

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

STARA S.A.-INDÚSTRIA DE IMPLEMENTOS AGRÍCOLAS,

Petitioner,

v.

AGCO CORPORATION,

Patent Owner.

Case IPR2024-01459

Patent 11,665,989

DECLARATION OF DOUGLAS S. PRAIRIE, P.E.

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I, Douglas S. Prairie, declare as follows:

I. INTRODUCTION AND SCOPE

1. I have been retained by counsel for Patent Owner AGCO Corporation as an independent technical expert in this proceeding, which involves the validity of U.S. Patent No. 11,665,989 (the “’989 patent”). I submit this declaration in support of Patent Owner’s Preliminary Response and to rebut certain statements in the Petition and the expert declaration of Petitioner’s expert Dr. Paul R. Weckler (EX1002).

II. EXPERIENCE AND QUALIFICATIONS

2. I hold a B.S. in Agricultural Engineering (with a focus on power and machinery) from South Dakota State University, which I received in 1997. I also hold an M.S. in Mechanical Engineering (with a business emphasis) from Boise State University, which I received in 2004. I am a registered Professional Engineer in the State of Idaho.

3. I have worked in the agricultural and mechanical engineering industry for over twenty-five years. For a large portion of that time, I worked directly on the development of precision seeding technology. My present position at South Dakota State University allows me to lecture and lead the development of engineering and technical based coursework for the first four-year university in the world with a B.S.

degree in Precision Agriculture. Courses I am responsible for involve every aspect of the design, operation and ownership of agriculture machinery including planting and seeding technologies.

4. Previous positions related directly to planting and seeding technology include five years as the global Product Manager of planting and seeding technologies for Raven Industries. This position involved being familiar with all the global planter and seeder hardware manufacturers and the technologies they utilized. A highlight of this position was the rollout of Raven's Omni-Row planter control system which interfaced with all the leading row crop planter technologies. A leading-edge feature of this system was individual row rate control of seed population and multi-hybrid or multi-species planting controls.

5. Early in my engineering career, I was employed as a Product Development Engineer for CaseIH within their planter and seeder product group. CaseIH is a brand of agricultural equipment formed by a merger of J. I. Case Company (company making, among other things, agricultural equipment dating back to the 1800s) and International Harvester (another company making, among other things, agricultural equipment dating back to the early 1900s). During my time with CaseIH (now part of CNHi), I was involved in multiple projects that led to a

series of innovative technologies and U.S. patents related to seed distribution and ground engaging tools for planting and seeding equipment.

6. From May 1996 until September 1996 (while I was completing my B.S.), I worked for Ag-Chem Equipment Co., where I performed product testing on the engine hydraulic systems of chemical and granular fertilizer applicators. (I understand that after my work there, Ag-Chem Equipment Co. was acquired by AGCO Corporation in 2001.)

7. From October 1996 until July 2000, I worked for Case Corporation as a New Product Development Engineer for Case's Planting and Seeding Division. In that role, I was part of a team that developed the SDX 30 and SDX 40 single disc no-till planter programs from conception to production. Some of this work is shown within U.S Patent Nos. 6,386,127; 6,640,732; and 6,644,223. I was also involved in the development of pneumatic seed delivery systems to row crop planter seed meters. *See* U.S. Patents Nos. 5,915,312 and 6,047,652.

8. From December 2000 until February 2003, and again from September 2005 until December 2007, I worked for Multiquip, a manufacturer and supplier of products for construction, industrial, telecom, government, and other industries, as an Engineering Department Manager. In that role, I oversaw the development of

light construction equipment, such as the HTX and STX hydraulic concrete power trowels.

9. From February 2003 until September 2005, I worked for Bratney Companies as a Construction/Mechanical Project Engineer. Bratney Companies provides equipment design, engineering, and construction services to seed, food, grain, and feed facilities around the world. In that role, I developed and managed construction projects, including a green field alfalfa cleaning and bagging facility.

10. From December 2007 through the present, I have done freelance agricultural, mechanical, and industrial design engineering through my own company, Prairie West LLC. Some examples of this work include mechanical engineering analysis and documentation for a micro corn to ethanol production facility, structure design analysis for a mobile hydraulic car crushing system, and industrial design and product development for a consumer products company that developed child strollers.

11. From March 2010 until March 2015, I also worked for Raven Industries (now part of CNHi), first as a Project Manager for planting, seeding, and harvesting product lines and then as the North American Sales Manager for precision agriculture technology. Raven Industries is an electronics manufacturing firm, specializing in precision agriculture, high-performance specialty films, and lighter-

than-air technologies. In those roles, I oversaw development and launch of multiple planting products, including OmniRow Planter Controls, OmniSeed Air Seeder Controls, UHarvest Grain Cart Monitoring System, and SmartYield Pro Yield Monitoring System. The OmniRow product line was the first aftermarket planter control system that allowed for individual rate control of row crop planter seed meters. The OmniSeed seeder control was an aftermarket- and OEM-based technology that was revolutionary in its ability to provide a comprehensive seeder control package within a single platform. Leading these product development efforts and launches allowed me firsthand exposure to all the major planter and seeding equipment manufactures and their technologies.

12. From June 2015 until June 2016, I worked for POET Research as a Mechanical Research Manager in the research and innovation group. POET Research develops and produces clean and renewable biofuels. In that role, I developed technologies related to corn ethanol, cellulosic ethanol, and corn-derived industrial products.

13. From August 2016 until the present, I have taught as an Instructor at South Dakota State University in the Agriculture and Biosystems Engineering Department. I have taught and led the development of courses for undergraduate students that go on to receive Bachelor of Science degrees in Agriculture Systems

Technology (AST), Precision Agriculture (PRAG), Agriculture and Biosystems Engineering (ABE), and Mechanical Engineering (ME). South Dakota State University is the first and only university in the world to offer a four-year B.S. degree in Precision Agriculture. As part of this coursework, I have assisted with the development of multiple small scale two-row planters that showcase technologies of the leading planter equipment manufacturers. Specific courses I lead and/or instruct are ABE 234 Digital Tools for Agriculture Engineers; ABE 314 Agriculture Power and Machinery; ABE 411/422 Capstone Design; ABE 350 Hydraulic Systems; ABE 464 Monitoring and Controls; AST 412 Fluid Power Technology; and AST 313 Farm Machinery Management.

14. I am a named inventor on multiple U.S. patents and applications relating to seeding and planting technology: U.S. Patent No. 5,915,312, titled Pneumatic Seed Delivery System, which issued on June 29, 1999 (a pneumatic system for providing grain from a grain bin to a grain meter using air flow); U.S. Patent No. 6,047,652, titled Seed Planter Distribution System, which issued on April 11, 2000 (a system for receiving air borne seed from a source and transferring the seed to seed metering bins); U.S. Patent No. 6,116,172, titled Shank-Mounted Row Chop Opener, which issued on September 12, 2000 (an opener assembly used to form a furrow in the ground with improved versatility and lower maintenance

needs); U.S. Patent Nos. 6,386,127, 6,640,732, and 6,644,223, titled Disc Opener for a Seed Planter, which issued on May 14, 2002, November 4, 2003, and November 11, 2003, respectively (a disc-style opener assembly for opening a furrow in the ground); U.S. Patent No. 6,454,019, titled Agricultural Implement Down Pressure System, which issued on September 24, 2002 (a mechanism for forcing a device that opens a furrow in the ground towards and into the soil); and U.S. Patent Application No. 13/842,326, titled Multi-Seed Planter Control System and Method for the Same, which was filed on March 15, 2013 (a method of automatically planting two or more seed types, including monitoring a planter's location and having remotely adjustable planting characteristics).

15. I am a member of multiple professional organizations, including the American Society of Agricultural and Biological Engineers (ASABE), and the American Society of Mechanical Engineers (ASME).

16. A copy of my curriculum vitae is attached as Appendix A, which contains further details regarding my experience, education, and other qualifications to render an expert opinion in connection with this proceeding.

17. For this engagement, I am being compensated by a 3-tier rate structure for my work, as follows:

- \$75/hour for travel plus reasonable travel, hotel and meal expenses;

- \$150/hour for review, documentation, on-site inspections and report composition; and
- \$225/hour for deposition and court related activities. Minimum of half day (4 hours) required for deposition or court appearances.

But my opinions are based on my own views of the patented technology and the prior art. My compensation is not dependent on the outcome of this proceeding and in no way affects the substance of my statements in this Declaration.

III. MATERIALS CONSIDERED

18. In addition to the Petition in this proceeding, I have considered the following materials in preparing this Declaration:

Petitioner's Exhibits:

Exhibit	Description
1001	U.S. Patent No. 11,665,989 B2 (the '989 Patent)
1002	Declaration of Dr. Paul R. Weckler, PhD
1003	Curriculum Vitae of Paul R. Weckler, PhD
1004	Excerpts of the File History of the '989 Patent
1005	U.S. Patent Application Publication 2015/0230391 to <i>Houck</i>
1006	U.S. Patent No. 9,031,749 to <i>Hubalek</i>
1007	U.S. Patent No. 8,573,319 to Casper et al. (" <i>Deere I</i> ")
1008	EP 2335465 to <i>Amazonen</i> , English Translation
1009	DE 102006034798 to Poettinger Landtechnik GMBH, English Translation (" <i>Poettinger</i> ")
1010	U.S. Patent Application Publication 2014/0209335 A1 to Casper, et al. (" <i>Deere II</i> ")
1011	EP3192343 to Poettinger Landtechnik GMBH, English Translation (" <i>Poettinger II</i> ")
1012	KR101877062 B1 to LS MTRON (" <i>KR'062</i> ") (English Translation)

1013	U.S. Patent Application Publication No. 2016/0302350 to Kinzenbaw (“the ’350 Application”)
1014	U.S. Patent No. 8,567,517 to Friggstad (“the ’517 Patent”)
1015	U.S. Patent Application Publication 2014/0069670 to <i>Friesen</i>
1016	EP 2335465 to Amazonen (Original)
1017	DE 102006034798 to Poettinger Landtechnik GMBH (Original)
1018	EP 3192343 to Poettinger Landtechnik GMBH (Original plus Espacenet Translation)
1019	KR101877062 B1 to LS MTRON (“KR’062”) (Original)
1020	Certificate of translation (affidavit) for DE102006034798
1021	Certificate of translation (affidavit) for EP3192343
1022	Certificate of translation (affidavit) for KR101877062 B1

Patent Owner’s Exhibits

Exhibit	Description
2002	AGCO Press Release
2003	Farm Journal (website)
2004	USPTO Webpage Printout, listing Documents & transaction history for the U.S. Patent No. 11,665,989
2005	File History for the U.S. Patent No. 11,665,989
2006	Cambridge Dictionary of Science and Technology
2007	Antonyms of Transverse (website)
2008	What is the opposite of transverse? (website)

19. I have reviewed the above exhibits and any other materials cited in this Declaration.

IV. LEGAL STANDARDS

20. I am not an attorney. For the purposes of this Declaration I have been informed by Patent Owner’s counsel about certain legal principles that are relevant

to my analysis and opinions. I have applied those legal principles in arriving at my opinions expressed in this Declaration.

A. Level of Ordinary Skill in the Art

21. I understand that when considering the claims of the '989 Patent and the prior art, I must do so based on the perspective of one of ordinary skill in the art at the relevant earliest claimed effective filing date, which I understand is December 16, 2016. *See* EX1002, ¶48 (“Therefore, I have been advised to use December 16, 2016 as the date of the invention.”).

22. I understand that several factors are to be considered in determining who would be a person of ordinary skill in the art. These factors include: (1) the types of problems encountered in the art; (2) the prior art solutions to those problems; (3) the rapidity with which innovations are made; (4) the sophistication of the technology; and (5) the educational level of active workers in the field.

23. Here, the Petition states:

To the extent necessary to define further, Petitioner asserts that a POSITA for the '989 Patent in the relevant field in December 2016 would have a bachelor's degree in mechanical or agricultural engineering, or a related study, and two years of experience building or using agricultural implements, such as

cultivators, planters, or other implements, or an equivalent combination of education and experience.

Petition, 21; *see also* EX1002, ¶¶64–66.

24. For purposes of the Preliminary Response, I understand that Patent Owner has used Petitioner’s proposed definition of a person of ordinary skill in the art (“POSITA”). I further understand that Patent Owner reserves the right to propose its own definition if this IPR is instituted.

25. Likewise, for purposes of this Declaration, I have used Petitioner’s proposed definition of a person of ordinary skill in the art. I am a person of ordinary skill in the art at the time of the invention; I satisfied this definition of a person of ordinary skill in the art well before December 2016. *See* Appendix A.

B. Claim Construction

26. I understand that “claim construction” is the process of determining a patent claim’s meaning. I also have been informed that the proper construction of a claim term is the meaning that a person of ordinary skill in the art (*i.e.*, the technical field to which the patent relates) would have given to that term at the time when the relevant patent application was filed in the USPTO.

27. I also have been informed that, in this proceeding, claim construction will be determined by the Patent Trial and Appeal Board (“the Board”). I further

understand that the proper construction of any term that requires construction is how a person of ordinary skill in the art would understand the term based on its use in the claims, specification, and file history of the patent.

28. I understand that claim terms that are not construed by the Board should be given their ordinary and customary meaning as understood by a person of ordinary skill in the art at the time of the claimed invention.

C. Obviousness

29. Obviousness is a question of law premised on underlying issues of fact, all of which must be considered, including: (i) the scope and content of the prior art; (ii) the level of ordinary skill in the art; (iii) the differences between the claimed invention and the prior art; and (iv) secondary considerations of nonobviousness, such as commercial success, long-felt need, and the failure of others.

30. I have been informed and understand that each element of a claim must be disclosed in the prior art references for a claim to be found obvious. I have been informed and understand that when analyzing the question of obviousness, it is improper to use hindsight reconstruction, and that one should not use the patent as a road map for selecting and combining items of prior art. I am informed and understand that the relevant question is what a person of ordinary skill in the art

would have understood at the time the invention was made in light of all the prior art before him or her.

31. I have been informed and understand that when deciding whether to combine the various items described in the prior art, the relevant question is whether the prior art combination would have been obvious to a person with ordinary skill in the art at the time of the claimed invention. I have been further informed that it can be important to identify a teaching, suggestion, or motivation, in either the prior art or the knowledge of persons skilled in the art, that would have prompted a person of ordinary skill in the relevant field to combine the elements in the prior art in the way the claimed invention does.

32. I have been informed and understand that the teachings of two or more references may be combined, or a single reference may be modified, if such a combination or modification would have been obvious to a person having ordinary skill in the art at the time of the claimed invention. In determining whether a combination or modification would have been obvious, I have been informed and understand that it is appropriate to consider, among other factors: (1) whether the teachings of the prior art references disclose known concepts combined in familiar ways, which, when combined, would yield predictable results; (2) whether a person of ordinary skill in the art could implement a predictable variation, and would see

the benefit of doing so; (3) whether the claimed elements represent one of a limited number of known design choices, and would have had a reasonable expectation of success by those skilled in the art; (4) whether a person of ordinary skill would have recognized a reason to combine known elements in the manner described in the claim; (5) whether there is some teaching or suggestion in the prior art to make the modification or combination of elements claimed in the patent; and (6) whether the alleged invention applies a known technique that had been used to improve a similar device or method in a similar way.

33. I have been informed and understand that a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was independently known in the prior art. I have been informed and understand that while one must look carefully at a patent that claims as an innovation the combination of known devices according to their established functions, it is important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. For example, a person of ordinary skill in the art could have been motivated to combine elements described by different prior art references where the prior art discloses the benefits of such a combination or the combination would have solved the problem the person of skill was attempting to solve.

34. I have been informed and understand that to show a motivation to combine, one is not required to show how the references would be physically combined to render a claim obvious. The analysis is not focused on whether the features of one reference can be physically incorporated into the structure of another reference, but rather whether a person of ordinary skill in the art would have been motivated to combine the teachings of the references to achieve the claimed invention.

D. Burden of Proof

35. I have been informed that, to institute an IPR, Petitioner bears the burden, by preponderance of the evidence, to establish a reasonable likelihood of prevailing with respect to at least one challenged claim. Petitioner has the burden to identify with particularity the evidence that supports the grounds for the challenge to each claim. I have been informed that Petitioner's burden never shifts to Patent Owner.

36. I understand that Petitioner's burden of proof is not satisfied by employing mere conclusory statements. I further understand that obviousness determinations based on conclusory and unsupported statements risks allowing the challenger to use the challenged patent as a roadmap to reconstruct the claimed

invention using disparate elements from prior art—*i.e.*, the impermissible *ex post* reasoning and hindsight bias.

V. OPINIONS

A. The Examiner Considered *Hubalek* and *Houck*

37. I have been informed and understand that it is the policy of the USPTO that its employees, including patent examiners, will not appear as witnesses or give testimony in legal proceedings, except under certain exceptions. *See* MPEP 1701.01. Nonetheless, Petitioner’s expert Dr. Weckler opines on what the Examiner considered:

62. It appears that the Applicant was able to eliminate Hubalek and the Examiner does not appear to ever have considered combining Houck with Hubalek.

EX1002, 31, ¶62 (bold in original).

38. I disagree with this opinion.

39. In my opinion, it is more likely than not that the Examiner considered combining *Houck* and *Hubalek*, but determined that the claims of the ’989 Patent were still allowable over a combination of *Houck* and *Hubalek*. Both *Houck* and *Hubalek* were considered by the Examiner during prosecution. *See* EX1001, 2 (face

of '989 Patent). Indeed, *Hubalek* was the basis of a rejection. EX1004, 14–16. Similarly, *Houck* was the basis of a rejection. EX1004, 16–20. In addition, the file history expressly includes an Examiner Interview Summary describing a discussion of these two prior art references and only these two references, namely *Hubalek* and *Houck*. EX1004, 7 (“Identification of the specific prior art discussed: Hubalek et al. (US 9,031,749) and Houck (US 2015/0230391).”). In my opinion, it is more likely than not that the Examiner, in view of an Examiner Interview discussing only two specific prior art references, with pending § 102 and § 103 rejections, considered an obviousness combination of the two references. To the extent that the file history does not include such a rejection is, in my opinion, evidence that the combination of that prior art is: (i) more likely than not somehow deficient as a basis for an obviousness rejection to the Examiner, and (ii) unworthy as combination for a USPTO challenge to validity. That is, under a preponderance standard, the Examiner’s failure to issue a rejection based on a combination *Houck* and *Hubalek* is evidence of a reasonable likelihood that the challenged claims are valid over a combination of the discussed and cited prior references, individually or in combination.

B. “Parallel” is not “Transverse”

40. The '989 Patent uses, including in the claims, the term “parallel” in what I understand is the ordinary and customary meaning. Based on my experience and education, “parallel” does not include “transverse.” Based on my experience and education, “parallel” and “transverse” are antonyms.

41. Internet references confirm this understanding. See EX2007, www.powerthesaurus.org/transverse/antonyms (listing “parallel” under “Antonyms for Transverse” including “words and phrases with opposite meaning”); see also EX2008, <https://www.wordhippo.com/what-is/the-opposite-of/transverse.html> (listing “parallel” as “the opposite of transverse”).

C. Hubalek’s Frame 12 is not Parallel to its Toolbar 78

42. In my opinion, U.S. Patent No. 9,031,749 to *Hubalek* (EX1006) shows that frame 12 in Fig. 1 is transverse (*i.e.*, not parallel) to toolbar 78 in Fig. 11.

43. Indeed, *Hubalek* discloses that “frame 12 has a main frame section 24” and that “the main or center frame section 24 is elongated in a fore-and-aft direction.” EX1006, 3:6–7, 3:45–46. *Hubalek* further discloses “center frame section 24 further includes a rear transverse beam 68.” EX1006, 4:29–30. And the singular reference to toolbar 78 in the Specification of *Hubalek* discloses “a transverse toolbar 78.” EX1006, 4:37–38. In my opinion, frame 12 is not parallel

to toolbar 78, pursuant to the express teachings of *Hubalek*.

44. Thus, I disagree with the Petition and Dr. Weckler's opinions on the disclosure in *Hubalek*. See, e.g., EX1002, ¶124 ("With the support of the drawings and descriptive report of *Hubalek*, it can be seen that the toolbar 78 is arranged in parallel and at the back of the frame element 12 (see column 4, lines 36 to 38 and figures).").

D. A Hinged Joint and a Ball Joint are Different

45. The '989 Patent uses, including in the claims, the term "a hinged joint" in what I understand is the ordinary and customary meaning. In my opinion, the ordinary and customary meaning of "a hinged joint," as used in independent Claims 1 and 17, does not include a "ball joint."

46. In my opinion, a "ball joint" is not a "hinged joint." This is well understood in anatomy. That is, a shoulder joint is an example of a ball joint, and an elbow is an example of a hinged joint. It is well understood that a shoulder is not an elbow. Similarly, in the field of agricultural implements, a "ball joint" is not a "hinged joint" in my opinion. That is, as used in the '989 Patent, a "ball joint" is not a "hinged joint" in my opinion.

47. Consistent with this understanding, the Cambridge Dictionary of Science and Technology defines a "hinge" as "... a joint permitting of movement in

one plane only.” EX2006, 5. Likewise, the Cambridge Dictionary of Science and Technology defines a “ball joint” as the “[s]ame as *a ball-and-socket joint*,” which is “[a] joint between two rods, permitting considerable relative angular movement in any plane.” EX2006, 4.

48. Moreover, in the field of agricultural implements, a reference to a “pivot” does not inherently include “a hinged joint.”

49. This also is shown by the prior art submitted by Petitioner in this proceeding, namely *Deere II*, which discloses that a “pivotal movement” may be enabled by “ball joints.” EX1010, [0051] (“The ball joints 110, 110', 185, 185' of the first and second drawbars 70, 145 are configured to enable relative pivotal movement between the first brackets 90, 165 and the second brackets 95, 170, respectively.”); *see also* EX1010, [0010] (“The ball joints of the first joint and the second joint are configured to enable relative pivotal movement between the first bracket and the second bracket.”).

50. In my opinion, in the field of agricultural implements, a reference to a “pivot” does not suggest “a hinged joint” as opposed to other types of joints. Again, *Deere II* shows that the Petition and Dr. Weckler are wrong.

51. Thus, with respect to “a hinged joint,” I disagree with the Petition and Dr. Weckler’s opinions on the disclosures in *Hubalek* (impacting Grounds 1, 2, and

5), *Poettinger* (impacting Ground 3), and *Deere I* and *Deere II* (impacting Ground 4) (collecting impacting Ground 6).

E. I Disagree with Petition and Dr. Weckler regarding the Prior Art’s Alleged Teaching with Respect to “a hinged joint”

52. The Patent Owner’s Preliminary Response includes a Table related to what the Petition alleges the prior art discloses with respect to the claim element “a hinged joint,” which is re-created as follows:

Ground: Claims Challenged	Relied on for “a hinged joint”	Actual Disclosure
Ground 1: 1-4, 6-8, 17-18	<i>Hubalek</i>	No mention of “hinge” or “joint” or “a hinged joint.” EX1006, <i>passim</i> .
Ground 2: 1-4, 6-8, 10-13, 17-18	<i>Hubalek</i>	No mention of “hinge” or “joint” or “a hinged joint.” EX1006, <i>passim</i> .
Ground 3: 1-4, 6-8, 17-18	<i>Poettinger</i>	No mention of “hinge” or “a hinged joint.” EX1009, <i>passim</i> .
Ground 4: 1-4, 6-8, 10-13,15, 17-18	<i>Deere I</i>	No mention of “hinge” or “joint” or “a hinged joint.” EX1007, <i>passim</i> .
	<i>Deere II</i>	No mention of “hinge” or “a hinged joint.” EX10, <i>passim</i> . ¹
Ground 5: 1-4, 6-8, 17-18	<i>Hubalek</i>	No mention of “hinge” or “joint” or “a hinged joint.” EX1006, <i>passim</i> .
	<i>Amazonen</i>	No mention of “hinge” or “joint” or “a hinged joint.” EX1008, <i>passim</i> .
Ground 6: 16	See Grounds 1–5.	

¹ As discussed herein, *Deere II* discloses a “ball joint.”

53. I agree with the Table and that the actual disclosures in the prior art does not use the claim language. I disagree with the Petition and Dr. Weckler.

54. In my opinion, the claim element “a hinged joint” is entirely missing from the submitted prior art.

55. Equally important, in my opinion, the lack of teaching of the claim element “a hinged joint” results in no teaching, suggestion, or motivation for combining any submitted prior art reference with any other reference, or otherwise modifying the submitted prior art reference.

56. For Grounds 1, 2, 5, and 6, *Hubalek* offers no teaching with respect to “a hinged joint” relating to a motivation to combine “a hinged joint” with other elements.

57. For Grounds 3 and 6, *Poettinger* offers no teaching with respect to “a hinged joint” relating to a motivation to combine “a hinged joint” with other elements.

58. For Grounds 4 and 6, neither *Deere I* nor *Deere II* offers any teaching with respect to “a hinged joint” relating to a motivation to combine “a hinged joint” with other elements.

F. The Petition and Dr. Weckler’s Analysis Fail to Appreciate the Invention

59. The '989 Patent itself explains how the rotation of the toolbar is important to maintain consistent elevation for contoured field surfaces with proper engagement. EX1001, 2:27–35 (“In contrast, certain embodiments of a contouring toolbar system actively control the rotation of the row unit toolbar, adapting the rotation to follow the contoured field surfaces and hence always attempting to keep the row units engaged with the ground (e.g., by attempting to control the toolbar to be at a level position relative to the ground, or stated otherwise, maintain a relatively consistent elevation of the toolbar relative to ground).”), 6:17–21 (“As illustrated in FIG. 3 , the toolbar position is adjusted to attempt to maintain a level operating position relative to the contour of the surface and to enable proper engagement of the row unit 33B with the field 46.”).

60. Based on my experience, the rotation of the toolbar based on the sensed position of the toolbar is an improvement over the prior art for contoured field surfaces.

61. During prosecution of the '989 Patent, Patent Owner argued and the Examiner agreed that the linkages disclosed in *Deere I* do not allow the toolbar to

rotate. *See* Petition, 58; *see also* EX1004, 41–62. Therefore, I disagree with any opinions or analyses that allege that *Deere I* discloses a toolbar that rotates.

62. Based on my experience, I further disagree with the Petition’s argument, namely that “**Pivotaly connected suggests rotation.**” Petition, 60 (bold in original).

63. I further disagree with the Petition and Dr. Weckler, who seem to rely on a modification not shown—*i.e.*, not disclosed—in *Deere I* for the claimed rotation. The Petition and Dr. Weckler seem to rely on the absence of a “description that a parallel linkage is required” for an affirmative disclosure. Yet the Petition admits that a parallel linkage is shown in the figures of *Deere I*. Petition, 60. Likewise, Dr. Weckler admits that a parallel linkage is shown in the figures of *Deere I*. EX1002, ¶338. Thus, in my opinion, the Petition and Dr. Weckler’s analysis is fatally flawed and does not rely on what the prior art actually discloses.

VI. AVAILABILITY FOR CROSS-EXAMINATION

64. By signing this Declaration, I recognize that the Declaration will be filed as evidence in a contested case before the Board at the USPTO. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required of me, I

will appear for cross-examination within the United States during the time allotted for cross-examination.

VII. RIGHT TO SUPPLEMENT AND FURTHER OPINE

65. As stated herein, I submit this declaration in support of Patent Owner's Preliminary Response and to rebut certain statements in the Petition and the expert declaration of its expert Dr. Paul R. Weckler (EX1002). Should Petitioner's Request be granted, I intend to submit a declaration in support of Patent Owner's Response.

66. I also reserve the right to supplement my opinions in the future to respond to any arguments that the Patent Owner raises, as well as to take into account new information as it becomes available to me.

67. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the full knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: 12-20-24



Douglas S. Prairie, P.E.
Brookings, South Dakota

Appendix A

DOUGLAS S. PRAIRIE, P.E.

1402 Steamboat Trail • Brookings, SD 57006 • (605) 310-8802 • douglasprairie@yahoo.com

PROFESSIONAL ENGINEER

Registered under number 13315 in the State of Idaho

MISSION STATEMENT

Provide innovative education, business and product development solutions

SKILLS SUMMARY

• Engineering Education • Precision Agriculture • Fluid Power Systems • Higher Education • Off-Highway Equipment • Project Management • Product Development • Lean Manufacturing	• Product Management • Business Development • P&ID Development • Sales Management • Intellectual Property • Biofuels • Industrial Equipment • Agricultural Equipment	• Engineering Management • Contract Negotiations • Design for Manufacturing • Stress & Failure Analysis • Feasibility Cost Studies • GD&T • Engine Emission Regs • Machine Design
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EXPERIENCE

South Dakota State University, Brookings, SD; www.sdstate.edu; August 2016 to present

Lecturer for Agriculture and Biosystems Engineering Department

- Ag Power and Machinery, Fluid Power Systems, Instrumentation and Controls, ABE Senior Design
- Advisor for International Quarter Scale tractor club; Awarded 3 Championships over the last 8 years
- Advisor for Fluid Power Club; Awarded 2nd place for Fluid Power Bike competition 2023

Prairie West LLC, December 2007 to present

Freelance Agriculture, Mechanical and Industrial Design Engineer

- Expert legal witness for Deere vs AGCO planter patent infringement case
- CAD 2D to 3D conversion project of industrial grain handling equipment. Project involved the architecture of multiple complex part and assembly configuration structures within SolidWorks.

POET Research, Sioux Falls, SD www.poet.com; June 2015 to June 2016

Mechanical Research Manager for POET's Research and Innovation Group

- POET Research was responsible for the development and support of novel technologies related to corn ethanol, cellulosic ethanol, and corn derived industrial products and processes.

Raven Industries, Sioux Falls, SD www.ravenprecision.com; November 2014 to March 2015

North American Sales Manager of Precision Agriculture Technology

- Sales Leadership for a team of 15 account managers spread across the United States and Canada
- Sales Forecasting and Analysis for hundreds of accounts totaling over \$60 million in annual sales
- Contract Negotiations with OEM and after-market distribution partners

Raven Industries, Sioux Falls, SD www.ravenprecision.com; March 2010 to November 2014

Product Manager of Planting, Seeding and Harvest Control Product Lines

- Led development and launch of OmniRow Planter Controls, OmniSeed Air Seeder Controls, UHarvest Grain Cart Monitoring System, and SmartYield Pro Yield Monitoring System
- Business Development of an industry leading Multi-Hybrid planter control system
- Team Lead for Raven SmartQuote Guided Sales and Quotation Tool
- Grew product line sales from a few thousand \$ into multi-million \$ per year business segments
- Recipient of four ASABE AE 50 Product Innovation Awards
- Member of Raven Leadership Council

DOUGLAS S. PRAIRIE, P.E.

EXPERIENCE CONTINUED

Bratney Companies, Boise, ID www.bratney.com; February 2003 to September 2005

Construction/Mechanical Project Engineer of Industrial Processes

- Developed and Executed proposals for multiple design-build construction projects
- Project Managed the construction and startup of a green field alfalfa cleaning and bagging facility

Multiquip, Boise, ID www.multiquip.com; Dec 2000 to Feb 2003; Sept 2005 to Dec 2007

Engineering Department Manager for Light Construction Equipment Manufacturer

- Manage a team of 15 engineers, designers, drafters, and technicians tasked with supporting the safety and technical demands of 200+ plus finished goods.
- Manage a \$1.3 million annual budget for engineering product support and product development.
- Coordinate with product managers, manufacturing, quality, purchasing, marketing, and suppliers
- Responsible for designing equipment to latest global safety and homologation standards
- Coordinate intellectual property development with patent attorneys

Case Corporation, Fargo, ND www.cnh.com; October 1996 to July 2000

New Product Development Engineer for Planting and Seeding Division

- Developed SDX 30 and SDX 40 single disc planter programs from conception to production

Ag-Chem Equipment Co., Jackson, MN www.agcocorp.com; May 1996 to September 1996

- Performed and analyzed engine dynamometer tests, hydraulic tests, and other product tests utilizing data acquisition systems

PATENTS

- Inventor on U.S. Patent # 5,915,312 & 6,047,652: *Pneumatic Seed Delivery System*
- Inventor on U.S. Patent # 6,116,172: *Shank Mounted Row Crop Opener*
- Inventor on U.S. Patent # 6,386,127 6,640,732 & 6,644,223: *Disc Opener for a Seed Planter*
- Inventor on U.S. Patent # 6,454,019: *Ag Implement Down Pressure System*
- Inventor on U.S. Patent # 7,497,522: *Concrete Saw Stay Level Handlebars,*
- Patent Pending: *Multi-Hybrid Planter Controls and Combine Yield Monitor Systems.*

SOFTWARE

SolidWorks CAD and Simulation, LabVIEW, MathCAD, Visio, CREO, AutoCAD, SAP R/3, Visual Basic, Working Model, Microsoft Office and Microsoft Project

EDUCATION

BOISE STATE UNIVERSITY (BSU) Boise, ID www.boisestate.edu

Masters of Mechanical Engineering with Business Emphasis

Graduation Date: December 2004

GPA: 3.5/4.0

Project Paper: *Design of a Conceptual Biodiesel Production Facility*

SOUTH DAKOTA STATE UNIVERSITY (SDSU), Brookings, SD www.sdstate.edu

BS Agricultural Engineering with Power and Machinery Focus

Graduation Date: May 1997

GPA: 3.6/4.0

ASSOCIATIONS

- Certified with Carew International Dimensions of Professional Selling® Program
- Member of FarmHouse Fraternity www.farmhouse.org
- Member of Society of Automotive Engineers www.sae.org
- Member of American Society of Mechanical Engineers www.asme.org
- Member of American Society of Agricultural and Biological Engineers www.asabe.org
- SolidWorks User Group

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PROFESSIONAL ENGINEER

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EXPERT WITNESS CASE HISTORY

Testimony and/or Deposition

1. Precision Planting, LLC and AGCO CORP (Petitioners) vs DEERE and COMPANY (Patent owner), Case Numbers: IPR2019-01044; IPR2019-010446; IPR2019-01050; IPR2019-01052; IPR2019-01053; IPR2019-01054; IPR2019-01055 (USPTO Patent Trial and Appeal Board). Multiple reports and approximately 40 hours of deposition.
2. Bazooka Farmstar, LLC (Petitioner) vs Nuhn Industries Ltd. (Patent Owner), IPR2023-01161 (USPTO Patent Trial and Appeal Board). Declaration testimony on behalf of Patent Owner
3. Bazooka Farmstar, LLC (Petitioner) vs Nuhn Industries Ltd. (Patent Owner), IPR2024-00004 (USPTO Patent Trial and Appeal Board). Declaration testimony on behalf of Patent Owner
4. Nuhn Industries Ltd. (Plaintiff) v. Bazooka Farmstar, LLC (Defendant), Case No.. 3:22-cv-00015, (S.D. Iowa). Expert reports on behalf of Plaintiff

Patent Infringement and Patent Litigation

1. Wilmer Cutler Pickering Hale and Dorr LLP, Washington D.C. (2018 -2020). Deere and Company (Plaintiff) vs AGCO and Precision Planting (Defendants). Patent Infringement Review Expert for U.S. Patent Numbers: 8,671,856; 8,813,663; 8,850,998; 9,480,199; 9,510,502; 9,661,799; 9,686,906; 9,699,955; 9,807,922; 9,807,924; 9,820,429; 9,861,031; 10,004,173. Working on behalf of the defendant.
2. Harness, Dickey & Pierce, P.L.C. Washington D.C. (2023-present). Bazooka-Farmstar, LLC (Petitioner) v. Nuhn Industries LTD., (Patent Owner). Patent validity case. Review Expert of US Patent No. 11,358,425. Working on behalf of Patent Owner.
3. Fish & Richardson, P.C, Minneapolis, MN (2024 – present). Unverferth Mfg. Co., Inc v Park-Kan Co., LLC (Petitioner). Review Expert of US Patent Numbers: 8,967,940; and 9,745,123. Working on behalf of petitioner.

Product Liability and Safety Litigation

1. Marlow, Woodward & Huff, PLLC, Yankton SD (2023). Dwayne Schmitz (Plaintiff) vs Clark Equipment Co. (Defendants). Product liability and safety review. Working on behalf of the Plaintiff. Work involved a safety test report and declaration report.