Petitioner notes in its Reply, a mechanical engineer having familiarity with hydraulic systems and sensors, as Patent Owner proposes, does not have experience necessarily with agricultural equipment or combines. Reply 2, n.1. Thus, Patent Owner's educational prong is overly broad. Second, Petitioner's educational prong, on the other hand, is too narrow, requiring "design" of combines or agricultural equipment. Third, we find that Petitioner's experience prong also is too narrow, because it requires experience specifically in the "design" of agricultural equipment or combines. Accordingly, we find that the level of ordinary skill in the art is "a mechanical engineer having

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[11] Indeed, neither party argues that any difference between the proposed levels of ordinary skill would affect the outcome of this proceeding.

familiarity[12] with agricultural equipment, such as combines, and hydraulic systems and sensors" or "a person having 10 or more years of experience[13] working with combines."[14]

2. Objective Indicia of Nonobviousness

Patent Owner's Response does not set forth any objective indicia of nonobviousness, and during oral argument, counsel for Patent Owner explained that it did not rely upon any secondary considerations or objective indicia of nonobviousness. Tr. 35:13-19. Accordingly, there is no argument

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[12] The familiarity may have been gained, as proposed by Petitioner, by "approximately three years of experience in combine or agricultural equipment design, including components thereof, such as headers and header height control systems" (Pet. 5 (citation omitted)), but also may have been gained through other experience.

[13] As argued by Patent Owner, we find that a person with 10 or more years of experience working with combines also would have experience working with sensors and hydraulic systems.

[14] As noted in the text *supra*, the difference in the parties' proposed level of ordinary skill in the art does not affect the outcome of the proceeding. Accordingly, even if we were to adopt Patent Owner's proposal as to the level of ordinary skill in the art, we would reach the same findings and conclusions as discussed herein.

regarding secondary indicia of nonobviousness before us.

B. Obviousness of Claims 1-7, 10, 27, 28, and 34 over Lofquist, Chmielewski, and Cleveland

Petitioner asserts that the combination of the teachings of Lofquist, Chmielewski, and Cleveland would have rendered obvious the subject matter of claims 1-7, 10, 27, 28, and 34 to one of ordinary skill in the art at the time of the invention. Pet. 15-49.

1. Lofquist

Lofquist is directed to a crop saving attachment for the snouts of combines. Ex. 1005, [54]. Lofquist's Figures 1 and 2 are shown below:

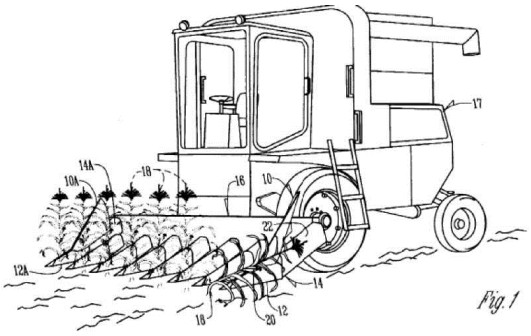


Fig. 1

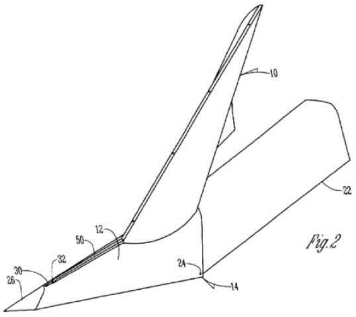


Fig. 2

Lofquist's Figure 1 shows "a front perspective view of a combine having a corn header with the crop saving attachment . . . affixed to the outermost snouts for deflecting down corn stalks inwardly into the snapping rollers of the corn head." *Id.* at 1:42-45. Lofquist's Figure 2 shows "a front fragmentary perspective view of the left corn head snout with the crop saving attachment . . . mounted thereon." *Id.* at 1:46-48. Lofquist explains that the crop saving attachment "is referred to generally in [Figures] 1 and 2 by reference numeral 10 and is shown mounted on the gathering point 12 of the left snout 14 of a corn head 16 of a JOHN DEERE combine 17." *Id.* at 2:7-10. Lofquist teaches that the gathering point includes "a wall made of plastic and has a metal tip 26 secured to it at its forward end." *Id.* at 2:24-25.

Petitioner includes an annotated version of a portion of Lofquist's Figure 8, shown below:

Pet. 16. Lofquist's Figure 8 shows "an exploded perspective view of the component parts of FIGS. 3-7 in position for being fastened to the gathering point." Ex. 1005, 1:65-67. Petitioner's annotated version shows which elements correspond to which reference numerals, including gathering point 12, metal tip 26, bracket 28, plate 30, bolts 32, and nuts 34. Pet. 16.

Lofquist teaches:

> metal tip 26 . . . include[s] a bracket 28 which extends under the plastic gathering point wall and is fastened thereto by a plate 30 positioned on top of the gathering point wall and affixed thereto by a pair of bolts 32 which extend through the plate 30, gathering point wall and bracket

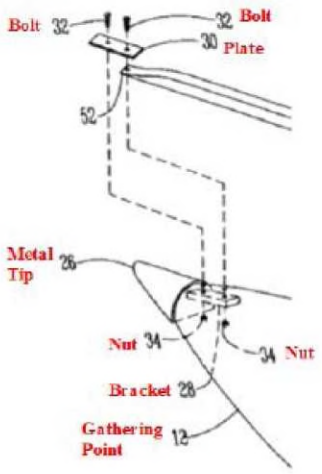


Fig. 8

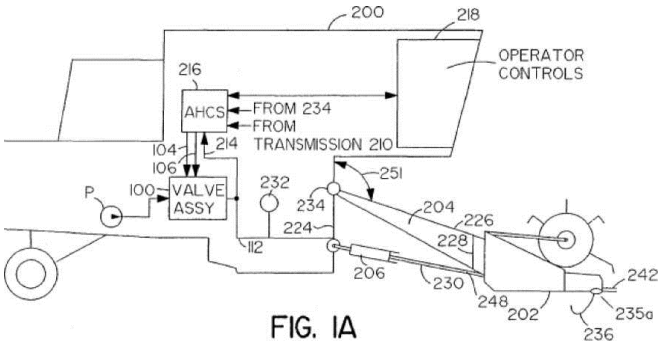


FIG. IA

28 for engagement with nuts 34.

Ex. 1005, 2:30-35.

2. Chmielewski

Chmielewski is directed to "the use of hydraulic control systems for regulating agricultural harvester header position and/or applied force of the header on the ground." Ex. 1006, 1:25-27. Chmielewski's Figure 1A is shown below:

Chmielewski's Figure 1A shows a schematic diagram of one embodiment of the invention. *Id.* at 3:59-60.

Chmielewski teaches that automated header control system (AHCS) "216 receives . . . a position signal 236, 237 representing the position of header 202 relative to ground 220." *Id.* at 7:47-51. Chmielewski explains: "Position signal 208 may be provided by a variety of different types of sensors. The position signal may represent the position of the header relative to the ground, as measured by devices such as contact sensors 236, 237." *Id.* at 7:53-57.

Chmielewski's Figure 10 is shown below:

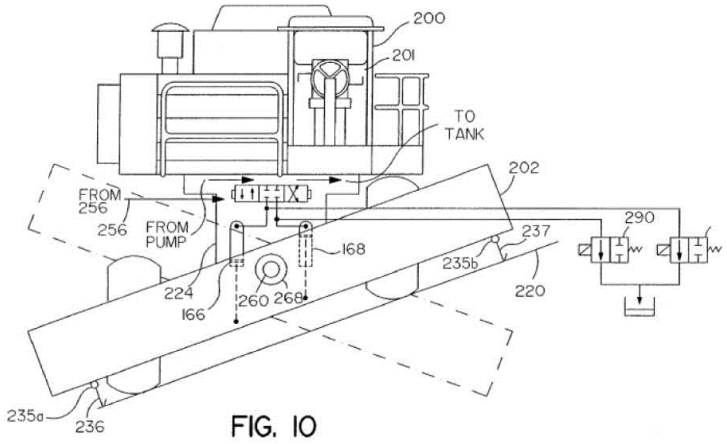


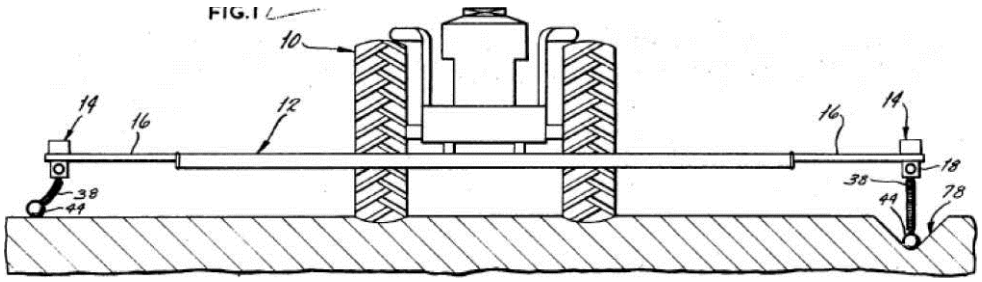
FIG. 10

Chmielewski's Figure 10 shows a front elevation view of a harvester with header height and lateral tilt functions. *Id.* at 4:16-18.

Chmielewski explains that "[s]ensors 236 and 237 include hoops connected to respective potentiometers *235a* and *235b* (shown in FIG. 10). This type of sensor only provides information when contacting the ground . . . ." *Id.* at 35:37-40. Ground tracking sensors 236, 237, located on opposite ends of the headers, sample the height. *Id.* at 35:59-60. A header height function is used to maintain the position of header 202 relative to the average surface of ground 220. *See id.* at 35:54-58.

3. Cleveland

Cleveland is directed to "a device for sensing the relative position of a moving vehicle with respect to a furrow in the ground." Ex. 1007, 1:4-6. Cleveland's Figure 1 is shown below:



Cleveland's Figure 1 shows a "rear elevational view of a vehicle having the sensing probe mounted thereon." *Id.* at 2:19-20. Cleveland's Figure 2 is shown below:

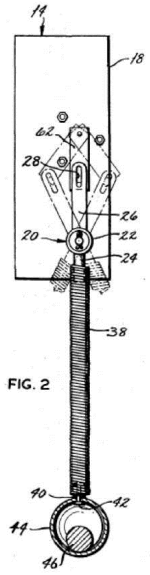


FIG. 2

Cleveland's Figure 2 shows "an elevational view of the sensing probe showing the bearing member in section." *Id.* at 2:21-22.

Cleveland teaches:

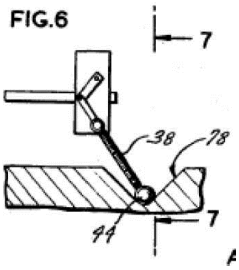
> sensing probe 14 includes a mounting plate 18 adapted to be mounted rigidly with respect to boom 16. Pivotally mounted on plate 18 is a swing member 20 including a collarlike hub 22, a downwardly extending stub 24 and an upwardly extending swing lever 26, all of which are welded together so that swing member 20 is a rigid member.

Id. at 2:44-49. Cleveland explains the following:

> After the farmer has completed one trip across the field, he aligns one probe 14 with the last furrow formed by his first trip across the field. Bearing member 44 is positioned within furrow 78 so that it is in the deepest portion thereof. The probe 14 on the opposite end of implement frame 12 is inoperative at this point, and helical spring 38 of that probe is deflected due to the fact that there is no furrow in which bearing member 44 can ride. . . . One probe 14 will be switched on during the first trip across the field and the other will be switched on during the return trip.

Id. at 3:54-66.

Cleveland's Figure 6 is shown below:



Cleveland's Figure 6 shows "a rear elevational view . . . [of] the sensing probe in the bottom of a furrow." *Id.* at 2:27-28. Cleveland

teaches that "[i]f vehicle 10 moves to the left from its position shown in FIG. 1, a result is obtained such as shown in FIG. 6." *Id.* at 4:5-6. Cleveland further explains:

> As vehicle 10 begins moving across the field, sensing probe 14 is aligned so that it is vertically disposed within furrow 78. If vehicle 10 moves laterally with respect to furrow 78, bearing member 44 remains within the deepest portion of furrow 78 as described above. This causes spring 38 and swing lever 26 to swing about hinge bolt 30 so that the longitudinal axes of spring 38 and swing lever 26 are displaced from a vertical position. Swinging of swing lever 26 causes cam shaft 58 to be rotated by means of switch link 62, thereby causing several microswitches 66 to actuate indicator lights 76 on instrument panel 74. Thus the moment that sensing probe 14 moves out of a vertically disposed attitude, the vehicle operator knows immediately from the indicator lights that he has deviated from a parallel path with respect to furrow 78. He is therefore able to take corrective steering measures.

Id. at 4:39-54.

4. Discussion

Petitioner asserts that the combination of Lofquist, Chmielewski, and Cleveland would have rendered obvious the subject matter of claims 1-7, 10, 27, 28, and 34 of the '395 patent to one of ordinary skill in the art at the time of the invention. Pet. 15-49.

a. Claim 1

i. "Apparatus for maintaining a non-cut crop header disposed on a forward portion of a combine a designated height above the soil as the combine traverses a field, said apparatus comprising"

Petitioner contends that Lofquist in combination with Chmielewski meets the preamble of claim 1. Pet. 16. Petitioner begins with the non-cut crop header of Lofquist (gatherpoint point 12), which Petitioner contends is "disposed on a forward portion of a combine." *Id.* (citing Ex. 1003)) 43; Ex. 1005, 2:7-10, Fig. 1). Petitioner asserts:

> The gathering point "has a metal tip 26 secured to it at its forward end." . . . [which] include[s] a bracket 28 which extends under the plastic gathering point wall and is fastened thereto by a plate 30 positioned on top of the gathering point wall and affixed thereto by a pair of bolts 32 which extend

> through plate 30, gathering point wall and bracket 28 for engagement with nuts 34.

Id. (quoting Ex. 1003)) 43 and Ex. 1005, 2:30-35) (citing Ex. 1005, Fig. 8 (version shown above with Petitioner's annotations added)).

Petitioner argues that Chmielewski "discloses an apparatus for maintaining a cut crop header disposed on a forward portion of a combine at a designated height above the soil as the combine traverses a field." *Id.* (citing Ex. 1006, 1:24-26; Ex. 1003 ¶ 44). Petitioner explains that Chmielewski's header height system "generally includes left and right ground contact sensors 236 and 237, potentiometers 235a and 235b, and an . . . ('AHCS') 216." *Id.* at 17 (citing Ex. 1006, 12:22-33, Figs. 1A, 1B, 10; Ex. 1003 ¶ 44).

Additionally, Petitioner asserts it would have been obvious to one of ordinary skill in the art to modify Lofquist's header with the automated header height system of Chmielewski for several reasons. *Id.* at 42. First, Petitioner contends that one of ordinary skill in the art would have recognized the importance of controlling the height of a header for the benefit of avoiding damage caused by uneven ground and would have been motivated to automate the process. *Id.* (citing Ex. 1003 ¶130)).[15] Second,

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[15] Petitioner explains that even the background of the invention section of the '395 patent "recognizes that at

Petitioner asserts that "[t]he incorporation of the automated header height system of Chmielewski with . . . Lofquist's header is mechanical in nature and would have been accomplished according to known methods to yield the predictable result of determining and adjusting the height of a non-cut crop header." *Id.* at 43 (citing Ex. 1003 ¶ 132). Petitioner explains that it would have been within the "technical grasp" of a person of ordinary skill "to modify Chmielewski's automated header height system to fit with . . . Lofquist's header and a conventional combine." *Id.* at 44 (citing Ex. 1003 ¶ 133). In so doing, Petitioner further explains that one of ordinary skill

> would have been motivated to utilize the existing hardware found on Lofquist['s] header when attaching the potentiometers 235a and 235b of left and right ground contact sensors 236 and 237 of Chmielewski to avoid forming additional holes, which would have been understood to have an adverse effect on the structural integrity of the header housing.

Id. (citing Ex. 1003 1 ¶ 134; Ex. 1001, 4:23-30; Ex. 1005, 1:21-22). Further, Petitioner asserts that

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the time of the alleged invention '[t]here [were] various approaches to maintaining the header [at] a predetermined height above the soil.'" Pet. 42 (quoting Ex. 1001, 1:40-41) (citing Ex. 1003 ¶ 130) (alterations added by Petitioner).

"adding other attachment fasteners would make the . . . header . . . more bulky and heavier, . . . le[ading] to undesirable performance characteristics." *Id.* (citing Ex. 1003 ¶ 134). Finally, Petitioner contends that Lofquist's preexisting hardware is "located at a forward portion of the header housing, which would have allowed for mounting the sensor on a forward portion of the header to allow for an early detection of the distance between the header and the ground." *Id.* at 44-45 (citing Ex. 1003 ¶ 135).

Patent Owner raises several arguments with respect to the preamble of claim 1 and Petitioner's reliance upon the combination of Lofquist and Chmielewski. First, Patent Owner contends that the preamble is limiting, *inter alia,* because it recites "a non-cut crop head[er]" and "a combine" and the body of claim 1 refers back to those elements by reciting "said header" and "said combine." Resp. 32. Patent Owner relatedly contends that the patentee amended the claim to include the non-cut crop header language to distinguish the claims from Chmielewski. *Id.* (citing Ex. 1002, 142). Second, Patent Owner asserts that the preamble requires two elements, neither of which is disclosed by the combination of Lofquist and Chmielewski: "(1) a non-cut crop head and (2) maintaining the non-cut crop head a designated height above the ground." *Id.* Patent Owner asserts that "Chmielewski is specifically directed to a height control system for a cut crop and **not** a non-cut crop head" and "therefore does not disclose a non-cut crop head or maintaining

such a head a designated height above the ground." *Id.* at 32-33. Patent Owner contends that "[w]hile . . . [Lofquist] does disclose a non-cut crop head, it does not disclose anything regarding maintaining the head a designated height above the ground." *Id.* at 33 (citing Ex. 2117 ¶ 33).

In the Reply, Petitioner contends that the preamble of claim 1[16] is not limiting and that the "non-cut crop header" language is an intended use, not a claim limitation. Reply 2. Petitioner contends that the use of the term "for" in the preamble phrase "apparatus for maintaining" confirms that the preambles are an intended use. *Id.* at 2-3. Petitioner also relies upon the prosecution history of the '395 patent, noting that the examiner found that the intended use is for a non-cut crop header and that the "crop header is not []part of the claimed invention." Reply 3 (quoting Ex. 1002, 153) (emphasis omitted) (alteration added by Petitioner). Additionally, Petitioner asserts that even if the preamble is limiting with respect to the two elements argued by Patent Owner above, the combination of Lofquist and Chmielewski teaches each of the elements. *Id.* at 4.

We first address the question of whether any elements recited in the preamble of claim 1 are limiting. Second, even if the preamble is limiting, we

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[16] Petitioner also contends that the preamble of claim 27 is not limiting. Reply 2.

determine that Petitioner has shown that the combination of Lofquist and Chmielewski meets each of the elements recited in the preamble.

a) Whether and to What Extent the Preamble of Claim 1 Is Limiting

"In general, a preamble limits the invention if it recites essential structure or steps, or if it is 'necessary to give life, meaning, and vitality' to the claim." *Catalina Mkt'g Int'l, Inc. v. Coolsavings.com, Inc.,* 289 F.3d 801, 808 (Fed. Cir. 2002) (quoting *Pitney Bowes, Inc. v. Hewlett-Packard Co.,* 182 F.3d 1298, 1305 (Fed. Cir. 1999)). "Conversely, a preamble is not limiting 'where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.'" *Id.* (quoting *Rowe v. Dror,* 112 F.3d 473, 478 (Fed. Cir. 1997)). "[C]lear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art transforms the preamble into a claim limitation because such reliance indicates use of the preamble todefine, in part, the claimed invention." *Id.* at 808-09 (citing *Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.,* 246 F.3d 1368, 1375 (Fed. Cir. 2001)). If a phrase in the preamble provides necessary structure for a claim, that "does not necessarily convert the entire preamble into a limitation, particularly one that only states the intended use of the invention." *TomTom, Inc. v. Adolph,* 790 F.3d 1315, 1323 (Fed. Cir. 2015).

There is no dispute that the invention at issue in the '395 patent is not a "header" or a "combine" per se; rather, it is a header height control apparatus—an "apparatus for detecting and controlling the height above the soil of an agricultural machine as it traverses a field." Ex. 1001, 1:11-13. Nonetheless, there is no prohibition on a patentee drafting his or her claim in a manner that further limits the invention if additional structure is recited in the claim. As argued by Patent Owner, the recitation of "a non-cut crop header" and "a combine" in the preamble of claim 1, provide antecedent basis for at least two terms recited in the body of the claim—"the header" and "said combine." The body of the claim reflects that the patentee chose to claim the header control apparatus in terms not limited to said apparatus standing alone, but rather the apparatus as attached (coupled) to the header of a combine. *See, e.g.,* Ex. 1001, 7:33-34 ("a pre-loaded, generally linear flexible arm *coupled to a forward portion of the header"* (emphasis added)); 7:44-45 ("control means *coupled to said header"* (emphasis added)); 7:48-51 ("wherein said flexible arm and angular deflection sensing means *are attached to a head housing* disposed on a forward portion of *said combine"* (emphases added)); 7:54-56 ("wherein said mounting bracket *further couples said flexible arm to a forward end of said head housing"* (emphasis added)).

The prosecution history reflects that the patentee at first desired the recitation of "header" in

the claim to be limited to "non-cut crop" headers, in an attempt to distinguish cut crop headers. Ex. 1002, 142 (Amendment filed June 19, 2000). The examiner, however, did not accept such argument *(id.* at 152-53 (Office Action mailed Aug. 24, 2000)), and the patentee did not reiterate or maintain the argument in amending the claims following the August 24, 2000, final rejection. *Id.* at 158-63 (Amendment filed Nov. 22, 2000). Nonetheless, the prosecution history is informative on this issue.

In light of our discussion above regarding the claim language, specification, and the prosecution history, we do not construe the entire preamble as limiting. In particular, the preamble recites an apparatus *for* maintaining, and is presented clearly as reciting an intended use. That being said, we agree with the Patent Owner that the phrase "non-cut crop header" limits the terms "the header" and "said header" recited in the body of claim 1 such that "the header" and "said header" recited in the body of claim 1 are the same "non-cut crop header" recited in the preamble of the claim.[17]

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[17] It is slightly less clear as to whether a combine is, in fact, a required element of claim 1. In particular, the claim body recites "wherein said flexible arm and angular deflection sensing means are attached to a head housing disposed on a forward portion of said combine," which suggests a combine is recited as a structural element of the claim. Even assuming a

b) The Combination of Lofquist and Chmielewski Meets the Elements of the Preamble

In a somewhat ironic manner, given the arguments regarding the preamble of claim 1 discussed above, Petitioner's challenge to claim 1 begins with a discussion of the preamble and identification of where the language of the preamble is disclosed or would have been obvious in light of the combination of the teachings of Lofquist and Chmielewski. Pet. 15-17. In particular, Petitioner argues (Pet. 15), and we find, that Lofquist teaches a non-cut crop header as recited in claim 1. Ex. 1005, 2:7-10, Fig. 1. Additionally, Petitioner argues (Pet. 16), and we find, that Chmielewski teaches maintaining a header a designated height above the ground. Ex. 1006, 1:24-26, 12:22-33, Abstract, Figs. 1A, 1B, 10.

Although Patent Owner asserts that "[t]he combination of Lofquist and Chmielewski does not

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combine is a required element, we find that Lofquist and Chmielewski each disclose a combine. Ex. 1005, 2:7-10 ("The crop saving attachment of this invention is referred to generally in FIGS. 1 and 2 by reference numeral 10 and is shown mounted on the gathering point 12 of the left snout 14 of a corn head 16 on a JOHN DEERE combine 17."); Ex. 1006, 4:60-61 ("An agricultural harvester 200 is shown, which may be a combine . . . .").

disclose" "(1) a non-cut crop head and (2) maintaining the non-cut crop head a designated height above the ground," Patent Owner acknowledges that Chmielewski "is specifically directed to a height control system for a cut crop . . . head" and that Lofquist "does disclose a non-cut crop head." *Compare* Resp. 32 *with id.* at 32-33. Patent Owner's argument regarding the preamble of claim 1 is that Lofquist "does not disclose anything regarding maintaining the head a designated height above the ground" *(id.* at 33) and, because Chmielewski discloses "height control system for a cut crop . . . head" *(id.* at 32), "the combination of Lofquist and Chmielewski does not satisfy the requirements of the preamble of claim 1" (id. at 33 (citing Ex. 2117 } 33)).

Patent Owner's position that "[t]he combination of Lofquist and Chmielewski does not meet the preamble of claim 1" (Resp. 32 (emphasis omitted)) is based entirely on arguing the references' teachings individually rather than as combined by Petitioner, and, thus, does not assist in our consideration of whether the combination of Lofquist and Chmielewski discloses a non-cut crop header and a header height control system. In other words, it is inapposite that Chmielewski fails to disclose a non-cut crop header because Petitioner relies upon Lofquist for that disclosure. *See In re Keller,* 642 F.2d 413, 426 (CCPA 1981) ("one cannot show non-obviousness by attacking references individually" where the claims are challenged based on

combinations of references); *In re Young,* 927 F.2d 588, 591 (Fed. Cir. 1991) ("The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art."). Similarly, it is inapposite that Lofquist fails to disclose a system for maintaining the header a designated height above the ground because Petitioner relies upon Chmielewski for that disclosure. Accordingly, we find that the teachings of Lofquist and Chmielewski, collectively, satisfy the claim limitations of a non-cut crop header disposed on a forward potion of a combine and an automated system for maintaining a header a designated height above the soil as the combine traverses a field.

c) Reason to Combine

Petitioner contends that it would have been obvious to combine the elements of the height control system of Chmielewski with the header disclosed by Lofquist for the reasons explained above. *See supra* pages 2021 (Section III.B.4.a.i.).

Patent Owner raises several arguments challenging Petitioner's arguments and evidence. We address each in turn. First, Patent Owner contends that one of ordinary skill in the art "would not be motivated to combine sensors from Chmielewski with the tip of the divider disclosed in Lofquist because the heads described in these references are substantially dissimilar in structure and function." Resp. 52-53. Patent Owner asserts that because of

the structural and functional differences between the two types of headers, "height sensors are placed in a difference [sic] location for cut crops than where they must be positioned for non-cut crops." *Id.* at 54 (citing Ex. 2117 ¶ 65). Specifically, for cut crop headers, height sensors are positioned behind the cutting bar, whereas height sensors are positioned on the dividers of non-cut crop headers to prevent damage to the dividers during use. *Id.* at 54 (citing Ex. 2117 ¶ 65). Ultimately, Patent Owner argues that because Chmielewski does not disclose *how* the sensors are mounted to the header and because of the structural and functional differences between the header types, "Chmielewski would not suggest to a [person of ordinary skill in the art] a finite number of predictable solutions that would result in anticipated success for adapting the cut crop height sensor of Chmielewski to a height sensor for a non-cut crop head." *Id.* at 55 (citing Ex. 2117 ¶ 69). Patent Owner asserts that "Chmielewski certainly would not suggest to a [person of ordinary skill in the art] a finite number of predictable solutions with a reasonable expectation of success for mounting the height sensor to the forward tip of a cut crop head." *Id.* (citing Ex. 2117 1 69).

Patent Owner's argument is based on an incorrect interpretation of the United States Supreme Court's decision in KSR. *See* Reply 11. In Patent Owner's presentation of the law pertaining to obviousness, Patent Owner states: "Moreover, an obviousness finding under *KSR* ***requires*** that there

be a 'finite number' of solutions yielding predictable results, *i.e.* that there is only a small or easily traversed number of options in the context of the art for resolving the issue." Resp. 28-29 (citing *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.,* 520 F.3d 1358, 1364 (Fed. Cir. 2008) (emphasis added)). Patent Owner's argument above reflects the position that if there is not a finite number of predictable solutions, then a combination is not obvious. The Supreme Court's statement regarding a finite number of identified, predictable solutions, discussed further in *Ortho-McNeil,* pertains to *one* way in which to show obviousness, and that discussion was tied specifically to whether something that is "obvious to try" could ever be "obvious under § 103."[18] KSR, 550 U.S. at 421. KSR, however, is not limited to only this *one* way in which to show obviousness. The Court specifically addressed several of its past decisions and drew, from those cases, a variety of principles that are instructive in considering whether a patent claiming a combination of elements is obvious. Moreover, the test for obviousness is not limited to those examples. Rather, what we look for in light of *KSR* is whether "there was an apparent reason to combine the known elements in the fashion claimed by the patent at

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[18] Petitioner's position is not based on whether the proposed combination would have been obvious to try. *See* Reply 11 (noting that Petitioner's "articulated rationales regarding obviousness here go well beyond just 'obvious to try'").

issue." *Id.* at 418. In so doing, we review the arguments offered by Petitioner to determine whether Petitioner has "articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id.* (quoting *In re Kahn,* 441 F.3d 977, 988 (Fed. Cir. 2006)). To that end, we determine that Petitioner has provided above sufficient articulated reasoning with rational underpinning supporting the legal conclusion of obviousness with respect to the preamble of independent claim 1.

Second, Patent Owner argues that even though cut crop height sensors were introduced in the early 1980s, and corn heads with metal dividers were available long before that, no corn head was commercially sold with a height sensor prior to 1999. Resp. 55 (citing Ex. 2117 ¶ 70-71). In other words, Patent Owner asserts that "[h]ad it been obvious to combine the height sensor of a cut crop head with a non-cut crop head, surely someone would have done so in the many years the height sensors and corn heads were available. Yet, no one did so." *Id.* at 56.

Although Patent Owner's argument regarding passage of time is more apropos to arguing an objective indicia of nonobviousness, and Patent Owner conceded during oral argument that there were no secondary considerations of nonobviousness presented in this case, we note that "absent a showing of long-felt need or the failure of others, the mere passage of time without the claimed invention

is not evidence of nonobviousness." *In re Kahn,* 441 F.3d at 990. Further, even if the mere passage of time alone were reflective of long felt need, Patent Owner has not argued or put forth evidence to show that the claimed invention met such need.

Third, Patent Owner contends that Petitioner impermissibly uses hindsight to presume that a person of ordinary skill in the art could easily "create a sensor small enough to fit into the small trapezoidal area at the tip of a corn head and yet one that is sufficiently strong to withstand the abuse it would encounter during harvesting." Resp. 56 (citing Ex. 2117 73-74). Patent Owner asserts that one of ordinary skill in the art "would have failed in his or her attempts to design" such a sensor. *Id.* at 57 (citing Ex. 2117 ¶ 74).

Petitioner responds to Patent Owner's arguments regarding size and robustness in its Reply, contending that "claims 1 and 27 nowhere require any particular level of 'robustness' or 'size.'" Reply 14. Petitioner asserts that Mr. Gramm acknowledged during his deposition that the combination of Chmielewski and Lofquist would work for *"perhaps a week,"* confirming that it would work, even if not very well. *Id.* at 14 (quoting Ex. 1021, 212:12-213:3). Petitioner also contends that it is within the level of ordinary skill in the art to size the components to fit a non-cut crop header as disclosed by Lofquist. *Id.* at 15.

We agree with Petitioner that claim 1 does not place explicit size or robustness limitations on the header height control system that Petitioner relies upon from Chmielewski. Further, we are persuaded by Petitioner's argument and evidence, and are persuaded, in particular, that modifying Chmielewski's header height control system to fit Lofquist's header is within the ordinary level of skill as defined above. *See KSR,* 550 U.S. at 421 ("A person of ordinary skill is also a person of ordinary creativity, not an automaton); *see also* Ex. 1003 ¶¶ 132-134. In any case, "[i]t is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements." *In re Mouttet,* 686 F.3d 1322, 1332 (Fed. Cir. 2012).

Fourth, Patent Owner asserts that Petitioner's argument—that mounting a sensor in other places on a header by forming additional holes would have an adverse effect on the structural integrity of the header is not supported by the evidence presented and that there are other location options for mounting. Resp. 58-59.

We agree with Patent Owner that it is possible to mount a height control sensor to other areas of the header. Nonetheless, we are persuaded by Petitioner's argument and evidence showing that one of ordinary skill in the art would have considered, and found it attractive, to mount such sensor to the header's existing hardware, in a

forward location on the header. That there may be other options for such mounting does not undermine our conclusion that it would have been obvious to mount to the existing hardware. We also are persuaded by Petitioner's argument that the existing hardware is located in a forward portion of the header and, thus, that one of ordinary skill would have mounted the height control sensor thereon because it provides an advantage for mounting in that it allows for early detection of the header height above the soil. Pet. 44-45 (citing Ex. 1003 ¶ 135).

d) Summary

In the context of the evidence and arguments before us, we conclude that Petitioner has set forth several reasons with rational underpinning to support the legal conclusion that it would have been obvious to one of ordinary skill in the art to combine Chmielewski's teachings of a header height control system on a combine with Lofquist's teaching of a non-cut crop header, to meet the preamble of independent claim 1. In other words, we are persuaded that one of ordinary skill in the art would have recognized the benefits of a header height control system as employed on a cut crop header of a combine, as taught by Chmielewski, and would have been prompted to apply such a header height control system to a non-cut crop header of a combine, as taught by Lofquist. Even though we agree with Patent Owner that there are structural and functional differences between the two types of

headers, the benefit of controlling either header's height above the soil when traversing a field is the same—protecting the header from damage caused by obstacles if the header is too low. *See supra* pages 20-21 (Section III.B.4.a.i.) (Petitioner's discussion of why one of ordinary skill in the art would have combined these elements of Lofquist and Chmielewski in this manner). Further, we find that it was well within the level of ordinary skill in the art to size a header height control system as disclosed by Chmielewski to fit the header and existing hardware of Lofquist at the time of the invention. Thus, on balance, Petitioner's evidence persuades us that it would have been obvious to one of ordinary skill in the art to combine Chmielewski's header height control system with the non-cut crop header of Lofquist to meet the preamble of independent claim 1.

ii. "a pre-loaded, generally linear flexible arm coupled to a forward portion of the header and having first and second opposed ends, wherein the first end of said flexible arm engages and is displaced over the soil as the header moves above the soil"

a) Claim Limitations

Petitioner contends that Chmielewski in combination with Cleveland meets the above-quoted

limitation of claim 1. Pet. 17-19. In particular, Petitioner asserts that Cleveland discloses "a pre-loaded, generally linear arm that is flexible and having first and second opposed ends, wherein the first end of said flexible arm engages and is displaced over the soil as the header moves above the soil." *Id.* at 18. Petitioner relies upon Cleveland's "swing member 20, collarlike hub 22, stub 24, helical spring 38, and bearing member 44." *Id.* (citing Ex. 1003 ¶ 48; Ex. 1007). Petitioner asserts that the "first end engages the soil, and the second end, which is opposed to the first end, is coupled to a sensor." *Id.* at 18 (citing Ex. 1007, 4:39-54; Ex. 1003 ¶ 48).

Petitioner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to "replace each of the contact sensors 236, 237 of Chmielewski with the sensor arm ["swing member 20, collarlike hub 22, stub 24, helical spring 38, and bearing member 44" (id. at 45)] of Cleveland." *Id.* at 18-19. Petitioner asserts that such replacement "would have amounted to nothing more than a simple substitution of one known element for another." *Id.* at 45 (citing Ex. 1003 ¶ 136). Petitioner contends that one of ordinary skill in the art would have understood that such replacement would predictably result in "improved flexibility, due to the helical spring, yet would have still been sufficiently rigid so as to allow for the accurate measurement of the header height" and have appreciated "the benefits of improved flexibility

. . . for traversing over foreign objects without breaking or being damaged." *Id.* (citing Ex. 1003 ¶ 136).

Additionally, Petitioner argues that it would have been obvious to:

> utilize the hinge bolt 30 and nut 36 disclosed in Cleveland (Ex. 1007, 2:46-55) to attach the potentiometers 235a and 235b of Chmielewski to the swing member 20 of Cleveland such that the hinge bolt 30 extends through the potentiometers 235a and 235b, extends through an aperture formed within the mounting bracket 18, and is attached thereto by way of a nut 36.

Pet. 45-46 (citing Ex. 1003 ¶ 137). Petitioner contends that "[i]t would have been obvious to have the hinge bolt 30 and nut 36 disclosed in Cleveland secure the potentiometers 235a and 235b of Chmielewski so that the potentiometers could read the movement of Cleveland's swing member 20." *Id.* at 46 (citing Ex. 1003 1 137). Petitioner asserts that "[t]his connection is mechanical in nature and would have been accomplished according to known methods to yield the predictable result of sensing the angular deflection of an arm" and "within the technical grasp of a [person of ordinary skill in the art] to modify the potentiometers of Chmielewski to fit with the sensor arm of Cleveland." *Id.* (citing Ex. 1003 ¶¶ 137-38).

Patent Owner asserts that the above-recited limitation of claim 1 "refers to the arm being coupled to 'the header' which, referring to the antecedent basis, is the 'non-cut crop' head recited in the preamble." Resp. 34 (citing Ex. 2117 ¶ 39). Patent Owner contends that "Chmielewski does not meet the requirement that the arm be coupled to the non-cut crop head because, as noted above, Chmielewski does not disclose a non-cut crop head." *Id.* (citing Ex. 2117 ¶ 39). Patent Owner asserts that "Cleveland does not remedy the defect in Chmielewski because the Cleveland apparatus has nothing to do with a combine or any kind of head, non-cut or otherwise. The assembly in Cleveland is, thus, not coupled to a non-cut crop head." *Id.* (citing Ex. 2117 ¶ 39).

Patent Owner's above assertion is unpersuasive because Patent Owner, again, argues the references individually, failing to account for the fact that Petitioner relies on Lofquist as disclosing a non-cut crop header, not Chmielewski or Cleveland. This is essentially the same argument that we rejected in the context of considering Patent Owner's argument directed to the preamble of claim 1. Thus, even though we agree with Patent Owner that the recitation of "the header" in this limitation of claim 1 refers back to the non-cut crop header recited in the preamble, Patent Owner's argument fails to respond to the combination proposed by Petitioner, which relies on Lofquist as disclosing such a header.

Additionally, Patent Owner asserts that "the arm assembly of Cleveland does not meet the requirement that 'the first end of said flexible arm engages and is displaced over the soil as the header moves above the soil.'" Resp. 34 (citing Ex. 2117 ¶ 40). Specifically, Patent Owner contends that the Cleveland apparatus "detects the lateral position of the probe and therefore is not 'displaced over the soil as the header moves above the soil.'" *Id.* (citing Ex. 2117 ¶ 40; Ex. 1007, 1:61-66, 5:17-21). Thus, Patent Owner contends that the combination of Chmielewski and Cleveland does not "meet the requirement of a flexible arm coupled to a non-cut crop header." *Id.* at 35.

In its Reply, Petitioner asserts that "Cleveland's FIGS. 6 and 7 illustrate that the arm is 'displaced over the soil' during use, regardless of whether the arm is used to detect lateral movement or some other movement." Reply 5 (citing Ex. 1007, Figs. 6-7; Pet. 17-19).

We agree with Patent Owner that Cleveland detects the lateral position of the probe, but we find that, as presented by Petitioner, Cleveland's probe is displaced over the soil during use because it is displaced (or moved out of position) over the soil during use.[19] Pet. 18; *see, e.g.,* Ex. 1007, 4:5-13 ("If

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[19] Neither party proposed a construction for the term "displaced" either before or after our Decision to Institute and we did not expressly construe the term in

that Decision. We understood implicitly that Petitioner's argument and evidence relied upon the plain and ordinary meaning of "displaced" and Patent Owner agreed generally that claim terms are given their ordinary and customary meaning unless inconsistent with the specification. Resp. 17-18. The '395 patent's use of the term "displaced" (as well as the noun form—"displacement") is consistent with the term's plain and ordinary meaning of "moved out of position." *See* Ex. 3001, THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE (2011) *retrieved from* http://search.credoreference.com/content/entry/hmdictenglang/displace/0 (last visited Aug. 31, 2016) (defining "displace" as "[t]o move, shift, or force from the usual place or position") (Although this dictionary is dated after the '395 patent's priority date, there is no indication that the meaning of "displaced" changed during that time period.). For example, the '395 patent discloses an "angular displacement detector" that "detects angular displacement of the arm as it is pivotally *displaced* upon encountering terrain irregularities and obstacles in the soil." Ex. 1001, 2:27-30 (emphasis added); *see also id.* at 6:45-49 ("Because coiled spring 114 provides this protection for the sensor arm 96 in the event the combine is *displaced* rearwardly, elongated, linear coiled spring 98 is unnecessary in the embodiment shown in FIGS. 7 and 8 to provide this protection against damage to the sensor arm 96." (emphasis added)). Our additional explanation

vehicle 10 moves to the left from its position shown in FIG. 1, a result is obtained such as shown in FIG. 6. As the vehicle begins to move to the left, bearing member 44 begins to ride up on the slanted surface of furrow 78. Spring 38 exerts a downward force on bearing member 44, but the slanted side of furrow 78 causes this downward force to have a lateral component in the direction of the deepest portion of the furrow. *This lateral force causes bearing member 44 to roll towards the deepest portion of the furrow* . . . ." (emphasis added)).

In light of the evidence presented by Petitioner, we find that Cleveland discloses "a pre-loaded, generally linear flexible arm . . . having first and second opposed ends, wherein the first end of said flexible arm engages and is displaced over the soil as the . . . [vehicle] moves above the soil." With respect to the arm being "coupled to a forward portion of the header" and a "header mov[ing] above the soil," we are persuaded that the combination of

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here does not "change theories in midstream;" rather, it explains our understanding of the term as applied in our Decision to Institute. *See SASInstitute*, 825 F.3d at 1351 ("What concerns us is not that the Board adopted a construction in its final written decision, as the Board is free to do, but that the Board 'change[d] theories in midstream.'" (quoting *Belden Inc. v. Berk-TekLLC*, 805 F.3d 1064, 1080 (Fed. Cir. 2015)).

Lofquist[20] and Chmielewski, as modified by the addition of Cleveland's teachings, meets these elements of claim 1, as explained by Petitioner.

b) Reason to Combine

Petitioner's arguments and evidence as to why one of ordinary skill in the art would have been prompted to combine the teachings of Lofquist, Chmielewski, and Cleveland to meet the aforementioned limitation concerning "pre-loaded, generally linear flexible arm" are discussed above. *See supra* pages 33-34 (Section III.B.4.a.ii.a)). Patent Owner raises several arguments as to why one of ordinary skill in the art would not have been prompted to combine the teachings of Chmielewski and Cleveland as proposed by Petitioner. Resp. 40-52. We address each in turn.

1. Application of KSR

First, Patent Owner again argues that obviousness is limited to situations where elements can *only* be combined in a finite number of ways with a reasonable expectation of success. *Id.* at 40-41. Patent Owner contends that Petitioner "has provided no argument or evidence that there were

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[20] Notably, the location proposed by Petitioner for mounting the sensor to Lofquist is "a forward portion of the header." Pet. 16 (showing Petitioner's annotated version of Lofquist's Figure 8).

only a finite number of ways to devise a height sensor for a plastic corn head and that the combination of the Cleveland probe with Chmielewski was one such solution." *Id.* at 51-52. Rather, Patent Owner contends that Petitioner's expert, Mr. Lucas, testified that there are "many different ways" to attach the Cleveland arm to Chmielewski. *Id.* at 52 (citing Ex. 2115, 11819). Thus, Patent Owner asserts that "[w]hen possible solutions are not limited to a small number in light of the art, a finding of obviousness is improper." *Id.* (citing *Ortho-McNeil,* 520 F.3d at 1364; *Rolls-Royce, PLC v. United Techs. Corp.,* 603 F.3d 1325, 1339 (Fed. Cir. 2010)).

We previously addressed Patent Owner's misinterpretation of *KSR* as applied to the evidence and arguments raised by Petitioner in the context of this case.[21] In short, Petitioner does not rely upon an "obvious to try" rationale as discussed in *KSR,* and for the additional reasons explained above, *supra* pages 28-29 (Section III.B.4.a.i.c), Patent Owner's interpretation and application of *KSR* is not persuasive.

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[21] As with *Ortho-McNeil, Rolls-Royce* addresses an argument based on an "obvious to try" rationale. *Rolls-Royce,* 603 F.3d at 1339.

2. Operability

Second, Patent Owner contends that one of ordinary skill in the art would not have had a reasonable expectation of success in combining the teachings of the references because

> the Cleveland probe 14 combined with the Chmielewski potentiometers 236, 237 could not function as 'a preloaded, generally linear flexible arm' (claim 1) or 'an elongated, linear shaft' (claim 27) coupled to a rotation sensor and mounted at the tip of a corn head crop divider using the existing hardware.

Resp. 41. Specifically, Patent Owner contends that such combination would not be operable. Patent Owner provides four reasons as to why such combination would be inoperable.

a. Cleveland as a Height Sensor

Patent Owner contends that Cleveland is incapable of functioning as a vertical height sensor with respect to the direction of travel 80 because the hub 22 (to which the stub 24 and spring 38 are rigidly connected) can only pivot around the axis of bolt 30 and cannot pivot perpendicularly to the axis which it would need to do to indicate vertical position.

Id. at 43.

In its Reply, Petitioner agrees with Patent Owner that Cleveland's flexible arm rotates perpendicularly to the direction of travel, and that it "would need to rotate parallel to the direction of travel when combined with Lofquist/Chmielewski." Reply 9 (citation omitted). Nonetheless, Petitioner contends that this modification is "inconsequential" because it is within the level of skill possessed by one of ordinary skill in the art.[22] *Id.*

The Matousek Declaration, submitted by Patent Owner, reflects that rotating the probe assembly of Cleveland 90 degrees such that the arm rotates parallel to the direction of travel would have

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[22] Patent Owner asserts that we should not consider Petitioner's position with respect to rotating the probe assembly of Cleveland because such position should have been set forth in the Petition rather than Petitioner's Reply. Paper 33 (challenging portions of pages 9 and 10 of Petitioner's Reply). Petitioner contends that its argument responds to the position set forth in Patent Owner's Response and Mr. Matousek's Declaration. Paper 37. We discuss Patent Owner's position and Mr. Matousek's Declaration, in particular the same paragraph of which Patent Owner relies upon in its Response, *infra.* In short, Patent Owner and Mr. Matousek raised a possible concern with the combination and proposed a simple solution that we determine would have been obvious to one of ordinary level of skill in the art at the time of the invention.

been well within the level of ordinary skill in the art at the time of the invention. In particular, paragraph 81 of the Matousek Declaration explains, in detail, precisely how such modification would be accomplished. While Mr. Matousek's level of skill is above the level of ordinary skill in the art (see Ex. 2117 ¶¶ 4-11 (discussing Mr. Matousek's education and experience)), we determine that the modification he proposes is not.[23] It is of little import that it was Patent Owner's Declarant, and not Petitioner's, who put forth this evidence, showing how a simple modification could be made when combining the teachings of Cleveland and Chmielewski, into the record. Once Patent Owner put the evidence into the record, Petitioner was justified in relying upon it, as are we in reaching our Decision here.[24] Thus, based

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[23] Neither Patent Owner nor Mr. Matousek asserts that the modification he proposes is beyond the level of ordinary skill in the art at the time of the invention.

[24] Patent Owner argues that Petitioner improperly relies upon such modification in its Reply without presenting the position in its Petition or accompanying expert declaration. Paper 33. We disagree. Petitioner's argument was properly made in response to Mr. Matousek's testimony, as discussed above, and Patent Owner's argument based thereon, explaining a simple modification to rotate the probe assembly of Cleveland 90 degrees such that the arm rotates parallel to the

on Mr. Matousek's testimony, we determine that it was a simple adjustment that was within the ordinary level of skill in the art and would have been recognized as such and performed by one of ordinary skill in the art, at the time of the invention, to detect changes in elevation in the direction of a vehicle's movement[25].

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direction of travel when combined with the teachings of Chmielewski.

[25] Although we address this issue *infra,* the reason Mr. Matousek gives as to why one of ordinary skill in the art would not have been motivated to make this modification is because it would "destroy the intended purpose of Cleveland"—to detect the lateral position of a vehicle with respect to a furrow. Ex. 2117 1 81. First, the purpose and intended use of the sensor in Cleveland, however, are not the focus of the inquiry where the teachings thereof are being applied in combination to the teachings of other prior art references. In other words, Petitioner does not propose modifying Cleveland in and of itself; rather, the proposed modification is with respect to incorporating Cleveland's teachings into the header of Lofquist and header height control system of Chmielewski. Second, we disagree that Petitioner's proposed modification would defeat Cleveland's purpose because after modification Cleveland's probe assembly would still be used to detect relative motion in the plane in which it operates. In other words, the purpose of the probe assembly in Cleveland is to detect

b. Cleveland's Ability to Bend

Next, Patent Owner contends that because Cleveland is designed to bend, it cannot function as a height sensing arm. Resp. 44. Specifically, Patent Owner asserts:

If probe 14 is designed to be bent rearwardly, the variation in the bend of spring 38 would change the amount of rotation the potentiometer measured and prevent the potentiometer from accurately detecting the height of the implement above the ground. It would be impossible to tell how much of the rotation perceived by the potentiometer was due to bend in the spring versus change in elevation.

Id. at 44 (citing Ex. 2117 ¶ 83).

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elevation changes (i.e., from the deepest portion of the furrow (see Ex. 1007, 4:39-54)), and that purpose remains unchanged when the teachings of Cleveland's probe assembly are combined with those of Chmielewski and DPC because the sensor arm/probe assembly still detects elevation changes. Third, even if rotating the probe assembly of Cleveland would negate Cleveland's purpose (which we find it would not), we disagree that such result would have led one of ordinary skill in the art *not* to rotate Cleveland's probe assembly when combining those teachings with the teachings of Lofquist and Chmielewski.

In its Reply, Petitioner asserts that claim 1 recites a "flexible" arm and that Cleveland's arm is flexible.[26] Reply 15-16 (citing Pet. 17-19). Petitioner contends that "to the extent the flexibility of the spring impacted the height calculations, the height control system would simply be calibrated to account for that impact." *Id.* at 17 (pointing to Chmielewski's disclosure that "[r]outine calibration is extremely important due to . . . variations in the combine, header and sensors that occur during and after each use in the field" (quoting Ex. 1006, 9:34-47)).

First, as discussed above, under either party's construction of "flexible," Cleveland's spring 38 is flexible because it is "able to bend" (as proposed by Patent Owner) and "made to bend" (as proposed by Petitioner). *See supra* pages 8-9 (Section II.A. 1.). Patent Owner explicitly states that "Cleveland is designed to bend." Resp. 44. Accordingly, we find that Cleveland's spring 38 is "flexible."

Second, to the extent that different degrees of flexibility impact calculating the height of a header, we agree with Petitioner that Chmielewski teaches calibrating a header height control system. Ex. 1006, 9:34-47. Specifically, we agree that it was within the level of ordinary skill in the art to perform such calibrations, and one of ordinary skill in the art

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[26] Petitioner notes that claim 27 does not recite a "flexible" arm, but it does not exclude one either. Reply 16.

would have been aware that such calibrations would include consideration of the degree of flexibility of the spring employed in Cleveland's flexible arm. *See* Reply 17.

c. Mounting to Bolt 30

Patent Owner contends that it would not have been obvious to one of ordinary skill in the art to mount Cleveland's swing member 20 to Chmielewski's potentiometers 235a and 235b using Cleveland's bolt 30 and nut 36 "because the potentiometer needs to rotate and hinge bolt 30 does not rotate. Rather than bolt 30 rotating, the hub 22 attached to spring 38 rotates around bolt 30." Resp. 44-45 (citing Ex. 2117 ¶ 84; Ex. 1007, 2:52-53). Patent Owner relies upon Cleveland's teaching that bolt 30 is "rigidly secured to plate 18 by means of a nut 36." *Id.* (citing Ex. 1007, 2:54-56). Thus, because bolt 30 does not rotate, Patent Owner asserts that attaching potentiometers to it would not result in the generation of a rotation signal, resulting in an inoperable combination. *Id.* (citing Ex. 2117 ¶ 84). Patent Owner, however, states further that "[i]n order for bolt 30 to rotate, . . . Cleveland . . . would have to be modified to have a bushing through plate 18 or a pair of bearings to allow bolt 30 to rotate independently of plate 18." *Id.* (citing Ex. 2117 ¶ 84).

In its Reply, Petitioner points to Cleveland's teaching that "[t]he particular pivotal mechanism used for swing member 20 *may vary without*

detracting from the invention, but it must be sturdily constructed." Reply 18 (quoting Ex. 1007, 2:56-58). Petitioner asserts that the combination, as proposed in the Petition, did not require that the attachment via bolt 30 must be rigid. *Id.* Rather, Petitioner contends that a person of ordinary skill in the art is not an "automaton" and would understand that additional modifications may need to be made, such as adding a bushing. *Id.*

Our consideration of this issue is very similar to our consideration of Patent Owner's argument that Cleveland's probe assembly would need to be rotated 90 degrees to detect changes in height in a direction parallel to the direction of travel. Specifically, Patent Owner's Response relies upon the Matousek Declaration, as noted above. Mr. Matousek testifies that "the configuration of the Cleveland probe assembly would have to be modified to provide a bushing through the plate 18 or a pair of bearings at each end of the bolt 30 so the bolt could freely rotate with the swing member independent of the plate 18." Ex. 2117 ¶ 84. As with our discussion of rotating Cleveland's probe assembly, it is of little import that it was Patent Owner's Declarant, and not Petitioner's, who put forth this evidence, showing how a simple modification could be made when combining the teachings of Cleveland and Chmielewski, into the record.[27] Once Patent Owner

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[27] Patent Owner argues that Petitioner improperly relies upon such modification in its Reply without presenting

put the evidence into the record, Petitioner was justified in relying upon it, as are we in reaching our Decision here. Additionally, neither Patent Owner nor Mr. Matousek asserts that this modification was outside the level of ordinary skill in the art, or that such modification posed some sort of difficulty in being performed. We determine that this modification is a simple adjustment that would have been recognized by one of ordinary skill in the art and would have been well within the level of ordinary skill in the art at the time of the invention.

d. Robustness and Size of Cleveland's Plate and Linkages

Patent Owner contends that "a height sensor for a corn head must withstand heavy abuse from corn stalks." Resp. 45-46 (citing Ex. 2116 ¶¶ 35, 69; Ex. 2117 ¶ 87)). Similar to the argument we addressed above, *see supra* pages 30-31 (Section III.B.4.a.i.c)), Patent Owner raises several arguments regarding the size and robustness of Cleveland's plates and linkages. *Id.* at 46-48.

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the position in its Petition or accompanying expert declaration. Paper 33. We disagree. Petitioner's argument was properly made in response to Mr. Matousek's testimony, as discussed above, and Patent Owner's argument based thereon, explaining a simple modification to allow bolt 30 to freely rotate independent of plate 18.

Petitioner raises the same arguments in response. *See* Reply 13-15.

As we previously concluded, Patent Owner has not identified any limitation in claim 1 that requires an explicit size or robustness for the plate and linkages. Further, we are persuaded by Petitioner's argument and evidence, and determine that modifying the size of Cleveland's plate and linkages to fit Lofquist's header was within the ordinary level of skill as defined above. *See KSR,* 550 U.S. at 421 ("A person of ordinary skill is also a person of ordinary creativity, not an automaton); *see also* Ex. 1003 ¶¶ 132-35.

3. The Combination of Chmielewski and Cleveland Would Render Each Reference Inoperable

Patent Owner's third argument as to why one of ordinary skill in the art would not have been prompted to combine the teachings of Chmielewski and Cleveland is because each reference would be rendered inoperable for its intended purpose. Resp. 48-51. With respect to Cleveland, Patent Owner contends that the probe assembly "would need to be rotated 90 degrees . . . . [to] allow swing member 20 to rotate with change in elevation." *Id.* at 49-50 (citing Ex. 2117 ¶ 81; Ex. 2115, 130-32). Patent Owner contends that, once rotated, Cleveland would be "unable to function for its intended purpose which

is sensing lateral position." *Id.* at 50 (citing Ex. 2117 ¶ 81). With respect to Chmielewski, Patent Owner asserts that "[i]f Cleveland's probe 14 was attached to Chmielewski with plate 18 perpendicular to the direction of travel as intended by Cleveland, Chmielewski's sensors 236 and 237 would necessarily only detect the lateral position of the header instead of changes in elevation." *Id.* at 51 (citing Ex. 2117[28] ¶ 81). Patent Owner contends that this would "destroy the intent, purpose and function of Chmielewski which is to control head height in response to elevation changes." *Id.* (citing Ex. 2117 ¶ 81).

Patent Owner's arguments are inapposite. With respect to Cleveland, we addressed this argument, in footnote 19 *supra,* as raised in the context of Mr. Matousek's Declaration. We reiterate, first, that the inquiry isn't whether applying a modification of Cleveland's teachings (by rotating the probe assembly 90 degrees) when combining with those of Chmielewski renders Cleveland inoperable for its intended purpose, because the structure being modified is being added to the teachings of Chmielewski, not Cleveland. Petitioner does not propose removing Cleveland's probe assembly, rotating it, and then placing it back onto Cleveland's vehicle. Thus, Patent Owner's assertion

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[28] Patent Owner's citation is to "Exhibit 11117" (underline added) which we understand to refer to Exhibit 1117."

is inapposite. Second, we disagree that Petitioner's proposed modification would defeat Cleveland's purpose because after modification Cleveland's probe assembly would still be used to detect relative motion in the plane in which it operates. In other words, the purpose of the probe assembly in Cleveland is to detect elevation changes (i.e., from the deepest portion of the furrow (see Ex. 1007, 4:39-54)), and that purpose remains unchanged when the teachings of Cleveland's probe assembly are combined with those of Chmielewski and DPC because the sensor arm/probe assembly still detects elevation changes. Third, even if rotating the probe assembly of Cleveland would negate Cleveland's purpose (which we find it would not), we disagree that such result would have led one of ordinary skill in the art *not* to rotate Cleveland's probe assembly when combining those teachings with the teachings of DPC and Chmielewski.

With respect to Chmielewski, Patent Owner's argument directed to Chmielewski is also inapposite because Petitioner acknowledges that Cleveland's probe assembly would have been rotated by one of ordinary skill in the art when combining the teachings of these references, and Petitioner does not propose mounting Cleveland's probe assembly so that it detects the lateral position (as opposed to the height) of Chmielewski's header.

Accordingly, Patent Owner's arguments with respect to this issue are unpersuasive to show that

one of ordinary skill in the art would not have been prompted to combine the teachings of Cleveland and Chmielewski, *as proposed by Petitioner.*

c) Summary

In the context of the evidence and arguments before us, we determine that the combination of Cleveland's teachings with those of the Lofquist/Chmielewski combination, discussed in considering the preamble of claim 1, discloses "a pre-loaded, generally linear flexible arm coupled to a forward portion of the header and having first and second opposed ends, wherein the first end of said flexible arm engages and is displaced over the soil as the header moves above the soil," as recited in claim 1. Further, we are persuaded that one of ordinary skill in the art would have been prompted to modify the Lofquist/Chmielewski combination to incorporate the teachings of Cleveland for the reasons explained by Petitioner (see *supra* pages 33-34 (Section III.B.4.a.ii.a)), thus, meeting the aforementioned limitation of independent claim 1. In particular, we agree with Petitioner that one of ordinary skill in the art would have been prompted to replace each of Chmielewski's contact sensors with Cleveland's sensor arm (1) as it was known to be a simple substitution of one known element for another, and (2) to achieve the predictable result of improved flexibility provided by Cleveland's sensor arm, the benefits of which permit traversing foreign objects without breaking or being damaged. Additionally, we

are persuaded by Petitioner's assertions that one of ordinary skill would have modified Cleveland's assembly by rotating it 90 degrees, when combining with Lofquist/Chmielewski, as well as modifying bolt 30 such that it would rotate with swing member 20, as explained by Mr. Matousek.

> iii. *"angular deflection sensing means coupled to the second end of said flexible arm for measuring a deflection of said flexible arm when the first end of said flexible arm encounters irregularities in the soil as the header moves above the soil and for providing a first signal representing the extent of deflection of said flexible and" [sic]*[29]

Petitioner contends that Chmielewski's potentiometers 235a and 235b disclose an angular deflection sensing means. Pet. 19 (citing Ex. 1006, 12:25-26; Ex. 1003 1¶51). In particular Petitioner explains that the potentiometers are a type of rotation sensor, and that they "measure the deflection of the ground contact sensors 236, 237 and

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[29] Patent Owner explains that "flexible and" is a typographical error that should read "flexible arm." Resp. 35 n.3. Petitioner agrees that "flexible and" is a typographical error. Pet. 19 n.3.

send 'a position signal 236, 237 [sic] representing the position of header 202 relative to ground 220.'" *Id.* (citing Ex. 1003 ¶ 51) (quoting Ex. 1006, 7:46-50) (other citations omitted).

Patent Owner contends that "[t]his limitation requires an angular deflection sensing means coupled to a flexible arm. 'Flexible arm' is repeated four times. . . . [but] Chmielewski does not disclose the required flexible arm." Resp. 35 (citing Ex. 2117 ¶ 45).[30] Additionally, Patent Owner asserts that this limitation refers to "the header," which means the "non-cut crop header," and Chmielewski does not disclose a non-cut crop header. *Id.* at 35-36 (citations omitted). Accordingly, Patent Owner asserts that "Chmielewski therefore does not meet the requirement of an angular deflection sensing means coupled to a flexible arm that deflects as the non-cut crop head moves above the soil." *Id.* (citing Ex. 2117 ¶ 45).

Patent Owner's argument reflects a misunderstanding of Petitioner's position. The discussions above, and at pages 19 to 20 of the Petition, address Chmielewski's teaching of potentiometers, which Petitioner argues, and we

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[30] It is unclear why Patent Owner asserts that Chmielewski fails to disclose a flexible arm when Patent Owner recognizes that Petitioner relies explicitly on Cleveland, not Chmielewski, for such teaching. Resp. 36 (citing Ex. 1003 1 49; Pet. 17-18).

agree, discloses an angular deflection sensing means. Patent Owner does not contest this point. As Patent Owner recognizes (*see* Resp. 35), Petitioner does not rely upon Chmielewski as disclosing a flexible arm. Petitioner's combination proposes replacing Chmielewski's ground contact sensors 236, 237 with the flexible arm of Cleveland. Pet. 18-19. We are persuaded by those arguments and reasons to combine, as discussed previously. Specifically, Petitioner explained that with respect to Cleveland's flexible arm, the "first end engages the soil, and the second end, which is opposed to the first end, is coupled to a sensor." *Id.* at 18. The point here simply is that Petitioner was not arguing that Chmielewski discloses the flexible arm or an angular deflection sensing means *coupled to* a flexible arm; rather, Petitioner argues that Chmielewski discloses an angular deflection sensing means and that the *combination* of Cleveland and Chmielewski's teachings discloses an angular deflection sensing means *coupled to* a flexible arm. Patent Owner's arguments are not commensurate in scope with the combination as proposed by Petitioner and, therefore, are unpersuasive.

In light of the discussion above, we find that Chmielewski's potentiometers are a type of rotation sensor and disclose an angular deflection sensing means. Additionally, we are persuaded that one of ordinary skill in the art would have been prompted to combine the teachings of Lofquist, Chmielewski, and Cleveland for the reasons presented previously

by Petitioner (see *supra* pages 33-34 (Section III.B.4.a.ii.a))), and as reiterated in our summary above *(see supra* pages 47-48 (Section III.B.4.a.iic))). Further, we determine that the combination of the teachings of Lofquist, Chmielewski, and Cleveland, discussed *supra,* meets the

> angular deflection sensing means coupled to the second end of said flexible arm for measuring a deflection of said flexible arm when the first end of said flexible arm encounters irregularities in the soil as the header moves above the soil and for providing a first signal representing the extent of deflection of said flexible [arm]

limitation of claim 1.

> *iv. "control means coupled to said header and said angular deflection sensing means and responsive to said first signal for raising or lowering the header in accordance with said first signal in maintaining the header a designated height above the soil, "*

Petitioner contends that "Chmielewski's automated header height system includes a 'control means' by way of the AHCS 216 and a hydraulic system that includes a hydraulic cylinder 206 that is

connected to a member 230 that is coupled to the header as shown in Figures 1A, 1B." Pet. 20 (citing Ex. 1003 ¶ 53; Ex. 1006, 1:24-26, 5:1-5). Petitioner explains the operation of AHCS 216 and its function to control the hydraulic system to maintain a desired header position. *Id.* at 20 (citations omitted). Petitioner asserts that "[t]he 'control means' includes the hydraulic cylinder 206, member 230, and AHCS 216, where the member 230 and hydraulic cylinder 206 are coupled to the header and the AHCS 216 is electronically coupled to the potentiometers 235a and 235b ('angular deflection sensing means')." *Id.* (citing Ex. 1003 ¶ 53; Ex. 1006, 7:46-50, 12:22-33).

Patent Owner argues that the above-quoted limitation of claim 1 "refers to 'said header'" and therefore "requires a control means coupled to a non-cut crop header as recited in the preamble." Resp. 36 (citing Ex. 2117 ¶ 47). Patent Owner contends that because Chmielewski discloses a cut crop header and not a non-cut crop header, "Chmielewski alone does not meet the requirement of a control means coupled to a non-cut crop header." *Id.* (citing Ex. 2117 ¶ 47). Patent Owner does not assert that Chmielewski fails to disclose a "control means," as recited in claim 1.

We find that Chmielewski discloses a control means, as recited in claim 1, for the reasons explained by Petitioner. Additionally, as we discussed with previous limitations, Petitioner does not rely upon Chmielewski as disclosing a non-cut crop header; rather, Petitioner relies upon Lofquist.

Thus, Patent Owner's argument that Chmielewski fails to disclose the above-quoted limitation, because Chmielewski does not disclose a non-cut crop header, is inapposite as it is not responsive to the combination of elements upon which Petitioner relies.

> v. *"wherein said flexible arm and angular deflection sensing means are attached to a head housing disposed on a forward portion of said combine and said head housing is comprised of polyurethane and includes a metal tip and a mounting bracket for attaching said metal tip to a forward end of said head housing, and wherein said mounting bracket further couples said flexible arm to a forward end of said head housing"*

Petitioner asserts that Lofquist discloses a head housing disposed on a forward portion of a combine, said head housing including a metal tip and a mounting bracket for attaching said metal tip to a forward end of said head housing. Pet. 21. Petitioner contends that Lofquist discloses that the head housing is made out of plastic. *Id.* Petitioner asserts that "[a] person of ordinary skill in the art . . . would have understood that polyurethane is a plastic, and any plastic would have provided the

same structural characteristics to the head housing, and therefore would have been interchangeable based on design choice." *Id.* (citing Ex. 1003 ¶ 56).

Patent Owner contends that "[t]his limitation requires a flexible arm attached to a polyurethane divider ('head housing')." Resp. 37 (citing Ex. 2117 ¶ 49). Patent Owner "does not dispute that . . . Lofquist discloses dividers made of plastic and that polyethylene and polyurethane are types of plastic." *Id.* (citations omitted). Patent Owner, however, contends that Lofquist "does not disclose a 'flexible arm' at all, let alone one that is coupled to the forward end of a divider as required by the claim." *Id.* at 37 (citing Ex. 2117 ¶ 49). Patent Owner does not contest Petitioner's position that polyurethane would have been interchangeable based on design choice.

Petitioner does not rely upon Lofquist as disclosing a flexible arm; Petitioner relies upon Cleveland for this teaching, as discussed *supra.* Thus, Patent Owner's argument is inapposite. With respect to the header housing material, Patent Owner does not contest Petitioner's position. We agree with Petitioner, and we are persuaded that it would have been an obvious matter of design choice to use polyurethane for the head housing. Accordingly, we determine that the teachings of Lofquist, Chmielewski, and Cleveland, combined for the reasons asserted by Petitioner (which we already

have found persuasive), meet the above-recited limitation of claim 1.

vi. Summary

As reflected in the detailed discussion above, we have reviewed Petitioner's arguments and evidence and Patent Owner's arguments and evidence directed to claim 1. We are persuaded that the elements of the claim are met by the combination of the teachings of Lofquist, Chmielewski, and Cleveland, and one of ordinary skill in the art would have been prompted to combine the teachings of these references in the manner recited in independent claim 1 at the time of the invention.

b. Claims 2-7 and 10

Petitioner contends that the combined teachings of Lofquist, Chmielewski, and Cleveland disclose the elements of claims 2-7 and 10, and also contends that one of ordinary skill in the art would have been prompted to combine them in the manner claimed. *See* Pet. 21-26.

Patent Owner does not raise a separate argument contesting the obviousness of dependent claims 2-7 and 10. *See generally* Resp.

Claims 2-7 and 10 depend from claim 1. We have reviewed Petitioner's arguments and evidence directed to claims 2-7 and 10. We are persuaded that the elements of the claims are met by the

combination of the teachings identified by Petitioner on pages 21 to 26 of the Petition, and, for the reasons articulated by and evidence presented by Petitioner (pages 41 to 49 of the Petition), that the combination of Lofquist, Chmielewski, and Cleveland would have rendered the subject matter of these claims obvious to one of ordinary skill in the art at the time of the invention.

c. Claim 27

i. "For use on a plastic non-cut crop header housing disposed on a forward portion of a combine used in the harvesting of crops, said header housing have a tip mounted to a forward end thereof by means of a mounting bracket, an arrangement for determining the height of the header housing above the soil as the combine traverses a field, said arrangement comprising"

Petitioner contends that Lofquist and Chmielewski disclose the elements of claim 27's preamble "through the disclosure of a plastic gathering point, metal tip, and bracket as disclosed in Lofquist and the automated header height system disclosed in Chmielewski" and for the reasons explained at pages 15 to 17 and 21 of the Petition. Pet. 38 (citing Ex. 1003 ¶ 116).

Patent Owner contends that "there is no disclosure between the three references[31] of an apparatus capable of determining the height of a non-cut crop head above the soil." Resp. 38 (citing Ex. 2117 ¶¶ 32-35, 52). In particular, Patent Owner argues that Chmielewski discloses a "cut crop head, not a non-cut crop head," and Lofquist "does not disclose anything about determining the height of the divider above the soil." *Id.* (citations omitted).

In its Reply, Petitioner contends that the preamble of claim 27 is non-limiting, for the same reasons discussed in the context of addressing the preamble of claim 1. *See* Reply 2-4 (addressing claims 1 and 27). Petitioner asserts that even if the preamble is limiting, the elements recited therein are disclosed by the references relied upon. *Id.* at 4.

The same reasoning and analysis we discussed in the context of the preamble of claim 1 applies to the preamble of claim 27, and we incorporate our discussion thereof here. In summary, the preamble "[f]or use on" recites an intended use, albeit a very narrow intended use because of the structural details provided for the header. The body of claim 27, like the body of claim 1, recites "the header" in several instances. *See id.* at 10:1-22 (including the recitation of "the plastic header

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[31] Patent Owner refers to "DA" as one of the "three references" mentioned in its discussion of the above limitation of claim 27. Resp. 27 (heading). "DA" is a reference in IPR2015-00898, but is not at issue in this proceeding.

housing"). Each of these instances relies upon the "plastic non-cut crop header housing" recited in the preamble for antecedent basis. Accordingly, for the same reasons we explained in the context of considering the preamble of claim 1, the recitation of "the header," "the header housing," and "the plastic header housing" in the body of claim 27 each refer to the "plastic non-cut crop header housing" recited in the preamble of the claim, and are, thus, limited thereto.

Nonetheless, we determine that Petitioner has shown that each of the elements of the preamble are met by the proffered combination of the teachings of Lofquist and Chmielewski. Additionally, Patent Owner's argument that none of these references teaches all of the elements *in combination* is essentially an argument that none of the references *anticipates* the claimed invention. The ground upon which we instituted, however, is obviousness in light of a combination of the teachings of these references. Thus, that none of the references *individually* discloses each of the elements is inapposite. *See In re Keller,* 642 F.2d at 426; *In re Young,* 927 F.2d at 591.

ii. "a rotation sensor disposed in a lower, forward portion of the header;"

Petitioner asserts that Chmielewski teaches a rotation sensor "through the disclosure of

potentiometers 235a and 235b" and for the reasons explained at pages 19 and 20 of the Petition. Pet. 38. As discussed previously, Petitioner contends, and we find, that a potentiometer is a type of rotation sensor. Pet. 18 (citing Ex. 1003 1¶ 51).

Patent Owner asserts that Chmielewski alone does not disclose a rotation sensor coupled to a non-cut crop header and that Chmielewski's potentiometers are not "disposed in a 'lower, forward portion of the header.'" Resp. 38.

The arguments presented on this limitation are essentially the same as those presented with respect to the "angular deflection sensing means" limitation of claim 1. *See supra* pages 48-50 (Section III.B.4.a.iii.). The point we made there is that Petitioner relies upon a combination of the teachings of Lofquist, Chmielewski, and Cleveland for the entirety of this limitation, including the phrase "disposed in a lower, forward portion of the header."[32] Petitioner relies on Chmielewski specifically for the "rotation sensor" portion of this limitation. Thus, in light of the discussion with respect to "angular deflection sensing means" as recited in claim 1, and the arguments and evidence presented by Petitioner with respect to claim 27, we determine that Petitioner's combination of the

[32] Notably, the location proposed by Petitioner for mounting the sensor to Lofquist is "a lower, forward portion of the header." Pet. 16 (showing Petitioner's annotated version of Lofquist's Figure 8).

teachings of Lofquist, Chmielewski, and Cleveland corresponds properly to "a rotation sensor disposed in a lower, forward portion of the header," as recited in claim 27.

> *iii. "an elongated, linear shaft having first and second opposed ends, wherein said first end is coupled to said rotation sensor and said second end engages the soil, and wherein said shaft rotationally displaces said rotation sensor as the second end of said shaft engages and passes over irregularities in the soil; and"*

Petitioner asserts that Cleveland discloses this limitation "by way of its swing member 20, collarlike hub 22, stub 24, helical spring 38, and bearing member 44." Pet. 38. Petitioner contends that

> "a [s]pring 38 and swing member 20 together form an elongated member," as shown in Figure 2. The elongated member is elongated, linear and has first and second ends. The second end of the elongated member is a bearing member 44. When combined with the potentiometers 235a and 235b of Chmielewski, the first end of the elongate member is coupled to the potentiometers 235a and 235b and the bearing member 44 end engages the soil. The elongate member

> rotationally displaces the potentiometers 235a and 235b of Chmielewski when the bearing member 44 of the elongate member passes over the irregularities in the soil.

Id. at 39 (citing Ex. 1007, 2:46-49, 2:62-63, 2:67-74, 4:39-54; Ex. 1003 ¶ 119). Petitioner further explains that it would have been obvious to replace each contact sensor 236, 237 of Chmielewski with the sensor arm of Cleveland, for the reasons discussed previously. *Id.*

Patent Owner asserts that this limitation requires "a linear shaft having a first end coupled to a rotation sensor which it rotationally displaces as the opposite end of the shaft engages the soil." Resp. 39. Patent Owner contends that because Cleveland is configured to detect lateral position only, "the arm of Cleveland does not rotationally displace a rotation sensor to which it is coupled." *Id.* (citing Ex. 2117 ¶¶ 56, 78).

We determine that the combination of teachings proposed by Petitioner meet this element as explained by Petitioner. Patent Owner's argument is directed toward Cleveland in an unmodified state and does not address the combination of Cleveland's teachings with those of Chmielewski. Accordingly, we determine that Petitioner's combination of the teachings of Chmielewski and Cleveland discloses

> an elongated, linear shaft having first and second opposed ends, wherein said first end is coupled to said rotation sensor and said second end engages the soil, and wherein said shaft rotationally displaces said rotation sensor as the second end of said shaft engages and passes over irregularities in the soil[,]

as recited in claim 27.

> *iv. "a flange connecting said rotation sensor to the mounting bracket for mounting said rotation sensor on a lower portion of the forward end of the plastic header housing, wherein said mounting bracket includes a strap and a bracket respectively disposed on lower and upper surfaces of the header housing and connected together by at least one nut and bolt combination."*

Petitioner contends that Loquist discloses a "mounting bracket including a strap and a bracket respectively disposed on lower and upper surfaces of the header housing and connected together by at least one nut and bolt combination through the disclosure of a bracket, plate, nuts, and bolts" for the reasons explained at page 16 of the Petition. Pet. 40. Petitioner asserts that Cleveland "meets the limitation of a flange by way of a mounting plate 18"

for the reasons explained at pages 31 to 32 of the Petition. *Id.*

Patent Owner contends that this limitation "requires that the flange connect 'said rotation sensor' to the mounting bracket" but "Cleveland does not disclose a rotation sensor, only an apparatus capable of detecting lateral position." Resp. 40 (citing Ex. 2117 ¶¶ 56, 78). Patent Owner also asserts that Lofquist does not disclose a rotation sensor. *Id.*

Petitioner's discussion of this limitation focuses on the "mounting bracket," and its components, as well as the "flange." Pertinent to Patent Owner's contention, however, Petitioner does not contend that Lofquist or Cleveland discloses a "rotation sensor." Rather, Petitioner relies upon Chmielewski for this teaching as explained repeatedly above. Thus, Patent Owner's argument that neither Lofquist nor Cleveland discloses a rotation sensor is inapposite. For the reasons explained by Petitioner, we determine that the proffered combination of Lofquist and Cleveland corresponds properly to a mounting bracket, and its components, as well as a flange, as recited in the above limitation of claim 27.

d. Claims 28 and 34

Petitioner contends that the combined teachings of Lofquist, Chmielewski, and Cleveland meet the elements of claims 28 and 34, and also

contends that one of ordinary skill in the art would have been prompted to combine them in the manner claimed. *See* Pet. 40-41.

Patent Owner does not raise a separate argument contesting the obviousness of dependent claims 28 and 34. *See generally* Resp.

Claims 28 and 34 depend from claim 27. We have reviewed Petitioner's arguments and evidence directed to claims 28 and 34 and determine, for the reasons articulated and evidence presented by Petitioner, that the combination of Lofquist, Chmielewski, and Cleveland would have rendered the subject matter of these claims obvious to one of ordinary skill in the art at the time of the invention.

e. Conclusion of Obviousness

We have considered Petitioner's evidence and argument and determine that the combination of Lofquist, Chmielewski, and Cleveland meets the limitations of claims 1-7, 10, 27, 28, and 34, and that one of ordinary skill in the art would have had reason, with rational underpinning, for combining the teachings of these references. We have considered Patent Owner's arguments to the contrary and determine that they are unpersuasive. The parties do not introduce or rely on objective indicia of nonobviousness. After weighing the evidence, we conclude that Petitioner has shown, by a preponderance of the evidence, that claims 1-7, 10,

27, 28, and 34 would have been obvious over Lofquist, Chmielewski, and Cleveland.

C. Obviousness of Claims 8, 9, and 29-33 over Lofquist, Chmielewski, Cleveland, and Agness

Petitioner asserts that the combination of the teachings of Lofquist, Chmielewski, Cleveland, and Agness would have rendered obvious the subject matter of claims 8, 9, and 29-33 to one of ordinary skill in the art at the time of the invention. Pet. 49-56.

1. Agness

Agness teaches "an automatic height control system for a crop harvester having a vertically moveable crop-gathering unit." Ex. 1008, 1: 12-14. Agness explains that each of its height sensing units includes reed switches 70. *See id.* at 4:31-32. Agness's Figure 3 is reproduced below:

Agness's Figure 3 "is an enlarged side elevational view of a height sensor . . . attached to [a] crop-gathering unit of [a] combine[.]" *Id.* at 2:5962. Agness teaches:

> Each of the height sensing units includes a short shaft 52 which is pivotally secured in a position directly below the horizontal leg of the right-angle member 44 by a pair of spaced straps 54 . . . . A plurality of reed switches 70 are clamped between the legs of an aluminum switch mounting clip 72 which is bolted to the bottom of the guard 48 . . . . [T]he reed switches 70 are each enclosed in an envelope which protects them from dust, moisture or any other elements which may affect their operation.

Id. at 3:59-4:30.

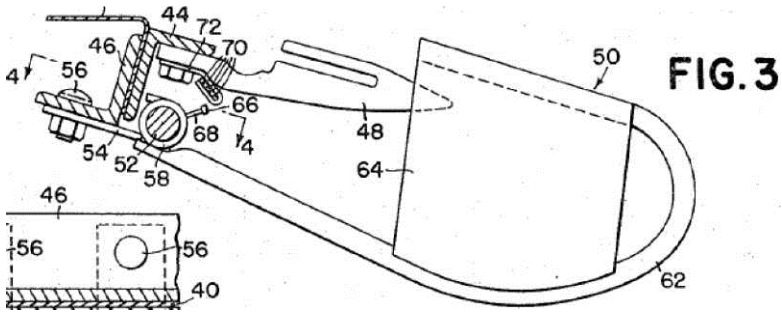


FIG. 3

2. Discussion

Claims 8 and 9 each depend, directly or indirectly, from independent claim 1. Ex. 1001, 8:8-

13. Claims 29-33 each depend, directly or indirectly, from independent claim 27. *Id.* at 10:28-42. Petitioner identifies where the elements of these claims are disclosed by the references, and why such elements would have been obvious to combine to one of ordinary skill in the art at the time of the invention. Pet. 49-56. In particular, Petitioner relies upon Agness for its teaching of switch mounting clip 72, which Agness describes, at least in-part, as an "envelope," that encloses reed switches 70 to protect the switches from elements that may affect their operation. *See, e.g., id.* at 50. Petitioner asserts several reasons as to why one of ordinary skill in the art would have sought to combine the teachings of Agness's switch mounting clip and plate for attaching said clip with the teachings of Lofquist, Chmielewski, and Cleveland, including "to protect the sensors disclosed in Chmielewski from the dirt, dust, and other debris that may affect the performance of the sensor." *Id.* at 55.

Patent Owner does not raise a separate argument contesting the obviousness of dependent claims 8, 9, and 29-33. *See generally* Resp.

3. Conclusion of Obviousness

We have considered Petitioner's evidence and argument and determine that Petitioner's proffered combination of Lofquist, Chmielewski, Cleveland, and Agness meets the limitations of claims 8, 9, and 29-33, and that one of ordinary skill in the art would

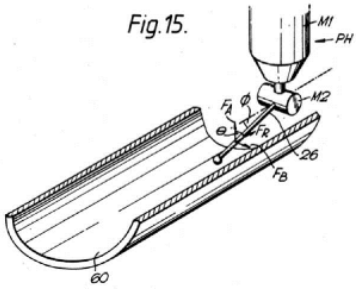
have had reason, with rational underpinning, for combining the teachings of these references. Specifically, we agree with Petitioner's identification of the factual teachings of the references and reasons as to why one of ordinary skill in the art would have combined the teachings as proposed by Petitioner. Patent Owner has not raised any argument directed to these dependent claims, aside from the arguments directed to claims 1 and 27, which arguments we considered, and rejected as unpersuasive, above. The parties do not introduce or rely on objective indicia of nonobviousness. After weighing the evidence, we conclude that Petitioner has shown, by a preponderance of the evidence, that claims 8, 9, and 29-33 would have been obvious over Lofquist, Chmielewski, Cleveland, and Agness.

D. Obviousness of Claim 11 over Lofquist, Chmielewski, Cleveland, and McMurtry

Petitioner asserts that the combination of the teachings of Lofquist, Chmielewski, Cleveland, and McMurtry would have rendered obvious the subject matter of claim 11 to one of ordinary skill in the art at the time of the invention. Pet. 56-59.

1. McMurtry

McMurtry teaches "a method of and apparatus for scanning the surface of a workpiece." Ex. 1009, 1:9-10. McMurtry's Figure 15 is reproduced below:



McMurtry's Figure 15 shows "a further scanning operation with a mechanical stylus in which strain gauges are used on the stylus to determine stylus bending." *Id.* at 6:1-4. McMurtry explains:

> the probe head PH is positioned so that point 28 lies on the axis of the bore 60, and the motors M1 and M2 are driven so as to bring the stylus 26 into contact with the surface of the bore 60. A force F*D* is determined as the desired resultant force on the stylus. The torque applied to the stylus by each of the motors M1 and M2, which will move the stylus around the surface of the bore, and will cause a force F*D* to act on the stylus, is estimated, and the current fed to the motors are then varied to as to [sic] generate this torque.

Id. at 14:12-22.

2. Discussion

Claim 11 depends from dependent claim 10, and further recites "wherein said calibration means includes an adjustable mounting arrangement for rotationally displacing said angular deflection sensing means so that said flexible arm engages the soil when in said full down position." Ex. 1001, 8:17-21.

Petitioner identifies where the elements of claim 11 are disclosed by the references or why such elements would have been obvious to one of ordinary skill in the art. Pet. 57-59. In particular, Petitioner asserts that Chmielewski teaches generally "calibration means." *Id.* at 57. Petitioner also relies upon McMurtry as teaching "an adjustable mounting relationship." *Id.* Petitioner asserts that one of ordinary skill in the art would have sought to combine McMurtry's teaching of an adjustable mounting arrangement with Chmielewski's "calibration means," because it "is an obvious design choice for calibration once a mounting bracket is used to couple a height sensor to a crop header." *Id.* at 58 (citing Ex. 1003 ¶ 179). Petitioner contends that "[a] sensing arm calibration means in a workpiece scanning device, as disclosed in McMurtry, would have led to the predictable variation of a sensing arm calibration means in a header height control system." *Id.* at 58-59 (citing Ex. 1003 ¶ 179).

Patent Owner's Response does not raise any argument directed to dependent claim 11. *See generally* Resp.

3. Conclusion of Obviousness

We have considered Petitioner's evidence and argument and determine that the combination of Lofquist, Chmielewski, Cleveland, and McMurtry meets the limitations of claim 11, and that one of ordinary skill in the art would have had reason, with rational underpinning, for combining the teachings of these references. Specifically, we agree with Petitioner's identification of the factual teachings of the references and reasons as to why one of ordinary skill in the art would have combined the teachings as proposed by Petitioner. Patent Owner has not raised any argument directed to dependent claim 11, aside from the arguments directed to claim 1, which arguments we considered, and rejected as unpersuasive, above. The parties do not introduce or rely on objective indicia of nonobviousness. After weighing the evidence, we conclude that Petitioner has shown, by a preponderance of the evidence, that claim 11 would have been obvious over Lofquist, Chmielewski, Cleveland, and McMurtry.

E. Patent Owner's Motions to Exclude

Patent Owner filed two motions to exclude. Patent Owner's first Motion to Exclude Evidence (Paper 14) seeks to exclude from the record the claim

charts appended to Mr. Lucas's Declaration. Paper 14, 1. Patent Owner requested, in its Preliminary Response, that we exclude all of Mr. Lucas's claim charts. Prelim. Resp. 15. In our Decision to Institute we discussed Patent Owner's argument and "disregarded the claim charts for the purposes of [the Decision to Institute] to the extent that a position is taken in the claim charts that is not expressly reiterated in the Petition." Dec. 34. Additionally, we stated that "[i]f Patent Owner chooses to object to the claim charts . . . beyond this stage of the proceeding, Patent Owner should proceed in accordance with 37 C.F.R. § 42.64." *Id.*

37 C.F.R. § 42.64(b)(1) states: "Any objection to evidence submitted during a preliminary proceeding must be filed within ten business days of the institution of the trial." A "preliminary proceeding" "begins with the filing of a petition for instituting a trial and ends with a written decision as to whether a trial will be instituted." 37 C.F.R. § 42.2.

Petitioner contends that any objection to Mr. Lucas's claim charts was waived because Patent Owner did not file and serve objections within ten business days of the institution of trial. Paper 19, 2-3.

In its Reply in support of its first Motion to Exclude Evidence, Patent Owner asserts that "Gramm did not waive his objection to the claim

charts because he objected on the record in his Patent Owner Preliminary Response ("POPR") before the expiration of the period set forth in 37 C.F.R. § 42.64." Paper 21, 1.

The time period set forth in § 42.64(b)(1) is "within ten business days of the institution of the trial." An objection raised in a preliminary response nearly three months prior to the institution of the trial is not "within ten business days of the institution of the trial." Thus, we agree with Petitioner that Patent Owner did not object to Mr. Lucas's claim charts within the time period set forth in § 42.64(b)(1).

The parties raise additional arguments regarding potential prejudice. In particular, Patent Owner asserts, in its Reply in support of its first Motion to Exclude Evidence, that "[t]he Petition does not cite to the claim charts, the paragraphs of the Lucas Declaration cross referencing the claim charts, or the passages from the purported prior art references included solely in the claim charts (Paper 2)." Paper 21, 5.

We have considered the parties' arguments and find that Patent Owner waived any objection to the claim charts submitted with Mr. Lucas's Declaration by not filing such objection "within ten business days of the institution of the trial" in accordance with 37 C.F.R. § 42.64(b)(1). Accordingly, we deny Patent Owner's first Motion to Exclude

Evidence (Paper 14). Nonetheless, the parties do not rely to any great extent, if at all (according to Patent Owner's representation), on Mr. Lucas's claim charts, and, in rendering the factual findings and conclusions of law reached in this Decision, we do not rely on any argument or evidence raised in the claim charts that is not expressly reiterated in the Petition.

Patent Owner's second Motion to Exclude Evidence (Paper 31) seeks to exclude Exhibits 1022, 1023, 1025, and 1026 in their entirety, as well as portions of Exhibit 2115, the deposition transcript of Mr. Lucas. Petitioner opposes Patent Owner's Motion. Paper 36.

The parties agree that none of Exhibits 1022, 1023, 1025, and 1026 is relied upon in the Petition, Patent Owner's Response, or Petitioner's Reply. Paper 31, 1; Paper 36, 5-6; Tr. 78:9-15. Additionally, neither party relies upon the deposition testimony of Exhibit 2115 that is the subject of Patent Owner's second Motion. Paper 36, 11-12. Because neither party relies on the materials in dispute, and because we do not rely on any of those materials in reaching our Decision here, we deny as moot Patent Owner's second Motion to Exclude Evidence (Paper 31).

IV. CONCLUSION

Petitioner has demonstrated, by a preponderance of the evidence, that: (1) claims 1-7,

10, 27, 28, and 34 would have been obvious over Lofquist, Chmielewski, and Cleveland; (2) claims 8, 9, and 29-33 would have been obvious over Lofquist, Chmielewski, Cleveland, and Agness; and (3) claim 11 would have been obvious over Lofquist, Chmielewski, Cleveland, and McMurtry.

V. ORDER

For the reasons given, it is:

ORDERED that, based on a preponderance of the evidence, claims 1-11 and 27-34 of U.S. Patent No. 6,202,395 B1 are unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude Evidence (Paper 14) is *denied;*

FUTHER ORDERED that Patent Owner's Motion to Exclude Evidence (Paper 31) is *denied* as moot; and

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

For PETITIONER:

Gary M. Ropski Kelly J. Eberspecher Manish K. Mehta Joshua James Jeffry Nichols

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UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,868	11/30/2016	6202395	12776-108	6543

23452 7590 11/24/2017

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EXAMINER	
KAUFMAN, JOSEPH A	

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
11/24/2017	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding. The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

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NOV 27 2017

CENTRAL REEXAMINATION UNIT

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/013,868.*

PATENT NO. *6202395.*

ART UNIT *3993.*

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Joseph A. Kaufman

Primary Examiner

PTOL-465 (Rev. 07-04)

Art Unit: 3993

Ex Parte Reexamination Advisory Action Before the Filing of an Appeal Brief	Control No. 90/013,868	Patent Under Reexamination 6202395	
	Examiner JOSEPH KAUFMAN	Art Unit 3993	AIA (First Inventor to File) Status No

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

THE PROPOSED RESPONSE FILED *13 November 2017* FAILS TO OVERCOME ALL OF THE REJECTIONS IN THE FINAL REJECTION MAILED *12 September 2017*.

1. ☒ Unless a timely appeal is filed, or other appropriate action by the patent owner is taken to overcome all of the outstanding rejection(s), this prosecution of the present *ex parte* reexamination proceeding WILL BE TERMINATED and a Notice of Intent to Issue *Ex Parte* Reexamination Certificate will be mailed in due course. Any finally rejected claims, or claims objected to, will be CANCELLED.

   THE PERIOD FOR RESPONSE IS EXTENDED TO RUN 4 MONTHS FROM THE MAILING DATE OF THE FINAL REJECTION. Extensions of time are governed by 37 CFR 1.550(c).

NOTICE OF APPEAL

2. ☐ An Appeal Brief is due two months from the date of the Notice of Appeal filed on _____ to avoid dismissal of the appeal. See 37 CFR 41.37(a). Extensions of time are governed by 37 CFR 1.550(c). See 37 CFR 41.37(e).

AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final action, but prior to the date of filing a brief, will not be entered because:
   (a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
   (b) ☐ They raise the issue of new matter (see NOTE below),
   (c) ☐ They are not deemed to place the proceeding in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.
   NOTE: _____ (See 37 CFR 1.116 and 41.33(a)).
4. ☐ Patent owner's proposed response filed _____ has overcome the following rejection(s):_____
5. ☐ The proposed new or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
6. ☐ For purposes of appeal, the proposed amendment(s) a)☐ will not be entered, or b)☐ will be entered and an explanation of how the new or amended claim(s) would be rejected is provided below or appended.
   The status of the claim(s) is (or will be) as follows:
   Claim(s) patentable and/or confirmed: _____
   Claim(s) objected to: _____
   Claim(s) rejected: _____
   Claim(s) not subject to reexamination: _____

AFFIDAVIT OR OTHER EVIDENCE

7. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because patent owner failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence fails to overcome all rejections under appeal and/or appellant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: *See Continuation Sheet*
12. ☐ Note the attached Information Disclosure Statement(s), PTO/SB/08, Paper No(s) _____.
13. ☐ Other:_____.

/JOSEPH KAUFMAN/ Primary Examiner, Art Unit 3993	conferees: /RMF/	/EDL/

cc: Requester (if third party requester)

Continuation Sheet (PTO-467) Reexam Control No. 90/013,868

Continuation of 10. The request for reconsideration has been considered but does NOT place the application in condition for allowance because: the Examiner will still not address issues with anything other than the Pearson reference and/or the combination as it relates to Pearson. The Examiner maintains that the motivation for combining Pearson with the other references is proper, that all the requirements for making the combination have been met, and that the Patent Owner is requiring the Examiner to provide information and/or reasoning that is beyond what is required/necessary/appropriate to make a proper 103 rejection. Finally, Pearson is a different reference than the one previously cited in the IPR, has different teachings, and different motivation for combining has been provided.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,868	11/30/2016	6202395	12776-108	6543

22452 7590 06/20/2018
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EXAMINER
KAUFMAN, JOSEPH A

ART UNIT	PAPER NUMBER
3991	

MAIL DATE	DELIVERY MODE
06/20/2018	PAPER

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The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

United States Patent and Trademark Office

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LARKIN HOFFMAN DALY & LINDGREN, LTD.
8300 NORMAN CENTER DRIVE, SUITE 1000
MINNEAPOLIS, MN 55437

Appeal No: 2018-006732
Ex Parte Reexamination Control No: 90/013,868
Appellant: Richard Gramm (Patent Owner/Inventor);
(Licensee of Headsight, Inc.)

Patent Trial and Appeal Board Docketing Notice

Ex Parte Reexamination Control No. 90/013,868 was received from the Technology Center at the Board on June 12, 2018 and has been assigned Appeal No: 2018-006732.

In all future communications regarding this appeal, please include both the *Ex Parte* Reexamination Control Number and the appeal number.

The mailing address for the Board is:

PATENT TRIAL and APPEAL BOARD
UNITED STATES PATENT AND TRADEMARK OFFICE
P.O. BOX 1450
ALEXANDRIA, VIRGINIA 22313-1450

Telephone inquiries can be made by calling 571-272-9797 and referencing the appeal number listed above.

By order of the Patent Trial and Appeal Board.

MAT

cc: Third Party Requester

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CHICAGO, IL 60610

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CHICAGO, IL 60610

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. 90/013,868

PATENT NO. 6202395.

ART UNIT 3993.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(e)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(e)).

PTO-465 (Rev.04-03)

Case: 17-1252 Document 59 Page 1 Filed 04-17-2018
NOTE: This disposition is nonprecedential.

United States Court of Appeals
for the Federal Circuit

RICHARD GRAMM,

Appellant

v.

DEERE & COMPANY,

Appellee

2017-1252, 2017-1253

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2015-00898, IPR2015-00899

ON PETITION FOR REHEARING EN BANC

Before PROST, *Chief Judge,* NEWMAN, LOURIE, DKY, MORRE, O'MALLEY, REYNA, WALLACH, TARANTO, CHEN, HUGHES, and STOLL, *Circuit Judges.*

PER CURIAM.

ORDER

Appellant Richard Gramm filed a petition for rehearing en banc. The petition was first referred as a petition

for rehearing to the panel that heard the appeals, and thereafter the petition for rehearing en banc was referred to the circuit judges who are in regular active service.

Upon consideration thereof.

IT IS ORDERED THAT:

The petition for panel rehearing is denied.

The petition for rehearing en banc is denied.

The mandate of the court will issue on April 24, 2018

FOR THE COURT:

February 13, 2018
Date

/s/ Peter R. Marksteiner
Peter R. Marksteiner
Clerk of Court