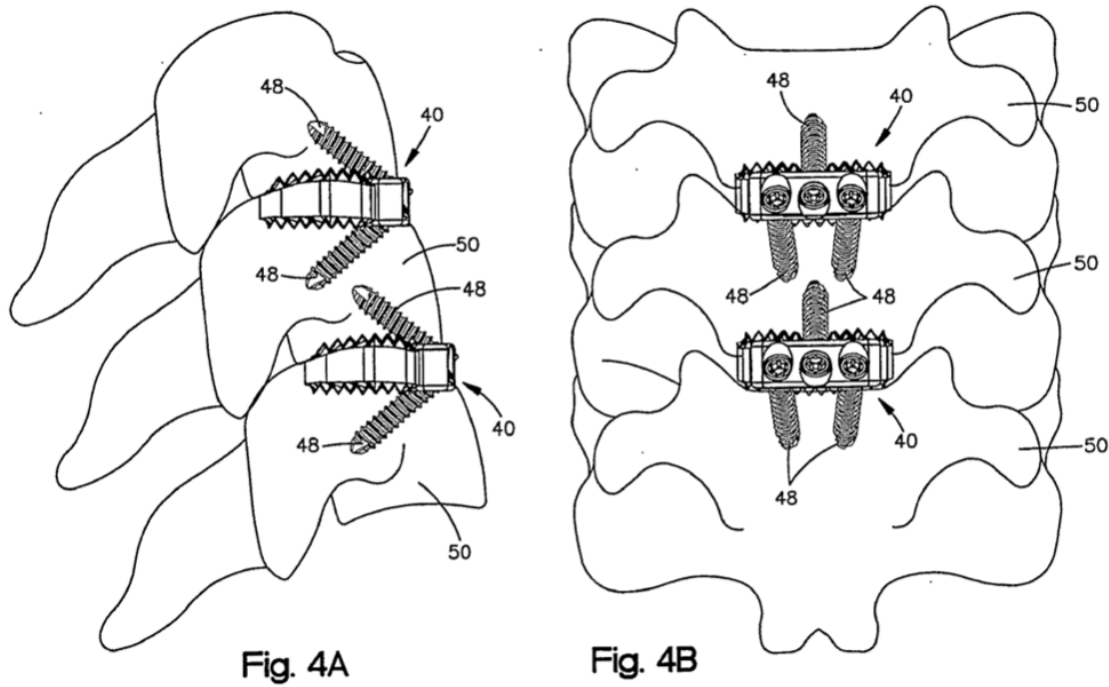


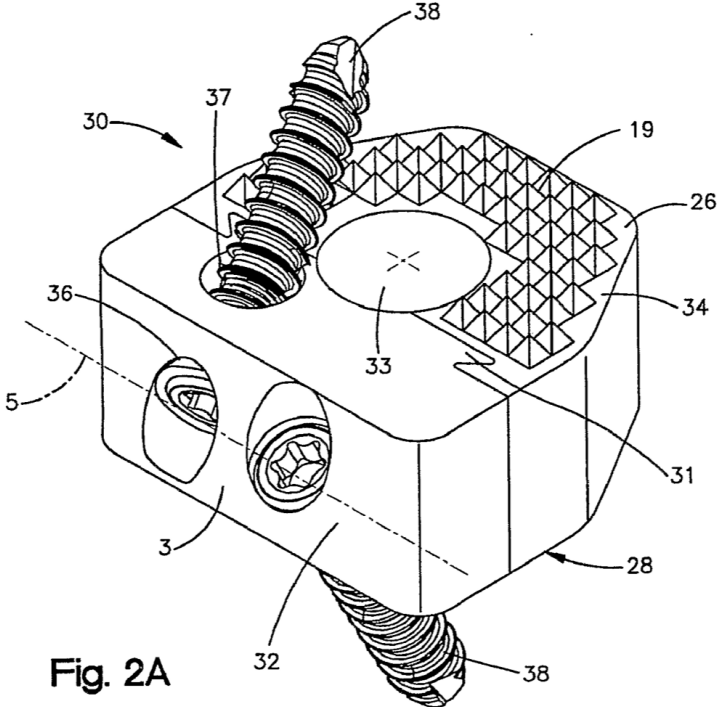
Exhibit B1 – Invalidity of U.S. Patent No. 9,907,674 in view of Messerli, Waugh '569, Michelson, Coates, and Bray

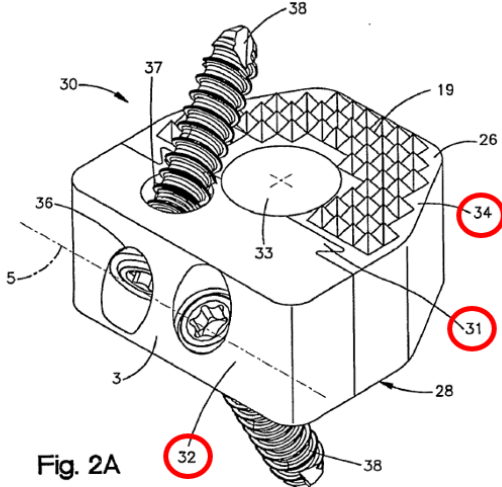
U.S. Patent Application Publication No. 2010/0305704 (“Messerli”), alone or in combination with U.S. Patent Application Publication No. 2008/0249569 (“Waugh '569”), alone or in combination with U.S. Patent Application Publication No. 2003/0208275 A1 to Michelson (“Michelson”), alone or in combination with U.S. Patent No. 5,423,826 to Coates et al. (“Coates”), alone or in combination with U.S. Patent No. 8,100,976 to Bray (“Bray”), alone or in combination with other prior art identified in the cover pleading and/or discussed below, disclose(s) or render(s) claims 34, 35, 36, 37, 39, 41, 42, 43, 44, and 46 of U.S. Patent No. 9,907,674 (“’674 Patent”) obvious. Moskowitz has claimed an August 21, 2007 priority date for the ’674 Patent. *See* Moskowitz First Supplemental Response to Medtronic Interrogatory 1. Messerli was filed on February 27, 2007 and published on December 2, 2010, and is therefore prior art under at least pre-AIA § 102(e). Waugh '569 was filed on April 3, 2007 and published on October 9, 2008, and is therefore prior art under at least pre-AIA § 102(e). Michelson published on November 6, 2003 and is therefore prior art under pre-AIA § 102(b). Coates issued on June 13, 1995 and is therefore prior art under pre-AIA § 102(b). Bray issued on January 24, 2012 from an application filed January 5, 2007, and is therefore prior art under at least pre-AIA § 102(e). 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.

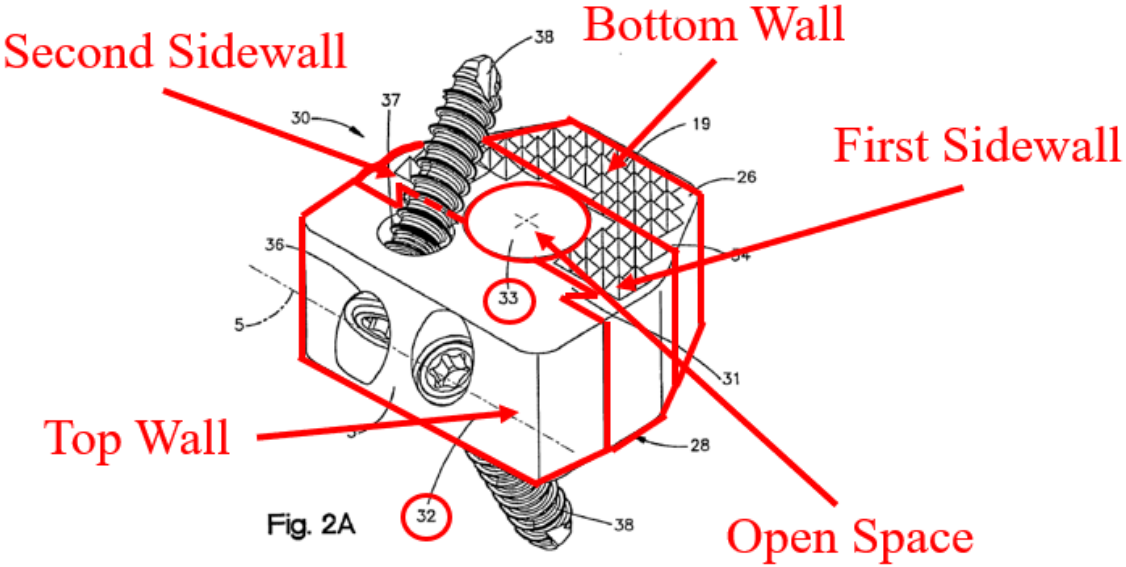
Claims	Exemplary Citations to Prior Art
Claim 34	
[34A] A system to provide fusion of a first vertebral body to a second vertebral body via biological bone fusion and screw fusion, the system comprising:	To the extent the preamble is limiting, Messerli discloses this limitation. Messerli is directed to “intervertebral implants,” and, more particularly, to “implants for use in spinal fusion surgery.” Messerli at [0002], [0003]. As Messerli explains, “[s]uch implants are used to stabilize and immobilize the spinal segments in the treatment of degenerative disc disease (single and multi-level), spinal stenosis, and failed previous fusions.” <i>Id.</i> at [0003]. “Some implants use supplemental fixation means, such as a plate and screws, to retain the implant once introduced between two vertebrae.” <i>Id.</i> Messerli discloses “[a]n intervertebral spacer implant (80) [that] is provided with a retention mechanism (86) to help alleviate expulsion and movement of the implant when placed in the spine while providing an implant that is easier to insert in the spine.” <i>Id.</i> at Abstract. Messerli’s spacer implant was designed to be inserted between two vertebral bodies (a “first vertebral body” and a “second vertebral body”) to fuse them together, as shown below.

Claims	Exemplary Citations to Prior Art
	 Fig. 4A and Fig. 4B are line drawings of a vertebral column section. Fig. 4A is a side view showing two vertebrae (50) with a spacer implant (40) between them. The implant is secured by four screws (48) that pass through the upper and lower vertebral bodies. Fig. 4B is a front view showing the same assembly, with the screws (48) clearly visible passing through the implant (40) into the vertebral bodies (50). <i>Id.</i> at Figs. 4A, 4B (while these images depict spacer implant 40, rather than spacer implant 80, it is clear from the similar structures of spacer 80 (depicted in Figure 6A-6D) and spacer 40 (depicted in Figures 4A-4B) that their intended placement in the spine is the same); <i>see also id.</i> at [0004] (“The spacer [is] configured and dimensioned for insertion between vertebrae.”). As can be seen, the spacer implants depicted above in Figures 4A-4B use screws (“screw fusion”) to fix the implant between the upper and lower vertebral bodies, thus also fusing the two vertebral bodies together. <i>See also id.</i> at Figs. 2A-2C, 3A-3C, 5A-5D, 6A-6D (depicting similar implant structures with screws protruding in two directions for fusing both upper and lower vertebral bodies to the implant and thus together); <i>id.</i> at [0014], [0017], [0020], [0023] (describing Figs. 2A, 3A, 5A, 6A as depicting “retention screws”). As Messerli states, the “present invention preferably allows for implantation of an intervertebral implant and fusion of adjacent vertebrae without the need for additional supplemental fixation means.” <i>Id.</i> at [0004].

Claims	Exemplary Citations to Prior Art
	With respect to Figures 2A-2C specifically, Messerli describes that the “implant 30” includes a “plate 32 and a spacer/graft 34.” Messerli at [0048]. It further describes that: in this embodiment, the retention mechanism is provided by screws that provide opposing screw fixation. In other words, for example, one screw diverges outward such that it is secured into an upper or superior vertebra and another screw diverges outward from the implant such that it is secured in a lower or inferior vertebra so that opposing forces act on the plate and/or vertebra. <i>Id.</i> at [0048]. In addition, “[g]raft/spacer 34 may include one or more openings 33 designed to receive bone graft material.” <i>Id.</i> Such bone graft material serves to provide the “biological bone fusion” aspect of this claim element. The disclosure of “a system to provide fusion of a first vertebral body to a second vertebral body via biological bone fusion and screw fusion” is similar as to Figures 3A-3C (<i>id.</i> at [0050]), Figures 5A-5D (<i>id.</i> at [0053]), and Figures 6A-6D (<i>id.</i> at [0055]-[0057]). Graft/spacer 34, with its opening 33 designed to receive bone graft material, is depicted below.

Claims	Exemplary Citations to Prior Art
	 Fig. 2A <i>Id.</i> at Fig. 2A; <i>see also id.</i> at Figs. 3A, 5A. Messerli thus discloses this limitation. <i>See also</i> below discussion of claim limitation [41A]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, it would have been obvious to a person having ordinary skill in the art to modify Messerli or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[34B] an intervertebral cage comprising a top portion and a bottom portion with	Messerli discloses a system “comprising a top portion and a bottom portion with the top portion operably connected to the bottom portion[.]” Messerli discloses an implant that includes a “plate 32 and a spacer/graft 34.” Messerli at [0048]. The plate and spacer correspond to the top portion and bottom portion, respectively. “The plate

Claims	Exemplary Citations to Prior Art
the top portion operably connected to the bottom portion, wherein the top portion and the bottom portion combine to form a top wall, a bottom wall, a first sidewall and a second sidewall, wherein the top portion forms the top wall and at least part of the first and second side walls, wherein the bottom portion forms the bottom wall and at least part of the first and second side walls, and wherein the intervertebral cage defines: at least one open space capable of receiving bone filling for biological bone fusion,	32 is preferably connected to the spacer 34 by a dovetail joint 31 that requires the plate 32 to slide vertically relative to the spacer 34.” <i>Id.</i> at [0049]. The dovetail joint “operably connect[s]” the top and bottom portions. Accordingly, Messerli’s implant comprises a top portion and a bottom portion that are operably connected, as claimed.  Fig. 2A Top Portion Bottom Portion Dovetail Joint <i>Id.</i> at Fig. 2A (annotated). Messerli discloses that its system is “an intervertebral cage ... wherein the top portion and the bottom portion combine to form a top wall, a bottom wall, [and] a first sidewall and a second sidewall.” As previously discussed herein, “plate 32” (the top portion) combines with “spacer 34” (the bottom portion). As shown in Fig. 2A below, the top and bottom portions together form an intervertebral cage comprising a top wall, a bottom wall, and two sidewalls, as claimed. Messerli therefore discloses “wherein the top portion forms the top wall and at least part of the first and second side walls” and “wherein the bottom portion forms the bottom wall and at least part of the first and second side walls,” as shown in Figure 2A below.

Claims	Exemplary Citations to Prior Art
	 The diagram, labeled Fig. 2A, shows a perspective view of a rectangular intervertebral cage. Red arrows and text labels identify its components: 'Second Sidewall' (top-left), 'Bottom Wall' (top-right), 'First Sidewall' (right), 'Top Wall' (bottom-left), and 'Open Space' (bottom-right). The cage has a mesh-like top surface (19) and a solid bottom surface (26). A central opening (33) is shown in the top surface. A screw (30) is shown passing through the cage. Other numbered parts include 37, 38, 36, 5, 3, 32, 31, and 28. The label 'Fig. 2A' is at the bottom left of the diagram. <i>Id.</i> at Fig. 2A (annotated). Messerli discloses “wherein the intervertebral cage defines: at least one open space capable of receiving bone filling for biological bone fusion.” Messerli discloses two sidewalls that define an open space, as claimed and as shown in Fig. 2A above. <i>Id.</i> at [0048] (“Graft/spacer 34 may include one or more openings 33 designed to receive bone graft material.”). As shown, the open space extends from the inner surface of the first sidewall to the inner surface of the second sidewall and extends from the inner surface of the top wall to the inner surface of the bottom wall. Messerli thus discloses this limitation. <i>See also</i> below discussion of claim limitation [41B]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, it would have been obvious to a person having ordinary skill in the art to modify Messerli or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.
[34C] a first side slot on the first sidewall;	Messerli discloses and/or suggests this limitation. While Messerli does not explicitly picture “ a first slot on the first sidewall ” with respect to the embodiments pictured in Figures 2A-6D, it does explain that its implants are “generally

Claims	Exemplary Citations to Prior Art
	sized and configured for anterior insertion, and state that “[i]n addition to the features shown the implants, spacers, and plate/spacer constructs may have threaded holes, slots or channels to mate with instruments to facilitate holding and inserting the implants.” Messerli at [0076]. Further, with respect to Figure 19, Messerli discloses an embodiment with a “recess 422” that “may be sized to fit an insertion tool.” Messerli at [0075]. It further discloses that it is useful to “have an opening allowing the insertion tool to grip the implant 400 for insertion between two vertebrae.” <i>Id.</i> Messerli thus discloses and/or suggests including slots on both the first and second sidewalls of the implants pictured in Figures 2A-6D, on opposite sides of each other, to allow for a tool to grip the implant for anterior insertion between the vertebrae in a position that allows for a small insertion hole and allows the tool to fit between the vertebrae. Such a configuration of slots for interaction with the tool would at least have been obvious to a POSITA in light of Messerli’s disclosure of slots to facilitate tool holding. <i>Id.</i> at [0076]. In addition, Waugh ’569 discloses this claim limitation. Waugh ’569, like Messerli, discloses an “implantable medical device attachable to bone structure using an anchor member,” for “insert[ion] between adjacent vertebrae.” Waugh ’569 at [003]-[0006]. Waugh ’569 discloses “a method including introducing an implant member to a vertebral segment comprising an upper and lower vertebra,” including “[a]nchor members [that] may be inserted through anchor member apertures in the implant member, the anchor members penetrating the upper and lower vertebrae.” <i>Id.</i> at [0008]. As pictured below, the Waugh ’569 implant is of a similar size and shape as those pictured in Figures 2A-6D of Messerli, with similar use of screws.

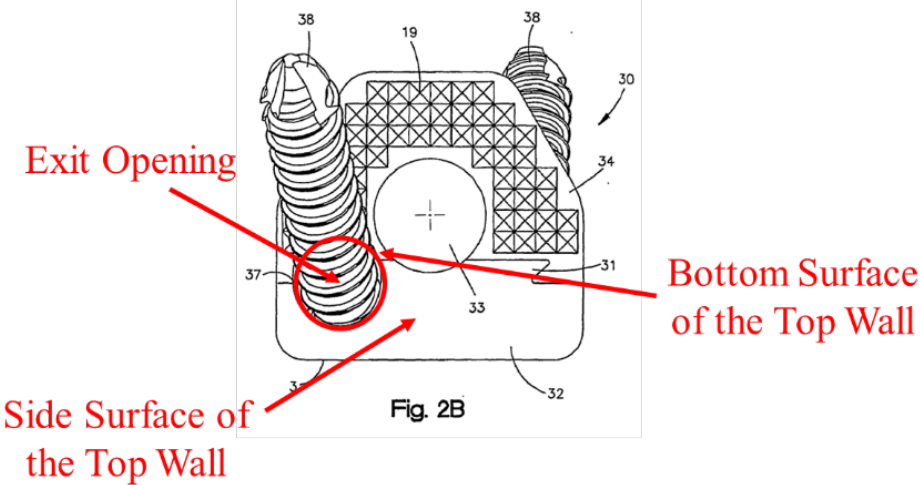
Claims	Exemplary Citations to Prior Art
	Waugh '569 at Figs. 2, 3. Like Messerli, Waugh '569 further discloses a “hollow center 118” of the implantable device that “may allow placement of bone growth materials, such as allograft to promote bonding and fusion of the implantable device 100 to the adjacent vertebrae.” <i>Id.</i> at [0028]. Waugh '569 further discloses a “recessed slot 122” on each sidewall. Waugh '569 at [0029] (“The side surfaces 112a-b each include a recessed slot 122 (best seen in FIG. 4) configured to cooperate with an insertion tool (described below) that selectively connects to the implant member 102.”). These recessed slots correspond to the first and second side slots. Although Waugh '569 does not picture the second slot and second sidewall, a POSITA considering its disclosure would understand that the second slot was placed in a location on the second sidewall that is opposite to the location of the first slot, such that the device is symmetrical. This is particularly so given the structure of the disclosed insertion tool (Fig. 6) that shows two prongs configured in a symmetrical way to interact with the slots. In Waugh '569, the recessed slots are configured to engage with “locking protrusion 158 on each arm 156” of an “insertion tool 152.” <i>Id.</i> at [0038], Fig. 6.

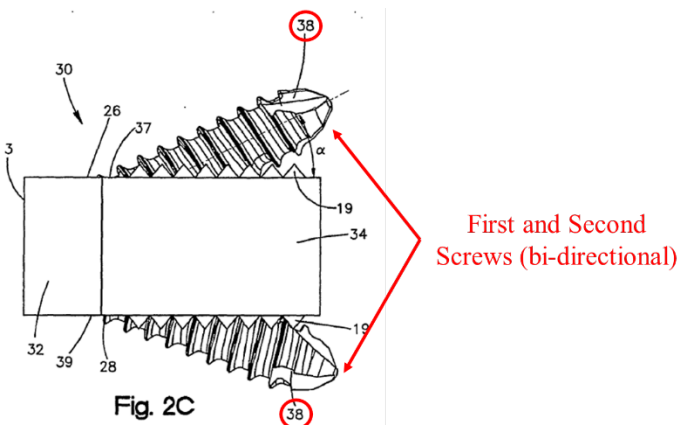
Claims	Exemplary Citations to Prior Art
	<i>Id.</i> at Figs. 4, 6 (annotated). Given these disclosures and the disclosures in Messerli, a POSITA would have been motivated to add slots on the side surfaces of Messerli like those disclosed in Waugh '569 to more easily secure and position the implant. This is particularly so in light of the many similarities between the implants discussed in Waugh '569 and Messerli. Modifying Messerli in this way in light of Waugh '569 would have constituted: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of known techniques to improve similar devices in the same way; and (4) applying a known technique to a known device ready for improvement to yield predictable results. A POSITA would also have been motivated to combine the implant disclosed in Messerli, including Messerli's disclosure of slots for interaction with an insertion tool, with older standard tools related to insertion and fixation of devices for treatment of spinal disorders and fusion of vertebrae. For example, Coates, with issued on June 13, 1995, is directed to "the use of fixation plates for treatment of spinal disorders or for fusion of vertebrae." Coates at 1:10-22; <i>see also id.</i> ("The present invention concerns spinal instrumentation systems, such as for use with the cervical vertebrae. More particularly, the invention pertains to a plating system for use in treatment of the cervical spine."). Coates' title, "Anterior Cervical Plate Holder/Drill Guide and Method of Use," makes clear that Coates is directed to anterior insertion, as is Messerli. <i>See Messerli</i> at [0076]. Coates describes a tool that has prongs (which

Claims	Exemplary Citations to Prior Art
	Coates calls “small hook[s] 161 on each foot 157”) to “attach[] to a notch 159 on each end of the plate 20” to manipulate and place the fixation plate. Coates at 12:67-13:32, Figs. 14-19. Fig. 14 Fig. 17 Hooks It would have been obvious to a POSITA to apply the hooks and corresponding notches of Coates to Messerli’s implant, particularly in light of Messerli’s disclosure of a tool and corresponding “slots to mate with instruments.” Messerli at [0076]. A POSITA would have been motivated to do so and would have had a reasonable expectation of success in so doing. This is particularly so because, as discussed herein, Messerli’s implant discloses screws and

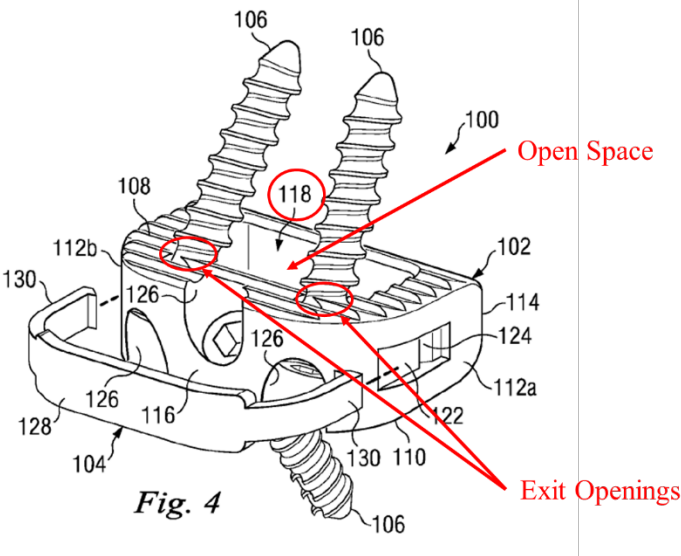
Claims	Exemplary Citations to Prior Art
	screw holes to promote fusion of the implant to the vertebrae, and the vertebrae to each other. The same fixation method, particularly screws protruding from the implant into the vertebrae, is disclosed by Coates. <i>See</i> Coates at 1:10-22; <i>see also id.</i> at Figs. 1, 5. A POSITA would thus have been motivated to look to Coates’ disclosure of how to stabilize and insert such screws—including the entirety the embodiment shown in Figures 14-17 of Coates—for understanding how best to stabilize and insert such screws with respect to the Messerli implant. Further discussion of how the Coates tool discloses stabilizing and facilitating insertion of screws is below with regard to claim limitation [34K]. The result of the Messerli-Coates combination would be a pair of slots on the sidewalls of the Messerli implant. It is clear that Coates is meant to grab an implant from the sides. It would have made far more sense to a POSITA to have the Coates tool grab along the sidewalls of the Messerli implant, rather than on the surfaces of the device that interact with the vertebrae, because there is space along the sidewalls for the insertion of such a tool, while turning the tool (and corresponding notches) 90 degrees would cause potential interaction/interference with the vertebrae themselves. The disclosure of Waugh ’569, discussed above, further makes obvious the placement of Messerli’s slots for Coates’ tool along the Messerli sidewalls. Modifying Messerli in this way in light of Coates would have constituted: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of known techniques to improve similar devices in the same way; and (4) applying a known technique to a known device ready for improvement to yield predictable results. For the foregoing reasons, Messerli discloses and/or suggests this claim limitation, alone or in combination with Waugh ’569, Coates, or both. <i>See also</i> below discussion of claim limitation [41C]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, alone or in combination with Waugh ’569 and/or Coates, it would have been obvious to a person having ordinary skill in the art to modify Messerli, Waugh ’569, and/or Coates or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.
[34D] a second side slot on the second sidewall, wherein the second side slot is positioned opposite the first side slot,	As described above with respect to claim limitation [34C], Messerli discloses and/or suggests “a second slot on a second outer side of the second sidewall of the two sidewalls, wherein the second slot is positioned opposite of the first slot,” alone or in combination with Waugh ’569 and/or Coates. As described above with respect to claim limitation [34C], a POSITA would have been motivated to combine the opposite-positioned slots of Waugh ’569 and Coates with the implants disclosed in Messerli, and it would have been obvious to a POSITA to do so, particularly in light of Messerli’s disclosure that such slots could facilitate interaction with an insertion tool. <i>See</i> Messerli at [0076].

Claims	Exemplary Citations to Prior Art
	For the foregoing reasons, Messerli discloses and/or suggests this claim limitation, alone or in combination with Waugh '569, Coates, or both. <i>See also</i> below discussion of claim limitations [41C] and [41D]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, alone or in combination with Waugh '569 and/or Coates, it would have been obvious to a person having ordinary skill in the art to modify Messerli, Waugh '569, and/or Coates or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[34E] a first internal screw guide having a first entry opening and a first exit opening, the first entry opening formed at least partially in a top surface of the top portion at the top wall and the first exit opening formed at least partially in a bottom surface of the top portion at the top wall and at least partially in a first side surface of the top portion at the top wall, and	Messerli discloses this limitation. Messerli discloses an implant with a “pair of holes or openings 36, [which] accept two screws.” Messerli at [0048], Fig. 2A. This pair of holes corresponds to the claimed “first entry opening” and “second entry opening.” As shown in Fig. 2A below, the entry openings are “formed at least partially in the top surface of the top portion of the top wall[.]” The entry and exit openings (and space between them) together define an internal screw guide. Messerli at Fig. [2A] (annotated).

Claims	Exemplary Citations to Prior Art
	Fig. 2B of Messerli discloses the exit opening as being “formed at least partially in a bottom surface of the top portion at the top wall and at least partially in a first side surface of the top portion at the top wall[.]” <i>See:</i>  Messerli at Fig. 2B (annotated). For the foregoing reasons, Messerli discloses this claim limitation. <i>See also</i> below discussion of claim limitation [41E]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, it would have been obvious to a person having ordinary skill in the art to modify Messerli or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.
[34F] a second internal screw guide having a second entry opening and a second exit opening, the second entry opening formed at least partially in the top surface of the top portion at the top wall and the second	Messerli discloses this limitation for at least reasons similar to those given above for limitation [34E]. A POSITA would understand that the second internal screw guide mirrored the first internal screw guide, such that the second exit opening, similar to the first exit opening, was “formed at least partially in the bottom surface of the top portion at the top wall and at least partially in a second side surface of the top portion at the top wall[.]” In addition, Messerli discloses “wherein the first internal screw guide and the second internal screw guide are angled to orient screw members bi-directionally[.]” Messerli discloses that “one screw... [is] inserted into the upper vertebrae and the other... [is] inserted into the lower vertebrae.” Messerli at [0048]. These screws are angled bi-directionally in opposite directions, as shown below in Fig. 2C. <i>Id.</i> at [0047] (“As shown best in FIG. 2C, holes

Claims	Exemplary Citations to Prior Art
exit opening formed at least partially in the bottom surface of the top portion at the top wall and at least partially in a second side surface of the top portion at the top wall, wherein the first internal screw guide and the second internal screw guide are angled to orient screw members bi-directionally; and	36 form an angle α with respect to the upper and lower surfaces of the implant, where α may range between 20° and 50°, and preferably ranges between 30° and 45°.”).  Fig. 2C <i>Id.</i> at Fig. 2C (annotated). For the foregoing reasons, Messerli discloses this claim limitation. <i>See also</i> below discussion of claim limitation [41F]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, it would have been obvious to a person having ordinary skill in the art to modify Messerli or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.
[34G] a first screw having a first screw head and a first threaded body that is sized and configured to be inserted through the first internal screw guide at a first angle so the first screw extends at least partially into the open space and at least	Messerli discloses “a first screw having a first screw head and a first threaded body that is sized and configured to be inserted through the first internal screw guide at a first angle so the first screw ... extends at least partially next to the open space.” As described above with respect to claim limitation [34E], the two internal screw guides are defined by their respective entry and exit openings. As can be seen below, each screw has a head and a threaded body that is sized and configured to be inserted through a screw guide such that the screw protrudes out from the implant next to open space 33. As Messerli describes, the implant has “[a] pair of holes or openings 36 [that] accept two screws 38, which penetrate the vertebral bodies and secure the implant in place. One of holes 36 is angled upward toward the upper or superior vertebrae, and the other hole 36 is angled downward toward the lower or inferior vertebrae.” Messerli at [0048].

Claims	Exemplary Citations to Prior Art
partially next to the open space;	Fig. 2A <i>Id.</i> at Fig. 2A (annotated). Messerli further suggests an internal screw guide from which “the first screw extends at least partially into the open space.” While Messerli does not depict the first screw extending at least partially into the open space 33, it explains that the purpose of the open space 33 was to accept bone graft material to further fusion between the vertebrae. Messerli at [0048] (“Graft/spacer 34 may include one or more openings 33 designed to receive bone graft material.”). Because of the beneficial fusion provided by bone graft, it would have been obvious to a POSITA to make the opening 33 larger to allow for more bone graft, and a POSITA would have been motivated to do so. It would further have been obvious to a POSITA that an implant of the materials disclosed in Messerli (such as titanium and stainless steel, <i>id.</i> at [0048]) would not need the walls to be quite as thick as depicted in order to be structurally stable for its intended purpose. It is clear from Fig. 2A of Messerli that increasing the size of opening 33 by even a little would result in the first and second screws “extend[ing] at least partially into the open space.” Thus, Messerli at least suggests and/or renders obvious this claim limitation. Messerli further suggests and/or renders obvious this claim limitation in combination with Waugh ’569, which depicts a larger hole for bone graft material and the first and second screws “extend[ing] at least partially into the open

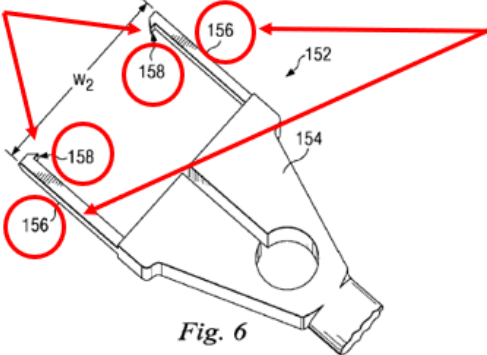
Claims	Exemplary Citations to Prior Art
	space.” Waugh ’569 discloses that “[t]he anchor members 106 extend through the anchor member apertures 126 in the front surface 116 and upper and lower surfaces 108, 110 and out the hollow center 118 and into the bearing endplates of the vertebrae 14, 16, thereby securely locating the implant member 102 entirely within the disc space.” Waugh ’569 at [0029]. Anchor members and hollow center correspond to the screws and open space, respectively. Moreover, the screw passages are the internal screw guides. Accordingly, the Waugh ’569 screws “extend at least partially into the open space.” As shown in Fig. 4 below, the Waugh ’569 screws also “extend at least partially next to the open space.”  <i>Fig. 4</i> Waugh ’569 at Fig 4 (annotated). As can be seen, Waugh ’569 discloses a larger opening for bone graft material than Messerli does. A POSITA would have been motivated to incorporate a larger opening for bone graft material, such as that in Waugh ’569, into Messerli, to promote the bone fusion discussed by both references. <i>See, e.g.</i>, Waugh ’569 at [0028] (“A hollow center 118 may allow placement of bone growth materials, such as allograft to promote bonding and fusion of the implantable device 100 to the adjacent vertebrae.”), <i>id.</i> at [0063] (“In some circumstances, it is advantageous to pack all or a portion of the hollow center of the implant member with a suitable osteogenetic material or therapeutic composition.”); Messerli at [0048] (“Graft/spacer 34 may include one or more openings 33 designed to receive bone graft material.”). Modifying Messerli in this way in light of Waugh ’569 would have constituted: (1) combining prior art elements

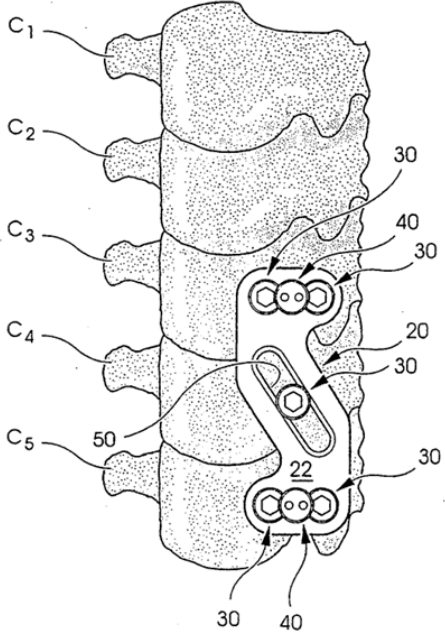
Claims	Exemplary Citations to Prior Art
	according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of known techniques to improve similar devices in the same way; and (4) applying a known technique to a known device ready for improvement to yield predictable results; and (5) choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success. As set forth above, it is clear from Fig. 2A of Messerli that increasing the size of opening 33 by even a little would result in the first and second screws “extend[ing] at least partially into the open space.” Thus, the result of a POSITA combining the larger opening of Waugh ’569 with the Messerli implant (which a POSITA would have been motivated to do and which would have been obvious to a POSITA) would have been that the Messerli implant further discloses the screws “extend[ing] at least partially into the open space.” Thus, Messerli in combination with Waugh ’569 also discloses and/or renders obvious this claim limitation. For the foregoing reasons, Messerli, alone or in combination with Waugh ’569, discloses and/or suggests this claim limitation. <i>See also</i> below discussion of claim limitation [41H]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, alone or in combination with Waugh ’569, it would have been obvious to a person having ordinary skill in the art to modify Messerli and/or Waugh ’569 or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.
[34H] a second screw having a second screw head and a second threaded body that is sized and configured to be inserted through the second internal screw guide at a second angle different than the first angle; and	Messerli discloses this limitation for at least the reasons given above with respect to claim limitation [34G]. <i>See also:</i>

Claims	Exemplary Citations to Prior Art
	Fig. 2A Messerli at Fig. 2A. Further, the second screw is “inserted through the second internal screw guide at a second angle different than the first angle.” <i>See id.</i> at [0047] (“As shown best in FIG. 2C, holes 36 form an angle α with respect to the upper and lower surfaces of the implant, where α may range between 20° and 50°, and preferably ranges between 30° and 45°.”). Fig. 2C

Claims	Exemplary Citations to Prior Art
	<i>Id.</i> at Fig. 2C (annotated). For the foregoing reasons, Messerli discloses this claim limitation. <i>See also</i> below discussion of claim limitation [41I]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, it would have been obvious to a person having ordinary skill in the art to modify Messerli or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.
[34I] a tool configured for manipulating and inserting the intervertebral cage into a disc space between the first vertebral body and the second vertebral body to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion,	As set forth above, Messerli discloses that “[i]n addition to the features shown the implants, spacers, and plate/spacer have threaded holes, slots or channels to mate with instruments to facilitate holding and inserting the implants.” Messerli at [0076]. Of course, the “inserting” of the implant is into “a disc space between the first vertebral body and the second vertebral body to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion,” as described above with respect to claim limitation [34A]. Messerli thus discloses “a tool configured for manipulating and inserting the intervertebral cage into a disc space between the first vertebral body and the second vertebral body to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion.” Waugh ’569 also discloses a tool for manipulating and inserting the intervertebral cage into the space between two vertebral bodies to provide biological bone fusion and screw fusion. As discussed above in limitation [34C], the purpose of the Waugh ’569 implant, as with Messerli’s implant, is to be inserted between the first vertebral body and the second vertebral body to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion.

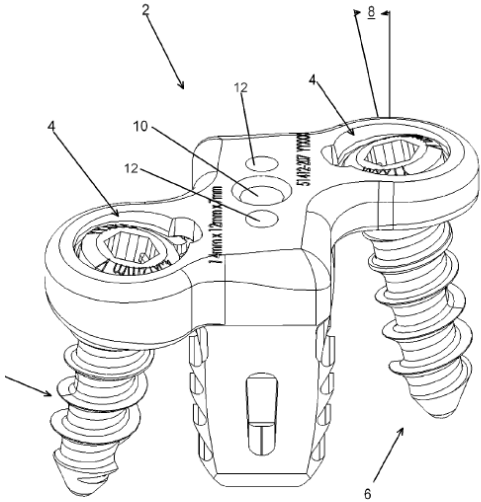
Claims	Exemplary Citations to Prior Art
	Fig. 2 Fig. 3 Waugh '569 at Figs. 2, 3; <i>see also id.</i> at [0028] (describing hollow center 118 for “placement of bone growth materials, such as allograft to promote bonding and fusion of the implantable device 100 to the adjacent vertebrae”). Waugh '569 further discloses a tool configured for manipulating and inserting its implant between the vertebral bodies. “FIG. 6 shows an end of an insertion tool 152 for implanting the implant member 102. The insertion tool 152 includes a body portion 154 and two arms 156 configured to interface with the recessed slots 122 on the implant member side surfaces 112a-b.” <i>Id.</i> at [0038].

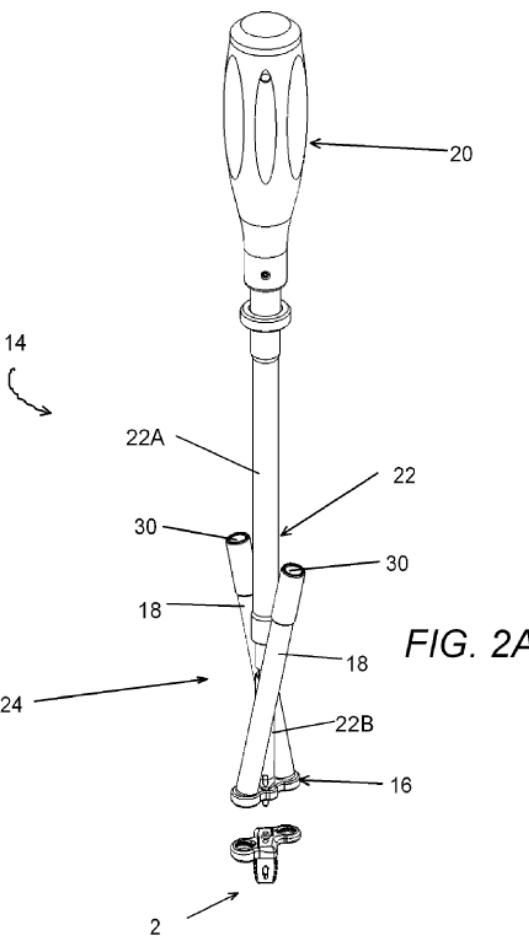
Claims	Exemplary Citations to Prior Art
	Locking Protrusions  Gripper Prongs Fig. 6 A POSITA would have been motivated to use a tool like Waugh '569's with Messerli's implant because Messerli discloses the use of a tool to insert its implant, but does not depict the tool itself. It would have been obvious for a POSITA to combine Messerli's implant with Waugh '569's tool because of the similar structures of the two implants, particularly given Messerli's disclosure that slots could be added to its implant to interact with a tool and Waugh '569's depiction of such slots and the tool that corresponds to them. <i>See</i> Messerli at [0076]. A POSITA would also have been motivated to use Waugh '569's tool in particular because it has gripper prongs and locking protrusions, which would provide a more secure engagement with the spinal implant, thereby facilitating safer and more reliable insertion. Modifying Messerli in this way in light of Waugh '569 would have constituted: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of known techniques to improve similar devices in the same way; and (4) applying a known technique to a known device ready for improvement to yield predictable results. Messerli, alone or in combination with Waugh '569, thus discloses and/or suggests this limitation. Coates also discloses “a tool configured for manipulating and inserting” a device into a person's spine “to provide fusion of [a] first vertebral body to [a] second vertebral body ... via screw fusion.” As described above with respect to claim limitation [34C], Coates discloses “a system for anterior fixation of the spine [that] includes an elongated fixation plate having a longitudinal axis and a length along the axis sufficient to span between at least two vertebrae.” Coates at 2:24-28. The plate is affixed to the two vertebrae via “several bone engaging screws.” <i>Id.</i> at 2:24-43.

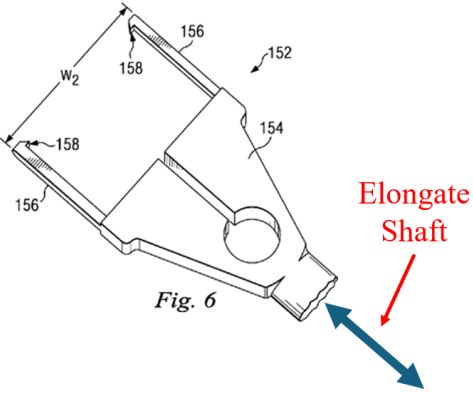
Claims	Exemplary Citations to Prior Art
	 Fig. 1 <i>Id.</i> at Fig. 1. Coates further discloses a tool for manipulating and inserting the fixation plate into the person's spine, complete with hooks on the tool to grab the plate and corresponding notches on the plate itself.

Claims	Exemplary Citations to Prior Art
	Fig. 14 Fig. 17 Hooks <i>Id.</i> at Figs. 14, 17 (both annotated). In light of the disclosure of a tool in Messerli, <i>see</i> Messerli at [0076], it would have been obvious to a POSITA to add the tool disclosed in Coates to Messerli to insert and position the Messerli device between two vertebrae “to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion.” This is particularly so because Messerli requires the insertion of screws, and, as discussed in more detail below, the Coates tool provides a solution for stabilizing such screws for insertion. Adding the Coates tool to

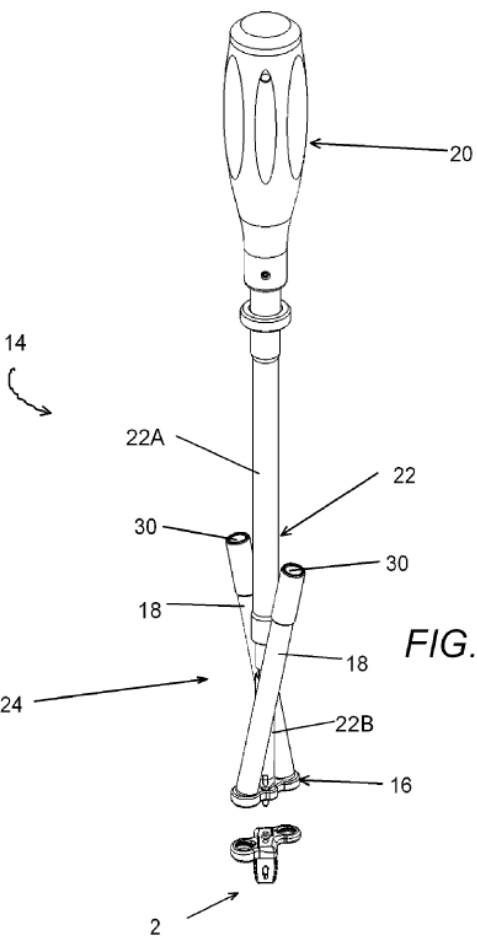
Claims	Exemplary Citations to Prior Art
	manipulate and insert the Messerli device would thus have constituted: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of known techniques to improve similar devices in the same way; and (4) applying a known technique to a known device ready for improvement to yield predictable results; and (5) choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success. Messerli, alone or in combination with Coates, thus discloses and/or suggests this limitation. Another tool that is relevant here is U.S. Patent No. 8,172,854 to Blain <i>et al.</i> (“Blain”). Blain describes an instrument guide for, for example, an “interbody fusion implant 2.” <i>See</i> Blain at 4:26-28. The instrument guide “can facilitate access to the fastener apertures 4 of the implant 2, as well as provide a guide for a particular angle of access to the apertures.” <i>Id</i> at 4:28-31. “To facilitate attachment or engagement of an instrument guide to an implant 2, the implant may further comprise one or more attachment sites to facilitate the attachment and/or detachment of the instrument guide.” <i>Id.</i> at 4:39-43. Although the figures of Blain do not show engagement sites on the sides of the implant, such an arrangement is clearly contemplated (and would be known in the art, as evidenced by the discussion above). <i>See id.</i> at 4:26-55. Blain further teaches its instrument guide “can facilitate the correct drilling or insertion angle of the desired fixation angle 8 between the polyaxial fastener 6 and the screw apertures 4 of the implant 2.” <i>Id.</i> at 4:37-39; <i>see also</i>:

Claims	Exemplary Citations to Prior Art
	 <i>FIG. 1</i> Blain at Fig. 1.

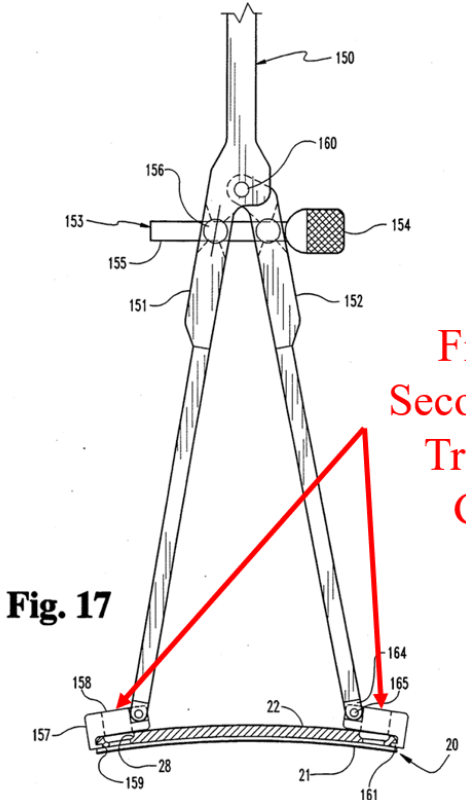
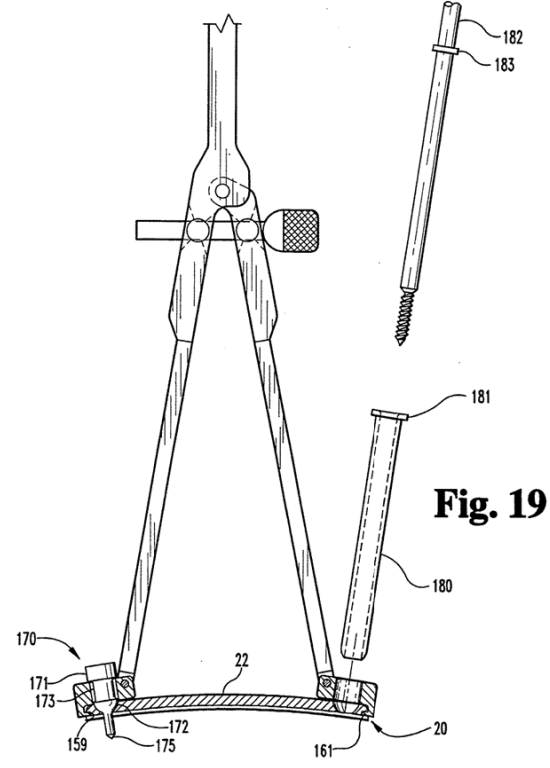
Claims	Exemplary Citations to Prior Art
	 Blain at Fig. 2A. Although Blain's tool is shown inserting screws outside of the interbody device, a POSITA would readily appreciate that the tool, with minor modifications, could insert the screws in interbody device's like Messerli's with screws that go through them. Messerli, alone or in combination with Blain, thus discloses and/or suggests this limitation. <i>See also</i> below discussion of claim limitation [41J].

Claims	Exemplary Citations to Prior Art
	To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, alone or in combination with Waugh '569, Coates, and/or Blain, it would have been obvious to a person having ordinary skill in the art to modify Messerli, Waugh '569, Coates, and/or Blain or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[34J] the tool comprising: an elongate shaft portion; and	Messerli does not explicitly state that its tool comprises an “elongate shaft,” as claimed. However, a POSITA would readily understand that the tool’s shaft is preferably elongate to allow for better control and access to the surgical site. Similarly, while Waugh '569 does not explicitly state that its tool comprises an “elongate shaft,” a POSITA would readily understand that the tool’s shaft is preferably elongate to allow for better control and access to the surgical site. Indeed, Waugh '569 describes Figure 6 as “an end of an insertion tool 152,” Waugh '569 at [0038], suggesting that the image depicted is at the end of an elongate shaft designed to reach into the body through a small incision hole to allow for placement of the implant. The image of Figure 6 consistently shows that it appears to be cut off right where an elongate shaft would begin.  Waugh '569 at Fig. 6 (annotated). Coates discloses the tool comprising multiple elongate shaft portions.

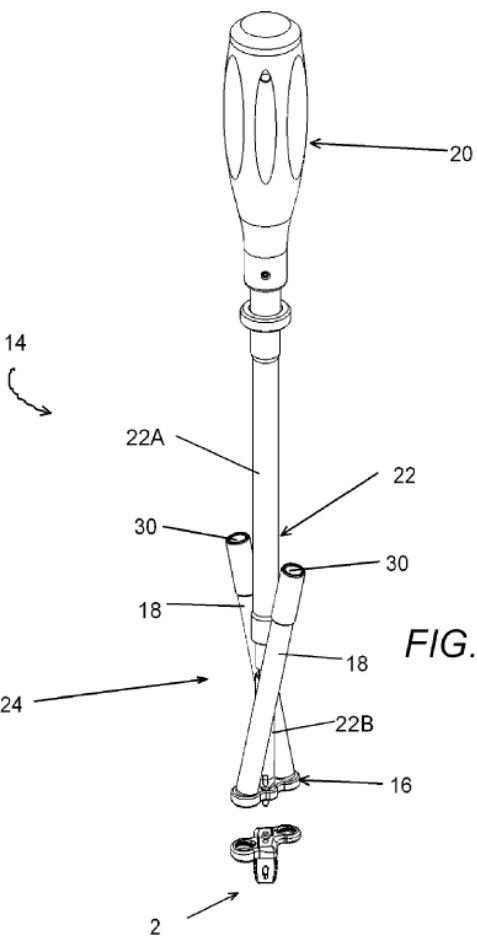
Claims	Exemplary Citations to Prior Art
	Fig. 17 Fig. 15 Elongate Shafts Elongate Shafts Coates at Figs. 15, 17 (annotated, showing different views of the same embodiment). Blain also discloses a tool with an elongate shaft:

Claims	Exemplary Citations to Prior Art
	 FIG. 2A Blain at Fig. 2A. Messerli, alone or in combination with Waugh '569, Coates, and/or Blain thus discloses and or suggests this limitation. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, alone or in combination with Waugh '569, Coates, and/or Blain, it would have been obvious to a person having ordinary skill in

Claims	Exemplary Citations to Prior Art
	the art to modify Messerli, Waugh '569, Coates, and/or Blain or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[34K] a screw guide defining a first screw trajectory guide and a second screw trajectory guide for controlling a direction of insertion of the first screw and the second screw as they are inserted into the first internal screw guide and the second internal screw guide of the intervertebral cage, wherein when the tool is engaged with the intervertebral cage the first and second screw trajectory guides of the tool are aligned with the first and second internal screw guides of the intervertebral cage.	Neither Messerli nor Waugh '569 describe their tools as including “a first screw trajectory guide and a second screw trajectory guide” as claimed. But both Messerli and Waugh '569 disclose implants that need screws to secure them, inserted deep in a person's body. <i>See</i> Messerli at Figs. 4A-4B, Waugh '569 at Fig. 4. Thus, they suggest and motivate the use of a tool to help stabilize and direct those screws. And such tool would need to “control the direction” of the screws and, when engaged with the implant, be “aligned with the first and second internal screw guides of the intervertebral cage” of Messerli and/or Waugh '569. Indeed, using screw trajectory guides for inserting screws that secure implants to the bone, particularly in anterior approaches, was well-known, as evidenced by Blain, Bray (which is detailed in another chart and incorporated herein by reference) and Coates, which issued on June 13, 1995. Coates discloses that “[t]he present invention concerns spinal instrumentation systems, such as for use with the cervical vertebrae. More particularly, the invention pertains to a plating system for use in treatment of the cervical spine.” Coates at 1:10-13. Coates' tool is a “drill and tap guide system [that] can be mounted on a bone plate to provide a firm foundation for accurately drilling and tapping screw holes into vertebra to be instrumented.” <i>Id.</i> at Abstract. It “includes a guide apparatus for holding a spinal plate and drilling and tapping the bone. The guide comprises two arms which pivot with respect to each other and a foot attached at the end of each arm. Each foot has a hook which is adapted to securely grasp a spinal plate and a pair of screw holes. Each hole is aligned with a screw bore in a spinal plate when the guide assemble is engaged to the plate.” <i>Id.</i> While Coates' tool is not disclosed for use with intervertebral cages, it is disclosed for the insertion of a spinal device to fuse two vertebrae together, just like Messerli and Waugh '569, and a POSITA would thus be motivated to look to its teachings. In addition, a POSITA would have understood that an intervertebral plate may be attached to an intervertebral cage. <i>See</i> Messerli at [0064] (“FIGS. 14A-F depict a cervical spacer-plate implant 2000 ... In this embodiment, the plate 2020 and spacer 2010 are integrally formed.”). Indeed, Messerli describes the intervertebral cage of the embodiment shown in Figure 2 as a combined “plate 32 and a spacer/graft 34.” <i>Id.</i> at [0048]. Messerli thus invites a combination of its implant with plate-related prior art such as Coates and encourages the combination of Coates, which is directed to holding and manipulating plates, with the implant disclosed in Figure 2, which is described as part plate. Coates discloses that “[e]ach foot defines a pair of thru-holes 158 which are aligned with the screw bores 27 when the bone plate 20 is engaged to the guide 150.” Coates at 13:6-9. The pair of thru-holes or screw trajectory guides

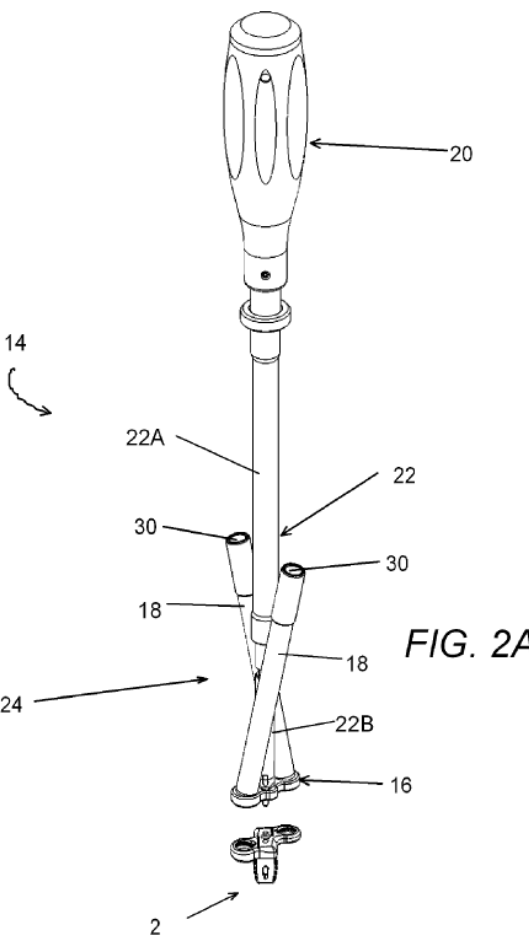
Claims	Exemplary Citations to Prior Art
	function to control the direction of the two screws, as claimed. Moreover, Coates discloses a locking mechanism in which “a small hook 161 on each foot 157 of the guide attaches to a notch 159 on each end of the plate 20.” <i>Id.</i> at 13:9-10. These small hooks, positioned on opposite ends, function as gripper prongs or projections that engage with the implant, thereby securing it. In that sense, Coates’ tool with its feet and hooks are similar to that disclosed by Waugh ’569 which features gripper prongs and locking protrusions, as well as that disclosed by Messerli when it discusses “threaded holes, slots or channels to mate with instruments to facilitate holding and inserting the implants.” Messerli at [0076].  Fig. 17  Fig. 19 Coates at Figs. 17 (annotated), 19.

Claims	Exemplary Citations to Prior Art
	A POSITA would have been motivated to (and indeed would have needed to) use a tool to secure and insert the Messerli implant or the combined Messerli-Waugh '569 implant and would have found it logical to either: (1) use Coates' tool—with its screw trajectory guides—directly with a Messerli implant with slots; or (2) include screw trajectory guides like the one depicted in Coates' Fig. 17 or those depicted in Bray in the tool disclosed by Waugh '569. These modifications would have constituted: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of known techniques to improve similar devices in the same way; and (4) applying a known technique to a known device ready for improvement to yield predictable results; and (5) choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success. As discussed above for [34I], Blain also teaches screw trajectory guides, and it would have been obvious to use a Blain-like tool with the Messerli implant or the combined Merrerli-Waugh '569 implant. These modifications would have constituted: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of known techniques to improve similar devices in the same way; and (4) applying a known technique to a known device ready for improvement to yield predictable results; and (5) choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

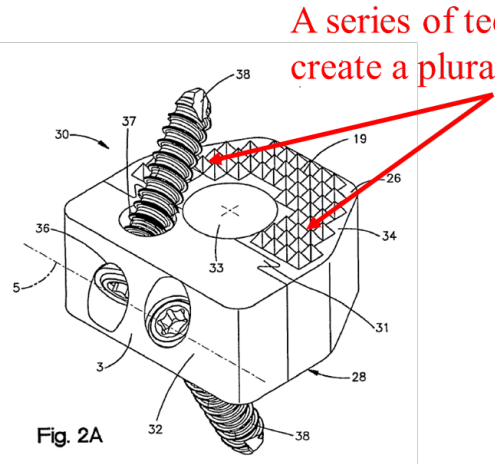
Claims	Exemplary Citations to Prior Art
	 FIG. 2A Blain at Fig. 2A. For the foregoing reasons, Messerli and/or Waugh '569 thus disclose and/or suggest this claim limitation, alone and/or in combination with Coates, Bray, and/or Blain. <i>See also</i> below discussion of claim limitation [41K]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, Waugh '569, Coates, Bray, and/or Blain, it would have been obvious to a person having ordinary skill in the art to modify Messerli, Waugh

Claims	Exemplary Citations to Prior Art
	'569, Coates, Bray and/or Blain or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
Claim 35	
[35] The system of claim 34, wherein the elongate shaft has a handle at a proximal end and has the screw guide at a distal end.	Messerli, alone or in combination with Waugh '569, Coates, Bray and/or Blain discloses or renders obvious claim 34. <i>See</i> [34A]-[34K]. As set forth above with respect to claim limitation [34J] and in the Bray chart, each of Messerli, Waugh '569, Bray, and Coates disclose and/or render obvious their tool having an elongate shaft. Coates and Bray further disclose their tools as having “a handle at a proximal end and ... the screw guide at a distal end,” with proximal meaning closer to the user and distal meaning farther from the user/closer to the patient.

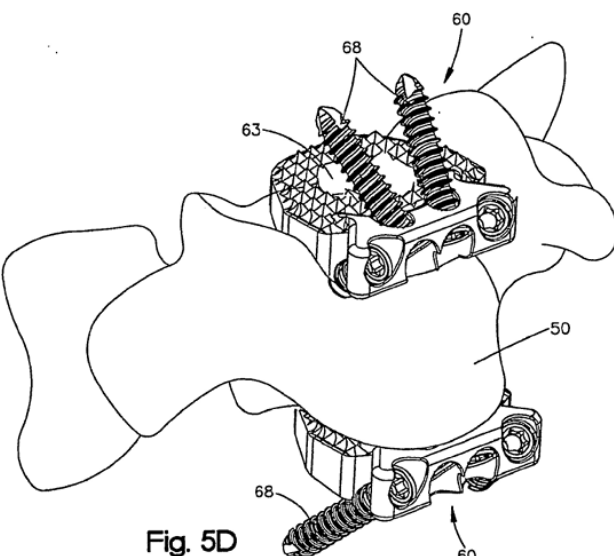
Claims	Exemplary Citations to Prior Art
	Fig. 17 Fig. 15 First and Second Screw Trajectory Guides Handle Z Coates at Figs. 15, 17 (annotated, showing different views of the same embodiment, <i>see id.</i> at 12:67-13:32 (“A further embodiment of the invention is shown in FIGS. 14-19.”)). Blain also discloses this limitation:

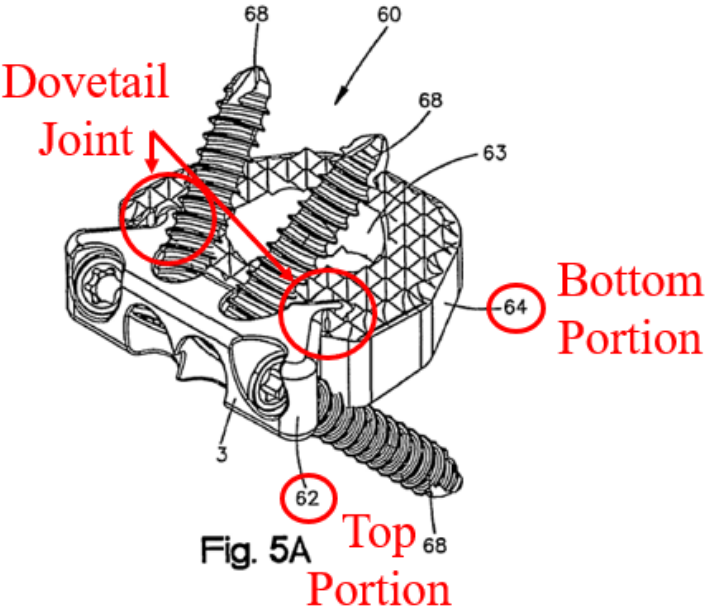
Claims	Exemplary Citations to Prior Art
	 Blain at Fig. 2A. Messerli thus discloses and/or suggests this limitation in combination with Waugh '569 and/or Coates and/or Bray and/or Blain. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, Waugh '569, Bray, Coates, and/or Blain, it would have been obvious to a person having ordinary skill in the art to modify Messerli,

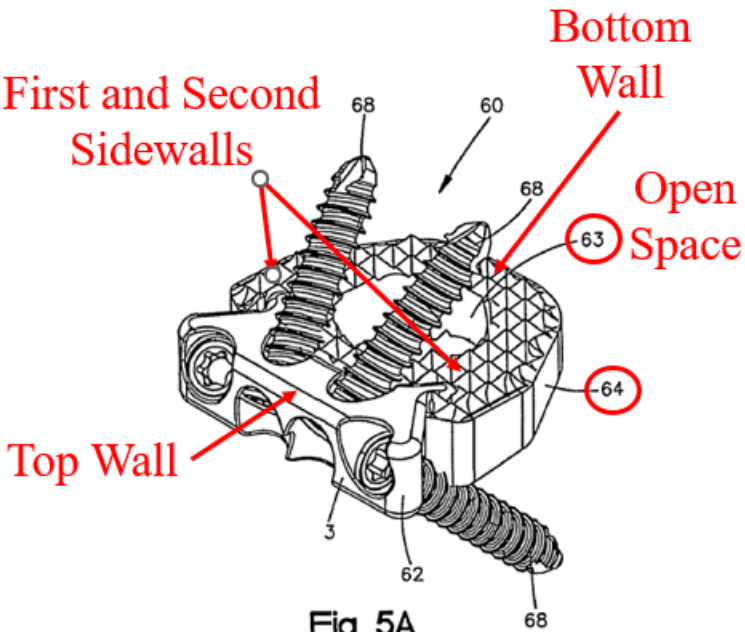
Claims	Exemplary Citations to Prior Art
	Waugh '569, Bray, Coates, and/or Blain or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
Claim 36	
[36] The system of claim 34, wherein the open space extends from an inner surface of the first sidewall to an inner surface of the second sidewall and extends from an inner surface of the top wall to an inner surface of the bottom wall.	Messerli, alone or in combination with Waugh '569, Coates and/or Blain, discloses or renders obvious claim 34. <i>See</i> [34A]-[34K]. As discussed above with respect to claim limitation [34B], Messerli discloses this limitation. <i>See also</i> discussion below with respect to claim 42. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, it would have been obvious to a person having ordinary skill in the art to modify Messerli or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
Claim 37	
[37] The system of claim 34, and further comprising means for facilitating integration and fusion with superior and inferior vertebral bodies.	Messerli, alone or in combination with Waugh '569, Coates and/or Blain, discloses or renders obvious claim 34. <i>See</i> [34A]-[34K]. Messerli further discloses “means for facilitating integration and fusion with superior and inferior vertebral bodies,” under multiple potential interpretations of this term. For example, Moskowitz's infringement contentions as to the '674 Patent point to bone graft inserted into the open space as the claimed means. Messerli discloses bone graft inserted into the open space. <i>See</i> Messerli at [0048] (“Graft/spacer 34 may include one or more openings 33 designed to receive bone graft material.”); <i>id.</i> at Fig. 2A (depicting opening 33). As another example, Messerli discloses “a series of teeth... to aid in securing the implant.” <i>Id.</i> at [0044]. These “teeth” constitute a series of surface features that form a plurality of ridges on both sidewalls. Moreover, Messerli discloses that the teeth “aid in securing the implant to the vertebral endplates.” <i>Id.</i> at [0048]. Accordingly, the teeth serve as the means for facilitating integration and fusion of the implant with the adjacent vertebrae, as claimed.

Claims	Exemplary Citations to Prior Art
	 Fig. 2A A series of teeth which create a plurality of ridges For the foregoing reasons, Messerli discloses this claim limitation. <i>See also</i> discussion below with respect to claim 43. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, it would have been obvious to a person having ordinary skill in the art to modify Messerli or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.
Claim 39	
[39] The system of claim 37, wherein the tool comprises at least one projection extending distally away from a distal end of the elongate shaft sized and that is configured to engage the intervertebral cage, wherein when the projection is engaged with the	Messerli, alone or in combination with Waugh ’569, Coates and/or Blain, discloses or renders obvious claim 34. <i>See</i> [34A]-[34K]. The Messerli-Coates and Messerli-Waugh ’569-Coates combinations disclosed above further disclose this claim limitation, as discussed above with respect to claim limitations [34I] and [34K]. As shown in Coates Figures 14 and 17, the Coates tool includes hooks, which are “projection[s] extending distally away from a distal end of the elongate shaft sides and ... configured to engage with” a spinal device, “wherein when the projection is engaged with the [spinal device] the first and second screw guides of the tool are aligned with the first and second internal screw guides of the [spinal device].” As set forth above, it would have been obvious to combine the Coates tool with the intervertebral cage of Messerli or Messerli-Waugh ’569 to satisfy this claim limitation.

Claims	Exemplary Citations to Prior Art
	It would also have been obvious to modify Blain to have hooks to connect to slots on the sides of the interbody device to arrive at the claimed limitation, as such an arrangement would avoid damaging the vertebrae during insertion and was known in the art, as evidenced by numerous references discussed herein. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, Waugh '569, Bray, Coates and/or Blain, it would have been obvious to a person having ordinary skill in the art to modify Messerli, Waugh '569, Bray, Coates, and/or Blain or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
Claim 41	
[41A] A system to provide fusion of a first vertebral body to a second vertebral body via biological bone fusion and screw fusion, the system comprising:	To the extent the preamble is limiting, Messerli discloses this limitation for the reasons set forth above with respect to claim limitation [34A]. In addition, and in particular, the embodiment disclosed in Figures 5A-5D of Messerli discloses this limitation. As with the other embodiments disclosed in Figures 2A to 6D the embodiment disclosed in Figures 5A-5D is an “intervertebral implant” configured to be inserted between two vertebral bodies, with “the retention mechanism [] provided by screws with provide opposing screw fixation.” Messerli at [0053]. “As shown, four holes 66 accept four fixation screws 68, which penetrate the vertebral bodies and secure the implant 60 in place, as shown in FIG. 5D.” <i>Id.</i>

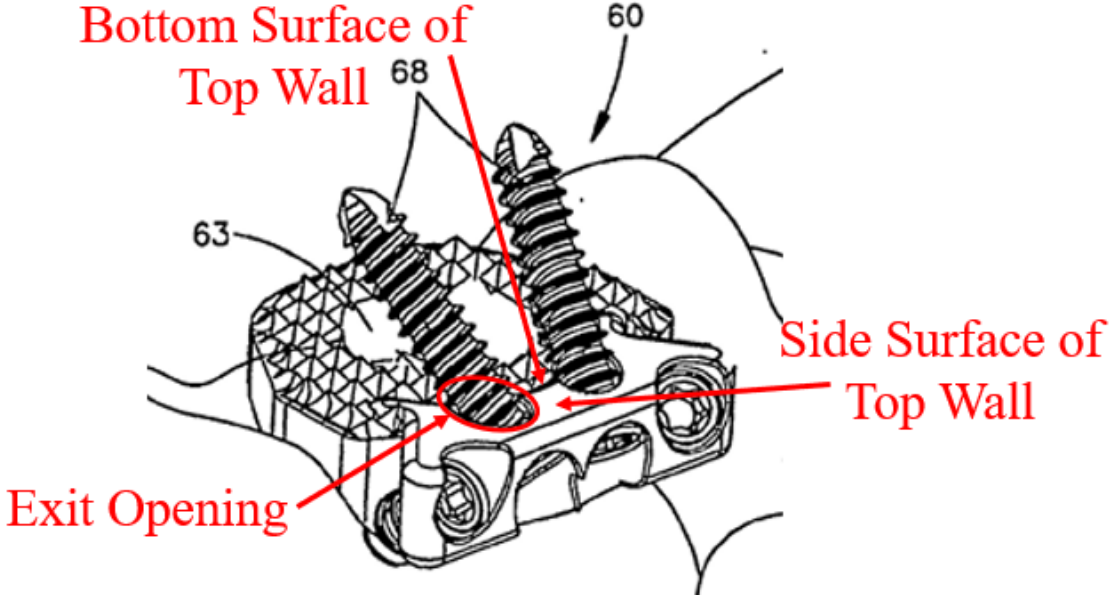
Claims	Exemplary Citations to Prior Art
	 Fig. 5D Messerli at Fig. 5D; <i>see also</i> Messerli at Fig. 4D for disclosure of second vertebral body, which a POSITA would understand would be placed the same for the embodiment disclosed in Figures 5A-5D. Messerli further discloses that the embodiment pictured in Figures 5A-5D includes “one or more openings 63 designed to receive bone graft material.” <i>Id.</i> at [0053]. Messerli thus discloses this limitation. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, it would have been obvious to a person having ordinary skill in the art to modify Messerli or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.
[41B] an intervertebral cage comprising a top portion and a bottom portion with the top portion operably	Messerli discloses this limitation for the reasons set forth above with respect to claim limitation [34B]. In addition, and in particular, the embodiment disclosed in Figures 5A-5D of Messerli discloses this limitation. This embodiment, like those discussed above with respect to claim limitation [34B], includes “a top portion and a

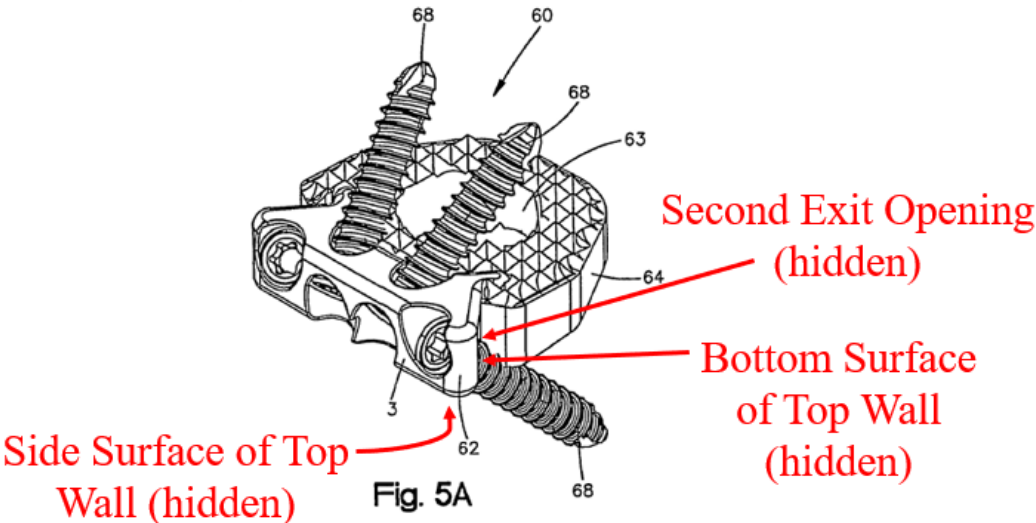
Claims	Exemplary Citations to Prior Art
connected to the bottom portion, wherein the top portion and the bottom portion combine to form a top wall, a bottom wall, a first sidewall and a second sidewall, wherein the top portion forms the top wall and at least part of the first and second side walls, wherein the bottom portion forms the bottom wall and at least part of the first and second side walls, and wherein the intervertebral cage defines: at least one open space capable of receiving bone filling for biological bone fusion,	bottom portion with the top portion operably connected to the bottom portion,” because it discloses “a plate 62 and a spacer/graft 64,” which constitute the top portion and bottom portion, respectively. Messerli at [0053]. Figures 5A-5D further depict the dovetail joint that “operably connect[s]” the plate 62 to the spacer/graft 64, as further discussed at Messerli [0059]-[0060].  Messerli at Fig. 5A (annotated). The combined structure forms “a top wall, a bottom wall, a first sidewall and a second sidewall, wherein the top portion forms the top wall and at least part of the first and second side walls, wherein the bottom portion forms the bottom wall and at least part of the first and second side walls, and wherein the intervertebral cage defines: at least one space capable of receiving bone filling for biological bone fusion,” as shown.

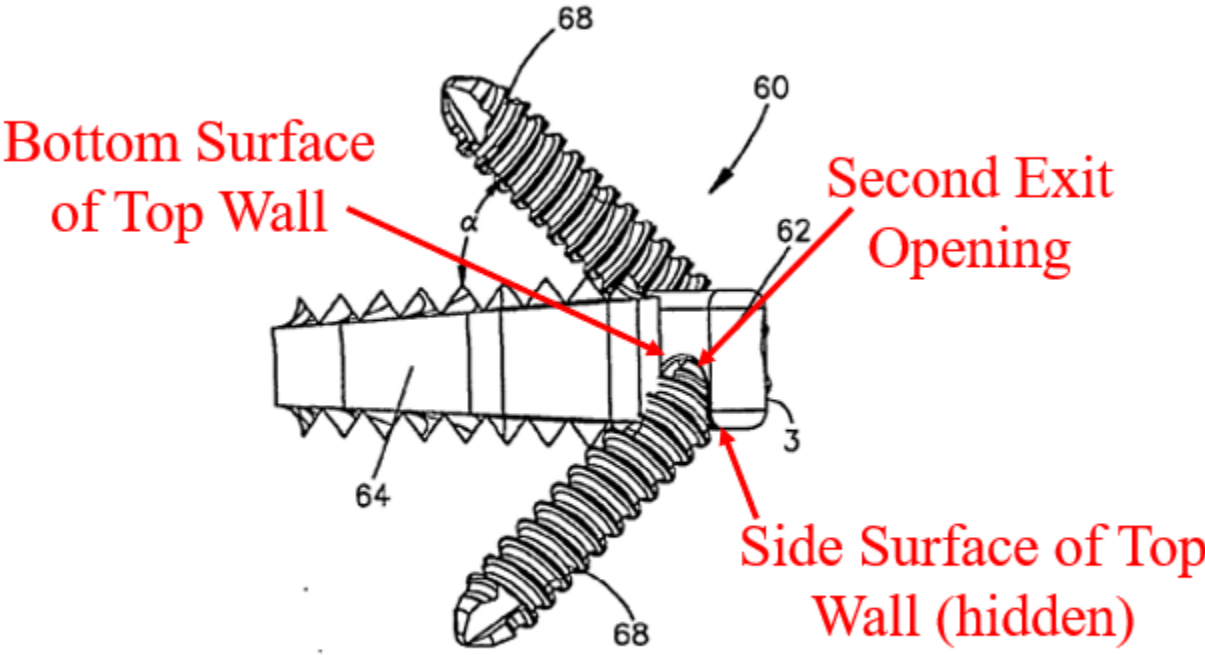
Claims	Exemplary Citations to Prior Art
	 Fig. 5A Messerli at Fig. 5A (annotated). As can be seen, at least the dovetail portion of the plate 62 extends into the first and second sidewalls, thus forming at least a part of those sidewalls. The open space 63 is for the purpose of receiving bone filling for biological bone fusion. <i>Id.</i> at [0053] (“Graft/spacer 64 may include one or more openings 63 designed to receive bone graft material.”). Messerli thus discloses this limitation. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, it would have been obvious to a person having ordinary skill in the art to modify Messerli or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.

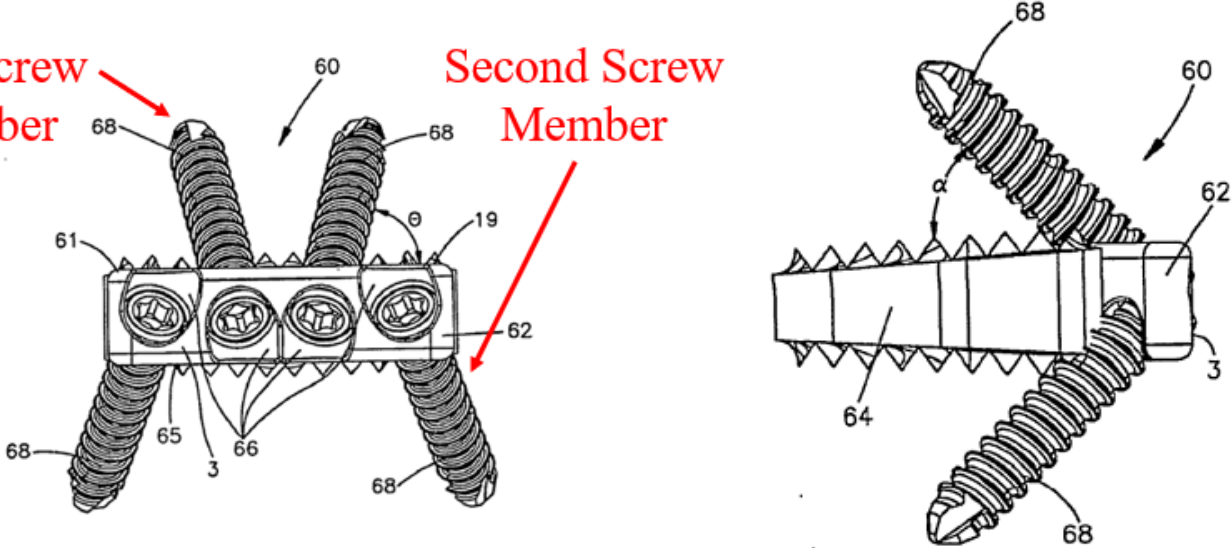
Claims	Exemplary Citations to Prior Art
[41C] a first side slot on the first sidewall;	Messerli discloses and/or suggests this claim limitation for the reasons set forth above with respect to claim limitation [34C]. In addition, and in particular, a POSITA would have been equally motivated to add slots to the embodiment disclosed in Figures 5A-5D as to the other embodiments discussed herein. Additionally, Waugh '569 discloses this claim limitation, and a POSITA would have been motivated to combine Waugh '569 with Messerli for the reasons described above with respect to claim limitation [34C]. Additionally, Coates discloses and/or suggests this claim limitation, and a POSITA would have been motivated to combine Coates with Messerli, or with a Messerli-Waugh '569 combination, for the reasons described above with respect to claim limitation [34C]. For the foregoing reasons, Messerli discloses and/or suggests this claim limitation, alone or in combination with Waugh '569, Coates, or both. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, alone or in combination with Waugh '569 and/or Coates, it would have been obvious to a person having ordinary skill in the art to modify Messerli, Waugh '569, and/or Coates or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[41D] a second side slot on the second sidewall, wherein the second side slot is positioned opposite the first side slot,	Messerli discloses and/or suggests this claim limitation, alone or in combination with Waugh '569, Coates, or both, for the reasons described above with respect to claim limitations [34C], [34D], and [41C]. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, alone or in combination with Waugh '569 and/or Coates, it would have been obvious to a person having ordinary skill in the art to modify Messerli, Waugh '569, and/or Coates or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[41E] a first internal screw guide having a first entry opening and a first exit opening, the first entry opening formed at least partially in a top surface of the top portion at the top	Messerli discloses and/or suggests this claim limitation, for the reasons set forth above with respect to claim limitation [34E]. Additionally and in particular, the embodiment disclosed in Figures 5A-5D of Messerli discloses this limitation, as shown in the annotated figures below.

Claims	Exemplary Citations to Prior Art
wall and the first exit opening formed at least partially in a bottom surface of the top portion at the top wall and at least partially in a first side surface of the top portion at the top wall,	The diagram shows a cross-sectional view of a medical device component. It features a top wall with a central opening. Two internal screw trajectory guides are shown, one on each side of the central opening. The top surface of the top wall is indicated. The first exit opening is located at the bottom of the top wall. The first and second entry openings are located on the sides of the top wall. The first internal screw trajectory guide is hidden, and the second internal screw trajectory guide is also hidden. Messerli at Fig. 5A (annotated).

Claims	Exemplary Citations to Prior Art
	 <i>Id.</i> at Fig. 5D (annotated). For the foregoing reasons, Messerli discloses this claim limitation. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, it would have been obvious to a person having ordinary skill in the art to modify Messerli or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[41F] a second internal screw guide having a second entry opening and a second exit opening, the second entry opening formed at least partially in the top	Messerli discloses this claim limitation for the reasons set forth above with respect to claim limitations [34E], [34F], and [41E]. Additionally and in particular, the embodiment disclosed in Figures 5A-5D of Messerli discloses this limitation. While the exit opening of the second internal screw guide may not be as clearly shown in the figures as for other embodiments, a POSITA would have understood, based on the geometry of the device and the exit openings shown,

Claims	Exemplary Citations to Prior Art
surface of the top portion at the top wall and the second exit opening formed at least partially in the bottom surface of the top portion at the top wall and at least partially in a second side surface of the top portion at the top wall, wherein the first internal screw guide and the second internal screw guide are angled to orient screw members bi-directionally, and	that it is “formed at least partially in the bottom surface of the top portion at the top wall and at least partially in a second side surface of the top portion at the top wall.”  Fig. 5A Messerli at Fig. 5A (annotated).

Claims	Exemplary Citations to Prior Art
	 Fig. 5C <i>Id.</i> at Fig. 5C (annotated). The Messerli embodiment disclosed at Figures 5A-5D further discloses the first and second internal screw guides “angled to orient screw members bi-directionally[.]”

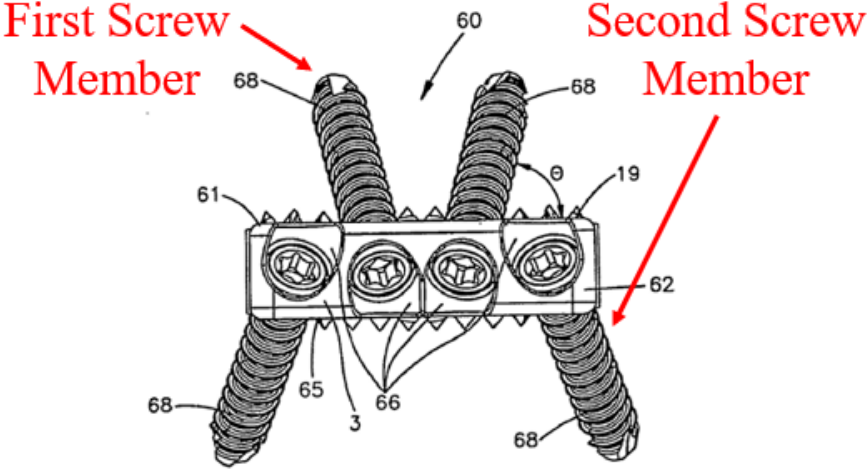
Claims	Exemplary Citations to Prior Art
	First Screw Member Second Screw Member  Fig. 5B Fig. 5C <i>Id.</i> at Fig. 5B (annotated), Fig. 5C; <i>see also id.</i> at [0053] (“As shown best in FIG. 5C, holes 66 form an angle α with respect to the upper and lower surfaces 61, 65 of the implant 60, where α may range between 20° and 50°, and preferably ranges between 30° and 45°. Angle α may be the same for all holes 66 or may be different for each hole.”). For the foregoing reasons, Messerli discloses this claim limitation. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, it would have been obvious to a person having ordinary skill in the art to modify Messerli or combine it with any of the other prior art references identified in Defendants’ Invalidity Contentions Cover Pleading that disclose this limitation.
[41G] at least one indentation in the top surface of the top portion of the top wall positioned between the first internal	Messerli discloses this claim limitation.

Claims	Exemplary Citations to Prior Art
screw guide and the second internal screw guide;	Messerli at Fig. 5A (annotated). Michelson further discloses this claim limitation. Like Messerli, Michelson is directed to a “Push-In Interbody Spinal Fusion Implant.” Michelson at Title. Like Messerli, the intended location of the Michelson implant is “between adjacent vertebral bodies in the space previously occupied by disc material” and the purpose is “for the immobilization of vertebrae.” <i>Id.</i> at [0002]; <i>see also id.</i> at Fig. 26. The embodiments shown in Figures 32-41 of Michelson further show that the Michelson implants include two screws, with corresponding screw guides, that protrude in different directions from the interbody such that one screw engages with and fuses the vertebral body above the implant, while the other screw engages with and fuses the vertebral body below the implant.

Claims	Exemplary Citations to Prior Art
	<i>Id.</i> at Figs. 32-41; <i>see also id.</i> at [0142] (“As shown in FIGS. 35 and 36, by way of example, upper and lower members 402, 406 preferably have upper and lower screw holes 474 passing therethrough, each adapted to receive a bone screw 478 passing from the interior of implant 400 into an adjacent vertebral body to anchor implant 400 to an adjacent vertebral body.”). Michelson further discloses that it is for both screw and bone fusion, disclosing openings in certain of its embodiments that are mean to be “packed with bone or other fusion-promoting substances.” <i>Id.</i> at 5:13-34, 18:45-50; <i>see also id.</i> at 2:12-16, 4:9-17 (disclosing openings “for permitting for the growth of bone from a vertebral body to an adjacent vertebral body through the implant”); <i>id.</i> at 13:47-62 (describing hollow space in implant 100 of figure 1 embodiment). Michelson Figures 32-37 show “a preferred embodiment of an expandable interbody spinal fusion implant 400 and an expanding and locking end cap 500 for use therewith” <i>Id.</i> at [0141]. Michelson Figures 38-41 are similar, but “the implant and end cap [are] generally referred to by the reference numbers 600 and 700, respectively.” <i>Id.</i> at [0153]. These figures show a “locking end cap” that “locks bone screws to the implant by blocking the exit path of the bone screws in a direction opposite to the direction of insertion.” <i>Id.</i> at [0144]; <i>see also id.</i> at [0146], [0154]. These figures further show an “indentation in the top surface of the top portion of the top wall positioned between

Claims	Exemplary Citations to Prior Art
	the first internal screw guide and the second internal screw guide” for the purpose of accommodating the locking cap. Michelson Figs. 33-45, 38 (annotated). Bray discloses a similar indentation for a similar locking mechanism, as discussed in the Bray chart, and is incorporated herein by reference. It would have been obvious to a POSITA (and a POSITA would have been motivated) to apply the teaching of a locking end cap—and its associated indentation—to the two-screw embodiment depicted in Figures 2A-2C of Messerli. The structure of Michelson Figures 32-37 is similar to that of Messerli, with two screw heads close to each other in the top surface of the implant, but directed different directions. Adding the locking end cap of Michelson to the two-screw embodiment of Messerli (between the two screws) would have provided the Messerli implant with the added and important benefit of ensuring that the Messerli screws did not back out. As such, adding the locking end cap of Michelson (and its associated indentation) would have constituted: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of known techniques to improve similar devices in the same way; and (4) applying a known technique to a known device ready for improvement to yield predictable results. This is particularly so because Messerli already discloses the use of other screws between screws protruding in different directions, as discussed herein with respect to the embodiment depicted in Figures 5A-5D of Messerli. For the foregoing reasons, Messerli discloses this claim limitation, alone or in combination with Michelson and/or Bray.

Claims	Exemplary Citations to Prior Art
	To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, alone or in combination with Michelson and/or Bray, it would have been obvious to a person having ordinary skill in the art to modify Messerli, Michelson, and/or Bray or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[41H] a first screw having a first screw head and a first threaded body that is sized and configured to be inserted through the first internal screw guide at a first angle so the first screw extends at least partially into the open space and at least partially next to the open space;	Messerli, alone or in combination with Waugh '569, discloses and/or suggests this claim limitation for the reasons set forth above with respect to claim limitation [34G]. In addition and in particular, the explanation above with respect to claim limitation [34G] applies equally to the Messerli embodiment shown in Figures 5A-5D, which discloses “a first crew having a first screw head and a first threaded body that is sized and configured to be inserted through the first internal screw guide at an angle so that the first screw extends ... at least partially next to the open space.” Fig. 5A Messerli at Figs. 5A. 5D (annotated). Messerli, alone or in combination with Waugh '569, discloses and/or suggests the first screw extending “at least partially into the open space” for the same reasons discussed above with respect to claim limitation [34G].

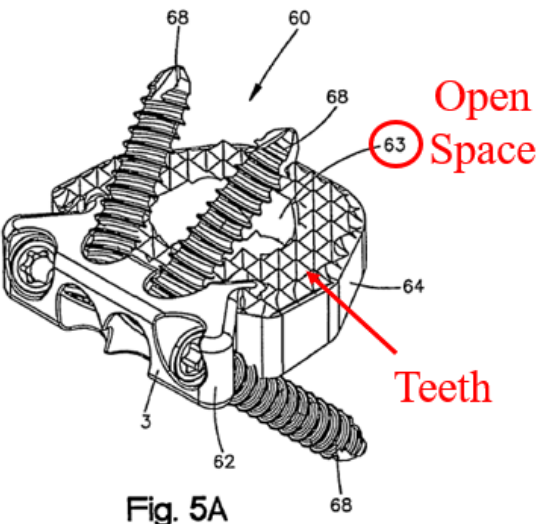
Claims	Exemplary Citations to Prior Art
	To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, alone or in combination with Waugh '569, it would have been obvious to a person having ordinary skill in the art to modify Messerli and/or Waugh '569 or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[41I] a second screw having a second screw head and a second threaded body that is sized and configured to be inserted through the second internal screw guide at a second angle different than the first angle so the second screw extends at least partially into the open space and at least partially next to the open space; and	Messerli, alone or in combination with Waugh '569, discloses and/or suggests this claim limitation for the reasons set forth above with respect to claim limitations [34G] and [34H], applying the teachings of the first screw extending at least partially into the open space and at least partially next to the open space to the second screw as well, which is symmetrically situated. In addition, the Messerli embodiment shown in Figures 5A-5D discloses and or suggests this claim limitation for the reasons set forth above with respect to claim limitations [34G], [34H], and [41H]. The second screw has “a second screw head and a second threaded body that is sized and configured to be inserted through the second internal screw guide at a second angle different than the first angle.”  Fig. 5B Messerli at Fig. 5B (annotated).

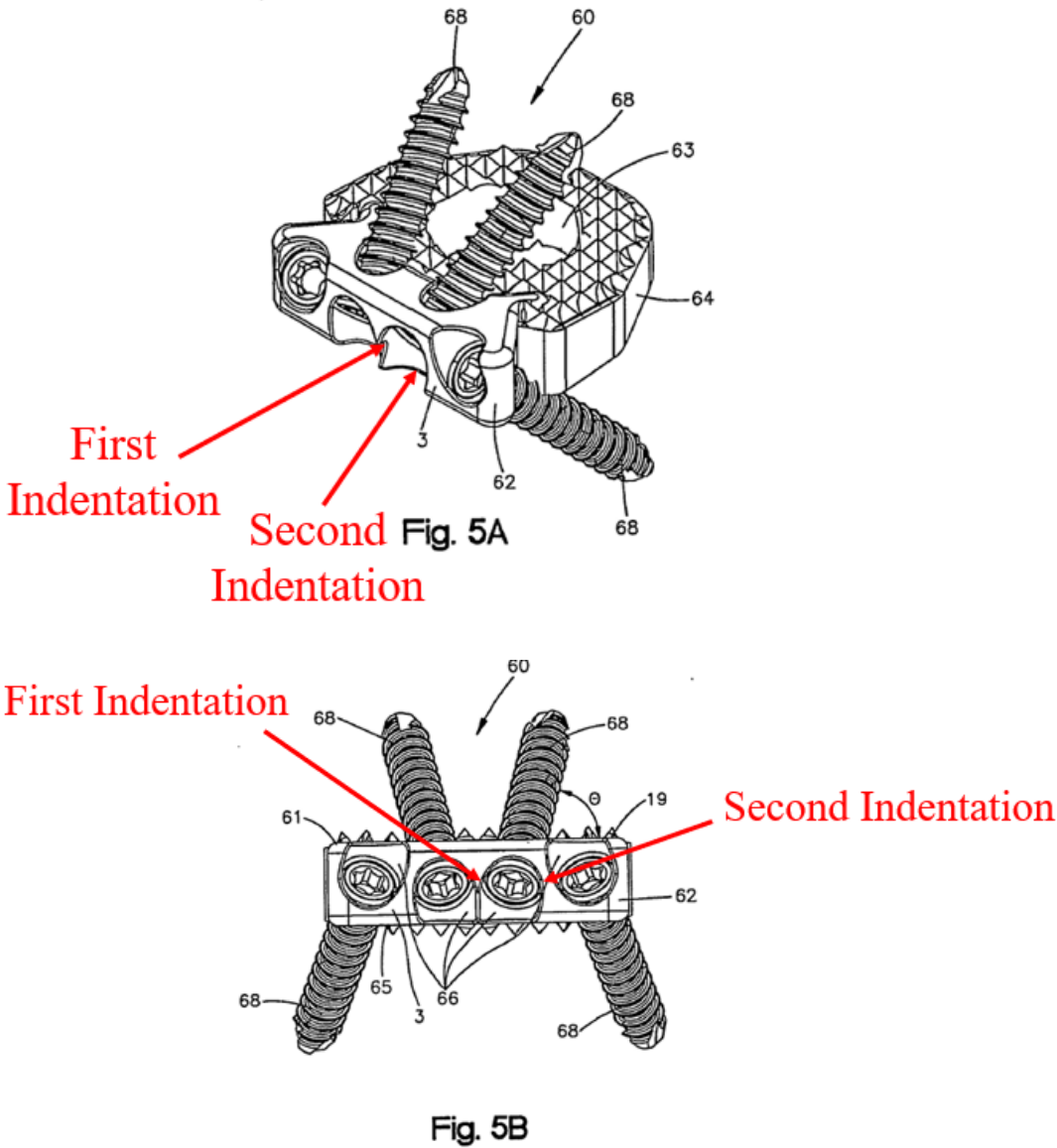
Claims	Exemplary Citations to Prior Art
	To the extent the Messerli embodiment shown in Figures 5A-5D does not disclose the second screw extending at least partially into the open space and at least partially next to the open space, Messerli discloses and/or suggests this limitation, alone or in combination with Waugh '569, for the reasons discussed above with respect to claim limitations [34G], [34H], and [41H]. A POSITA, in view of Messerli and/or Waugh '569, would have been motivated to increase the size of the open space to allow for more bone filling, such that the open space would extend to an area that would allow the second screw to extend both partially next to it and partially into it. This solution would have constituted: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of known techniques to improve similar devices in the same way; and (4) applying a known technique to a known device ready for improvement to yield predictable results. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, alone or in combination with Waugh '569, it would have been obvious to a person having ordinary skill in the art to modify Messerli and/or Waugh '569 or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[41J] a tool configured for manipulating and inserting the intervertebral cage into a disc space between the first vertebral body and the second vertebral body to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion,	Messerli, alone or in combination with Waugh '569 and/or Coates and/or Blain, discloses and/or suggests this limitation for the reasons set forth above with respect to claim limitation [34I]. The discussion above with respect to claim limitation [34I] applies equally to the Messerli embodiment disclosed in Figures 5A-5D. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, alone or in combination with Waugh '569 and/or Coates and/or Blain, it would have been obvious to a person having ordinary skill in the art to modify Messerli, Waugh '569, Coates, and/or Blain or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
[41K] the tool comprising first and second gripper prongs at a distal end of the tool wherein the first gripper prong opposes the second	Messerli, alone or in combination with Waugh '569, Coates, Bray, and/or Blain discloses and/or suggests this limitation for the reasons discussed above with respect to claim limitation [34K] and in the Bray chart, incorporated herein by reference.

Claims	Exemplary Citations to Prior Art
gripper prong and is sized and configured to grip and hold the intervertebral cage while inserting the intervertebral cage, wherein the distal end of the tool is shaped to expose the first and second internal screw guides enough to allow a tool to screw the first and second screws in the first and second internal screw guides while the tool is holding the intervertebral cage.	The prior art identified herein discloses and/or suggests this claim limitation for the reasons described above with respect to claim limitation [34K]. The Coates hooks constitute “first and second gripper prongs at a distal end of the tool wherein the first gripper prong opposes the second gripper prong and is sized and configured to grip and hold [a spinal device] while inserting the [spinal device].” And the Coates “thru-holes 158 which are aligned with the screw bores 27 when the [spinal device] is engaged to the guide 150,” Coates at 13:6-9, necessarily “expose the first and second internal screw guides enough to allow a tool to screw the first and second screws in the first and second internal screw guides while the tool is holding the [spinal device]” because Coates describes a bone screw being “placed through the same hole in the foot 157 of the guide 150” and then being “tightened down, [so that] it rests in the spherical recess 28” of the spinal device. Coates at 13:33-49. The diagrams show a surgical tool with two main views. Figure 14 is a side view of the tool, showing a handle (150) and a gripper assembly (151, 152) with a central shaft (153). Figure 17 is a top-down view of the gripper assembly, showing two prongs (151, 152) and a central shaft (153). Red circles and arrows highlight specific features: red circles around 157 and 158 in both figures, and red arrows pointing to these circles with the label 'Hooks'. Coates at Figs. 14, 17 (annotated). As discussed above with respect to claim limitation [34K], a POSITA would have been motivated to combine Coates with Messerli and/or Waugh '569 for this purpose. This discussion applies equally to the Messerli

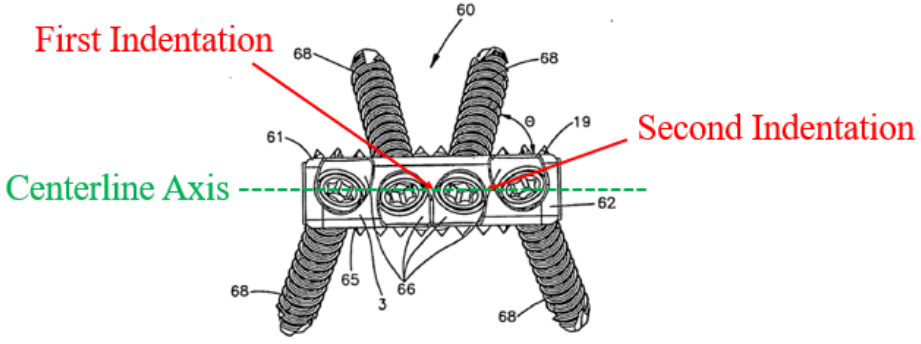
Claims	Exemplary Citations to Prior Art
	embodiment disclosed in Figures 5A-5D. It would have been simple and obvious for a POSITA to modify the Coates tool to add additional thru-holes to accommodate the additional fixation screws disclosed in Figures 5A-5D, particularly in light of the flexible nature of the Coates legs, which can accommodate different sized spinal devices and would easily adjust to accommodate different sized feet as well. Making the feet of Coates larger to accommodate additional thru holes would have constituted: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of known techniques to improve similar devices in the same way; and (4) applying a known technique to a known device ready for improvement to yield predictable results. For the foregoing reasons, Messerli and/or Waugh '569 thus disclose and/or suggest this claim limitation, alone and/or in combination with Coates and/or Bray. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, Waugh '569, Bray, and/or Coates, it would have been obvious to a person having ordinary skill in the art to modify Messerli, Waugh '569, Bray, and/or Coates or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
Claim 42	
[42] The system of claim 41, wherein the open space extends from an inner surface of the first sidewall to an inner surface of the second sidewall and extends from an inner surface of the top wall to an inner surface of the bottom wall.	Messerli, alone or in combination with Michelson, Waugh '569, Coates and/or Blain, discloses or renders obvious claim 41. <i>See</i> [41A]-[41K]. As discussed above with respect to claim limitation [34B], Messerli discloses this limitation. In addition, the Messerli embodiment disclosed at Figures 5A-5D discloses this limitation.

Claims	Exemplary Citations to Prior Art
	Fig. 5A Messerli at Fig. 5A (annotated). To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, it would have been obvious to a person having ordinary skill in the art to modify Messerli or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
Claim 43	
[43] The system of claim 41, and further comprising means for facilitating integration and fusion with superior and inferior vertebral bodies.	Messerli, alone or in combination with Michelson, Waugh '569, Coates and/or Blain, discloses or renders obvious claim 41. <i>See</i> [41A]-[41K]. As discussed above with respect to claim 37, Messerli discloses this limitation. Further, the Messerli embodiment disclosed in Figures 5A-5D discloses this limitation for the same reasons, because it discloses both an open space for bone graft and teeth for securing the implant to the vertebrae.

Claims	Exemplary Citations to Prior Art
	 Fig. 5A Messerli at Fig. 5A (annotated); <i>see also id.</i> at [0053] To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, it would have been obvious to a person having ordinary skill in the art to modify Messerli or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
Claim 44	
[44] The system of claim 41, wherein the at least one indentation in the top surface comprises first and second indentations in the top surface of the top portion of the top wall positioned between the first internal screw guide and the second internal screw guide.	Messerli, alone or in combination with Michelson, Waugh '569, Coates and/or Blain, discloses or renders obvious claim 41. <i>See</i> [41A]-[41K]; <i>see also</i> Bray chart, incorporated herein by reference. Messerli further discloses this claim limitation, in multiple ways. <i>See, e.g.:</i>

Claims	Exemplary Citations to Prior Art
	 The figure consists of two technical drawings, Fig. 5A and Fig. 5B, illustrating a medical device with multiple threaded components (68) and a central body (60). Fig. 5A is a perspective view showing the device with two red arrows pointing to specific locations on the central body, labeled 'First Indentation' and 'Second Indentation'. Fig. 5B is a top-down view of the device, also showing the threaded components (68) and the central body (60). Red arrows point to the 'First Indentation' and 'Second Indentation' locations on the central body. The drawings include various numerical labels (68, 60, 63, 64, 3, 62, 61, 19, 65, 66) identifying different parts of the device. Fig. 5A Fig. 5B

Claims	Exemplary Citations to Prior Art
	Messerli at Figs. 5A-5B (annotated). Michelson further discloses this claim limitation, as shown below. A POSITA would have been motivated to combine the locking cap of Michelson with the two-screw embodiment of Messerli for the reasons discussed above with respect to claim limitation [41G]. The image contains two technical drawings. FIG. 33 is a top-down view of a rectangular frame assembly with internal components labeled 400, 402, 426, 490, 492, 482, and 406. FIG. 38 is a perspective view of a similar assembly with a screw (678) and various internal parts labeled with reference numerals including 600, 690, 692, 694, 700, 702, 704, 706, 708, 710, 712, 714, 720, 726, 740, 742, 744, 746, 748, 680, 682, 684, 686, 688, and 678. Red arrows originate from the word 'Indentations' and point to specific locations on both FIG. 33 and FIG. 38. A text box 'Saved to this PC' is overlaid on FIG. 33. Michelson at Figs.33, 38 (annotated). Bray further discloses this limitation, as discussed in the Bray chart. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, alone or in combination with Michelson and/or Bray, it would have been obvious to a person having ordinary skill in the art to modify Messerli, Bray, and/or Michelson or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.
Claim 46	
[46] The system of claim 44, wherein the first and	Messerli, alone or in combination with Michelson, Waugh '569, Coates and/or Blain, discloses or renders obvious claim 41. <i>See</i> [41A]-[41K]; <i>see also</i> Bray chart, incorporated herein by reference.

Claims	Exemplary Citations to Prior Art
second indentations are both positioned along the centerline axis that bisects the top surface.	Messerli further discloses this claim limitation, as shown below.  Fig. 5B Messerli at Fig. 5B (annotated). Michelson further discloses this claim limitation, as shown below. A POSITA would have been motivated to combine the locking cap of Michelson with the two-screw embodiment of Messerli for the reasons discussed above with respect to claim limitation [41G].

Claims	Exemplary Citations to Prior Art
	Michelson at Figs. 33, 38 (annotated). Bray further discloses this limitation, as discussed in the Bray chart. To the extent Moskowitz argues this limitation is not disclosed or rendered obvious by Messerli, alone or in combination with Michelson and/or Bray, it would have been obvious to a person having ordinary skill in the art to modify Messerli and/or Michelson and/or Bray or combine it with any of the other prior art references identified in Defendants' Invalidity Contentions Cover Pleading that disclose this limitation.