

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SOLARIS OILFIELD SITE SERVICES OPERATING, LLC, AND
SOLARIS OILFIELD SITE SERVICES PERSONNEL, LLC,
Petitioners

v.

MASABA, INC.,
Patent Owner

Case No. IPR2024-01179
Patent No. 11,780,689

**SUPPLEMENTAL DECLARATION OF DR. ROBERT DURHAM IN
SUPPORT OF PETITION FOR *INTER PARTES* REVIEW**

I, Robert A. Durham, Ph.D., hereby declare as follows:

I. INTRODUCTION

1. My name is Dr. Robert A. Durham. I make this declaration based upon my own personal knowledge and, if called upon to testify, would testify competently to the matters contained herein.

2. I have been asked to provide technical assistance in the *inter partes* review (“IPR”) of U.S. Patent No. 11,780,689 (which I may abbreviate as “the ’689 Patent”). In this declaration I may refer to this IPR by its patent number or IPR number (*e.g.*, “’689 IPR” or “IPR2024-01179”). This declaration supplements and updates the statements of my opinions on issues related to the unpatentability of claims of the ’689 Patent as reflected in my previous declaration submitted in this IPR. I am being compensated at my normal hourly rate for my analysis, plus reimbursement for expenses. My compensation does not depend on the content of my opinions or the outcome of this proceeding.

II. LIST OF EXHIBITS

3. In forming my opinions, I have reviewed the ’689 Patent, its prosecution history and references cited by the Examiner, the materials cited in the List of Exhibits below and in my original declaration, and the materials cited throughout my declaration. I have also reviewed the Patent Owner’s Response

(“POR”) filed in this IPR, including the exhibits submitted therewith that relate to the opinions below. I have also reviewed the declaration of Mr. Travis Anderson, including the exhibits thereto that relate to the opinions below.

4. All citations to exhibits reference original page numbers found in the underlying document, and all emphases are added unless otherwise noted.

Ex.	Description
1001	U.S. Patent No. 11,780,689 to Brenden et al. (“the ’689 Patent”)
1003	Expert Declaration of Petitioner’s Expert, Dr. Robert A. Durham
1004	U.S. Patent No. 9,663,303 to Waldner et al. (“Waldner”)
1005	<u>Belt Conveyor-based Loading Systems</u> , https://web.archive.org/web/20160819111857/http://mcschroeder.com/wp-content/uploads/2012/09/Product-Spec-Sheet-Belt-EconoLoader.pdf (August. 19, 2016) (“Dynatek”)
1006	U.S. Patent No. 11,691,831 to Sleeman et al. (“Sleeman”)
1011	U.S. Patent No. 8,926,252 to McIver et al. (“McIver”)
1112	Declaration of Jeremy Weinstein
1113	Transcript of Deposition of Travis A. Anderson
1151	“A Review on the Angle of Repose of Granular Material”, by Al-Hashemi et al., <i>Powder Technology</i> , pgs. 397-417, 27 Feb. 2018.
1152	U.S. Patent No. 11,185,900 to Smith et al.
1153	“Frac Sand Storage and Handling System”, available at: https://www.tankconnection.com/assets/pdf/frac-sand-system.pdf
2003	Transcript of Deposition of Dr. Robert A. Durham

2004	Expert Declaration of Travis A. Anderson
2006	Declaration of Mike Stanton
2012	Audio Recording of Q4 2021 Solaris Oilfield Infrastructure, Inc. Earnings Conference Call (retrieved at https://seekingalpha.com/article/4489042-solaris-oilfield-infrastructure-inc-soi-ceo-bill-zartler-on-q4-2021-results-earnings-call)
2015	Audio Recording of Q3 2022 Solaris Oilfield Infrastructure, Inc. Earnings Conference Call (retrieved at https://seekingalpha.com/article/4551594-solaris-oilfield-infrastructure-inc-soi-ceo-william-zartler-on-q3-2022-results-earnings-call)
2016	Audio Recording of Q4 2022 Solaris Oilfield Infrastructure, Inc. Earnings Conference Call (retrieved at https://seekingalpha.com/article/4581377-solaris-oilfield-infrastructure-inc-soi-q4-2022-earnings-call-transcript)

III. SECONDARY INDICIA OF NON-OBVIOUSNESS

5. In its POR, Patent Owner argues that various secondary indicia support the non-obviousness of the ‘689 Patent claims. However, in my opinion, several of these secondary indicia lack nexus to the purported invention of the ‘689 Patent claims.

6. Patent Owner asserts that Solaris representatives praised a design for a silo filling system that Masaba purportedly created.¹ However, the alleged statements of Mr. Weinstein (as reported by Patent Owner’s declarant Mike Stanton) that Patent Owner cites in support of that argument do not indicate what the Solaris

¹ POR, 13-14 & 72.

representatives actually praised, *i.e.*, whether they praised aspects of the design claimed in the ‘689 Patent or something else.

7. Patent Owner also relies on Solaris’ purported commercial success with its own silo filling system (which Patent Owner asserts infringes the ‘689 Patent) and Solaris’ touting of that system during investor calls.² Patent Owner also acknowledges that Solaris touted the “belly dump capability” of that system (and the faster unload times that belly dumping allows) as the feature responsible for that success.³ In the same investor calls that Patent Owner cites, Solaris likewise confirmed that this feature was “one of the largest drivers” for the success of its Top Fill system.⁴ However, the ability to use belly dumping trucks to fill silos was known in the art before the ‘689 Patent. For example, that capability is clearly disclosed in several of the prior art references cited in my original Declaration, including

² POR, 14, 15, & 18-22.

³ POR, 14 & 18.

⁴ Ex. 2012 (“...one of the features is you know we have plenty of unloading capacity through the traditional methods. But if you can increment up a truck by 10 to 15% and shortage of drivers. You're going to, you're going to lower your driver need and driver time by moving to the belly dump and I think that's one of the largest drivers for the what and the why of the top fill.”); *see also* Ex. 2016 (“Belly dump trucking allows for increased sand volume per truck load and increases the number of turns per truck.”); Ex. 2015 (“By using belly dump trucks. We can increase per truck payload which drives a significant reduction in total truck miles per job. Trucking efficiency is also improved by faster unload times, which drives an increase in truck turn. Per day, the combination of increased payload and faster unloading times reduces the overall number of trucks and drivers required to supply sand to a well site. Fewer trips and fewer drivers, lower overall trucking costs and operational risk for our customers.”).

Waldner (the primary reference for all grounds in this IPR) and *Sleeman*. The only features of the ‘689 Patent’s independent claims that are even arguably not disclosed in *Waldner* relate to the configurations of the extension conveyor, kingpin, landing leg, and lift arm structures. None of the praise or commercial success of Solaris’ Top Fill system appears to be linked to those features. Therefore, in my opinion, Solaris’ praise and commercial success of its Top Fill system does not have nexus to the ‘689 Patent claims.

8. Mr. Stanton also stated that he was impressed by Masaba’s design because “it allowed frac sand to be transported to the top of Solaris’s silos with a mobile system using a minimal footprint”.⁵ However, this statement does not have nexus to the alleged invention of the ‘689 Patent claims either. First, the ‘689 Patent claims do not require a vertical bucket elevator, or any vertical elevator at all, or even any particular footprint, as Mr. Stanton was addressing. The independent claims of the ‘689 Patent simply require “an elevating conveyor configured to receive aggregate from the base conveyor and **convey the aggregate upwardly from the base assembly** toward the free end of the deployable frame”.⁶ This does not expressly require a vertical bucket elevator, and it is silent on the footprint of the system that accomplishes this.

⁵ Ex. 2006, ¶12.

⁶ Ex. 1001 (‘689 Patent), claim 1 (emphasis added).

9. To the extent that the benefits Mr. Stanton noted do relate to features of the ‘689 Patent claims, at least *Waldner* and *Sleeman* each disclose all of these same features and benefits. *Waldner* and *Sleeman* each disclose systems that use vertical bucket elevators to elevate sand or other particulates to the top of a silo,⁷ and such vertical bucket elevators have a smaller footprint than, for example, an upwardly-inclined horizontal conveyor belt. Likewise, *Waldner* and *Sleeman* each describe trailer-mounted systems that are designed to be mobile,⁸ and *Waldner* and *Sleeman* disclose all of the components necessary to connect those systems to a towing vehicle for transport.⁹

10. Patent Owner also asserts that Solaris stated that there was skepticism in the oilfield about bucket elevators before the ‘689 Patent was filed.¹⁰ However, as noted above and in my original declaration, numerous prior art references—including *Waldner* and *Sleeman*—disclosed systems that used bucket elevators to elevate particulate material to an elevated location, specifically in the oilfield.¹¹ The only features of the ‘689 Patent’s independent claims that are even arguably not disclosed in *Waldner* relate to the configurations of the extension conveyor, kingpin,

⁷ Ex. 1004 (*Waldner*), 14:4 – 15: 21; Ex. 1006 (*Sleeman*), 18:29 – 19:8.

⁸ Ex. 1004 (*Waldner*), 11:59 – 12:12 ; Ex. 1006 (*Sleeman*), 17:8-24.

⁹ Ex. 1004 (*Waldner*), 12:22-34 ; Ex. 1006 (*Sleeman*), 38:3-24.

¹⁰ POR, pages 6 & 71.

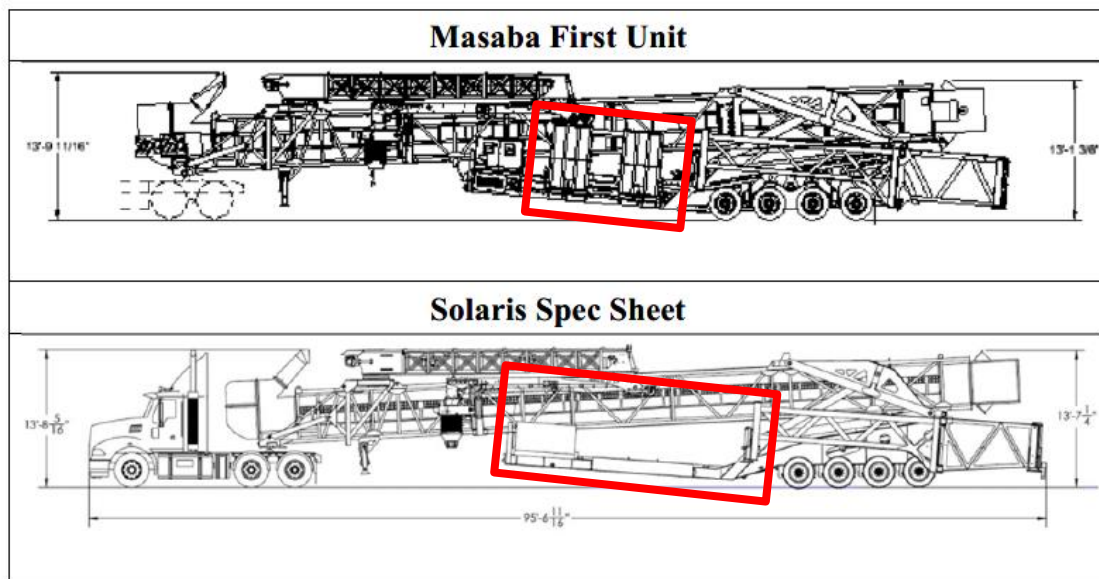
¹¹ Ex. 1003 (*Durham Declaration*), ¶¶67, 69; Ex. 1004 (*Waldner*), 14:4 – 15: 21; and 1:30-36; Ex. 1006 (*Sleeman*), 18:29 – 19:8; and 34:14-18.

landing leg, and lift arm structures. None of the alleged skepticism appears to be linked to those features or their combination with a bucket elevator. Therefore, in my opinion, any skepticism of bucket elevators does not have nexus to the alleged invention of the '689 Patent claims.

11. Patent Owner asserts that Solaris allegedly copied its design, comparing Masaba's drawings with spec sheets purportedly showing Solaris' top fill system. Patent Owner first argues that Solaris copied Masaba's design because the dimensions of the Masaba and Solaris units are very similar.¹² However, in my experience, the dimensions of a system for filling a silo would largely be dictated by the dimensions of the equipment with which the filling system has to operate. For example, with regard to Masaba's and Solaris' systems, the height of the silos being filled would dictate the minimum heights of the bucket elevator and the outlet of the extension conveyor in the filling system, and the dimensions of the vehicles carrying the sand would dictate various dimensions of the unloader structure's components. Therefore, the fact that those dimensions of Solaris' top fill system are similar to those of Masaba's system does not indicate that Solaris copied Masaba's system. It simply indicates that they were likely both designed for use with similar silos and vehicles.

¹² POR, 15-16.

12. Moreover, Patent owner ignores at least one significant difference between Masaba's drawings with spec sheets purportedly showing Solaris' top fill system – the absence of deployable ramps installed on the unit in the transport configuration (see the regions marked in red below from the drawings shown on page 16 of the POR). This indicates that Solaris did not copy at least this aspect of the Masaba design, which relates to several of the claimed elements in the '689 Patent (*e.g.*, claim elements 1[c], 12[c], 13[c], and 16[c], and claims 10 and 11).



IV. LEVEL OF SKILL OF A PERSON HAVING ORDINARY SKILL IN THE ART

13. Mr. Anderson asserts that a POSITA for the '689 Patent would have (1) a degree in mechanical engineering or perhaps petroleum or civil engineering with at least 2 years experience engineering the structural and/or mechanical aspects of aggregate transferring equipment, or (2) if some other engineering degree, 4-6

years of hands-on experience engineering the structural and/or mechanical aspects of aggregate transferring equipment.¹³ Mr. Anderson's definition has several flaws.

14. First, I disagree that the most relevant educational experience is limited to that associated with mechanical engineering (or petroleum or civil engineering) degrees, or that persons with other engineering degrees would have to have 2 or 3 times more hands-on engineering experience in order to qualify as a POSITA for the '689 Patent. Electrical engineers are still required to take courses in statics and instrumentation, which is all that would be required to understand the types of problems encountered in conveyors and bucket elevators, the rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field. Persons with advanced degrees in electrical or other types of engineering also would have further education and training in those areas. Moreover, electrical engineers routinely have to be fluent with the mechanical loads and other aspects of the systems they are working on, and very often calculate those loads in their work. Even if that is not the focus of their work, they would be exposed to those concepts and their calculations frequently in working on such systems. Therefore, in my opinion, a person with a bachelor's degree in any of the fields of engineering that I noted in my original declaration would be equally capable of performing the calculations required to engineer the mechanical aspects of aggregate

¹³ Ex. 2004 (Anderson Declaration), ¶¶27-28.

transferring equipment. Further, as discussed in my original declaration, a POSITA would have recognized that a single person would not necessarily have to perform the calculations for, as an example, coupling Dynatek's horizontal conveyor system with a vertical conveying system as Dynatek discloses that they will provide such engineering capabilities.¹⁴

15. In discounting the relevant experience of persons with electrical engineering, Mr. Anderson also ignores that the '689 Patent specifically discloses a system with electrical components that must be powered in order to operate. For example, the '689 Patent discloses "Broadly, the control assembly 170 may also include elements of the apparatus 10 which receive commands or signals from the controller 172 (or operator-manipulated manual controls) in order to operate elements of the apparatus 10, such as the power control circuitry which provides electrical power to elements of the apparatus such as the motors and valves which control the supply of hydraulic fluid to elements of the apparatus such as hydraulic actuators."¹⁵ The '689 Patent further discloses the use of "encoders", "wired or wireless communications connections," electronic "remote control device 176", "sensors", "image sensors", "display screen or monitor", "memory", and other

¹⁴ Ex. 1005 (*Dynatek*), pgs. 2-3.

¹⁵ Ex. 1001 ('689 Patent), 13:4-12.

components which are better covered by the formal education of an electrical engineering degree than other degrees, such as mechanical or petroleum.”¹⁶

16. Mr. Anderson also ignores that the '689 Patent discusses that the alleged inventions described therein involve **use** of the disclosed systems. For example, the '689 Patent states that aspects of the disclosed inventions include:

- “a method of setting up an apparatus” as disclosed, including:
 - Identifying an area of ground surface for deployment of the apparatus that is level and clear of obstructions
 - Positioning the apparatus by towing the apparatus to that area
 - Connecting the apparatus to a power source to provide power to the control assembly and other components
 - Removing the apparatus from a travel configuration by operating lift actuators, deploying outriggers and landing legs, and deploying ramps
- “a method of operating an apparatus” as disclosed, including:
 - Positioning the chute over the port(s) of one or more silos,
 - Positioning a vehicle over the unloader structure

¹⁶ See, *e.g.*, Ex. 1001 ('689 Patent), 12:40-13:3; 13:13-34.

- Initiating operation of the extension conveyor, elevating conveyor, and base conveyors
- Unloading aggregate from the aggregate transporting vehicle.¹⁷

17. The ‘689 Patent inventors also clearly directed their invention to use in oil and gas applications. Indeed, the only real-world application that the ‘689 Patent describes for these uses is “the process of hydraulic fracturing in connection with subterranean petroleum drilling”.¹⁸ Moreover, 11 of the 12 references cited on the face of the ‘689 Patent expressly relate to methods and systems for use in oilfield operations.

18. A POSITA reading these disclosures of the ‘689 Patent and its cited references would understand that experience using and observing the use of aggregate handling systems, particularly in oil and gas operations, is equally relevant to the ‘689 Patent’s field of invention and the level of skill in the art.

19. I also disagree with Mr. Anderson that the relevant experience for a POSITA is limited to experience with “aggregate transferring equipment”. Experience with the mechanical aspects of other types of equipment would be relevant to the field of the ‘689 Patent, at least because engineering other such equipment often involves the same types of engineering concepts and calculations

¹⁷ Ex. 1001 (‘689 Patent), 13:35 – 15:38.

¹⁸ Ex. 1001 (‘689 Patent), 4:13-18.

(e.g., loads, stresses, etc.) as those involved in designing aggregate transferring equipment.

20. In any event, I have sufficient experience with engineering and understanding the mechanical aspects of equipment to qualify as a POSITA for the '689 Patent.

- I have taken formal classes in statics, instrumentation, fluid dynamics. Additionally, the two semester (and more) penultimate design class is multidisciplinary and requires understanding of mechanical and structural systems. For example, my final design class was to design and construct a solar driven vehicle. I was electrical design lead and regularly participated in design and design review meetings for both electrical and mechanical groups. Further, I was tasked with overseeing physically constructing the vehicle, including the mechanical and electrical systems.
- I have experience in building / designing / engineering / investigating mechanical aspects of mechanical systems including:
 - Oil and gas production systems, including pumping systems, piping systems, tank systems, treating systems, heating systems and separators, including structures that support them.
 - Completion systems, including hydraulic fracturing and gravel pack systems.

- Structures and platforms to support various other equipment, including both electrical and mechanical equipment.
- I have experience involving calculation of mechanical concepts – calculation of loads, stresses, rates, horsepower, material strength, including finite element analysis.

V. WALDNER DISCLOSES AN “EXTENSION CONVEYOR ASSEMBLY ...” AND AN “EXTENSION CONVEYOR FOR MOVING AGGREGATE ...”

21. I understand that Mr. Anderson and Patent Owner have construed these terms in the ‘689 Patent claims as meaning “a device that imparts motion to the aggregate to transport it from one point to another.”¹⁹ *Waldner’s* discharge chute 242 is not a fixed tube or pipeline. As discussed in my original declaration, using the actuators described in *Waldner*, the discharge chute can be moved to place its outlet at a lower elevation than its inlet such that aggregate material will slide from the inlet along the length of the chute to the outlet.²⁰ It is that movement and orientation of *Waldner’s* discharge chute that allows the aggregate to be transported from the inlet to the outlet. In that way, it is my opinion that *Waldner’s* discharge chute “imparts motion to the aggregate to transport it from to transport it from one point to another.”

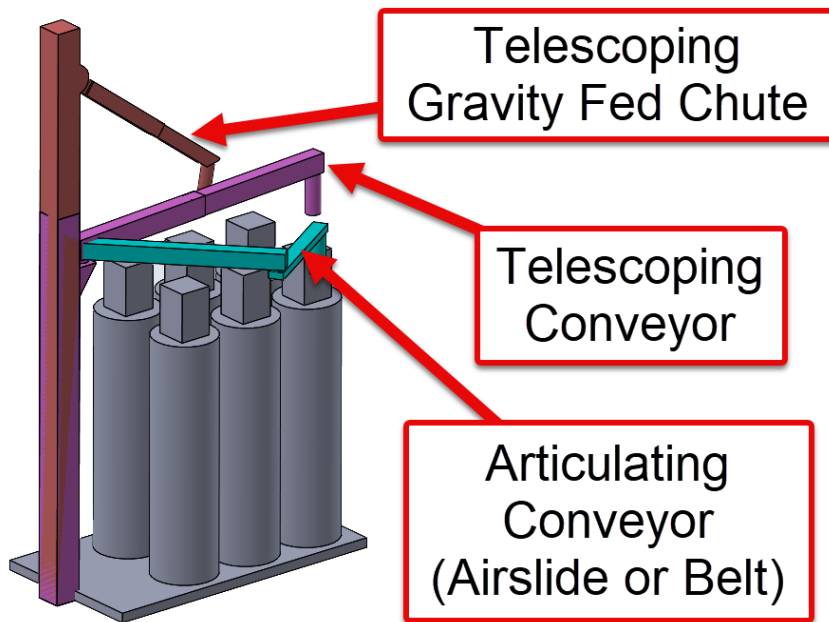
¹⁹ Ex. 2004 (Anderson Declaration), ¶34.

²⁰ Ex. 1003 (Durham Declaration), ¶¶147-157.

VI. GROUND 1: MOTIVATION TO COMBINE WALDNER AND DYNATEK

A. Increased Range of Motion

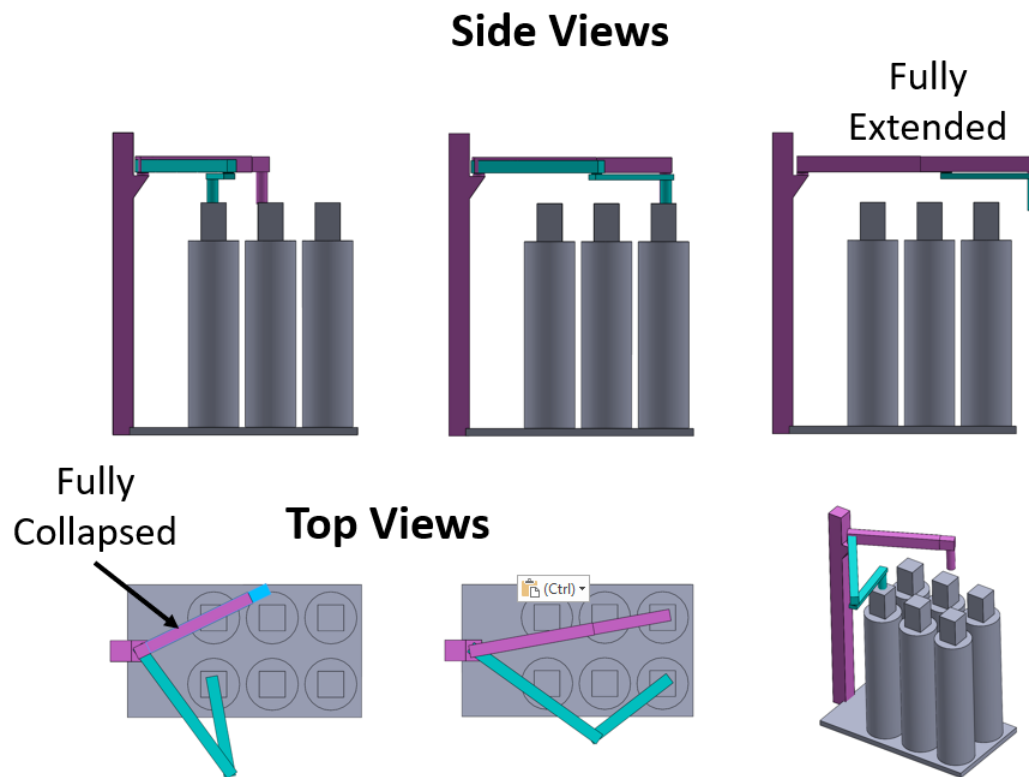
22. As I stated in my original declaration, a POSITA would have recognized that an articulated pivoting joint would increase the range of motion of the *Waldner* telescoping discharge chute.²¹ This concept can be further illustrated with reference to some simple hypotheticals and diagrams comparing different options. The following images represent three types of systems: a telescoping gravity fed chute (as disclosed in *Waldner*) (brown below); a telescoping belt conveyor (purple below); and an articulated conveyor (green below).



23. First, in comparing the telescoping and articulating belt or airslide conveyors, as can be seen in the side and top views below, the articulating belt

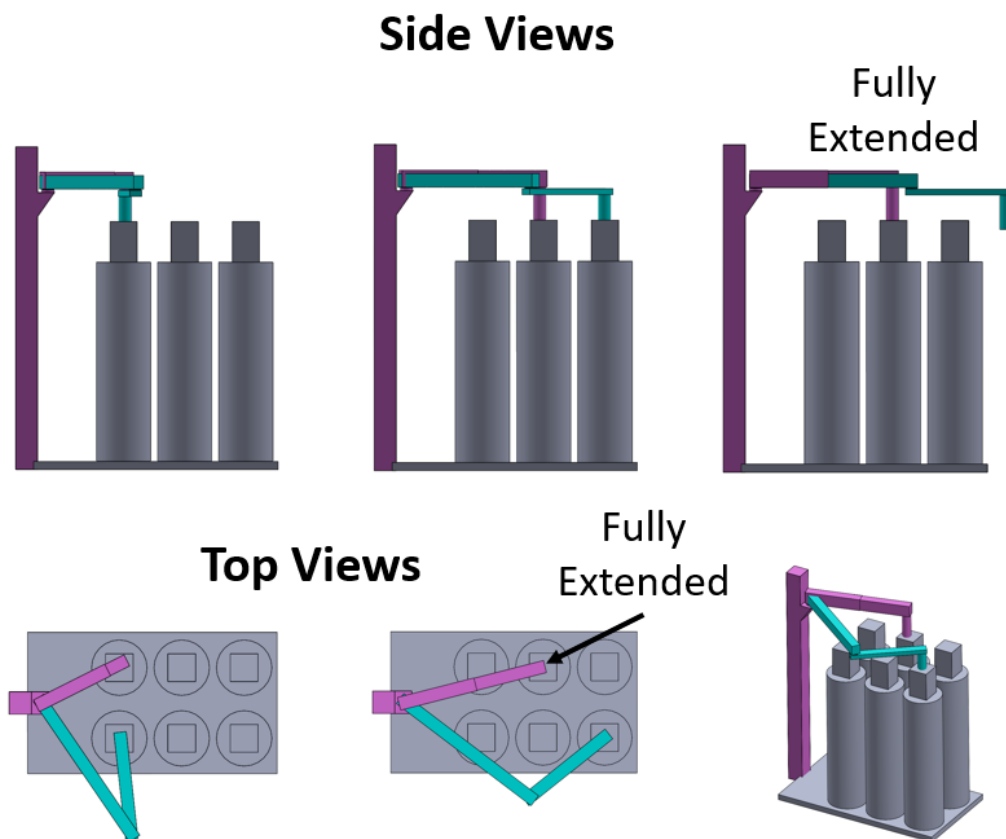
²¹ EX1003 (Durham Declaration), ¶¶115, 116, and 118.

conveyor (green) can easily reach every silo. The telescoping conveyor (purple) can reach the furthest silo but can only collapse sufficiently to reach the middle silos and cannot collapse enough to reach the closest silos. This limitation is due to the nature of the conveyor. It can only rotate from side to side from the pivot close to the bucket elevator and retract a little less than half of its length (this is always true due to the need for overlap of the two telescoping members). Because of the limited degrees of freedom of the design it will never be able to reach all six silos.



24. The design of the system could be adjusted so that the telescoping belt conveyor could collapse sufficiently to reach the nearest silo by reducing the length of both sections equally. As can be seen in the figure below, if the telescoping

conveyor is sufficiently short enough to reach the closest silos, it is not capable of reaching the furthest silos when fully extended. The articulating belt conveyor on the other hand has sufficient length and degrees of freedom with the addition of the rotation at the intersection of the two members to reach any of the six silos with ease.

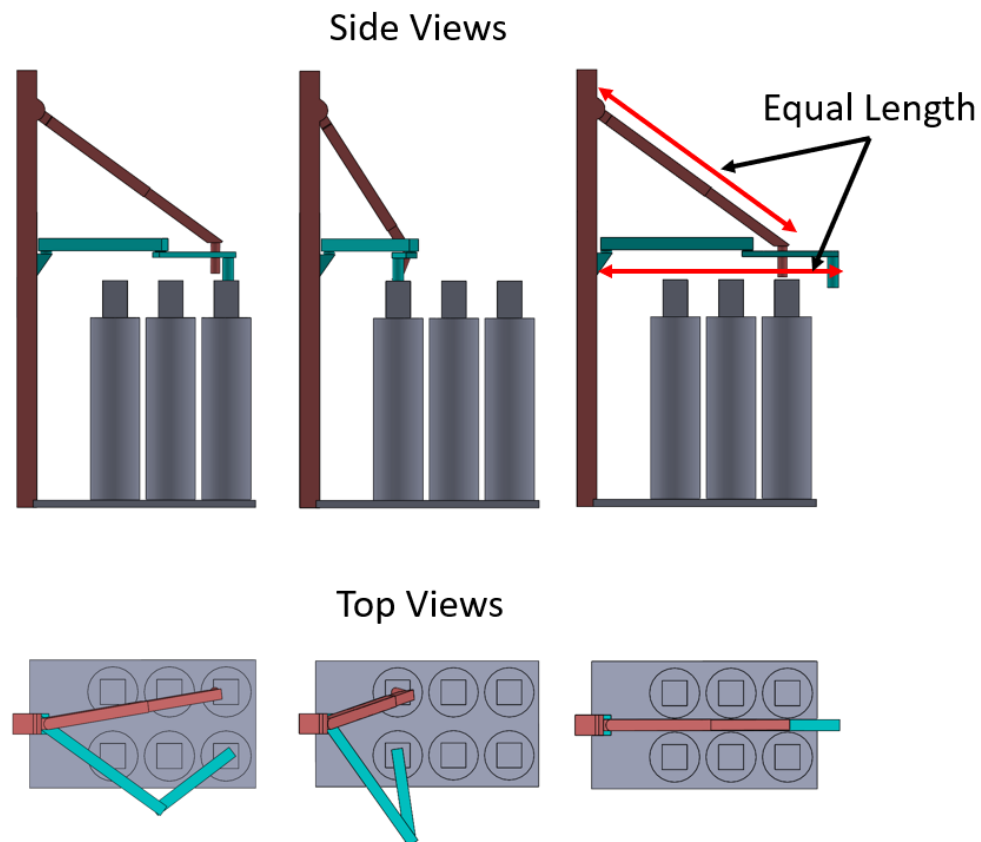


25. Mr. Anderson asserts that a POSITA looking to optimize the range of motion of the discharge chute in *Waldner* could have increased the height of the bucket elevator or the length of the discharge chute.²² Even if a POSITA would have considered these options, a POSITA would not necessarily have considered them

²² Ex. 2004 (Anderson Declaration), ¶¶41 & 43.

better options than using conveyor belts and/or an outer pivot joint like those in *Dynatek*.

26. To understand these issues, the telescoping gravity fed chute (as disclosed in *Waldner*) can be compared against the articulating conveyor using figures similar to those discussed above. As can be seen below, both the articulating conveyor (green) and the telescoping gravity fed chute (brown) can both reach all of the six silos. However, to achieve this, as Mr. Anderson concedes, the bucket elevator for the gravity fed chute must be significantly taller than the tower for the articulated conveyor. A POSITA would recognize several disadvantages in this arrangement.



27. First, increasing the height of the bucket elevator would have made it more difficult to transport and manipulate. For example, all else being equal, a taller bucket elevator would be heavier, which would require more powerful lift structures for deploying it and potentially more fuel for transportation. A taller bucket elevator also would have required a taller frame surrounding the bucket elevator, which would further increase the weight of the system. A taller bucket elevator would also make the unit longer in its transportation configuration. When collapsed, a taller bucket elevator would have made the unit more difficult to maneuver during transport and would have required additional space for storing the collapsed unit. Both the additional length and weight would put further limitations to the locations and routes taken during transport. In another example, increasing the height of the bucket elevator could require further permitting, which would make the system less convenient and more complicated to transport.

28. Additionally, if sized to reach the farthest silos, the telescoping chute would not be able to reach the silos nearest to the tower (similar to the issue illustrated in paragraph 23) without changing the downward angle of the chute. Changing the downward angle of the chute would require a further increase to the height of the tower, and the addition or lengthening of a retractable drop chute so that the aggregate is not lost between the end of the telescoping chute and the silo port.

29. Moreover, a POSITA would have recognized that the bucket elevator of the *Waldner* system needs to be significantly taller to accommodate a gravity-fed chute than it would need to be using a motorized conveyor belt in place of the chute.

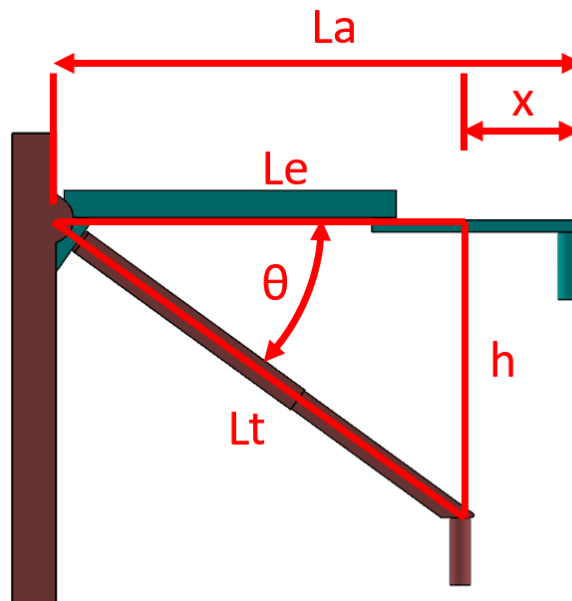
30. Unlike a liquid, granular media does not always flow down an inclined chute because the chute is not steep enough. A POSITA would understand that the angle of repose for granular material refers to the angle between the horizontal and the natural slope of a pile of granular material. It is also the approximate angle required before granular material will begin to slide down a gravity fed chute. If a chute is at a lower angle than the angle of repose the media will not predictably slide. Pertinent to this system is the angle of repose for dry sand, which is approximately 34 degrees.²³ This means that a gravity fed chute should be at least 34 degrees from horizontal for the sand to predictably flow. Indeed, Mr. Anderson acknowledges that the discharge chute would need to be maintained at an angle “sufficient to allow the required material flow rates”,²⁴ and a POSITA would understand this to be at least 34 degrees for the present application.

31. In an example comparing a telescoping gravity fed chute and an articulating conveyor, a POSITA would have known that both the articulating conveyor and the telescoping gravity fed chute can reach all silos in a six-pack

²³ Ex. 1151 (Angle of Repose article), pg. 3 at Table 2.

²⁴ Ex. 2004 (Anderson Declaration), ¶¶41 and 43.

configuration, however to achieve this, the vertical component (i.e., bucket elevator) for the telescoping gravity fed chute must be significantly taller than the vertical component (i.e., bucket elevator) for the articulated conveyor. A POSITA would have known that the magnitude of this additional height requirement depends on the type of media and its angle of repose (e.g., 34-degree decline from horizontal for sand). In addition to the increased height, the length of the telescoping gravity fed chute would have less reach than an articulating conveyor system of the same length. The geometric relationship between these two options is illustrated in the diagram below.



32. In the above diagram, the telescoping chute length (L_t) is the same as the articulating conveyor length (L_a). In addition, the diagram shows the telescoping chute rotated down from the same exit point from the tower as the articulating

conveyor which illustrates the change in height (h) as a decrease in final conveyor exit height. In order to meet the requirements of the angle of repose for sand the telescoping system has been rotated 34 degrees (θ) from horizontal. The diagram also illustrates the difference in reach (x). Geometry dictates the following relationships.

$$\begin{aligned}L_t &= L_a \\L_e &= L_t * \cos(\theta) \\h &= L_t * \sin(\theta) \\x &= L_t - L_e\end{aligned}$$

33. By setting the length of both systems (L_t and L_a) to equal 1 the geometric relationships are revealed. If L_t & $L_a = 1$ then $h = 0.559$ and $x = 0.171$. This means for every foot of horizontal length, the telescoping chute will need to increase in height .559 feet to maintain the same exit height and will have .171 feet less reach than an articulating belt conveyor of the same overall length. For example, I understand from the Declaration of Mr. Jeremy Weinstein of Solaris that the lateral distance from the location where the bucket elevator would be deployed to the outlet of the silo in Solaris' preexisting six-pack silo arrangement that is farthest away from that location was about 50 feet.²⁵ To reach that lateral distance at an appropriate angle θ , a telescoping chute would need to be about 10 feet longer than an articulated

²⁵ Ex. 1112, ¶15.

belt conveyor, and attached at the top of a bucket elevator that is about 33 feet taller. In other words, if the articulating belt conveyor has a reach of 50 feet (which is approximately the length that would have been required to reach to the farthest silo outlet in Solaris' six-pack²⁶) a telescoping chute of equal length as compared to the articulating conveyor would need to be attached at the top of a bucket elevator approximately 28 feet taller, and that telescoping chute would have approximately 8.5 feet less reach than an articulating belt conveyor of the same length.

34. As noted above, Mr. Anderson also proposed that the discharge chute of *Waldner* could be made longer to increase its reach. Of course, making the chute longer (without increasing the height of the bucket elevator) would present a similar problem to that of the telescoping conveyor discussed above, in that a longer chute may not be able to collapse sufficiently to reach silos closer to the bucket elevator. Moreover, all else being equal, increasing the length of the *Waldner* discharge chute also would have made it heavier and more difficult to manipulate, both while deploying it and while using it to fill silos. Even if a POSITA could modify the construction or materials of the discharge chute to compensate for this issue, those modifications would have added further complication and potentially required re-testing and re-qualifying the chute to confirm that it met other safety or operational requirements. With those added complications, a POSITA would not necessarily

²⁶ *Id.*

have considered increasing the length of the discharge chute sufficiently simple to outweigh the benefits of using a conveyor like that disclosed in *Dynatek*.

35. Mr. Anderson also asserts that a POSITA would not have been motivated to modify *Waldner* to increase its range of motion because “there is no need in *Waldner*, for example, to fill silos behind the bucket elevator.”²⁷ Even if not disclosed in *Waldner*, a POSITA would have understood that silos are not always arranged in the same configuration on one side of the silo filling system (such as the single “six-pack” as shown in the ‘689 Patent). To the contrary, both now and at the time the ‘689 Patent was filed, silos are often placed in varying numbers and configurations in several places at an oil or gas well site, and may be located on more than one side of a silo filling system.²⁸ For example, increasing the range of motion of *Waldner*’s discharge chute to reach silos outside of a less than 180-degree range of motion would have allowed a single system to better reach more of these silos without having to reposition the *Waldner* system.

36. Mr. Anderson also assumes that it will always be possible to park the system as described in *Waldner* such that the silos would be directly in front of its discharge chute (or within its 180-degree reach). However, space is limited at most

²⁷ Ex. 2004 (Anderson Declaration), ¶41.

²⁸ See, e.g., Ex. 1152 (US 11,185,900) (“The number of sand sources, such as transportation and storage containers 101 and portable silos/vertical sand movers 816 may vary in actual practice.”)

oil and gas well sites due to the presence of other equipment and personnel, particularly when fracturing operations are occurring. It is often necessary to keep certain areas adjacent to the silos clear for other equipment or personnel, and access to those areas are sometimes limited by property boundaries, safety hazards, and the like. Moreover, a POSITA would have recognized that systems like *Waldner* would work best when they are installed on level ground, and the ground near the silo certain locations may not be as level as the ground in other locations around the silo. Therefore, a POSITA would have recognized that it may not always be possible or desirable to park the *Waldner* system such that 180-degrees of reach from its discharge chute is sufficient to fill the silos. Further, a POSITA would have understood that flexibility in laying out an oil and gas well site would have value.

37. Even if it is possible to reposition the *Waldner* system to fill silos that are not directly in front of its bucket elevator, that repositioning would require additional personnel and time. The added time for repositioning would delay filling of the silos, potentially resulting in downtime that could cause the operator / owner at the site to lose more time and money.

38. Finally, even for those silos along one side of the *Waldner* bucket elevator and within the 180 degrees of area reachable by *Waldner's* discharge chute, filling silos near the leftmost and rightmost portions of that area would force the discharge chute to the maximum limits of its left-to-right movement. Doing so may

cause strain and wear on the actuators used to move the discharge chute and/or the components that connect the discharge chute to the vertical frame. Alternatively, designing the discharge chute to have a second left-to-right pivot joint, as *Dynatek* teaches, would allow positioning the discharge end of the chute in the leftmost and/or rightmost regions of that area using a combination of the two pivot joints and thus would not force either pivoting joint to its limits. This is one way in which a POSITA would have used the teachings of *Dynatek* to enhance the mechanical control of the discharge chute in *Waldner*.

39. Mr. Anderson asserts the *Waldner* discharge chute already contains the same number of “points of control” as *Dynatek*’s Econoloader, and so a POSITA would not have been motivated to use *Dynatek*’s teachings in order to enhance mechanical control of the system.²⁹ This is, at best, misleading. First, in *Waldner*, the left-to-right movement of the outlet of the discharge chute can only be controlled at a single point – where the chute is connected to the bucket elevator frame. Modifying *Waldner*’s discharge chute according to *Dynatek*’s teachings to include an outer pivot joint (analogous to an elbow on an arm), or substituting the *Dynatek* Econoloader for the *Waldner* discharge chute, would provide an additional point at which the left-to-right positioning of that outlet can be controlled. Moreover, since *Dynatek* shows placing the additional pivot joint approximately half-way down the

²⁹ Ex. 2004 (Anderson Declaration), ¶48.

length of the chute or the Econoloader, less mass would need to be moved from that location in order to adjust the left-to-right position of the outlet. This arrangement would provide substantially better leverage and require less force to move the outer portion of the chute or the outer arm of the Econoloader to the desired location.

B. Discharge Rates

40. Mr. Anderson asserts that a POSITA would not be motivated to replace *Waldner's* discharge chute with a conveyor having a faster particle discharge rate because the discharge rate of the overall system is already set at the loading point.³⁰ Certainly the discharge chute of *Waldner* cannot and would not dispense more aggregate than is dispensed onto the unloader, and would not need to be designed to unload aggregate faster than it can be dispensed from the truck onto the unloader. But Mr. Anderson assumes that every system disclosed by *Waldner* (or that might be built according to *Waldner's* disclosure) would already be designed to accommodate the maximum possible discharge rate of any truck that might be used to unload sand into it. But *Waldner* includes no such teaching.

41. Even if Mr. Anderson's assumption was correct, this would still mean that such a system would be limited to transferring aggregate from trucks at a rate no greater than the assumed maximum rate when the system was designed and built. In my experience, not all trucks used for transporting aggregate discharge it at the

³⁰ Ex. 2004 (Anderson Declaration), ¶44.

same maximum rate, and certainly new trucks have been introduced over time that can discharge aggregate at increased rates as compared to older equipment (such as belly dump trucks). Further, the rate of *Waldner's* base conveyor could be controlled to better match those increased discharge rates by increasing the speed of the belt. However, because the particle discharge rate from the *Waldner* discharge chute depends on gravity and the angle of the chute, its discharge rate cannot be so increased without pivoting the chute further downward and thereby limiting its horizontal reach. Moreover, the discharge chute could experience reduced discharge rates, for example, if its orientation must be near-horizontal in order to maximize its lateral reach, if the aggregate being transferred becomes wet or moist (which would likely slow its movement down the slide, or increase its angle of repose³¹), or if aggregate or some other substance at least partially obstructs the interior of the chute. Therefore, a POSITA would indeed have reasons to consider increasing, or at least controlling, the discharge rate of *Waldner's* chute. The rate of discharge from *Waldner's* chute without incorporating the teachings of *Dynatek* is not controllable. It is completely dependent on what position the chute must be in to reach the desired silo.

42. Further, assuming a larger input rate, a POSITA would still have been motivated to ensure that the discharge rate from *Waldner's* discharge chute is faster

³¹ See *supra* at 23.

than upstream components of the system. Mr. Anderson asserts that “a POSITA would not be motivated to replace [the discharge chute] with something faster,”³² but Mr. Anderson did not consider the effects of the material weight on the discharge chute. A POSITA would have further wanted to minimize the weight of the discharge chute of *Waldner* and its contents, including the weight of the sand being carried on the chute. As sand piles up on the upper conveyor, that would increase the overall weight, which could cause stresses on the system. Therefore, a POSITA would have been motivated to increase the discharge rate from the discharge chute, for example, by using a motorized conveyor even if that would not increase the discharge rate of the overall system.

43. Mr. Anderson also asserts that, even if a POSITA were motivated to increase the particle discharge rate of *Waldner’s* chute, the POSITA could do so by simply increasing the diameter of the chute.³³ This alternative could cause a number of problems. For example, all other things being equal, a wider discharge chute would have been heavier and more difficult to manipulate in moving its outlet to the port of a silo distanced outwardly from the bucket elevator. This may also require re-designing the width of the outlet of the bucket conveyor or the components that connect it. Moreover, enlarging the diameter of the chute may not increase discharge

³² Ex. 2004 (Anderson Declaration), ¶44.

³³ Ex. 2004 (Anderson Declaration), ¶46.

rates if those rates are being limited by, for example, obstructions in the chute, moisture in the sand, or the angle of the chute. Further, increasing the diameter of the chute would increase the height of the system in the transport configuration. Finally, a conveyor belt may allow for a greater range of increased rates than can be accommodated by a reasonably-sized chute. In view of these drawbacks, a POSITA would have at least considered *Dynatek's* teaching of using a conveyor belt to increase particle discharge rates instead of widening the chute.

C. Belt Mistracking & Other Conveyor Belt Issues

44. Mr. Anderson asserts that placing a conveyor belt within a chute would result in significant wear and low reliability.³⁴ He explained in his deposition that this arrangement would be a “tubveyer” in which the conveyor belt is folded into the tube, which “causes a lot of friction because [you are] taking that belt and rolling it up to get it into the tube”.³⁵ This arrangement is not what I proposed in my original declaration. In my original declaration I stated: “In combination with Dynatek ... Discharge chute member 242 is modified per the teachings of Dynatek to have “(2) open or closed conveying arms, each containing its own belt conveyor”.³⁶ This does not require folding or rolling up the belt of *Dynatek* or anything like what Mr. Anderson described. A POSITA would have understood that the segments of

³⁴ Ex. 2004 (Anderson Declaration), ¶50.

³⁵ Ex. 1113 (Anderson Deposition), pages 181 – 183.

³⁶ Ex. 1003 (Durham Declaration), ¶152.

Waldner's discharge chute could each be replaced with a conveyor belt as disclosed in *Dynatek*, or flat conveyor belts as disclosed in *Dynatek* could be placed within the open space of each chute segment with enough clearance around the belts to avoid any added frictional wear issues.

45. Mr. Anderson asserts that a POSITA would have been concerned about modifying *Waldner's* discharge chute to include belt conveyors because of concerns that the conveyor belt would mistrack if it is not mounted and maintained side-to-side level.³⁷ I disagree that the risk of mistracking would dissuade a POSITA from modifying *Waldner's* discharge chute to include conveyor belts as discussed above.

46. First, *Waldner* already discloses a vertical bucket conveyor that already should be kept side-to-side level to avoid mistracking. The same forces that could cause a conveyor belt at the position of *Dynatek's* discharge chute could cause similar issues with the vertical bucket elevator. To address that issue, *Waldner* discloses several features to ensure that the bucket elevator and overall system remains level. For example, *Waldner* discusses the use of support legs to stabilize the trailer and maintain its level orientation,³⁸ which would help keep the bucket elevator vertical and the conveyor belts at the position of *Waldner's* discharge chute level. *Waldner* also discusses a control system with tilt sensors that are used to detect

³⁷ Ex. 2004 (Anderson Declaration), ¶¶ 54-59.

³⁸ Ex. 1004 (Waldner), 24:4 – 25: 6.

level and unlevel conditions of the transportable frame that carries the bucket elevator,³⁹ which would also detect an unlevel condition of conveyor belts at the position of *Waldner's* discharge chute. *Waldner* discloses that this combination of elements can be used to keep the system level during setup and during operation of the conveyor system.⁴⁰ Other types of levelling and stabilizing devices for vertical systems such as guy wires, outrigger arms, and stabilizing legs were well known in the art and would have been well within the skill of a POSITA to install if further stabilization was required or desired. Therefore, particularly in view of *Waldner's* own disclosure, it would have been well within the skill of a POSITA to install measures to keep the system sufficiently level to avoid belt mistracking.

47. Moreover, a POSITA would understand that equipment like that disclosed in *Waldner* used at an oil and gas site must be closely monitored and inspected (often several times a day) to ensure its proper working order and to comply with worker safety requirements, and often requires maintenance to address issues that may arise during operation. In conducting that routine maintenance and monitoring on a system as disclosed in *Waldner* and modified in view of *Dynatek*, the operator would detect if a belt in the modified *Waldner* system is no longer level and/or requires adjustment. The need to make this kind of routine adjustment would

³⁹ Ex. 1004 (*Waldner*), 28:1 – 30:30.

⁴⁰ Ex. 1004 (*Waldner*), 28:48 – 29:60.

not dissuade a POSITA from modifying *Waldner* as proposed. Even Mr. Anderson acknowledged that a POSITA would have expected that systems for handling aggregate in this field would have been subjected to frequent inspections and maintenance – even multiple times a day during use – during which such techniques from the prior paragraph could have been employed to prevent or fix belt mistracking.⁴¹

48. Mr. Anderson also asserts that wind would push a belt conveyor at the position of the *Waldner* discharge chute into a position where they are not level and exacerbate belt mis-tracking issues.⁴² The same solutions discussed above disclosed in *Waldner* and known to a POSITA would address these problems and stabilize the conveyor. Moreover, to the extent that wind forces could increase the risk of belt mistracking, if the *Dynatek* system and/or conveyor belts would be heavier than *Waldner's* discharge chute as Mr. Anderson asserts,⁴³ then the additional weight would tend to make conveyor belts less susceptible to being blown into un-level positions by wind. Finally, to the extent that the belt conveyor of *Dynatek* has less surface area than the chute of *Waldner*, it may be less susceptible to the effects of wind.

⁴¹ Ex. 1113 (Anderson Deposition), at 54:12 – 55:8.

⁴² Ex. 2004 (Anderson Declaration), ¶60.

⁴³ Ex. 2004 (Anderson Declaration), ¶60 (“a conveyor belt system such as the Dynatek EconoLoader is much larger and heavier than comparable discharge chutes...”).

D. Transport Height of System

49. Mr. Anderson asserts that attaching the *Dynatek* Econoloader to *Waldner's* bucket elevator frame would have resulted in a system that was too tall (in the transport configuration) to be transported on highways in most states.⁴⁴ I disagree with this view, or that such a result would have made that combination not obvious to a POSITA.

50. As an initial matter, a POSITA would have understood how to make basic adjustments to the dimensions of the *Dynatek* system to meet any limitations on the transportable height on the system. These types of adjustments were and are commonplace for engineers designing this type of equipment, and those changes would not necessarily require substantially redesigning the components to make the system just a few feet shorter. If a POSITA would have reconfigured the bucket elevator of *Waldner* by increasing its height⁴⁵ or reconfigured the discharge chute of *Waldner* to increase its diameter,⁴⁶ as Mr. Anderson suggests, a POSITA certainly would have understood how to make these basic adjustments.

51. There are also several problems with Mr. Anderson's assumptions and calculations. First, Mr. Anderson assumes in his calculations that the figure in *Waldner* that he uses for his calculations (Figure 6) is drawn to scale. A POSITA

⁴⁴ Ex. 2004 (Anderson Declaration), ¶61.

⁴⁵ Ex. 2004 (Anderson Declaration), ¶¶41 and 43.

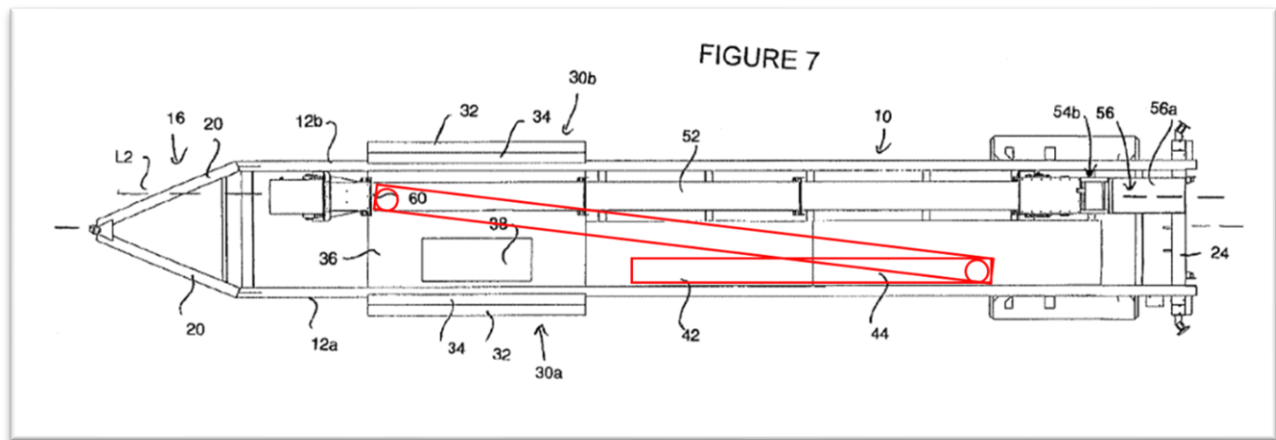
⁴⁶ Ex. 2004 (Anderson Declaration), ¶46.

would recognize that Figure 6 of Waldner is more of an idealized schematic that is not necessarily intended to show the relative dimensions of different components with any degree of precision. He also assumes that the Econoloader conveyor used would have the same dimensions as depicted in the images from Dynatek that he used. However, *Dynatek* did not include dimensions in the drawings of the EconoLoader shown, and *Dynatek* specifically states that “Every DYNATEK EconoLoader is custom engineered for the application.”⁴⁷ In view of these disclosures, a POSITA would not assume the dimensions of the *Dynatek* EconoLoader that Mr. Anderson assumed in his calculations.

52. Moreover, even if Figure 6 of *Waldner* and the images in *Dynatek* show the dimensions that would be used in the proposed combination, a POSITA would understand that the *Dynatek* Econoloader need not be “double-stacked” on top of the bucket elevator as Mr. Anderson assumes. *Dynatek* discloses that the EconoLoader’s arms can be rotated with respect to each other about the outer pivot joint such that they are not fully aligned with each other. According to the proposed combination, the inner arm of *Dynatek*’s EconoLoader would also be pivotally mounted on *Waldner*’s bucket elevator frame. When the bucket elevator frame is in the transport configuration, this combination of pivot joints would allow a POSITA to position

⁴⁷ Ex. 1005 (Dynatek), pages 2-3.

the EconoLoader's arms such that the inner arm sits on top of the bucket elevator frame but the outer arm sits to the side of the bucket elevator frame, as shown below.



Ex. 1004 (Waldner) Fig. 7 (example annotated to include teachings of *Dynatek* as implemented by a POSITA)

A POSITA would be able to position the EconoLoader's arms as shown above simply using the pivoting functionality described in *Dynatek* that is already present in the EconoLoader.

53. Using Mr. Anderson's other calculations and assumptions,⁴⁸ this arrangement would result in a total height of 13.5 to 14.5 feet for the *Waldner* system (as modified by the proposed substitution) in the transport configuration. That height would comply with state highway regulations in most states, and a POSITA would recognize that it is readily transportable.

⁴⁸ Ex. 2004 (Anderson Declaration), ¶61.

54. Finally, even if using the *Dynatek* EconoLoader would result in a system that is as tall in its collapsed transport configuration as what Mr. Anderson theorizes, that system would still fall within the scope of the ‘689 Patent claims. Nor would a POSITA expect that such a system would be impossible or prohibitively difficult to transport. In the oil and gas industry, it is typical for equipment suppliers and operators to have to obtain permits to transport oversized equipment on certain highways, or to plan transport routes that will not require such permits. In particular, the silos that the *Waldner* system would have been used to fill were often as tall as 80 feet,⁴⁹ and so the height of *Waldner’s* bucket elevator for filling them would necessarily already exceed most state highway regulations for trailer length (53 ft) without a special permit. Since *Waldner’s* system will already require permits due to the height of its bucket elevator (*i.e.*, the length in the transport configuration), a POSITA would not be dissuaded from using the *Dynatek* conveyor simply because its height also may require permits.

VII. GROUND 1, CLAIM 6: “CONVEYOR SUPPORT FRAME”

55. Mr. Anderson asserts that a POSITA would understand that the “conveyor support frame” of claim 6 must be “the support structure that connects the conveyors to the bucket elevator frame and **not** the support structure that is part

⁴⁹ Ex. 1153, page 3.

of the conveyors”.⁵⁰ He appears to base this on looking only at component 154 of Figure 8C of the ‘689 Patent.

56. However, the relevant claim language of claim 6 reads “a conveyor support frame supporting the segments of ***the extension conveyor on the aggregate elevating assembly***”. A POSITA would not necessarily parse this language the way that Mr. Anderson suggests. In particular, a POSITA would have understood that the phrase “on the aggregate elevating assembly” may simply specify that the extension conveyor is located “on the aggregate elevating assembly”, not the location of the frame relative to the aggregate elevating assembly. Indeed, in several instances, the ‘689 Patent claims recite a claim element and later restate the location or association of that element (*e.g.*, see claim 1 reciting that the extension conveyor is articulated “with an inboard segment and an outboard segment”, and then subsequently reciting “the inboard segment ***of the extension conveyor***” and “the outboard segment ***of the extension conveyor***”).

57. Moreover, the ‘689 Patent figures also show truss frames surrounding the conveyors, for example, in Figure 8C as highlighted below.

⁵⁰ Ex. 2004 (Anderson Declaration), ¶¶74-75.

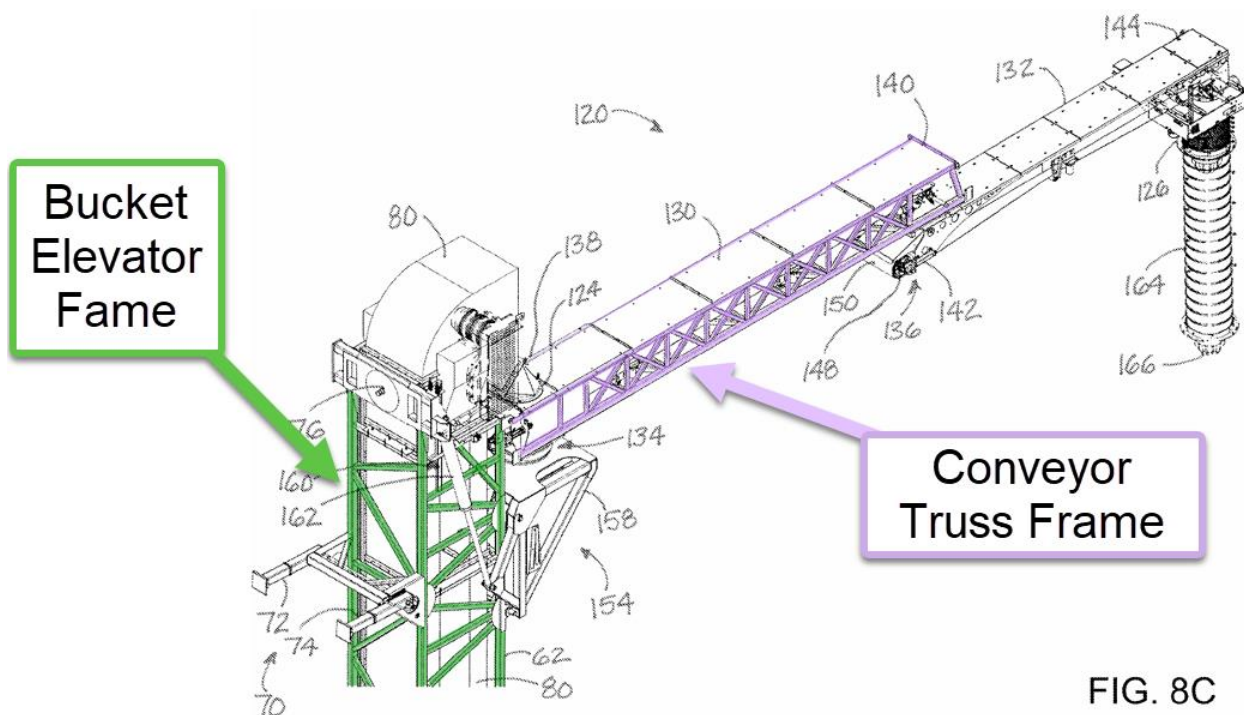


FIG. 8C

58. To the extent that the truss frames in *Dynatek* would not “connect the conveyors to the bucket elevator frame” when combined with *Waldner*, neither do these truss frames. However, nothing in the specification indicates to a POSITA that those frames could not also be “conveyor support frame[s] supporting the segments of the extension conveyor on the aggregate elevating assembly”.

59. Even if a POSITA would understand claim 6 to require that the conveyor support frame is attached to the deployable frame as the patent owner and Mr. Anderson seem to suggest, the proposed combination of *Dynatek* with *Waldner* would meet that limitation. In making the proposed combination, a POSITA would attach a truss frame around the conveyor (or *Waldner*’s discharge chute) like that disclosed in *Dynatek* to the bucket elevator frame of *Waldner* in a manner that allows

the chute or conveyor to move relative to the deployable frame. Therefore, a POSITA would attach the proximal end of *Dynatek's* truss frame to *Waldner's* bucket elevator frame using, for example, *Waldner's* brackets 252, links 256, and pins 258, or similar structures known to a POSITA.

VIII. GROUND 1A: WALDNER IN VIEW OF DYNATEK AND SLEEMAN

60. As I discussed in my original declaration, *Sleeman* discloses a series of actuators, shafts and gears that are used to adjust the position of spout 50.⁵¹ With regard to Claim element 1[h] of the '689 Patent, I discussed that *Sleeman* discloses that the position of spout 50 is controlled by the extension actuator 56, the swing actuator 68, and the tilt actuator 70.⁵² I also noted that horizontal pivot shaft 60 defines the horizontal tilt axis for the spout 50.⁵³

61. In discussing Claims 6 & 7 of the '689 Patent, I incorporated my discussion of claim element 1[h],⁵⁴ but inadvertently referenced swing actuator 68.⁵⁵ In discussing claims 6 and 7, I intended to refer to tilt actuator 70 instead of swing actuator 68. As discussed in *Sleeman* and a POSITA would immediately recognize, tilt actuator 70 is the actuator in *Sleeman* that controls the tilting motion of spout 50

⁵¹ Ex. 1003 (Durham Declaration), ¶90 (citing Ex. 1006, 19:25 – 20:13).

⁵² Ex. 1003 (Durham Declaration), ¶276.

⁵³ Ex. 1003 (Durham Declaration), ¶276.

⁵⁴ Ex. 1003 (Durham Declaration), ¶¶ 287 & 289.

⁵⁵ Ex. 1003 (Durham Declaration), ¶¶ 289 & 291.

about the horizontal pivot shaft 60 and horizontal tilt axis.⁵⁶ Mr. Anderson further confirmed this at his deposition.⁵⁷

IX. GROUND 3: WALDNER IN VIEW OF *DYNATEK* AND *AULD*

A. Kingpin / Fifth Wheel Connections and Gooseneck Connections

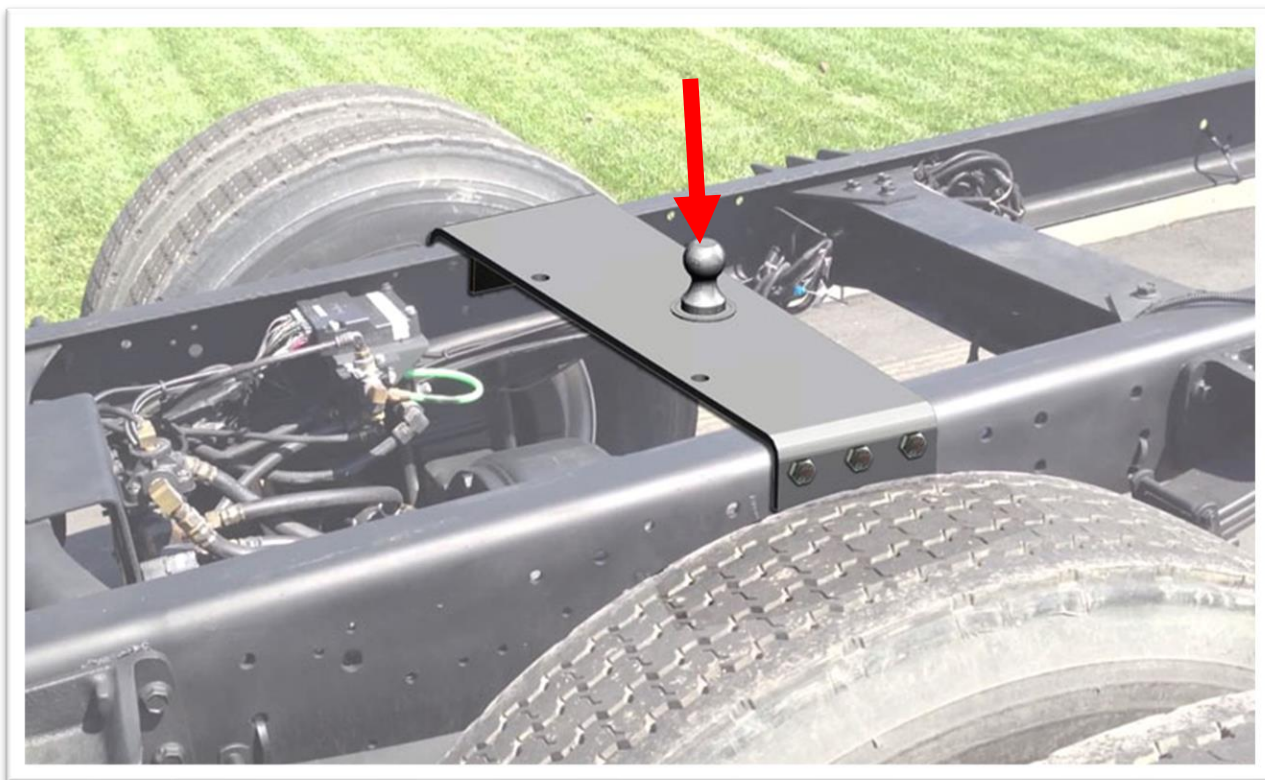
62. Mr. Anderson asserts that a fifth wheel / kingpin connection would not have a more even distribution of load across the bed of the transport vehicle than a gooseneck connection.⁵⁸ I disagree with this view. A gooseneck connection connects over a ball on, for example, the bed of the truck. The ball (see the red arrow below) is of a similar nature as a hitch ball for a receiver or bumper connected trailer hitch and is typically only 3 inches in diameter. Accordingly, all of the tongue load of the trailer is only distributed across a few of inches of the ball.⁵⁹

⁵⁶ Ex. 1006 (Sleeman), 19:25 – 20:13.

⁵⁷ Ex. 1113 (Anderson Deposition), pages 248 – 249.

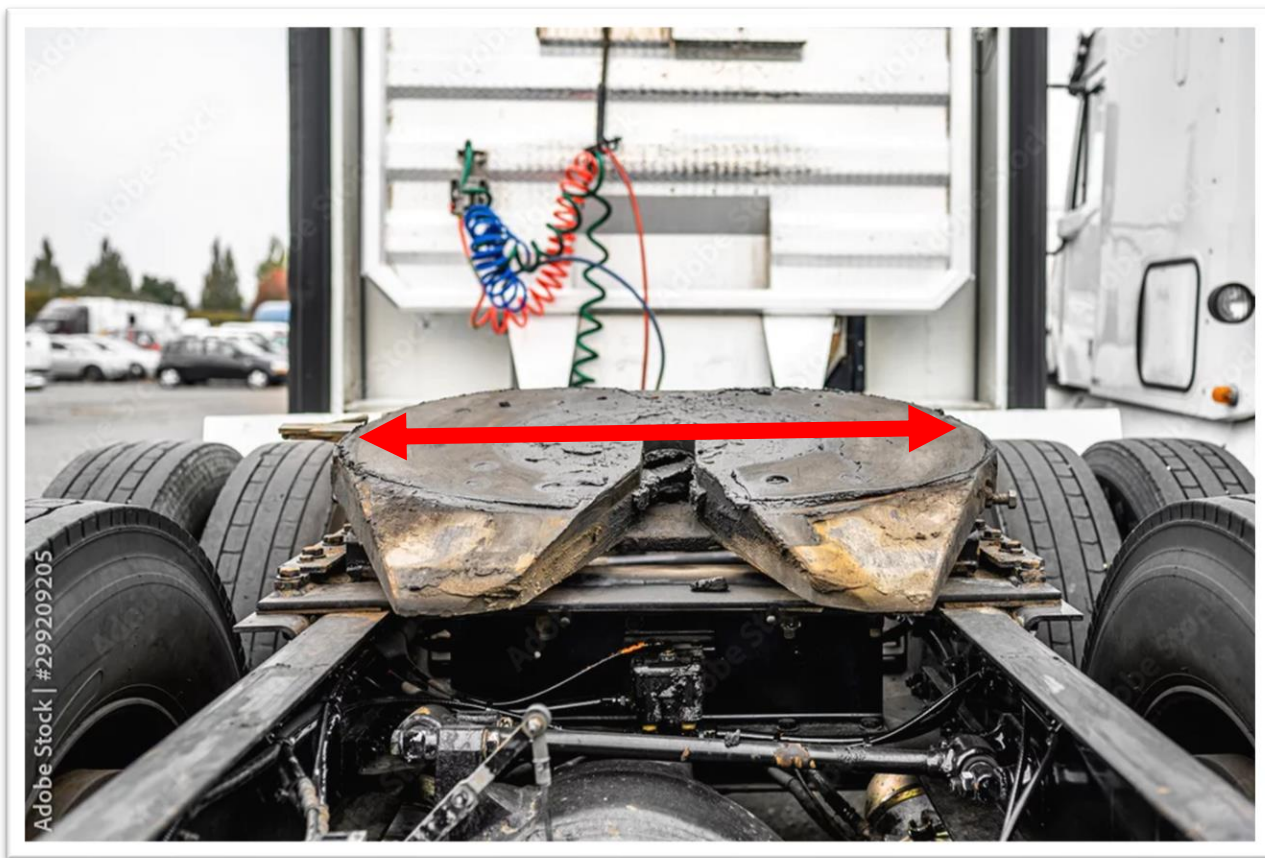
⁵⁸ Ex. 2004 (Anderson Declaration), ¶147.

⁵⁹ <https://goosenecktowing.com/product/semi-flip-over-gooseneck-hitch>.



63. A fifth wheel connection, on the other hand, has a much larger mating surface, with the mating surface of a fifth wheel hitch between 35 and 38” across (see red arrow below).⁶⁰

⁶⁰ <https://stock.adobe.com/images/fifth-wheel-coupling-and-rear-suspension-with-axles-and-wheels-of-big-rig-semi-truck-tractor/299209205?isa0=1&state=%7B%22ac%22%3A%22stock.adobe.com%22%7D>.



64. While the “kingpin” that provides connection to the truck for longitudinal pulling forces (would mount in the center of the fifth wheel plate above), is still approximately 3”, the lateral and vertical forces are distributed across the entire fifth-wheel plate. Accordingly, as discussed in my original declaration, the load is distributed more evenly. As a result, the entire pulling process is more stable, which would motivate a POSITA to incorporate a fifth wheel connection, with a kingpin, to the teachings of *Waldner/Dynatek/Auld*.

B. Placement of Kingpin in Waldner

65. Mr. Anderson asserts that mounting a hitch coupler or kingpin to *Waldner's* bucket elevator 50 would cause problems because the bucket elevator 50 is off-center relative to the wheels 28 as shown in Figure 7.⁶¹ I disagree with this view.

66. As an initial matter, Mr. Anderson's opinions seem to rely on Figure 7 of *Waldner* and the placement of the kingpin on the bucket elevator in that particular embodiment. However, as discussed in my original declaration, *Waldner* discloses several embodiments of the disclosed system that differ from the embodiment in Figure 7, all of which would be relevant to the proposed combination of *Waldner* with *Auld*. For example, Figure 15 of *Waldner* shows another embodiment in which the bucket elevator is configured differently and includes a frame surrounding it. And in each embodiment the bucket elevator would be positioned somewhat differently. This would teach a POSITA that *Waldner's* bucket elevator and/or its frame could be reconfigured and/or repositioned to allow the kingpin to be mounted in a workable location.

67. As another example of such an arrangement, *Sleeman* shows that the vertical elevating assembly 24 includes bucket elevators 34 surrounded by a frame 26 that is pivotally connected to a base frame 12. As shown, for example, in Figures

⁶¹ Ex. 2004 (Anderson Declaration), ¶¶150-151.

3 & 15 (in the operational position) and Figure 2 (in the collapsed transport position), frame 26 is centered on frame 12. And *Sleeman* discloses that base frame 12 can be used as a trailer frame for readily transporting the entire system.⁶² This disclosure further confirms that a POSITA would understand that *Waldner's* bucket elevator and/or its frame could be positioned to be centered relative to *Waldner's* trailer frame.

68. Indeed, claims 12 and 25 of the '689 Patent recite that the kingpin is mounted on the deployable frame, not the bucket elevator, and so the kingpin need not be mounted on the bucket elevator to read on those claims. And, as I stated in my original declaration, I have simply applied the teaching of *Auld* of a king pin mounted at the free / upper end of a vertically oriented structure to the structures shown in *Waldner*, which include the vertical bucket elevator shown in all of the embodiments as well as the bucket elevator frames shown in Figures 11 and 15. Therefore, even if a POSITA was unable to center *Waldner's* bucket elevator itself on the trailer frame, a POSITA could reposition or resize (widen) the frame surrounding the bucket elevator such that the frame would be centered on the trailer frame. Even with this modification, the system would still achieve the same advantage discussed in my original declaration of reducing the total length of *Waldner's* trailer.

⁶² Ex. 1006 (*Sleeman*), 15:35-38, 38:3-12.

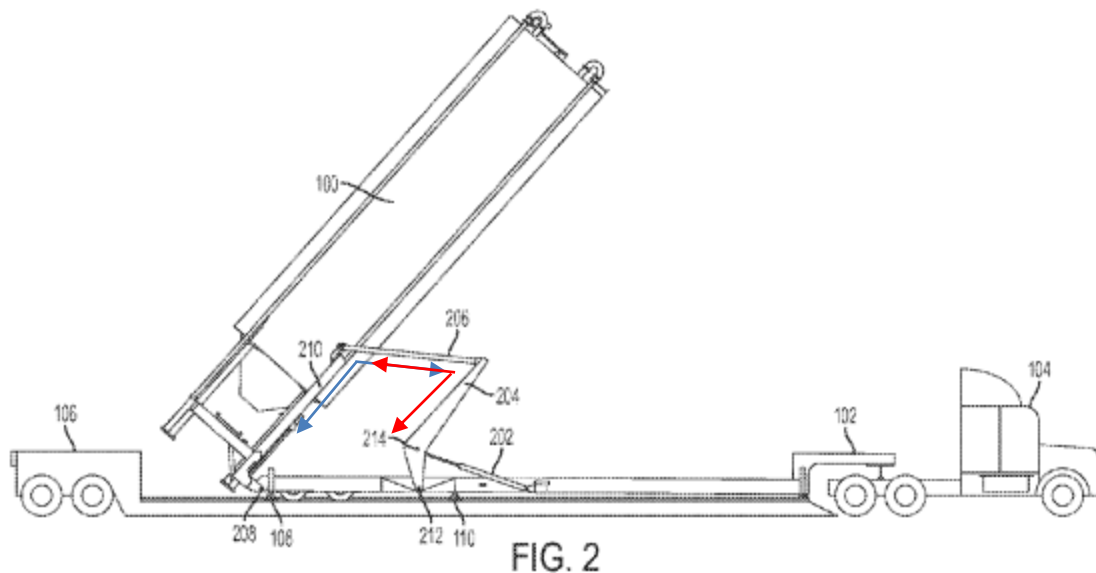
X. GROUND 3: WALDNER IN VIEW OF DYNATEK AND *McIVER*

69. Mr. Anderson asserts that the rocker arm 204 of *McIver* is not articulated between the first and second ends of the arm structure.⁶³ In my original declaration and at my deposition, I stated that a POSITA would understand that rocker arm 204, arm 206, and flipper mechanism 210 as a “lift arm structure” that forms a linkage between the trailer and the silo in *McIver*.⁶⁴

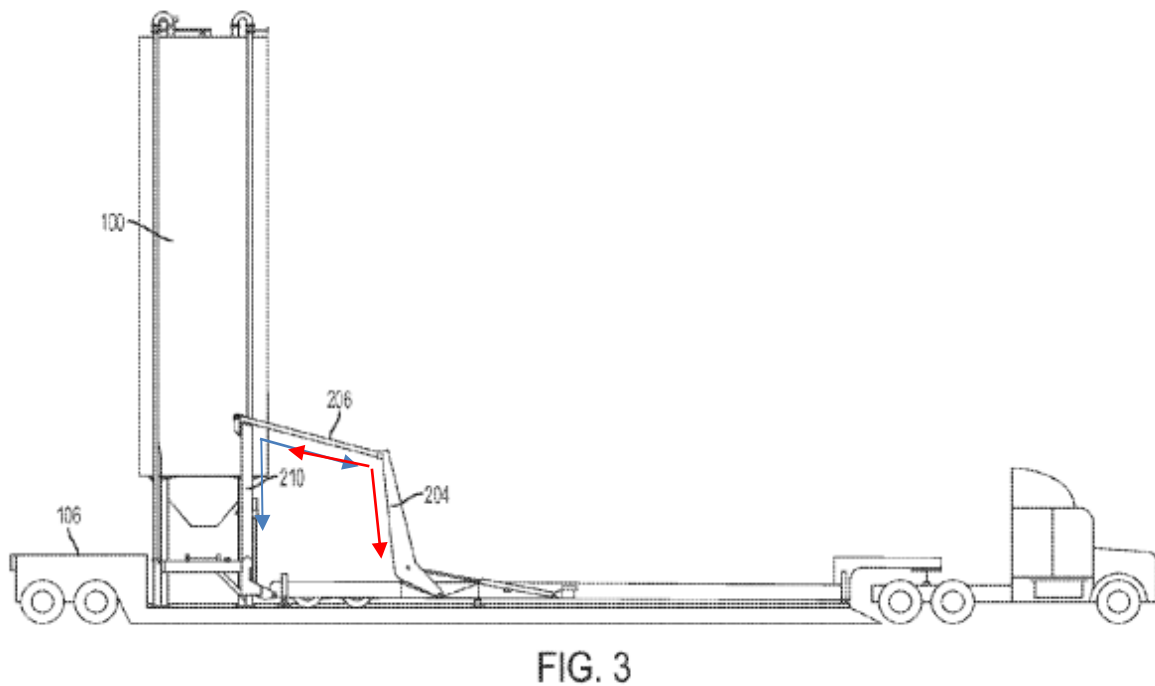
70. As I stated in my original declaration, the “arm structure” is articulated between its first and second ends. That is because the “arm structure” that includes rocker arm 204, arm 206, and flipper mechanism 210 has pivotal connections between rocker arm 204 and arm 206, and between arm 206 and flipper mechanism 210. Those pivotal connections are apparent from comparing Figures 2 and 3 of *McIver* (see below).

⁶³ Ex. 2004 (Anderson Declaration), ¶¶150-151.

⁶⁴ Ex. 1003 (Durham Declaration), ¶394; Ex. 2003 (Durham Deposition) 148:4-23.



Ex. 1011 (*McIver*) annotated FIG. 2 (red angle corresponding to the pivotal connection between 204 and 206; blue angle corresponding to the pivotal connection between 206 and 210).



Ex. 1011 (*McIver*) annotated FIG. 3 (red angle corresponding to the pivotal connection between 204 and 206; blue angle corresponding to the pivotal connection between 206 and 210).

71. Mr. Anderson also confirmed the existence of these pivoting, articulated connections in *McIver* at his deposition:

Q. Now, looking at Figure 2, do you see Element 204?

A. Yes, ma'am.

Q. And do you agree that Element 204 is connected at one end to trailer 102?

A. Yes. At 212.

Q. And 212 is a pivot point, right?

A. Yes, ma'am.

Q. And that rocker arm 204 pivots relative to the trailer 102 at that point?

A. Yes, ma'am.

Q. Do you agree that the rocker arm, the other end of rocker arm 204 is connected to arm 206?

A. Well, 206 isn't a rocker arm. It's the second linkage.

Q. Yes.

A. So 204 is the rocker arm and then 206 is the link that then attaches it to the -- 210, I guess.

Q. And 204 ask connected to 206?

A. Yeah. The rocker arm 204 is connected to 206 on one end and the other end of 206 is connected to the silo.

Q. Where 204 is connected to 206, that's another pivot point?

A. Yes, ma'am.

Q. And I think you mentioned 206 on the other end is connected to the flipper mechanism 201?

A. Flipper mechanism. I said that because in the picture it looks like it's connected to the silo but I do understand that that is a flipper frame 210.

Q. And it's connected there to Element 210 at another pivot point?

A. Ask that question again.

Q. 206 is connected to 210 at a pivot point?

A. Yes, ma'am.

Q. And so arm 206 is going to pivot with regard to 210 as well?

A. Right.⁶⁵

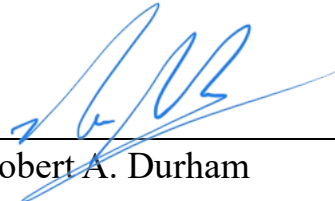
⁶⁵ Ex. 1113 (Anderson Deposition), pages 266 - 268; *see also id.* at pages 264 - 266 (confirming that pivoting movement qualifies as “articulated”).

72. Therefore, because of these pivoting connections, the lift arm structure comprising rocker arm 204, arm 206, and flipper mechanism 210 is “articulated” between its first and second ends.

XI. DECLARATION

73. I hereby declare that all the statements made in this Declaration are of my own knowledge and true; that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Executed in Tulsa, OK on July 25, 2025.



Robert A. Durham