

Exhibit I1: Invalidity of U.S. Patent No. 11,376,136 in View of Gordon, McLuen, and Michelson

U.S. Patent Application Publication No. 2005/0278026 A1 to Gordon et al. (“Gordon”), alone or in combination with U.S. Patent Application Publication No. 2006/0253201 A1 to McLuen (“McLuen”), alone or in combination with and/or International Publication No. WO 02/062272 A2 to Michelson (“Michelson”), alone or in combination with other prior art identified in the cover pleading and/or discussed below, disclose(s) or render(s) claims 9, 10, 11, 12, 14, 16, 18, and 20 obvious. Moskowitz has claimed a priority date of August 21, 2007 for the ’136 Patent. Gordon published on December 15, 2005, and is thus prior art under at least pre-AIA § 102(a) and 102(b). McLuen published on November 9, 2006, and is thus prior art under at least pre-AIA § 102(a). Michelson published on August 15, 2002, and is thus prior art under at least pre-AIA § 102(a) and (b). Nothing in this chart should be construed as an admission of infringement or the correctness of Moskowitz’s interpretation of the claims as reflected in the infringement contentions.

Claims	Invalidity Analysis
Claim 9	
[9A] A system comprising: a tool assembly comprising: a first tool having a first proximal end, a first distal end, and a first elongate body between the first proximal end and the first distal end, wherein the first tool defines a first tool axis from the first proximal end to the first distal end,	To the extent the preamble is limiting, Gordon discloses or renders obvious this limitation. As discussed below and in [9B]-[9L], Gordon discloses and/or suggests a system comprising a tool assembly and an expandable spinal implant, using one tool to secure the implant in a desired location and another tool to expand/contract the implant. Gordon discloses an instrument 700, <i>i.e.</i>, “a tool assembly,” which includes an outer shaft 706, driver 708, holding device 710, and handle 712. Gordon [0227], [0230], Fig. 35 (reproduced below). Outer shaft 706, holding device 710, and handle 712 collectively comprise a “first tool,” as they are used in coordination to hold the implant during insertion. <i>Id.</i> [0227]-[0236]. The “first tool” has a proximal end 702, <i>i.e.</i>, “a first proximal end,” a distal end 704, <i>i.e.</i>, “a first distal end,” and an outer shaft 706, <i>i.e.</i>, “a first elongate body,” which is between proximal end 702 and distal end 706. <i>Id.</i> [0227] (“Instrument 700 may include outer shaft 706 As used herein, ‘<i>shaft</i>’ includes elongated members having various regular and irregular cross-sections, including, but not limited to, round, square, rectangular, hexagonal, or irregular. A shaft may be solid or hollow.”) (emphasis added), [0230], Fig. 35 (reproduced below).) As shown below in figures 35-36, outer shaft 706 defines a “first tool axis” from its proximal end to distal end. <i>Id.</i> [0227].

Claims	Invalidity Analysis
	Gordon at Figs. 35-36 (both annotated). In addition, McLuen in view of Gordon also further discloses and/or suggests limitation [9A]. The “system” recited in claim 9 claims the combination of an expandable implant (limitations [9G]-[9L]) and a tool assembly for use in securing and expanding the implant (limitations [9A]-[9F]). As discussed further below in [9G-L], McLuen discloses a system comprising a spinal implant (<i>e.g.</i>, bone fusion device 1500) and a tool for securing and expanding that implant. For example, McLuen explains that use of its spinal implant requires tools with both (1) a screwdriver or similar implement; and (2) another tool that fits into channels on the implant to secure it in place and keep the screwdriver from slipping. McLuen, [0076] (“To secure the bone fusion device 1500 in place, a user generally utilizes an implement such as a screw driver to turn the positioning means 1508 . . . [C]hannels 1522 are implemented to receive a tool (not shown). The tool (not shown) has attachments that fit within the channels 1522 to secure the tool (not shown) in place.”).

Claims	Invalidity Analysis
	McLuen at Figs. 15-16 (both annotated). As discussed above, Gordon also discloses “[a] system” including a spinal implant and a tool assembly for use therewith. The combination of McLuen in view of Gordon further renders obvious claim 9’s “system” limitation and the subject matter of claim 9, as a whole. While McLuen provides significant discussion about its expandable implant, it does not illustrate its complete tool assembly for securing and expanding the implant. McLuen nevertheless provides sufficient disclosure for a POSITA to recognize other prior art tool assemblies that would achieve those functions, such as the Gordon tool assembly. There are several reasons why it would have been obvious to a POSITA to combine the teachings of McLuen and Gordon. Like McLuen, Gordon discloses a spinal implant that uses a tool assembly to expand the implant, as explained in [9A]-[9F]. The Gordon implant is expanded in response to a tool rotating a screw 312 located at the proximal end of the implant, like the McLuen implant. <i>Compare</i> Gordon, [0177], [0233], [0237], Fig. 38 <i>with</i> McLuen, [0076], Fig. 15.) Gordon also discloses an implant with recesses 733, which are similar to channels 1522 in McLuen, for engagement with a tool assembly. Given these structural similarities, a POSITA would have been motivated to use Gordon’s tool assembly to deliver and expand McLuen’s bone fusion device 1500. A POSITA would have been particularly motivated to use Gordon’s tool assembly with McLuen’s implant because Gordon’s tool assembly is designed to prevent the screwdriver from slipping off the implant during the expansion process. According to McLuen, one skilled in the art would have recognized that “[s]crew drivers unfortunately have the ability to slip out of place” and “[w]hen performing surgery near someone’s

Claims	Invalidity Analysis
	spine, it is preferable to prevent or at least minimize the slipping ability.” McLuen, [0076]. Gordon’s tool assembly addressed this problem by providing a mechanism for holding the implant securely at the target site (with holding device 710) while driver 708 rotates the implant’s expansion screw. A POSITA would have recognized that McLuen’s spinal implant could also use that mechanism because it has a recess 1522 for engaging the lobes 722 in Gordon’s tool assembly, just like Gordon’s implant. A POSITA would have also been motivated to use the Gordon tool assembly with the McLuen implant because it offers the advantage of a tool assembly that can both deliver the implant to its desired location and securely expand it when it is in position. Gordon, [0225]-[0242]. A tool assembly that could be used for both insertion and expansion of the implant, like Gordon’s, would be ideal because use of multiple, standalone tools could disrupt the patient’s surgical opening and require more time and effort by the surgeon. Moreover, if the tool used to hold and deliver the implant is pulled out after the implant is delivered at a target site, then it would have been difficult to find the screw and insert the screw driver into the screw. Gordon’s tool assembly design allows for alignment of the holding tool and the screw driver such that they can easily lock in place. Given the apparent cooperative nature between Gordon’s tool assembly and McLuen’s implant, a POSITA would have also had a reasonable expectation of success in using Gordon’s tool assembly to deliver and securely expand McLuen’s fusion device 1500. For instance, Gordon discloses that driver head 726 in its tool assembly can take “various forms suitable for actuating (<i>e.g.</i>, rotating, advancing) a portion of an expansion member or insert” to expand the implant. Gordon, [0233], Figs. 36, 38. As shown in the figures below, in the McLuen-Gordon combination, Gordon’s driver head 726 would have engaged the screw head of McLuen’s positioning means 1508 to adjust the height of the bone fusion device 1500. <i>Id.</i>¹ Moreover, Gordon’s holding device 710 includes holding arms 716, which as shown below, are shaped such that they would engage channels 1522 of McLuen’s bone fusion device 1500 to secure it in place, just like the surgical tools McLuen describes for its implantation technique.

¹ A POSITA would have known to make any minor modifications to Gordon’s driver head 726 that would have been needed for the driver head 726 to engage with the screw head of McLuen’s positioning means 1508.

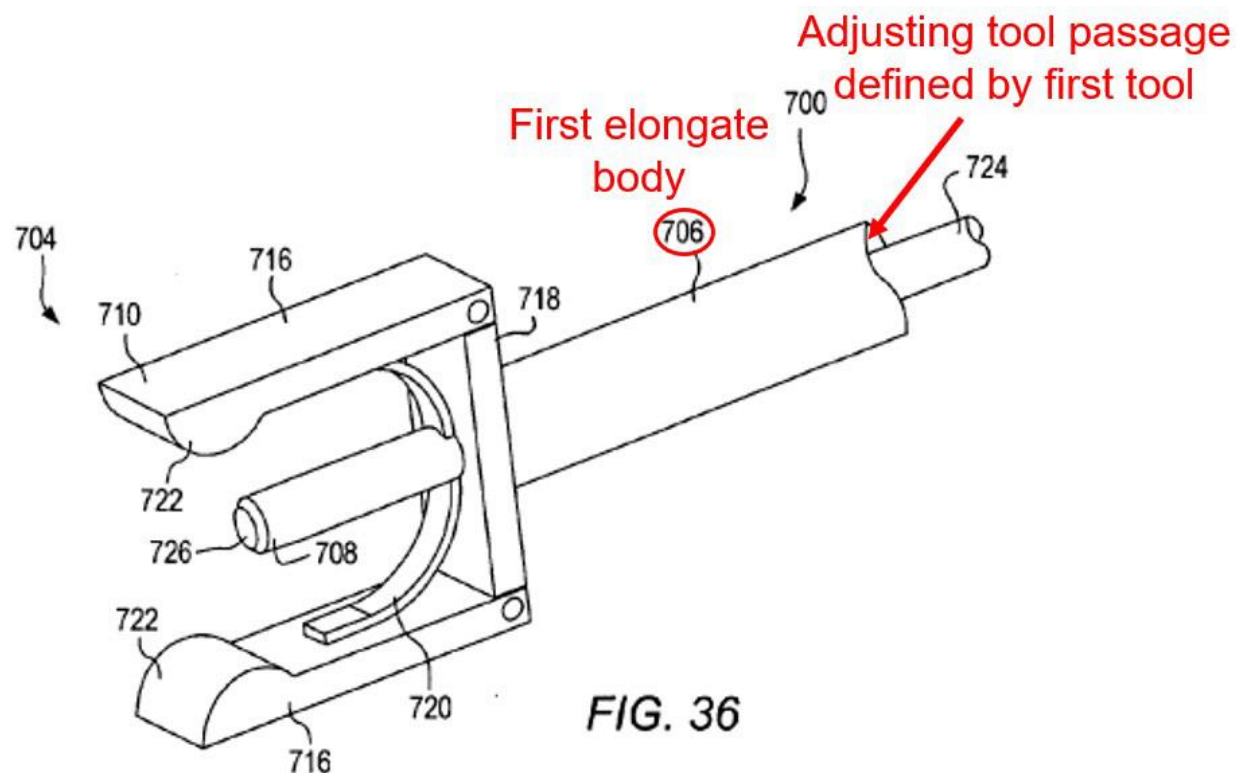
Claims	Invalidity Analysis
	Fig. 15 McLuen FIG. 36 Gordon McLuen at Fig. 15 (annotated); Gordon at Fig. 37 (annotated). The McLuen-Gordon combination thus discloses and renders obvious “[a] system.” As explained above, the combination involves the use of Gordon’s tool assembly for securing and expanding McLuen’s implant. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.

Claims	Invalidity Analysis
[9B] wherein the first tool includes first and second engagement prongs positioned at the first distal end on opposite sides of the first tool axis,	Gordon discloses or renders obvious this limitation. Holding device 710 “hold[s] an implant during insertion of the implant between two vertebrae.” Gordon [0227], [0230]. As shown in figures 35-36 above, holding device 710 includes two holding arms 716 (“first and second engagement prongs”) at distal end 704 (“positioned at the first distal end”), where the holding arms 716 are positioned on either side of the first tool axis (“on opposite sides of the first tool axis”). <i>Id.</i> [0227], [0230]-[0231], Figs. 35-36, 38. The McLuen-Gordon combination also discloses limitation [9B]. As explained in [9A], the combination involves the use of Gordon’s tool assembly for securing and expanding McLuen’s implant. Gordon’s tool assembly thus discloses limitation of claim [9B]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.

[9C] wherein the first tool defines an adjusting tool passage through the first tool; and

Gordon discloses or renders obvious this limitation.

As shown below, inner shaft 724 of driver 708 passes through outer shaft 706 (“**first elongate body**”). Gordon [0230], [0233]-[0238]. As discussed below in [9D-E], driver 708 is an “**adjusting tool**,” and therefore the hollow passage in shaft 706 is an “**adjusting tool passage**” in the “**first tool**.”



Gordon at Fig. 36 (annotated).

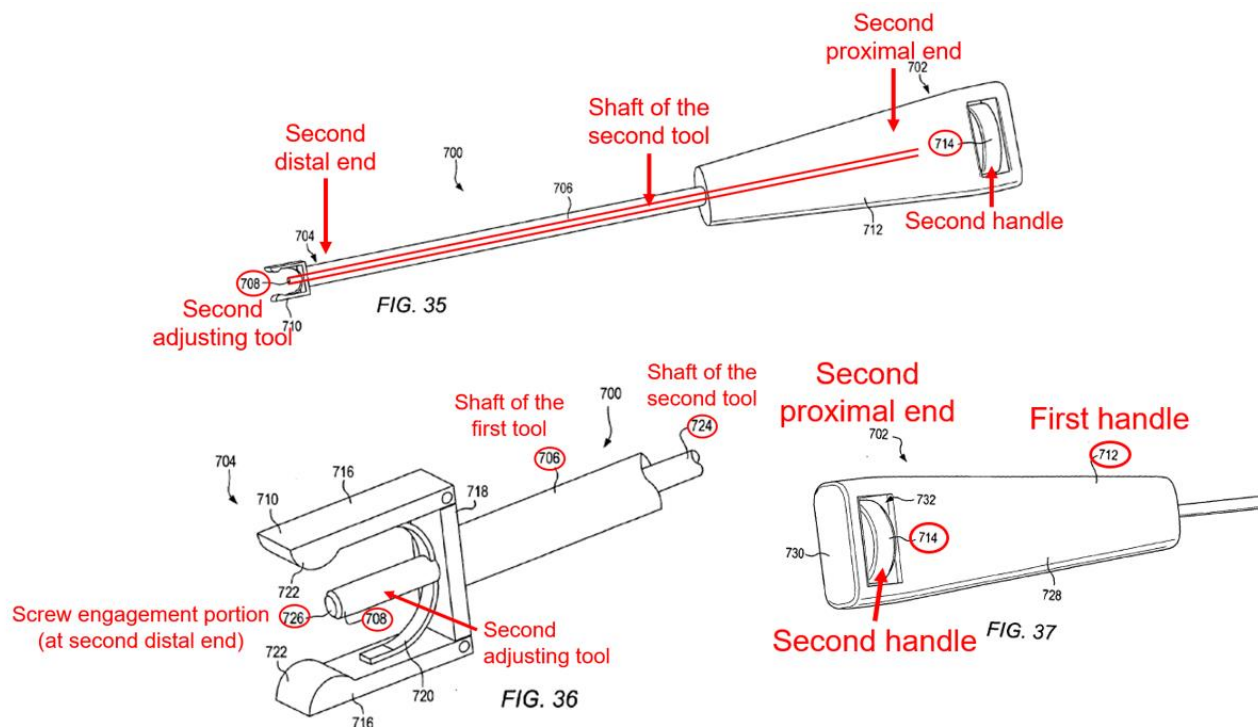
The McLuen-Gordon combination also discloses limitation [9C]. As explained in [9A], the combination involves the use of Gordon’s tool assembly for securing and expanding McLuen’s implant. Gordon’s tool assembly thus discloses limitation of claim [9C].

Claims	Invalidity Analysis
	To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.

[9D] a second adjusting tool having a second proximal end and a second distal end, wherein the second adjusting tool includes a second handle positioned at the second proximal end,

Gordon discloses or renders obvious this limitation.

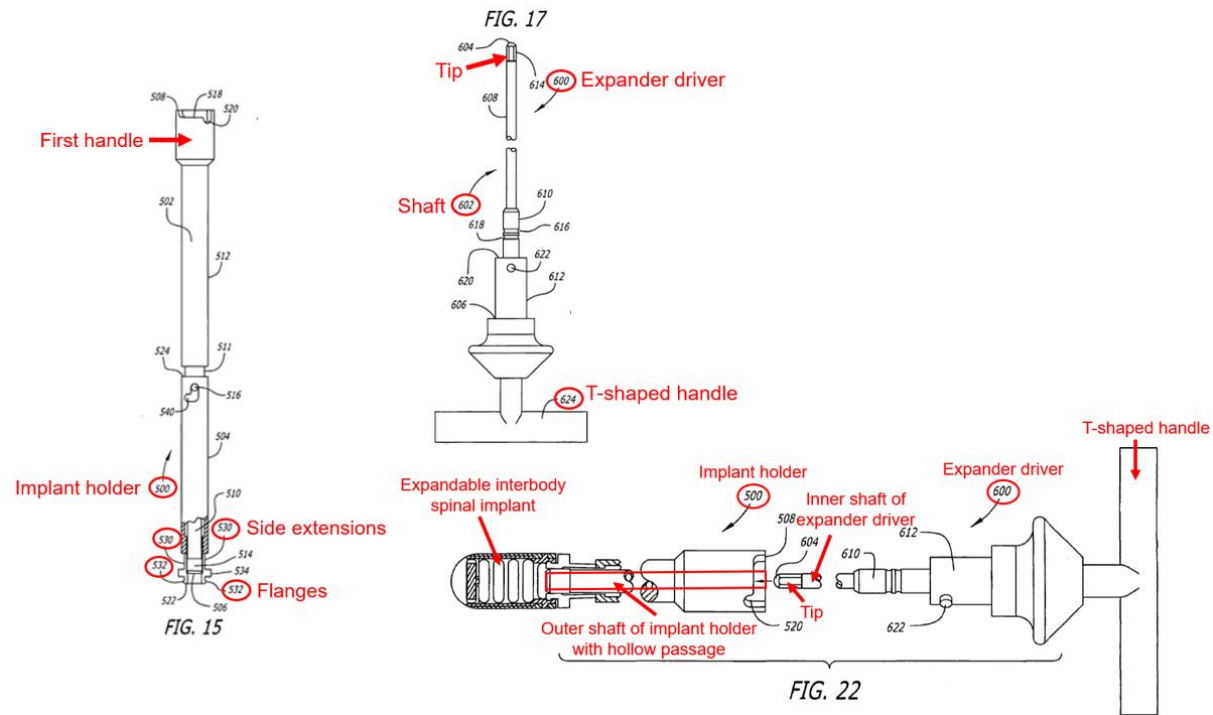
Gordon's driver 708 is a **"second adjusting tool"** because it expands the implant by engaging with a screw of the implant with driver head 726. Gordon [0230], [0233]-[0238], Fig. 36. As shown below in figure 35, driver head 726, which may be "slotted, Phillips, square, hexagonal, or hexalobular," is **"a screw engagement portion,"** and is provided at a **"second distal end"** of driver 708. *Id.* [0233], Fig. 35. Driver 708 also includes inner shaft 724 (**"a shaft"**) coupled to driver head 726. *Id.* [0226]-[0233], Figs. 35-36. The "inner shaft 724 may be coupled with thumbwheel 714", which is a **"second handle"** of driver 708 and is positioned at a **"second proximal end"** of driver 708. *Id.*; see also *id.* [0228], Figs. 35, 37.



Gordon at Figs. 35-37 (annotated).

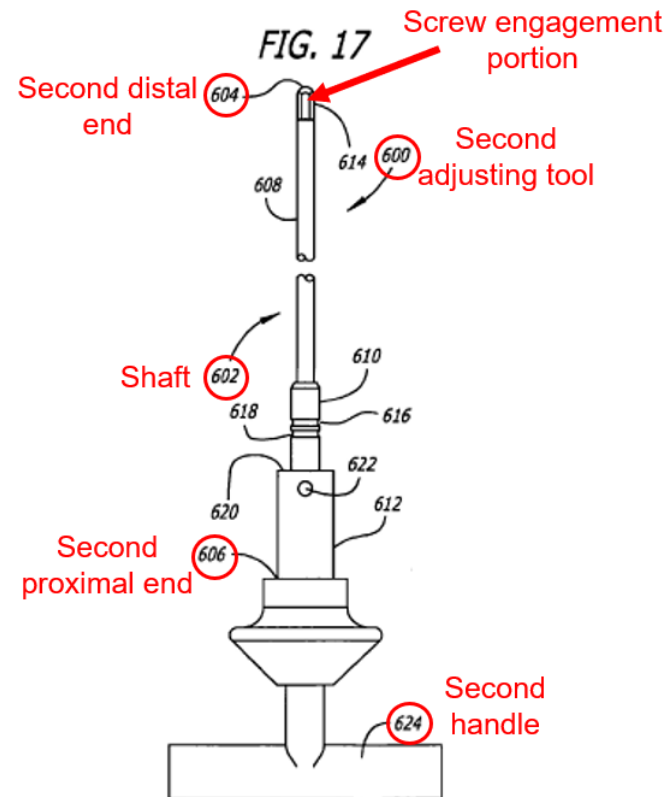
The McLuen-Gordon combination also discloses limitation [9D]. As explained in [9A], the combination involves the use of Gordon's tool assembly for securing and expanding McLuen's implant. Gordon's tool assembly thus discloses limitation of claim [9D].

In addition, Gordon in view of Michelson further renders obvious this limitation. Like Gordon, Michelson discloses expandable spinal implants and a tool assembly for implanting and expanding such implants. (See Michelson, 19-21; *infra*, [10]. As shown in the figures below, Michelson discloses a tool assembly including implant holder 500 to hold an implant in at a desired location while expander driver 600 securely engages the implant for expansion/contraction. Michelson, 23-24.



Michelson at Figs. 15, 17, 22 (all annotated).

	Michelson’s tool assembly is thus similar to Gordon’s tool assembly in that it teaches a first tool (implant holder 500) that securely holds an expandable spinal implant in place at a desired implant site while a second tool (expander driver 600) passes through the first tool and engages the implant for adjusting its height. Gordon and Michelson are thus in the same field of art and a POSITA would have been motivated to consider the teachings of Michelson in modifying the Gordon tool assembly. In particular, Michelson discloses that “expander driver 600 [is] for engaging and rotating expander 120,” <i>i.e.</i>, expander driver 600 is “a second adjusting tool.” Michelson, 20. As shown in figure 17 below, expander driver 600 includes proximal end 606 (“second proximal end”) and distal end 604 (“second distal end”). <i>Id.</i> “Proximal end 606 has a T-shaped handle 624 for manual rotation of expander driver 600,” <i>i.e.</i>, the T-shaped handle 624 is “a second handle positioned at the second proximal end.” Michelson, 21.
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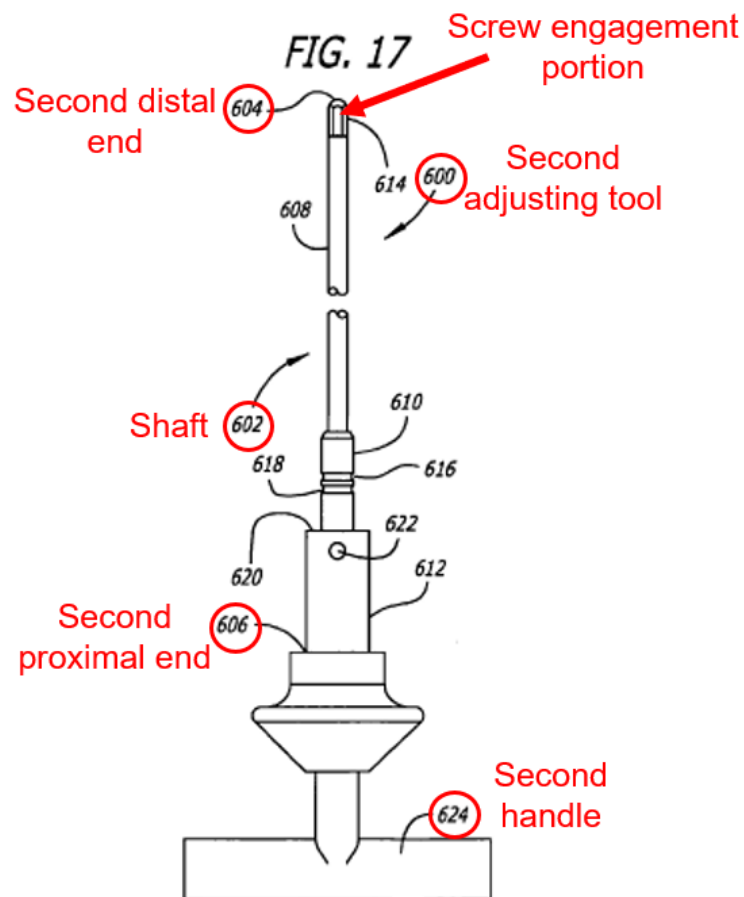


Michelson at Fig. 17 (annotated).

In addition, McLuen in view of Gordon and Michelson further renders obvious limitation [9D] for the same reasons given above for Gordon in view of Michelson. For example, a POSITA would have understood that the Gordon-Michelson tool assembly would have functioned similarly to the Gordon tool assembly for engaging McLuen's implant for delivery to the target site and expansion at the target site. Thus, modifying Gordon's **tool assembly** to include Michelson's **second adjusting tool** would not impact the reliance on McLuen's implant under the McLuen-Gordon combination. Accordingly, the McLuen-Gordon-Michelson combination renders obvious claim 9 and claims 10-12 and 14-17.

Claims	Invalidity Analysis
	To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.

[9E] a screw engagement portion positioned at the second distal end, and a shaft extending from the second handle to the screw engagement portion,	Gordon discloses or renders obvious this limitation. The handle 712 is designed to be held with the thumb and forefinger of one hand on the distal end of the handle. The other hand would hold and operate thumbwheel 714 (a second handle) to rotate driver 708. Gordon [0229]. A second hand would also be needed to “control position, orientation, or motion of” driver 708 with thumbwheel 714. <i>Id.</i> [0228], [0234]. Gordon further discloses that “[o]ther examples of control members include, but are not limited to, a knob, a lever, or a button.” <i>Id.</i> [0228]. A POSITA would have recognized that an alternative embodiment in Gordon, which uses a “knob” or “lever,” instead of a thumbwheel, would also disclose a second handle. Moreover, a POSITA would have understood that this understanding of Gordon’s thumbwheel 714 (or a “knob” or “lever” in an alternative embodiment) is consistent with how the ’136 patent describes the function of a second handle. According to the ’136 patent, Allen key 501, which corresponds to the second adjusting tool, has a knob similar to Gordon’s thumbwheel 714 (or a “knob” or “lever” in an alternative embodiment), to turn adjusting screw 105 with the hand that is not on the first handle. ’136 patent, 8:66-9:17, Figs. 5A-5D. The McLuen-Gordon combination also discloses limitation [9E]. As explained in [9A], the combination involves the use of Gordon’s tool assembly for securing and expanding McLuen’s implant. Gordon’s tool assembly thus discloses limitation of claim [9E]. In addition, Gordon in view of Michelson further renders obvious this limitation. Michelson discloses that “Distal end 604 has a tip 614 adapted to cooperatively engage opening 130 of expander 120,” which renders obvious “a screw engagement portion positioned at the second distal end,” as discussed below. Michelson, 20-21. Expander driver 600 further includes shaft 602 extending from T-shaped handle 624 to tip 614, <i>i.e.</i>, “a shaft extending from the second handle to the screw engagement portion.” Michelson, 20-21.
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Michelson at Fig. 17 (annotated).

It would have been obvious to a POSITA to modify Gordon's **tool assembly** to include Michelson's expander driver 600 as the **second adjusting tool**. Expander driver 600 is structured similar to Gordon's driver 708, but expander driver 600 allows for Gordon's **tool assembly** to include the **second adjusting tool** as a separable component that works together with Gordon's **first tool** (outer shaft 706, holding device 710, and handle 712) for inserting and expanding the implant. Michelson, 19-21. Such separable components would have allowed for separate manufacturing of individual components of the **tool assembly** and greater

flexibility to maintain, replace, repair, clean, and/or sterilize the components. Moreover, a POSITA would have been motivated to draw from Michelson's teachings of its **tool assembly** employing a locking mechanism for holding the implant securely at the target site while expander driver 600 rotates the implant's expansion mechanism. Michelson, 15, 19-20, 24.

As discussed above, Gordon discloses that the control member for driver 708 could be "any element that is operable by a user to control position, orientation, or motion of another element." Gordon, [0228]. Gordon identifies several alternatives to thumbwheel 14, including "a knob, a lever, or a button." *Id.* A POSITA would have recognized that Michelson's T-shaped handle 624 would have been another suitable option for driver 708's control member in Gordon's **tool assembly**, as it would have been "operable by a user to control position, orientation, or motion" of driver 708. *Id.* A POSITA would have recognized that Michelson's **second adjusting tool** with the T-shaped handle would have been advantageous to the Gordon **tool assembly**, as its "T"-shape would have allowed more control over the rotation of the **second adjusting tool** because, *e.g.*, one could wrap their fingers around the handle to rotate the second tool if additional leverage was needed. The T-shaped handle would have also provided a more mechanical advantage to turn and expand the implant compared to Gordon's thumbwheel. A POSITA would have also recognized that Michelson's T-shaped handle would have been another variation of Gordon's knob embodiment and thus the proposed modification would have been a simple substitution of one known element for another to obtain the predictable result of providing a control mechanism for driver 708.

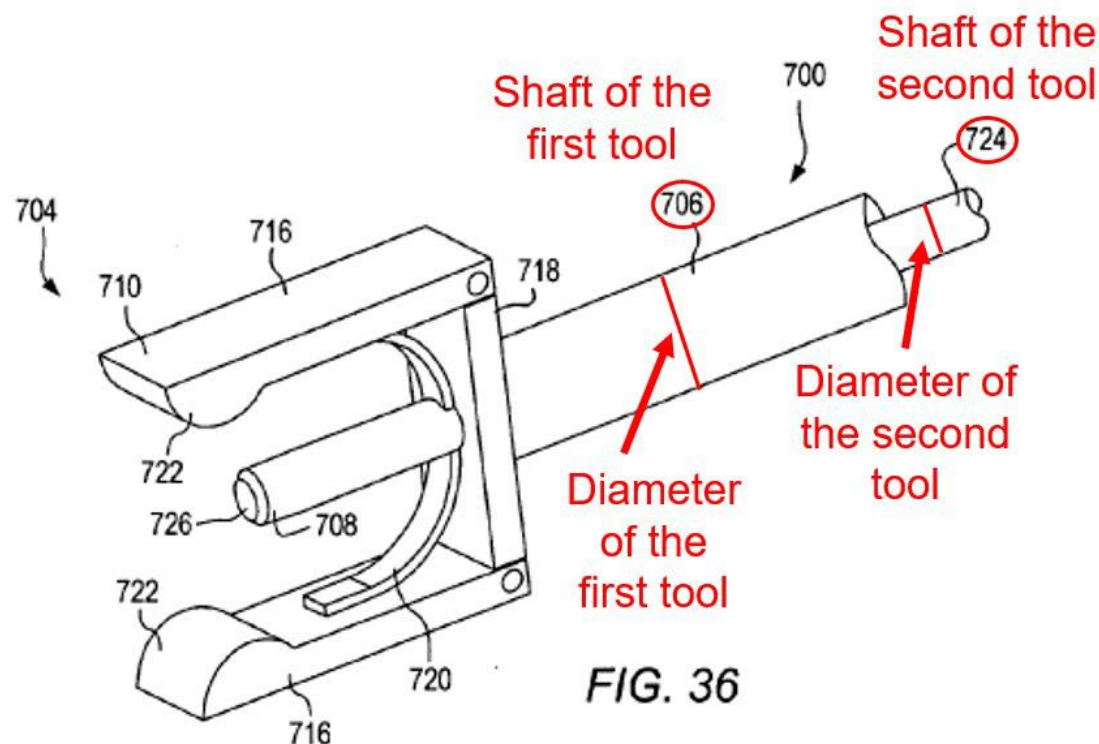
A POSITA would have had the skill to implement and reasonable expectation of success in achieving the proposed Gordon-Michelson combination. For example, Gordon discloses that a "knob" could be used as the control member of driver 708 instead of thumbwheel 714. Gordon, [0228]. A POSITA would have understood that modifying Gordon's **second adjusting tool** by replacing thumbwheel 714 with a knob in Gordon's tool assembly would have required the same modification needed to replace thumbwheel 714 with Michelson's T-shaped handle. For example, both modifications would have required the inner shaft of the **second adjusting tool** in Gordon's tool assembly to be configured to be inserted through an opening at a proximal end of handle 712 to pass through the **adjusting tool passage** of the **first tool**, and extend past the proximal end of handle 712 so that the knob or T-shaped handle could be positioned proximal to the handle 712. A POSITA would have also had a reasonable expectation of success in the Gordon-Michelson combination because the mechanism of the thumbwheel would be the same as the mechanism of either a knob or a T-handle—each of them would operate to rotate a screw to expand the implant.

Claims	Invalidity Analysis
	A POSITA would have also had a reasonable expectation of success in using Michelson’s second adjusting tool to expand Gordon’s implant. Michelson discloses that tip 614 of expander driver 600 in its tool assembly “may be of any shape suitable to engage expander 120” to expand the implant. Michelson, 20-21, 24, Figs. 17-18. Given that Gordon’s implant is expanded by rotating screw 312 (which has a screw head), a POSITA would have shaped Michelson’s tip 614 like a screw driver so it can expand Gordon’s implant. Gordon, [0074]-[0075]. Thus, in the Gordon-Michelson combination, Michelson’s tip 614 would have engaged the screw head of Gordon’s screw 312 to adjust the height of Gordon’s implant. <i>Id.</i> The proposed combination would have involved a combination of known technologies (<i>e.g.</i>, a known tool assembly (Gordon) incorporating a known second adjusting tool (Michelson)) according to known methods to yield the predictable result of a Gordon-Michelson combination where, during implantation, a surgeon would have been able to precisely control rotation of the second adjusting tool using a T-shaped handle as disclosed by Michelson. <i>KSR Int’l. Co. Teleflex Inc.</i>, 550 U.S. 398, 416 (2007). Implementing a tool like Michelson’s expander driver 600 in place of Gordon’s mechanism for engaging and rotating the implant screw does not impact the reliance on Gordon for the remaining limitations of independent claim 9 or dependent claims 10-12 and 14-17. Accordingly, the Gordon-Michelson combination renders obvious claims 9-12 and 14-17. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.

[9F] wherein the shaft of the second adjusting tool is sized with a smaller diameter than that of the adjusting tool passage such that the second adjusting tool can extend through the adjusting tool passage of the first tool; and

Gordon discloses or renders obvious this limitation.

As discussed in [9C], and as shown in figure 36 below, shaft 724 (shaft) of driver 708 is “sized with a **smaller diameter than that of**” outer shaft 706 (adjusting tool passage) so that shaft 724 can pass through shaft 706. Gordon, [0227]-[0233], [0237], Figs. 35-36, 38. Gordon thus discloses that the “**second adjusting tool**” (*i.e.*, driver 708) “**can extend through the adjusting tool passage of the first tool.**”



Gordon at Fig. 36 (annotated).

The McLuen-Gordon combination also discloses limitation [9F]. As explained in [9A], the combination involves the use of Gordon’s tool assembly for securing and expanding McLuen’s implant. Gordon’s tool assembly thus discloses limitation of claim [9F].

Claims	Invalidity Analysis
	To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.

[9G] an expandable spinal implant sized and configured to be implanted in a human spine, the expandable spinal implant comprising a first expandable spinal implant structure defining a first vertebral body engagement surface sized and configured to engage a first vertebral body,	Gordon discloses or renders obvious this limitation. According to Gordon, “[e]mbodiments of [its] invention generally relate to functional spinal implant assemblies for insertion into an intervertebral space between adjacent vertebrae of a human spine.” Gordon, [0003]. Gordon further discloses that “[t]he shape and/or size of an implant . . . may be chosen according to factors including, but not limited to, the surgical approach employed for insertion . . ., the intended position in the spine . . ., and a size of the patient.” <i>Id.</i> [0137]; <i>see also id.</i> [0138]-[0139]. Gordon discloses other examples of expandable intervertebral implants for insertion between adjacent vertebrae and associated tool assemblies. As shown in figures 15A-C below, Gordon discloses a c-shaped expandable implant for insertion between two vertebrae, <i>i.e.</i>, “an expandable spinal implant sized and configured to be implanted in a human spine.” Gordon, [0177]. Figure 15B shows the implant before expansion and figure 15C shows the implant after expansion. <i>Id.</i>
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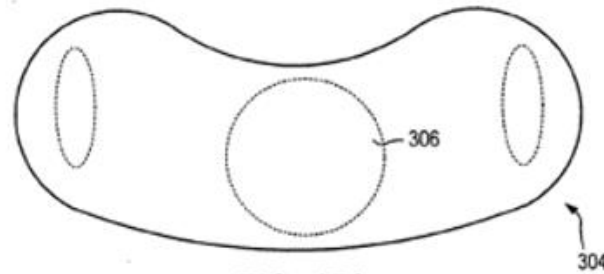


FIG. 15A

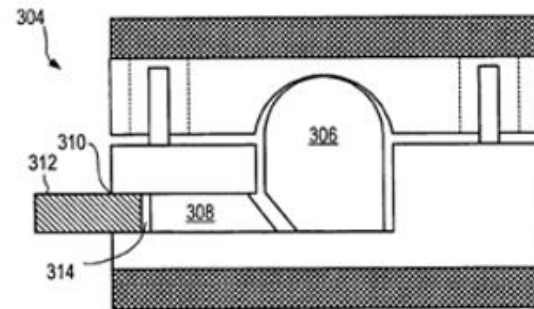


FIG. 15B

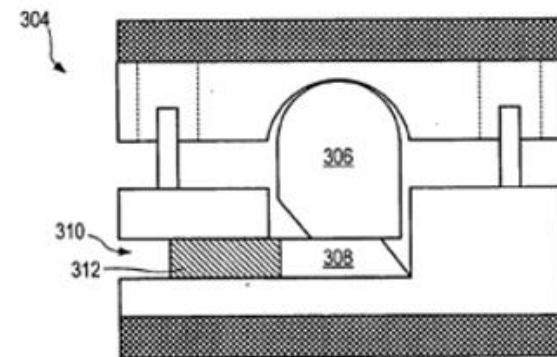
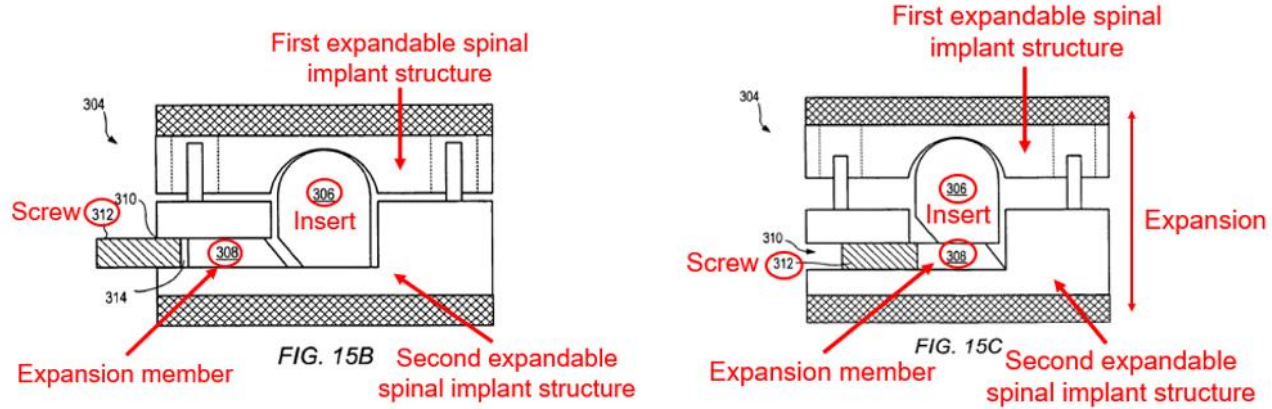


FIG. 15C

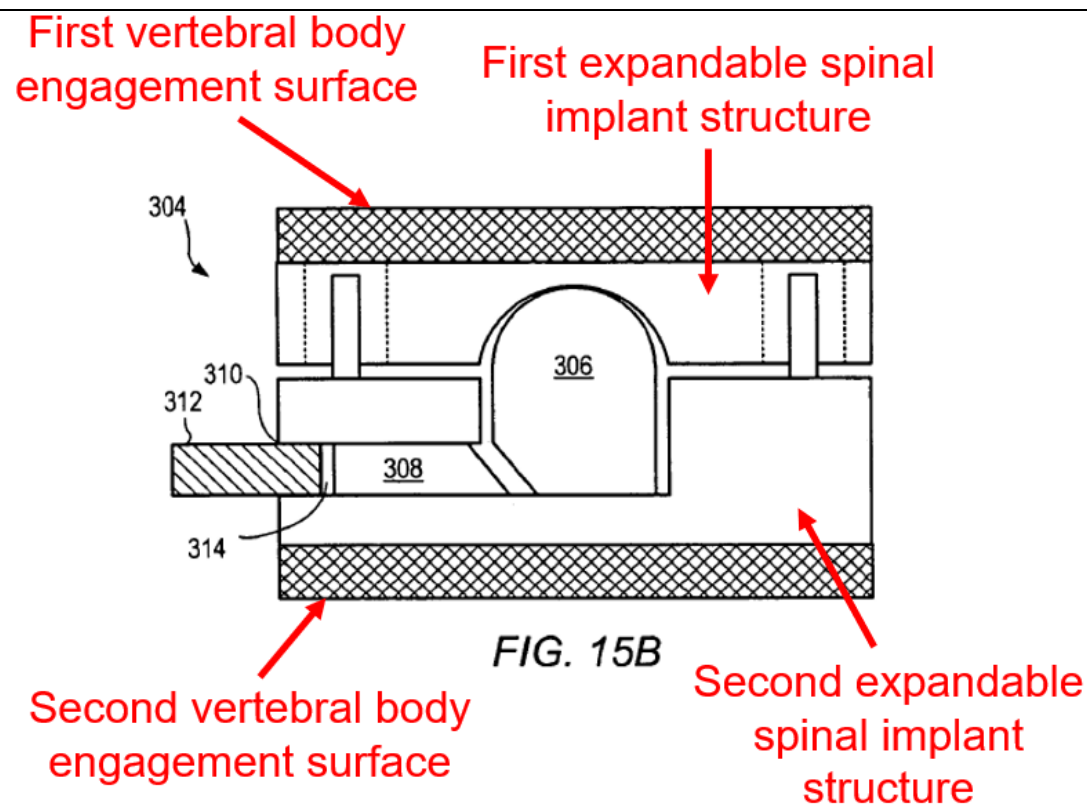
Gordon at Figs. 15A-C.

As shown in figures 15B-C below, Gordon's expandable spinal implant includes two expandable bodies on either side of the implant, *i.e.*, "**a first [and second] expandable spinal implant structure.**" Gordon, [0177]. As shown in figure 15C below, the first and second bodies expand in the vertical direction in response to rotation of advancing element 312, which moves expansion member 308 towards insert 306. *Id.*



Gordon at Figs. 15B-C (both annotated).

Gordon discloses that its “method of performing a minimally invasive surgical procedure may include removing a portion of a disc *between two vertebrae* of a human spine” and “placing an implant in a disc space *between the vertebrae*.” *Id.* [0025] (emphasis added); *see also id.* [0022] (“The driver may engage an insert of the implant while the implant is *between two vertebrae* of a human spine.”) (emphasis added), [0226] (“In some embodiments, instruments may be used to install elements of an implant in a spine.”). Gordon’s implant is thus implanted between two vertebrae of the spine, *i.e.*, “[**first/second**] **vertebral body**.”



Gordon at Figs. 15B (annotated).

The McLuen-Gordon combination also discloses limitation [9G]. According to McLuen, “[t]he present invention is a bone fusion device for insertion between bones that are to be fused together, such as, for example, the vertebrae of a spinal column,” where “[t]he bone fusion device comprises one or more extendable tabs.” *See* McLuen, [0013]-[0015]; *see also id.* [0002]-[0003], [0037]-[0038], [0045]-[0046], [0065], [0072]-[0081], Figs. 3A-3B, 12, 15-18B. For example, as shown in figures 16 and 18A below, McLuen discloses an expandable bone fusion device 1500 (“**an expandable spinal implant**”) with two expandable tabs 1530 on the top and bottom of the implant. McLuen, [0072]-[0081], Figs. 15-18B; *see also id.* [0072]-[0073].

Expandable
spinal implant

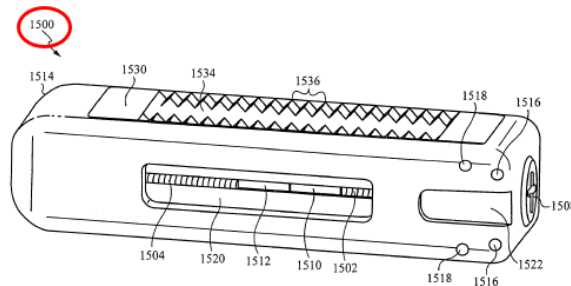


Fig. 16

Expandable
spinal implant

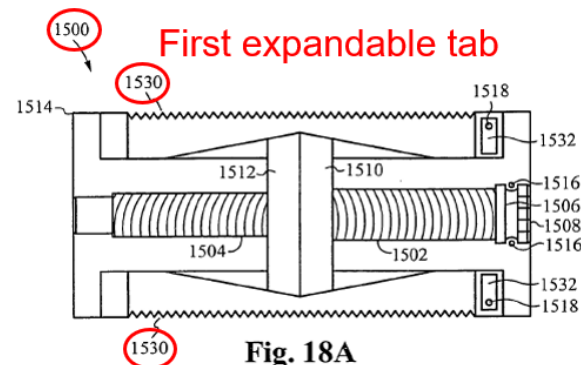
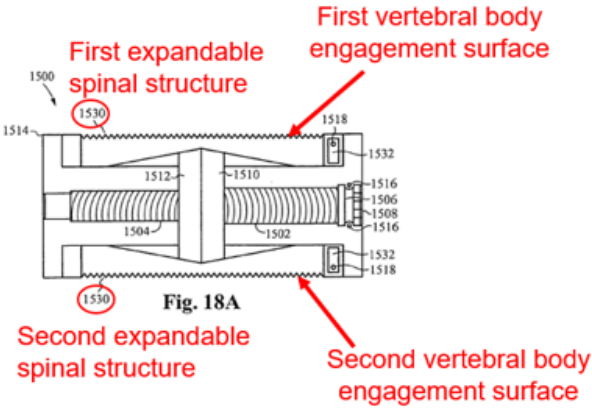
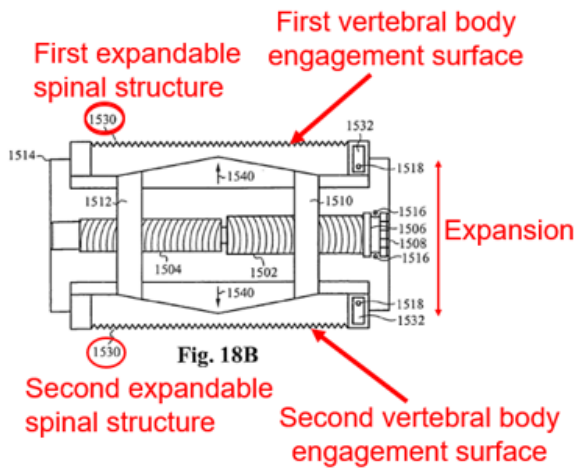


Fig. 18A

McLuen at Figs. 16, 18A (both annotated).

Given that McLuen's bone fusion device 1500 is intended to be inserted between vertebrae of a spinal column (*Id.* [0013]), device 1500 is **"sized and configured to be implanted in a human spine."**

In addition, McLuen discloses a bone fusion device 1500 (**expandable spinal implant**) that has two expandable tabs 1530 on either side of device 1500, which correspond to **"a first expandable spinal implant structure"** and **"a second expandable spinal implant structure,"** respectively. As shown below in figures 18A-18B, expandable tabs 1530 define surfaces designed to engage the vertebrae, *i.e.*, **"[first]/[second] vertebral body engagement surface sized and configured to engage a [first]/[second] vertebral body."** McLuen, [0073] ("The bone graft material and *the surface texturing of the device 1500* encourage the growth and fusion of bone from the neighboring vertebrae.") (emphasis added), [0074]-[0077]; *see also id.* [0013] ("[T]he tabs of the bone fusion device provide a larger surface area to which the bones attach and fuse during a healing period.").

Claims	Invalidity Analysis
	Expandable spinal implant (compact)  Fig. 18A Expandable spinal implant (expanded)  Fig. 18B McLuen at Figs. 18A-18B (annotated). As shown in figures 18A and 18B above, the two expandable tabs 1530 can be expanded by turning positioning means 1508, which causes two extending blocks 1510, 1512 to move away from the middle. <i>Id.</i> [0074]-[0075], [0079]-[0080]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.

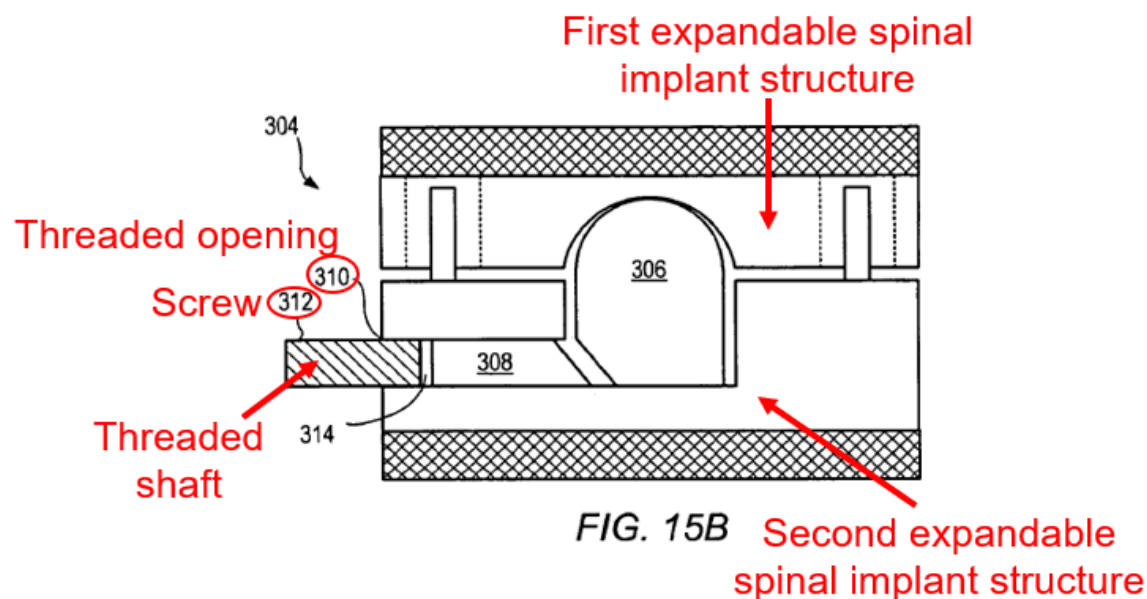
Claims	Invalidity Analysis
[9H] a second expandable spinal implant structure defining a second vertebral body engagement surface sized and configured to engage a second vertebral body,	Gordon discloses or renders obvious this limitation. <i>See</i> above analysis for limitation [9G].

[9I] and an adjusting screw having a screw head and a threaded shaft,

Gordon discloses or renders obvious this limitation.

As shown in figure 15B below, Gordon's expandable implant includes an advancing element 312 for expanding the implant. Gordon, [0177]. Gordon illustrates the same advancing element 312 in figures 16A-16B as a screw having "a screw head." *Id.* [0178], Figs. 16A-16B². Gordon discloses that advancing element may be a "set screw" Gordon, [0177], which Gordon illustrates as a screw with a screw head in other embodiments, *e.g.*, set screw 166 in Figures 7A-7B, set screw 394 in figures 21A-21B, and set screw 624 in figures 31-32 and 34. *Id.* [0159]-[0160], [0197], [0216], [0219], [0223]. Advancing element is therefore, "an adjusting screw having a screw head."

Gordon discloses that screw 312 is inserted in threaded opening 310. *Id.* [0177] ("In some embodiments, opening 310 may be threaded. Advancing element 312 may be inserted in opening 310."). Thus, a POSITA would have understood that screw 312 must include a "threaded shaft" to securely engage with opening 310. This is further confirmed by the shading of screw 312, as shown in figure 15B below.



Gordon at Fig. 15B (annotated).

Claims	Invalidity Analysis
	McLuen also discloses limitation [9I]. McLuen’s bone fusion device 1500 includes positioning means 1508, <i>i.e.</i>, “an adjusting screw.” McLuen, [0074], Figs. 15-18B. As shown in figures 15 and 17 below, positioning means 1508 has a screw 1502 with “a screw head,” to control placement of bone fusion device 1500, and “a threaded shaft.” McLuen, [0078], [0081], Figs. 15-18B. Fig. 17 Fig. 15 McLuen at Figs. 17, 15 (both annotated). To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.

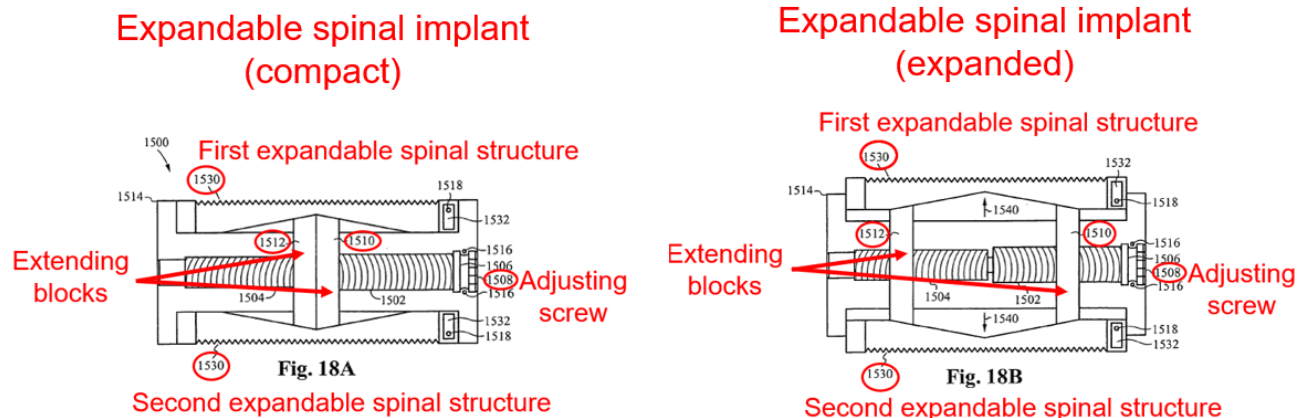
² Gordon discloses that advancing element may be a “set screw” Gordon, [0177], which Gordon illustrates as a screw with a screw head in other embodiments, *e.g.*, set screw 166 in Figures 7A-7B, set screw 394 in figures 21A-21B, and set screw 624 in figures 31-32 and 34. *Id.* [0159]-[0160], [0197], [0216], [0219], [0223].

[9J] wherein the expandable spinal implant is configured to expand the first expandable spinal implant structure with respect to the second expandable spinal implant structure in response to turning of the adjusting screw,

Gordon discloses or renders obvious this limitation.

As discussed in [9G]-[9H], Gordon's expandable spinal implant is configured to expand one of the expandable bodies (**first expandable spinal implant structure**) with respect to the other expandable body (**second expandable spinal implant structure**) "in response to turning of" screw 312 (**adjusting screw**). Gordon, [0177].

McLuen also discloses limitation [9J]. McLuen discloses that bone fusion device 1500 is configured to expand one of the tabs 1530 (**first expandable spinal implant structure**) with respect to the other tab 1530 (**second expandable spinal implant structure**) "in response to turning of" positioning means 1508 (**adjusting screw**). McLuen, [0072], [0074]-[0081], Figs. 18A-18B.



McLuen at Figs. 18A-18B (annotated).

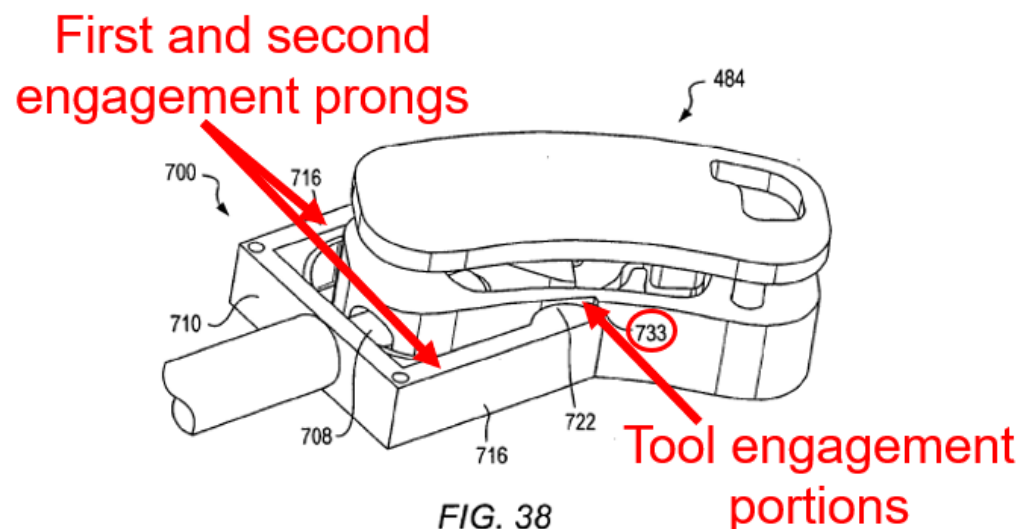
Moreover, "positioning means 1508 is coupled to a first extending block 1510 and a second extending block 1512," as shown above in figure 18A. *Id.* [0074]. "When the positioning means 1508 is turned appropriately, the extending blocks 1510 and 1512 each travel outwardly on their respective screws 1502 and 1504," and "[a]s the extending blocks 1510 and 1512 travel outwardly, they push the tabs 1530 outward," as shown above in figure 18B. *Id.*; see also *id.* [0072], [0075]-[0081].

Claims	Invalidity Analysis
	To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.

[9K] wherein the expandable spinal implant defines first and second tool engagement portions sized, shaped, and configured for receiving the first and second engagement prongs of the first tool, wherein the first tool engagement portion is formed in a first side surface of the expandable spinal implant and the second tool engagement portion is formed in a second side surface of the expandable spinal implant,

Gordon discloses or renders obvious this limitation.

As discussed in [9D]-[9E], Gordon discloses that holding arms 716 (“**the first and second engagement prongs of the first tool**”) are configured to hold securely a c-shaped expandable implant 484 by engaging holding side recesses (“**first and second tool engagement portions**”) of the implant. As shown in figure 38 below, implant 484 is c-shaped, just like the implant shown in figure 15, and expressly includes holding recesses 733 configured to engage with holding arms 716. Gordon, [0237].



Gordon at Fig. 38 (annotated).

A POSITA would have understood that Gordon also suggests this limitation. In view of the above-noted disclosures within Gordon, and for additional reasons provided below, it would have been obvious to configure Gordon’s c-shaped implant 304 (figures 15B-15C) to include side recesses 733, as shown in figure 38, such that implant 304 “**defines first and second tool engagement portions each defining a space that is sized, shaped, and configured for receiving the first and second engagement prongs of the first tool.**” A POSITA would have been motivated to do so in order to allow Gordon’s c-shaped implant 304 to be inserted and expanded using a tool such as instrument 700. Gordon expressly teaches that instrument 700 is used “to position an implant in an intervertebral space and to actuate an expansion member to expand the

implant in the intervertebral space.” Gordon, [0226]. Gordon’s instrument 700 further holds a c-shaped implant 484 “after driver 708 has been operated to expand the implant,” as shown in figure 38 below. *Id.* [0237]; *see also id.* [0204] (describing c-shaped implant 484 with reference to figure 25). Holding arms 716 engage side recesses 733 of the c-shaped implant to “maintain a position of the implant during insertion and/or expansion of the implant” and to help “place implant 484 in a desired alignment for insertion between the vertebrae and engagement with an expansion tool.” *Id.* [0237]. For these same reasons, a POSITA would have been motivated to modify implant 304 to include recesses 733, like implant 484.

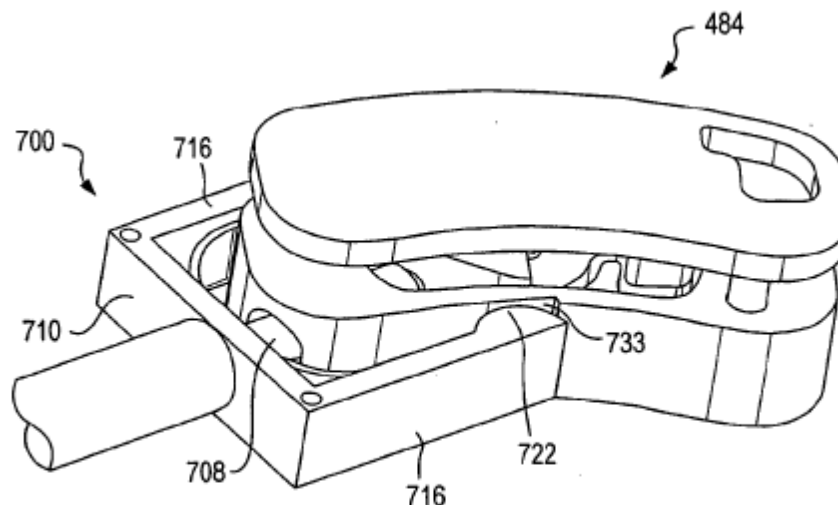


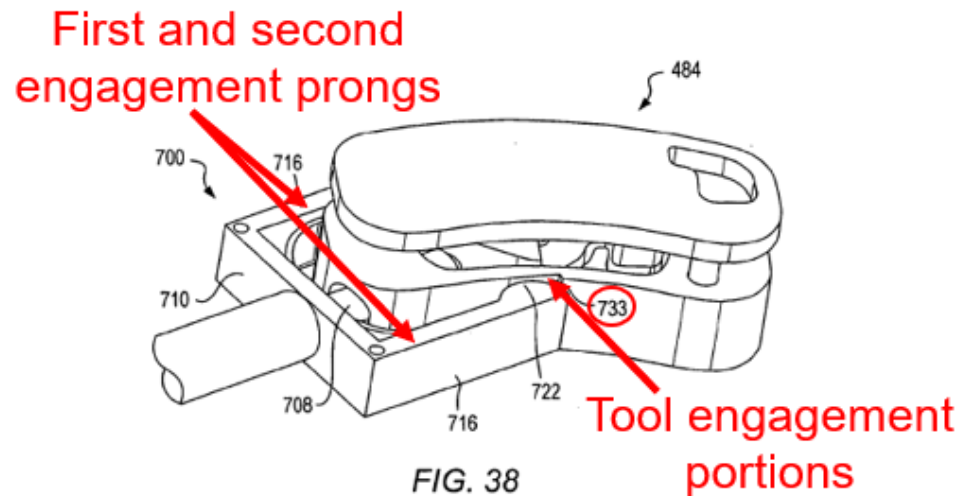
FIG. 38

Gordon at Fig. 38.

A POSITA would have also had a reasonable expectation of success in including recesses 733 on the sides of the implant given Gordon expressly discloses and shows such recesses in another similar embodiment, *i.e.*, the c-shaped implant 484 shown in figures 25 and 38. Gordon’s implant 484 shown in figures 25 and 38 is similar to the implant 304 shown in figure 15, *e.g.*, both implants are expandable with expandable c-shaped structures on either side of the device, which are expanded based on actuation of an expansion element like a screw using driver 708. Gordon, [0177], [0204], [0233], [0237], Figs. 15-16, 25, 38. Furthermore,

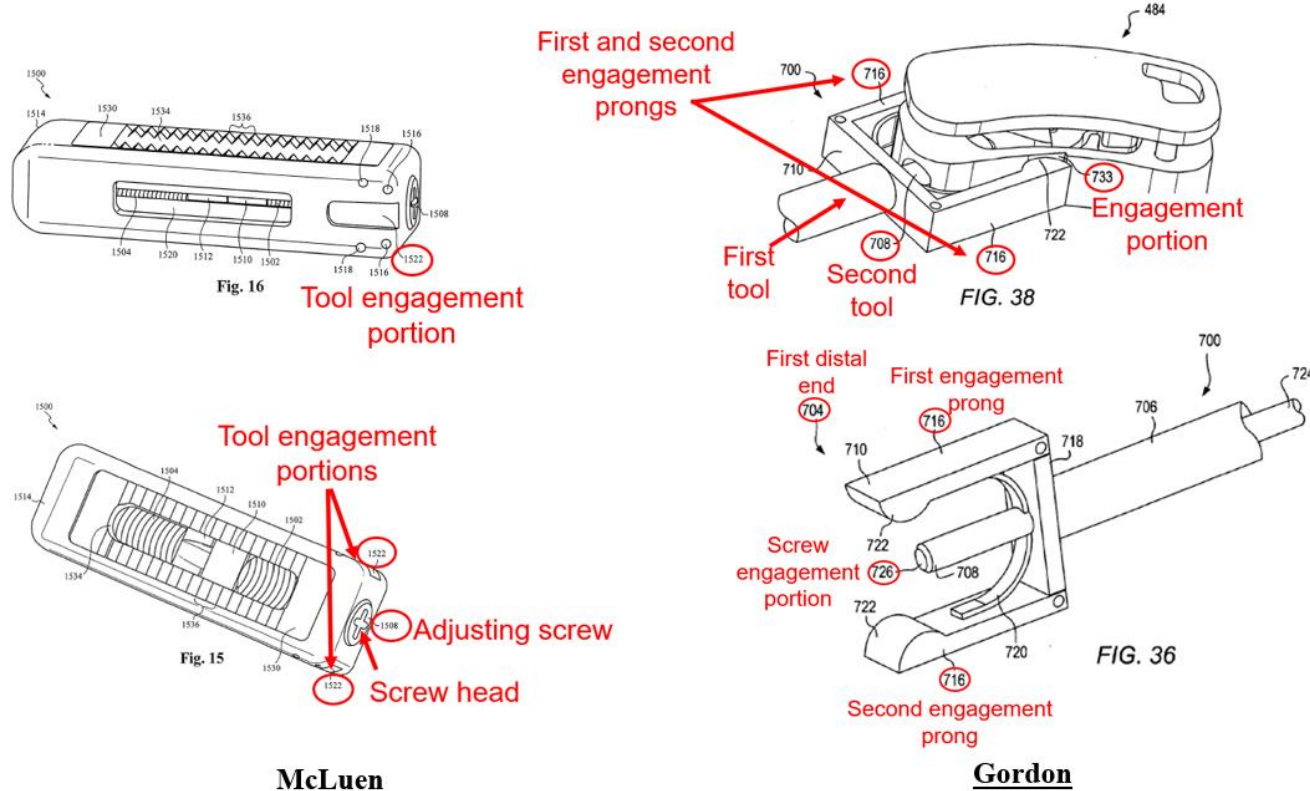
instrument 700's driver head 726 "may engage a set screw . . . of an implant" to expand the implant (*id.* [0237]), which demonstrates compatibility with implant 304 whose advancement element can also be a "set screw." *Id.* [0177].

As discussed above and shown in figure 38 below, Gordon discloses and/or suggests recesses 733 ("**first tool engagement portion**" and "**second tool engagement portion**") on its expandable spinal implant. As shown in figure 38 below, a first recess 733 is formed in a first side surface of the implant ("**the first tool engagement portion is formed in first side surface of the expandable spinal implant**"). Gordon, [0237]. While figure 38 below does not illustrate the recess 733 on the other side, it explains that "[w]hen implant 484 is initially coupled to holding device 710, lobes 722 of holding arms 716 may engage in holding recesses 733 on either side of lower body 488." *Id.* A POSITA would have recognized that a second recess 733 is formed in a second side surface of the implant. Thus, the second recess 733 discloses "**the second tool engagement portion is formed in a second side surface of the expandable spinal implant.**"



Gordon at Fig. 38 (annotated).

	Moreover, a POSITA would have understood that modification of implant 304 to include recesses 733, implies that implant 304 also discloses limitation [9K]. <i>Supra</i>, [9D]-[9E]. The McLuen-Gordon combination discloses limitation [9K]. As shown in figure 16 below, McLuen's bone fusion device 1500 has channels 1522, <i>i.e.</i>, “first and second tool engagement portions,” “to receive a tool (not shown),” where “[t]he tool (not shown) has attachments that fit within the channels 1522 to secure the tool (not shown) in place.” McLuen, [0076]; <i>see also id.</i> [0078]. As shown in figure 36 below, Gordon discloses instrument 700 with holding arms 716, <i>i.e.</i>, “the first and second engagement prongs of the first tool,” which “engage complementary surfaces (<i>e.g.</i>, notches, grooves) on an implant or spacer.” Gordon, [0231], Figs 36, 38. Gordon thus discloses holding arms 716 that are configured to engage complementary surfaces, like channels 1522 in McLuen's bone fusion device 1500, which “defin[e] a space that is sized, shaped, and configured” to receive lobes 722 on Gordon's holding arms 716.
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McLuen at Figs. 15-16 (left) (annotated); Gordon at Figs. 36, 38 (right) (annotated).

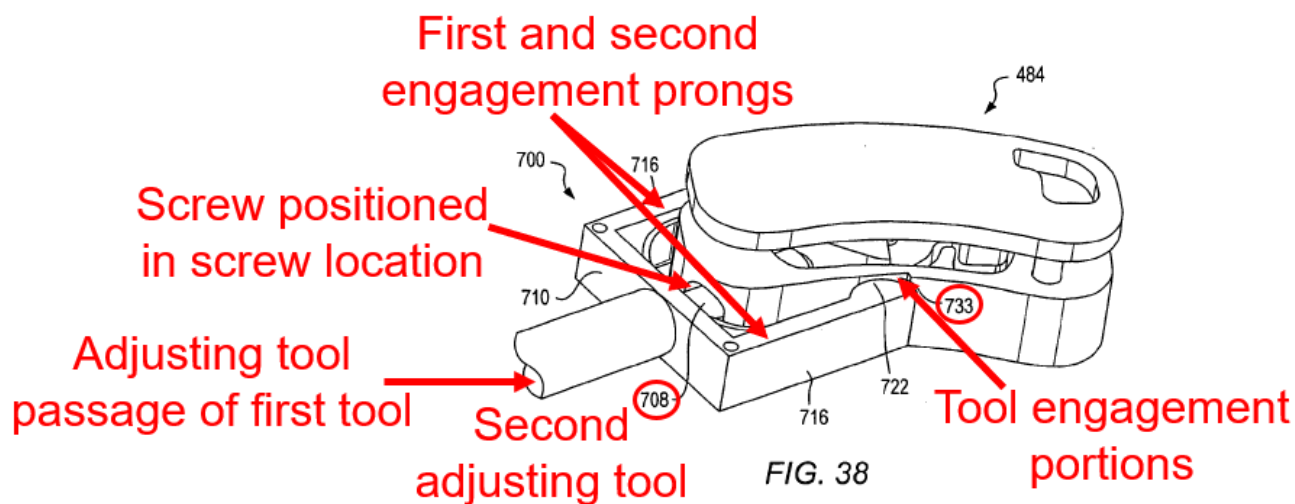
Additionally, as discussed above and shown in figure 15 below, McLuen discloses that one of the channels 1522 (**first tool engagement portion**) is formed in a “**first side surface**” of bone fusion device 1500 and another one of the channels 1522 (**second tool engagement portion**) is formed in “**a second side surface**” of device 1500. *Id.*

Claims	Invalidity Analysis
	McLuen at Fig. 15 (annotated). To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.

[9L] wherein the adjusting screw is positioned within the expandable spinal implant in a screw location such that the second adjusting tool can extend through the adjusting tool passage of the first tool to engage the screw head of the adjusting screw while the first and second engagement prongs of the first tool are engaged with the first and second tool engagement portions of the expandable spinal implant.

Gordon discloses or renders obvious this limitation.

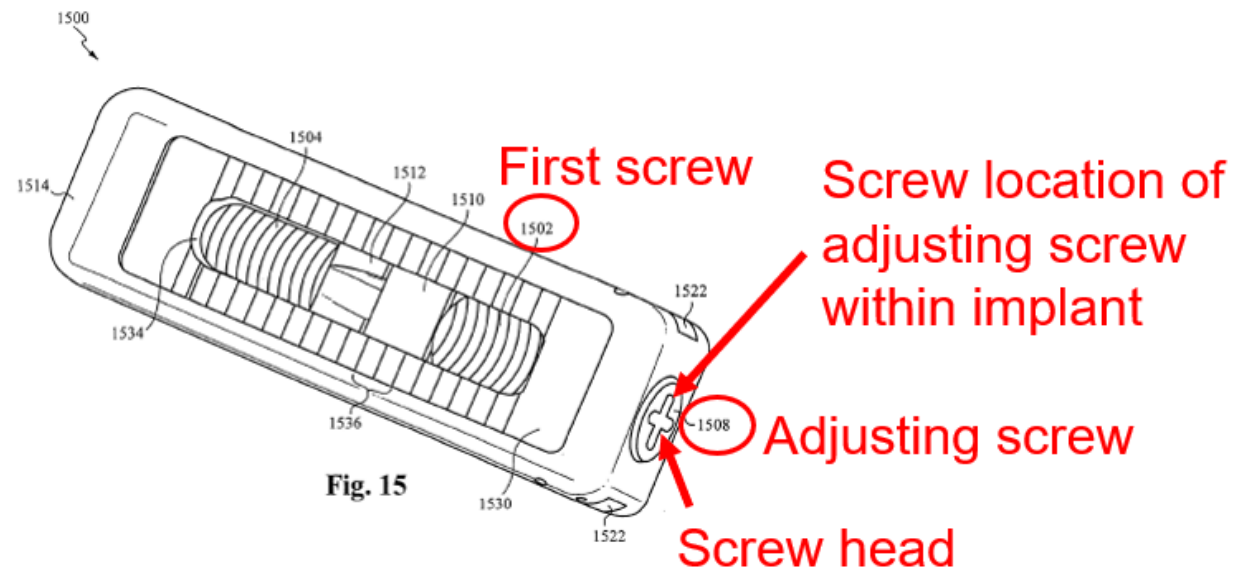
As shown in figure 38 below, Gordon discloses that the screw (“**adjusting screw**”) is positioned within the expandable spinal implant in a location, *i.e.*, “**a screw location**,” such that driver 708 (**the second adjusting tool**) extends through “**the adjusting tool passage of the first tool**” defined by outer shaft 706 to engage with the screw head of the implant’s screw. Gordon, [0233] (“In some embodiments, the driver head may engage a set screw in the implant.”), [0237], Figs. 36, 38; *see also id.* [0226]-[0231]. Moreover, as shown in figure 38 below, Gordon’s holding arms 716 (**first and second engagement prongs of the first tool**) engage side recesses of the implant (**first and second tool engagement portions of the expandable spinal implant**) while the **second adjusting tool** is engaged with **the adjusting screw**. *Id.* [0233], [0237].



Gordon at Fig. 38 (annotated).

The above disclosure equally applies to the use of instrument 700 with implant 304. That is, when instrument 700 is used with implant 304 (*see supra* [9K]), a POSITA would have understood that driver head 708 and holding arms 716 would similarly interact with the screw head of advancing element 312 (**adjusting screw**) and recesses in the implant 304.

The McLuen-Gordon combination also discloses limitation [9L]. As shown in figure 15 below, McLuen's positioning means 1508 (**the adjusting screw**) is positioned within bone fusion device 1500 (**expandable spinal implant**) in a location, *i.e.*, "**in a screw location**," such that it can be accessed from the outside using a screwdriver. McLuen, [0074], [0076].



McLuen at Fig. 15 (annotated).

And as discussed in [9A], in the McLuen-Gordon combination, McLuen's positioning means 1508 (**the adjusting screw**) is positioned in the screw location such that Gordon's driver 708 (**the second adjusting tool**) extends through "**the adjusting tool passage of the first tool**" defined by outer shaft 706 to engage the screw head of positioning means 1508 (**adjusting screw**). Moreover, as discussed in [9A], Gordon's holding arms 716 (**the first and second engagement prongs of the first tool**) engage channels 1522 of McLuen's bone fusion device 1500 (**the first and second tool engagement portions of the expandable spinal implant**) while the **second adjusting tool** is engaged with the **adjusting screw**.

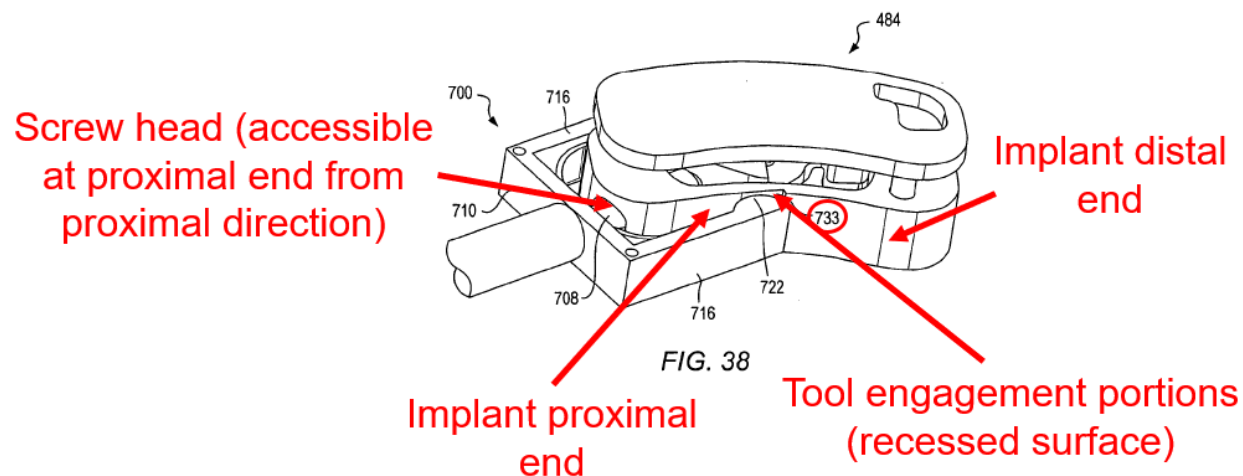
Claims	Invalidity Analysis
	Fig. 16 Tool engagement portion Fig. 15 Adjusting screw Screw head <u>McLuen</u> First and second engagement prongs FIG. 38 FIG. 36 <u>Gordon</u> McLuen at Figs. 15-16 (left) (annotated); Gorgon at Figs. 36, 38 (right) (annotated). To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
Claim 10	

[10] The system of claim 9, wherein the expandable spinal implant comprises an implant proximal end and an implant distal end, wherein the first and second tool engagement portions are formed as recessed surfaces and positioned at or near the implant proximal end, and wherein the screw head of the adjusting screw is accessible at the implant proximal end from a proximal direction.

Gordon, alone or in combination with McLuen, discloses or renders obvious claim 9. *See* claim 9.

Gordon also discloses or renders obvious this limitation.

As discussed in [9K]-[9L], and shown in figure 38 below, Gordon's expandable spinal implant includes "**an implant proximal end and an implant distal end,**" where side recesses (**first and second tool engagement portions**) are "**formed as recessed surfaces**" and "**positioned at or near the implant proximal end,**" and the screw head of screw 312 (**adjusting screw**) is accessible at the implant proximal end from a proximal direction.

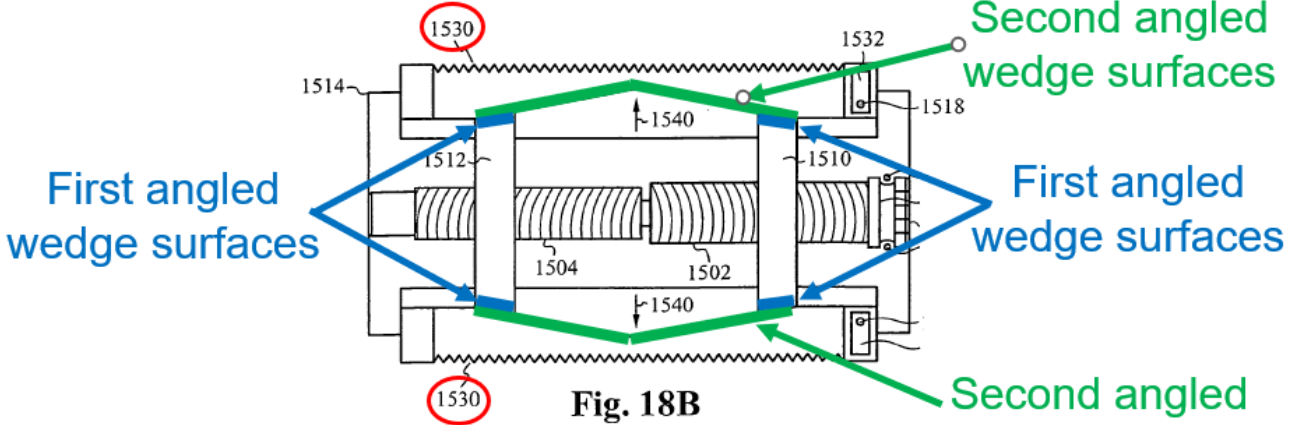


Gordon at Fig. 38.

The McLuen-Gordon combination discloses limitation [10]. As discussed in [9I]-[9L], and shown in figure 16 below, McLuen's bone fusion device 1500 includes "**an implant proximal end and an implant distal end,**" where channels 1522 (**first and second tool engagement portions**) are "**formed as recessed surfaces**" and "**positioned at or near the implant proximal end,**" and the screw head of positioning means 1508 (**adjusting screw**) is "**accessible at the implant proximal end from a proximal direction.**" McLuen, [0076]-[0078], Figs. 15-18B.

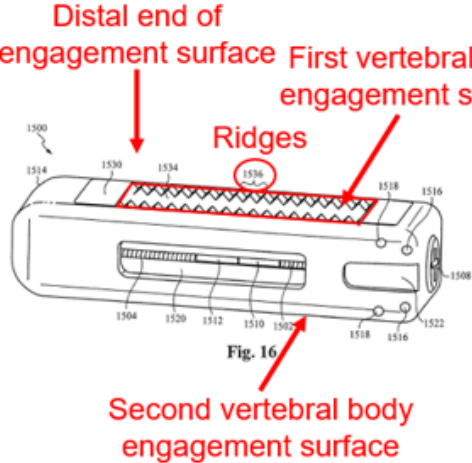
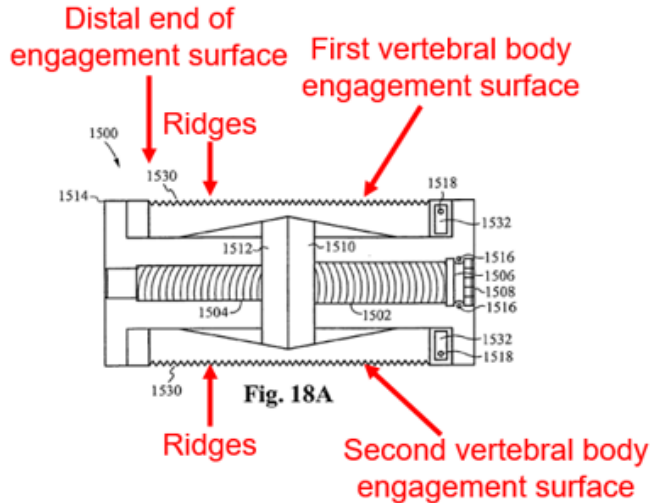
Claims	Invalidity Analysis
	Distal end Proximal end Screw head (accessible at proximal end from proximal direction) Tool engagement portion (recessed surface) Fig. 16 McLuen at Fig. 16 (annotated). To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
Claim 11	
[11] The system of claim 9, wherein the expandable spinal implant comprises first and second angled wedge	Gordon, alone or in combination with McLuen, discloses or renders obvious claim 9. <i>See</i> claim 9. Gordon also discloses or renders obvious this limitation. As shown in figures 15B-C below, Gordon's implant includes expansion member 308 with a “first [] angled wedge surface[]”(in blue) and insert 306 includes a “second angled wedge surface[]”(in green). Gordon,

Claims	Invalidity Analysis
surfaces, wherein rotation of the adjusting screw by the second adjusting tool drives relative motion of the first angled wedge surface with respect to the second angled wedge surface to expand the expandable spinal implant.	[0177]. As discussed in [9G]-[9J] and [9L], Gordon further discloses that rotation of screw 312 (adjusting screw) by driver 708 (second adjusting tool) drives relative motion of the first angled wedge surface of expansion member 308 with respect to the second angled wedge surface of insert 306 to expand the expandable spinal implant. Gordon at Figs. 15B-15C (annotated). The McLuen-Gordon combination also discloses limitation [11]. As shown below, the portions of McLuen's extending blocks 1510 and 1512, which interface with the top and bottom tabs 1530, include "first angled wedge surface[s]" (in blue) and the corresponding portions of the top/bottom tabs 1530 bottom expandable tab 1530 that interface with the extending blocks 1510 and 1512 include "second angled wedge surface[s]" (in green). As discussed in [9I-J], McLuen's bone fusion device 1500 (expandable spinal implant) expands in response to rotation of positioning.

Claims	Invalidity Analysis
	First expandable spinal structure  Fig. 18B Second expandable spinal structure McLuen at Fig. 18B (annotated). McLuen's positioning means 1508 and push up the second angled wedge surfaces of the top/bottom tabs 1530 to expand device 1500, <i>i.e.</i>, “rotation of the adjusting screw by the second adjusting tool drives relative motion of the first angled wedge surface with respect to the second angled wedge surface to expand the expandable spinal implant.” McLuen, [0072], [0074]-[0081], Figs. 18A-18B. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
Claim 12	
[12] The system of claim 9, wherein the first vertebral body	Gordon, alone or in combination with McLuen, discloses or renders obvious claim 9. <i>See</i> claim 9.

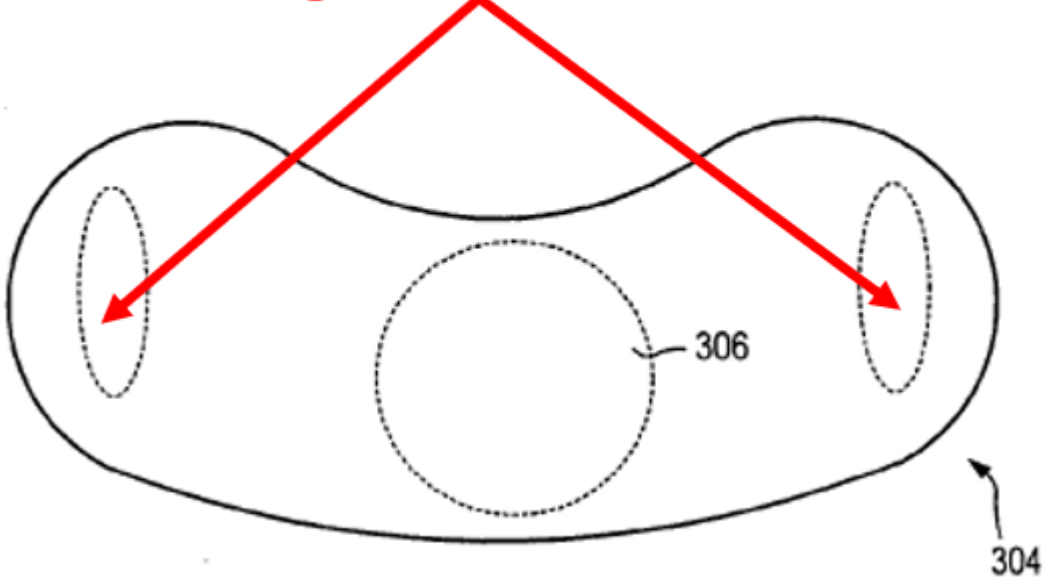
Claims	Invalidity Analysis
engagement surface comprises a plurality of ridges extending from the first vertebral body engagement surface, wherein some of the ridges are positioned on the first vertebral body engagement surface at a distal end of the first vertebral body engagement surface.	Gordon also discloses or renders obvious this limitation. For example, Gordon discloses that the implant's endplate engaging surface ("first vertebral body engagement surface") "may include teeth or ridges," <i>i.e.</i>, "a plurality of ridges extending from a first vertebral body engagement surface." Gordon, [0138]; <i>see supra</i> [9G]-[9H]. A POSITA would have understood that at least some of these ridges "are positioned on the first vertebral body engagement surface at a distal end of the first vertebral body engagement surface." Providing at least some ridges at a distal end (and at a proximal end) of the first vertebral body engagement surface would accomplish Gordon's purpose for the ridges, <i>e.g.</i>, "to facilitate retention of the implant in a desired position between vertebrae." Gordon, [0138]. Indeed, when Gordon depicts ridges on the top and bottom endplate engaging surfaces in figure 21A below, they extend from the implant's distal end to its proximal end, and thus include the distal end of the engaging surfaces. <i>Id.</i> [0196].

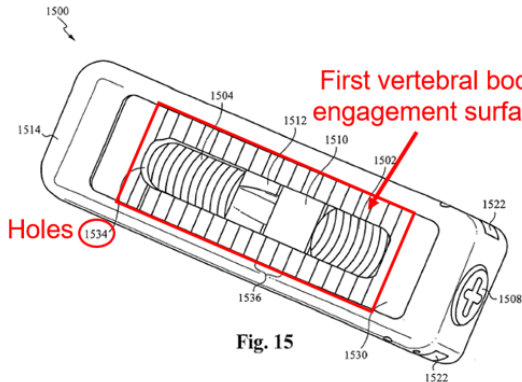
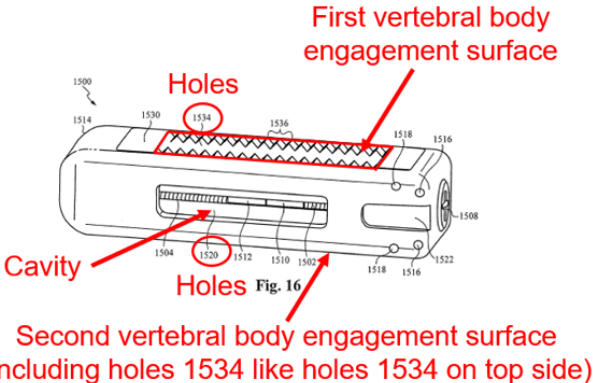
Claims	Invalidity Analysis
	Gordon at Fig. 21A (annotated). The McLuen-Gordon combination also discloses limitation [12]. As discussed in [9G]-[9H], McLuen discloses a bone fusion device 1500 with expandable tabs 1530 (first and second expandable spinal implant structures) defining surfaces that contact the vertebrae (first and second vertebral body engagement surfaces). McLuen further discloses that “tabs 1530 have serrated edges 1536 to further increase the bone fusion device's gripping ability to secure it in place between the bones,” <i>i.e.</i>, “a plurality of ridges.” McLuen, [0075]. Moreover, as shown in figures 16 and 18A below, serrated edges 1536 (ridges) on McLuen’s bone fusion

Claims	Invalidity Analysis
	device 1500 are positioned “at a distal end of the first vertebral body engagement surface.” <i>Id.</i> at Figs. 16, 18A.   McLuen at Figs. 16, 18A (both annotated). To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.
Claim 14	
[14] The system of claim 9, wherein the first and second expandable spinal implant structures	Gordon, alone or in combination with McLuen, discloses or renders obvious claim 9. <i>See</i> claim 9. Gordon also discloses or renders obvious this limitation.

Claims	Invalidity Analysis
each include a through-hole sized to allow for placement of bone material into the expandable spinal implant for fusion. ³	Gordon discloses that “members of an implant may include one or more openings to accommodate packing of bone graft material and/or to allow for bone ingrowth.” Gordon, [0138]. Gordon depicts such openings (“through-hole[s]”) on the top body of the implant (“first [] expandable spinal implant structure[s]”) of the figure 15 implant. <i>Id.</i> [0177].

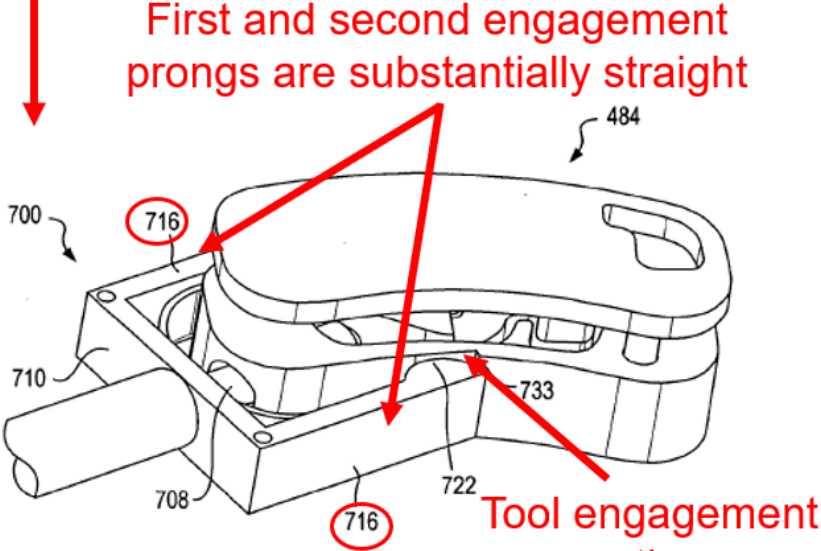
³ The ’136 patent specification does not provide textual support for the claimed “bone material.” Instead, it describes “slots 308 a, 308 b for bone graft placement.” Thus, to the extent “bone material” in the claims can be understood, Petitioner assumes it encompasses bone graft material.

Claims	Invalidity Analysis
	Openings for bone graft material  FIG. 15A Gordon at Fig. 15A (annotated). A POSITA would have understood that in order for the implant to fuse with the adjacent vertebrae, similar openings would be provided on the bottom body of the implant (“second expandable spinal implant structure[s]”). Gordon, [0008], [0014], [0138], [0196] (“In certain embodiments, upper body 388 and/or lower body 390 may include openings to allow for bone ingrowth into an interior portion of implant 422.”). A POSITA would have further understood that these openings would extend through the top and bottom surfaces to hollow portions within the implant (<i>e.g.</i>, a cavity) to allow for fusion of the vertebrae and bone

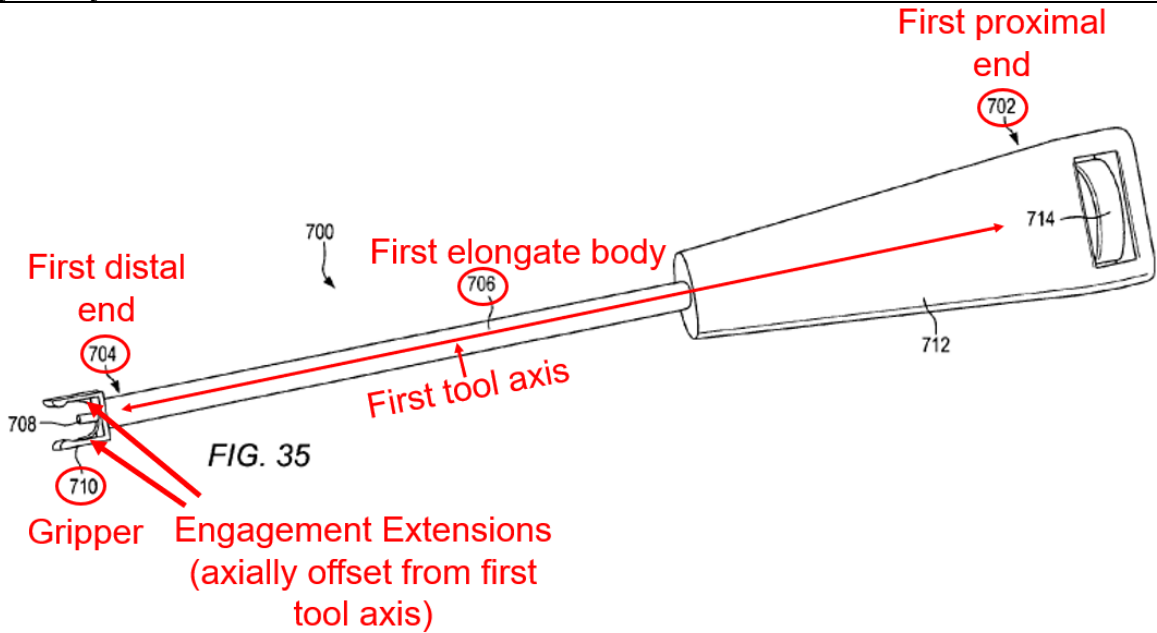
Claims	Invalidity Analysis
	ingrowth, <i>i.e.</i>, these openings are “through-hole[s] sized to allow for placement of bone material into the expandable spinal implant for fusion.” <i>Id.</i> The McLuen-Gordon combination also discloses limitation [14]. For example, as shown in figures 15 and 16 below, McLuen further discloses “<i>holes 1534 within the tabs 1530 [that] allow the bone graft material to contact the vertebral bone after the device 1500 has been inserted between the vertebrae of the patient,</i>” <i>i.e.</i>, the tabs 1530 (“the first and second expandable spinal implant structures”) each include “a through-hole sized to allow for placement of bone material into the expandable spinal implant for fusion.” McLuen, [0077] (emphasis added), Figs. 15-16; <i>see also id.</i> [0078], Figs. 17-18B.⁴   McLuen at Figs. 15-16 (both annotated). To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.

⁴ McLuen also refers to the holes/conduits 1520, 1534 as “openings.” McLuen, [0072] (“Thereafter, material for fusing the bones together is inserted through the holes and openings within the bone fusion device.”).

Claims	Invalidity Analysis
Claim 16	
[16] The system of claim 9, wherein outer sides of the first and second engagement prongs are substantially straight when viewed from an angle perpendicular to the first vertebral body engagement surface when the first and second engagement prongs are engaged with the first and second tool engagement portions on the first and second side surfaces of the expandable spinal implant.	Gordon, alone or in combination with McLuen, discloses or renders obvious claim 9. <i>See</i> claim 9. Gordon also discloses or renders obvious this limitation. As shown in figure 38 below, outer sides of Gordon's holding arms 716 (first and second engagement prongs) are “substantially straight when viewed from an angle perpendicular to the first vertebral body engagement surface” (<i>e.g.</i>, the top surface of Gordon's upper body) while “the first and second engagement prongs are engaged” with recesses 733 (first and second tool engagement portions) on “the first and second side surfaces” of Gordon's implant, and driver 708 (second adjusting tool) engages the screw head of screw 312 (adjusting screw). Gordon, [0177], [0226], [0237].

Claims	Invalidity Analysis
	View direction from an angle perpendicular to the first vertebral body engagement surface First and second engagement prongs are substantially straight  FIG. 38 Tool engagement portions Gordon at Fig. 38 (annotated); <i>see also supra</i> [9L]. The McLuen-Gordon combination also discloses limitation [16] for at least the same reasons as explained above. To the extent Patent Owner argues this limitation is not disclosed or rendered obvious by Gordon, it would have been obvious to a person having ordinary skill in the art to modify Gordon or combine it with any of the other prior art references that disclose this limitation for the reasons set forth in Defendants' Invalidity Contentions Cover Pleading.
Claim 18	

Claims	Invalidity Analysis
[18A] A system comprising: a tool assembly comprising: a first tool having a first proximal end, a first distal end, and a first elongate body between the first proximal end and the first distal end, wherein the first tool defines a first tool axis from the first proximal end to the first distal end,	To the extent the preamble is limiting, Gordon discloses or renders obvious this limitation. <i>See above analysis for limitations [9A]-[9B].</i> To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.
[18B] wherein the first tool includes a gripper having one or more engagement extensions positioned at the first distal end axially offset from the first tool axis,	Gordon discloses or renders obvious this limitation. <i>See above analysis for limitations [9A]-[9B].</i> Furthermore, limitation [18B] recites “wherein the first tool includes a gripper having one or more engagement extensions positioned at the first distal end axially offset from the first tool axis.” As discussed in [9A]-[9B], Gordon’s holding device 710 is part of “the first tool.” Holding device 710 “includes any element or combination of elements that may be used to hold, support, or grip another element, such as an implant,” <i>i.e.</i>, holding device 710 is “a gripper.” Gordon, [0230]. As shown in figure 35 below, holding device 710 is at distal end 704, and includes two holding arms 716 on either side of the first tool axis, <i>i.e.</i>, holding arms 716 disclose “one or more engagement extensions positioned at the first distal end axially offset from the first tool axis.” <i>Id.</i> [0230]-[0231].

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	 Gordon at Fig. 35 (annotated). To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[18C] wherein the first tool defines an adjusting tool passage through the first tool; and	Gordon discloses or renders obvious this limitation. See above analysis for limitation [9C]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the

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	other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[18D] a second adjusting tool having a second proximal end and a second distal end,	Gordon discloses or renders obvious this limitation. <i>See</i> above analysis for limitation [9D]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[18E] wherein the second adjusting tool includes a screw engagement portion positioned at the second distal end and a shaft extending from the second proximal end to the screw engagement portion,	Gordon discloses or renders obvious this limitation. <i>See</i> above analysis for limitations [9D]-[9E]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.

Claims	Invalidity Analysis
[18F] wherein the shaft of the second adjusting tool is sized with a smaller diameter than that of the adjusting tool passage such that the second adjusting tool can extend through and turn within the adjusting tool passage of the first tool; and	Gordon discloses or renders obvious this limitation. <i>See above analysis for limitation [9F].</i> Furthermore, limitation [18F] additionally recites that “the second adjusting tool can . . . turn within the adjusting tool passage of the first tool.” Gordon discloses this feature. For example, Gordon’s driver 708 (second adjusting tool) turns “within the adjusting tool passage” created by outer shaft 706 when the control member of driver 708 (<i>e.g.</i>, thumbwheel 714) is used to control rotation of driver 708. For example, Gordon discloses that “thumbwheel 714 may be fixedly coupled to driver 708 such that driver 708 rotates as thumbwheel 714 is rotated.” Gordon, [0229]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.
[18G] an expandable spinal implant sized and configured to be implanted in a human spine, the expandable spinal implant comprising a first expandable spinal implant structure defining a first engagement surface sized and configured to engage a first vertebral body,	Gordon discloses or renders obvious this limitation. <i>See above analysis for limitation [9G].</i> To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.

Claims	Invalidity Analysis
[18H] a second expandable spinal implant structure defining a second engagement surface sized and configured to engage a second vertebral body,	Gordon discloses or renders obvious this limitation. <i>See</i> above analysis for limitations [9G]-[9H]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[18I] and an adjusting screw having a tool engagement feature and a threaded portion,	Gordon and McLuen disclose or render obvious this limitation. <i>See</i> above analysis for limitations [9I]. Limitation [18I] recites that the adjusting screw has “a tool engagement feature” instead of “a screw head,” as recited in limitation [9I]. A POSITA would have understood that a screw head is a particular type of tool engagement feature, and thus Gordon's screw head discloses “a tool engagement feature,” for the same reasons discussed in [9I]. Limitation [18I] also recites that the adjusting screw has “a threaded portion” instead of “a threaded shaft,” as recited in limitation [9I]. A POSITA would have understood that a threaded shaft includes a threaded portion, and thus Gordon's screw 312 discloses “a threaded portion,” for the same reasons discussed in [9I]. And as discussed in [9I], a POSITA would have understood that a screw head is a particular type of “a tool engagement feature” and that a threaded shaft includes “a threaded portion.” Thus, McLuen's screw 312 includes a tool engagement feature and a threaded portion, as claimed. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.

Claims	Invalidity Analysis
[18J] wherein the expandable spinal implant is configured to expand the first expandable spinal implant structure with respect to the second expandable spinal implant structure in response to turning of the adjusting screw,	Gordon discloses or renders obvious this limitation. <i>See above analysis for limitation [9J].</i> To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[18K] wherein the expandable spinal implant defines one or more tool engagement portions sized, shaped, and configured for engaging with the gripper of the first tool,	Gordon discloses or renders obvious this limitation. <i>See above analysis for limitation [9K].</i> To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by this prior art, it would have been obvious to a person having ordinary skill in the art to modify it or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.

Claims	Invalidity Analysis
[18L] wherein the adjusting screw is positioned within the expandable spinal implant in a screw location such that the second adjusting tool can extend through the adjusting tool passage of the first tool to engage the tool engagement feature of the adjusting screw while one or more engagement extensions of the first tool are engaged with the one or more tool engagement portions of the expandable spinal implant,	Gordon discloses or renders obvious this limitation. <i>See</i> above analysis for limitation [9L]. To the extent Patent Owner argues this limitation is not disclosed or rendered obvious by Gordon, it would have been obvious to a person having ordinary skill in the art to modify Gordon or combine it with any of the other prior art references that disclose this limitation for the reasons set forth in Defendants' Invalidity Contentions Cover Pleading.

Claims	Invalidity Analysis
[18M] wherein at least one of the one or more tool engagement portions of the expandable spinal implant is indented into one or more side surfaces of the expandable spinal implant such that the one or more engagement extensions of the gripper is positioned in the one or more tool engagement portions on the one or more side surfaces of the expandable spinal implant when the first tool is engaged with the expandable spinal implant.	Gordon and McLuen disclose or render obvious this limitation. See above analysis for limitation [9K]-[9L] and claim 10. Limitation [18M] recites that “at least one of the one or more tool engagement portions of the expandable spinal implant is indented into one or more side surfaces of the expandable spinal implant such that the one or more engagement extensions of the gripper is positioned in the one or more tool engagement portions.” Gordon discloses these features for reasons similar to those given in [10] with respect to claim 10, which recites that the first and second tool engagement portions are “formed as recessed surfaces.” As explained in [10], Gordon’s side recesses (first and second tool engagement portions) are formed as recessed surfaces on the side of the implant (indented into one or more side surfaces of the expandable spinal implant) such that holding arms 716 of Gordon’s holding device 710 (one or more engagement extensions of the gripper) are positioned in the side recesses. Gordon, [0237]. In addition, as discussed in [10], the McLuen-Gordon combination discloses these features for reasons similar to those given above with respect to claim 10, which recites that the first and second tool engagement portions are “formed as recessed surfaces.” As explained in [10], channels 1522 (at least one of the one or more tool engagement portions) are formed as recessed surfaces on the side of McLuen’s bone fusion device 1500 (indented into one or more side surfaces of the expandable spinal implant) such that holding arms 716 of Gordon’s holding device 710 (one or more engagement extensions of the gripper) are positioned in channels 1522. To the extent Patent Owner argues this limitation is not disclosed or rendered obvious by Gordon and/or McLuen, it would have been obvious to a person having ordinary skill in the art to modify Gordon or combine it with any of the other prior art references that disclose this limitation for the reasons set forth in Defendants’ Invalidity Contentions Cover Pleading.
Claim 20	

Claims	Invalidity Analysis
[20A] The system of claim 18, the expandable spinal implant further comprising: an implant proximal end and an implant distal end, the one or more tool engagement portions positioned at or near the implant proximal end, and the tool engagement feature of the adjusting screw is accessible at the implant proximal end from a proximal direction, such that the second adjusting tool engages with the tool engagement feature of the adjusting screw at the implant proximal end;	Gordon, alone or in combination with McLuen, discloses or renders obvious claim 18. <i>See</i> claim 18. Gordon also discloses or renders obvious this limitation. <i>See</i> above analysis for limitation [9L] and claim 10. To the extent Patent Owner argues this limitation is not disclosed or rendered obvious by Gordon, it would have been obvious to a person having ordinary skill in the art to modify Gordon or combine it with any of the other prior art references that disclose this limitation for the reasons set forth in Defendants' Invalidity Contentions Cover Pleading.

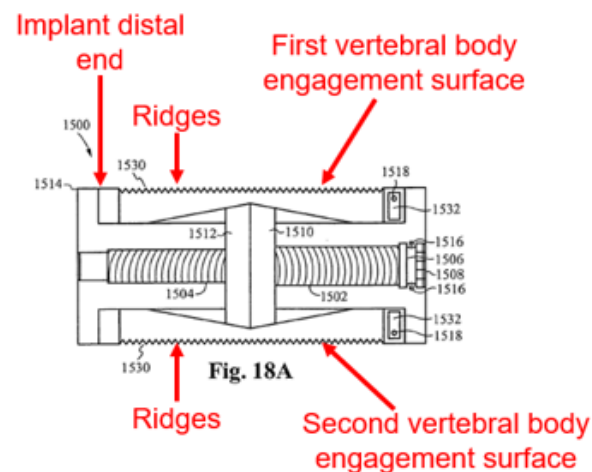
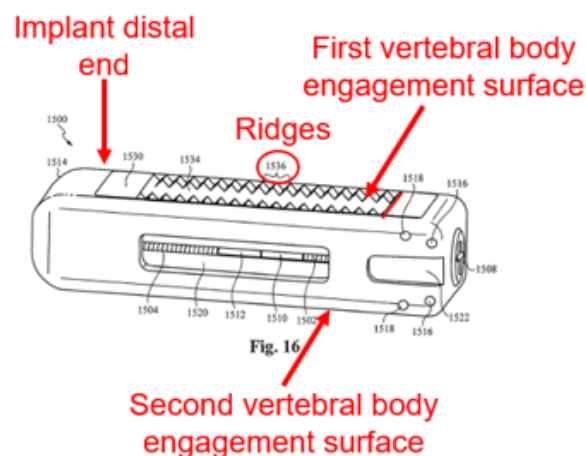
[20B] a plurality of ridges extending from the first engagement surface, wherein at least some of the ridges are positioned on the first engagement surface at or near the implant distal end, said ridges configured to contact the first vertebral body;

Gordon and McLuen disclose or render obvious this limitation.

See above analysis for claim 12.

Furthermore, limitation [20B] recites that “**at least some of the ridges are positioned on the first engagement surface at or near the implant distal end**” while claim 12 recites that “**some of the ridges are positioned on the first vertebral body engagement surface at a distal end of the first vertebral body engagement surface.**”

As explained in [12], Gordon discloses that ridges on the top endplate engaging surface (“**first engagement surface**”) extend from the implant’s distal end, *i.e.*, “**at or near the implant distal end.**” And as explained in [12] and as shown in figures 16 and 18A below, serrated edges 1536 (ridges) are positioned “**at or near the implant distal end.**” McLuen, Figs. 16, 18A.



McLuen at Figs. 16, 18A (both annotated).

To the extent Patent Owner argues this limitation is not disclosed or rendered obvious by Gordon and/or McLuen, it would have been obvious to a person having ordinary skill in the art to modify Gordon or combine

Claims	Invalidity Analysis
	it with any of the other prior art references that disclose this limitation for the reasons set forth in Defendants' Invalidity Contentions Cover Pleading.
[20C] first and second angled wedge surfaces, wherein rotation of the adjusting screw by the second adjusting tool drives relative motion of the first angled wedge surface with respect to the second angled wedge surface to expand the expandable spinal implant; and	Gordon discloses or renders obvious this limitation. <i>See</i> above analysis for claim 11. To the extent Patent Owner argues this limitation is not disclosed or rendered obvious by Gordon, it would have been obvious to a person having ordinary skill in the art to modify Gordon or combine it with any of the other prior art references that disclose this limitation for the reasons set forth in Defendants' Invalidity Contentions Cover Pleading.

[20D] first and second openings extending through the first and second engagement surfaces to a cavity within the expandable spinal implant, the cavity sized to receive bone material;⁵	Gordon discloses or renders obvious this limitation. <i>See</i> above analysis for claim 14. As explained in [14], Gordon discloses that the engagement surfaces on the top and bottom bodies of the implant include openings to accommodate packing of bone graft material. As further explained, these openings would extend through the top and bottom surfaces to hollow portions within the implant (<i>e.g.</i>, a cavity) to allow for fusion of the vertebrae and bone ingrowth, <i>i.e.</i>, Gordon discloses “first and second openings extending through the first and second engagement surfaces to a cavity within the expandable spinal implant, the cavity sized to receive bone material.” The McLuen-Gordon combination also discloses limitation [20D]. As explained in [14], and as shown in figures 15 and 16 below, McLuen discloses “holes 1534 within the tabs 1530 [that] allow the bone graft material to contact the vertebral bone after the device 1500 has been inserted between the vertebrae of the patient,” <i>i.e.</i>, holes 1534 of device 1500 are “first and second openings extending through the first and second engagement surfaces.” McLuen, [0077], Figs. 15-16. Holes 1534 extend through the surfaces of tabs 1530 to a cavity within bone fusion device 1500 defined by holes/conduit 1520, <i>i.e.</i>, “a cavity within the expandable spinal implant.” <i>Id.</i> [0077]-[0078] (“The frame 1514 of the bone fusion device 1500 contains a set of holes 1520 within the frame 1514 for allowing bone graft material to be inserted.”), Figs. 15-18B.
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⁵ The ’136 patent specification does not provide textual support for the claimed “bone material.” *See* n.5.

Claims	Invalidity Analysis
	Fig. 15 Fig. 16 McLuen at Figs. 15-16 (both annotated). According to McLuen, “material for fusing the bones together is inserted through the holes and openings within the bone fusion device,” <i>i.e.</i>, holes/conduits 1520, 1534 are provided for receiving bone graft material (bone material) and the cavity defined by holes 1520 is “sized to receive bone material.” <i>Id.</i> [0072]-[0073], [0077]-[0078]. A POSITA would have understood that the holes 1534 on the top/bottom tabs 1530 of McLuen’s bone fusion device 1500 extend through the first and second vertebral body surfaces to the cavity defined by holes 1520 within device 1500 because bone graft material inserted in holes 1520 and 1534 allows for device 1500 to “becom[e] embedded within the two adjacent vertebrae of the spine which eventually fuse together during the healing period.” McLuen, [0073]. To the extent Patent Owner argues this limitation is not disclosed or rendered obvious by Gordon, it would have been obvious to a person having ordinary skill in the art to modify Gordon or combine it with any of the other prior art references that disclose this limitation for the reasons set forth in Defendants’ Invalidity Contentions Cover Pleading.

Claims	Invalidity Analysis
[20E] wherein the first expandable spinal implant structure is a first single integral structure and the second expandable spinal implant structure is a second single integral structure; and	Gordon discloses or renders obvious this limitation. <i>See</i> above analysis for claim 15. To the extent Patent Owner argues this limitation is not disclosed or rendered obvious by Gordon, it would have been obvious to a person having ordinary skill in the art to modify Gordon or combine it with any of the other prior art references that disclose this limitation for the reasons set forth in Defendants' Invalidity Contentions Cover Pleading.

Claims	Invalidity Analysis
[20F] wherein outer sides of the one or more engagement extensions are substantially straight when viewed from an angle perpendicular to the first engagement surface when the one or more engagement extensions are engaged with the one or more tool engagement portions on the one or more side surfaces of the expandable spinal implant, and the second adjusting tool is engaged with the tool engagement feature of the adjusting screw.	Gordon discloses or renders obvious this limitation. <i>See</i> above analysis for claim 16. To the extent Patent Owner argues this limitation is not disclosed or rendered obvious by Gordon, it would have been obvious to a person having ordinary skill in the art to modify Gordon or combine it with any of the other prior art references that disclose this limitation for the reasons set forth in Defendants' Invalidity Contentions Cover Pleading.