

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PROVISUR TECHNOLOGIES, INC.,
Petitioner,

v.

WEBER FOOD TECHNOLOGY GMBH,
Patent Owner.

Case IPR2024-00235
Patent No. 8,529,321

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

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PETITIONER EXHIBIT LIST

EX	Description
1001	Patent-at-Issue: U.S. Patent No. 8,529,321 B2
1002	File Wrapper for U.S. Patent No. 8,529,321 B2
1003	Expert Declaration of Dr. John Collins
1004	U.S. Patent No. 5,514,032 (“Young”)
1005	U.S. Patent No. 4,979,269 (“Norrie”)
1006	U.S. Patent No. 6,929,540 (“Johnson”)
1007	U.S. Patent No. 6,198,843 (“Belk”)
1008	U.S. Patent No. 7,918,718 (“Christensen”)
1009	Weber Memo, WEBER3A-00086192 (Sealed)
1010	Weber ASD 460 Brochure
1011	Weber ASD 460 Operation Video
1012	U.S. Pub. No. 2003/0036344 (“Sigurdsson”)
1013	<i>Intentionally left blank</i>
1014	U.S. Patent No. 6,129,625 (“Cate”)
1015	U.S. Patent No. 4,947,517 (“Boekel”)
1016	U.S. Patent No. 4,423,671 (“Murphy”)
1017	U.S. Patent No. 6,558,242 (“Veldkamp”)
1018	U.S. Patent No. 4,226,540 (“Barten”)
1019	Dr. Collins CV

EX	Description
1020	Light Emitting Diodes: A Primer.
1021	U.S. Patent No. 5,334,084 (“O’Brien”)
1022	U.S. Patent No. 4,413,279 (“Gorl”)
1023	Automation in the Food Industry
1024	Energy Saving Lighting: The History of LED Lighting
1025	GB 2 428 182 (“Burton”)
1026	WO 2006-136814 (“Burton814”)
1027	U.S. Patent No. 6,277,019 (“Veldkamp019”)
1028	<i>Provisur v. Weber III</i> , Sept. 5, 2023 Hearing Tr.
1029	Correspondence to Weber (dated March 20, 2024)
1030	Declaration of Keaton A. Sheeler in Support of Motion For Admission <i>Pro Hac Vice</i>
1031	U.S. Patent No. 4,785,817 (“Stouffer”)
1032	[Food Safety] Sanitary Design Strategies for Preventing Cross Contamination
1033	New Food Magazine Hygienic Design of Equipment in Food Processing
1034	North American Meat Institute History Page (Reinholtz Deposition Exhibit 1)
1035	Supplemental Declaration of Dr. John Collins
1036	Deposition Transcript of Dr. Reinholtz
1037	Cognex In-Sight Press Release (Reinholtz Deposition Exhibit 2)

EX	Description
1038	Cognex Food & Beverage Applications Webpage (Reinholtz Deposition Exhibit 3)
1039	Cognex User Manual Weber-0005121 (Reinholtz Deposition Exhibit 4)

I. INTRODUCTION

The Petition clearly demonstrated that the '321 patent is unpatentable on three separate grounds, either due to the teachings of (1) Young alone, (2) Young in combination with Norrie, or (3) Johnson in combination with Belk.

In its response, Patent Owner only disputes that two limitations are missing from Young: the determination of the thickness of the fat cover and cutting based on that measurement. POR, 14-24. However, Young teaches such a determination and cutting based on the distance between the fat/lean separation line and the edge line in Young. EX1004, 23:20-27, 24:34-39.

Regarding the proposed obviousness combinations, Patent Owner does not dispute that both the proposed combinations teach all the limitations of the '321 patent. *See* POR, 24-32. Instead, Patent Owner rehashes its pre-institution arguments to assert that “Petitioner does not propose how *Young* is modified by *Norrie*.” POR, 26; *see also* D.I., 11-12; Pet., 53-54. Patent Owner is (still) wrong. Petitioner provided more than sufficient detail on how and why a POSA would modify Young either via a simple software change to implement Norrie’s functionality into Young’s existing camera system or through direct integration of Norrie’s camera, for instance. Pet., 53-54; EX1003, ¶ 177; *see* D.I., 12.

Patent Owner's arguments also fail to rebut—or even address—the numerous advantages and benefits that a POSA would recognize in the proposed combinations, such as improved accuracy, yield, reliability, end product sale value, throughput, and hygiene. Pet., 52-53, 62-63. Instead, Patent Owner's expert agrees that these advantages would be of great importance to a POSA. EX1036, 90:8-16, 91:19-92:7, 92:11-13, 95:5-8, 134:1-6, 153:5-11. Likewise, Patent Owner ignores the known disadvantages of the prior art, such as the hygiene concerns and product damage caused by probe measurement systems that would be improved by the proposed combinations. Pet., 62-63.

Below, Petitioner addresses how (1) Young teaches the disputed two limitations; (2) a POSA would be motivated to combine Young and Norrie; and (3) a POSA would be motivated to combine Johnson and Belk.

For the reasons discussed in the Petition and below, the '321 patent claims are unpatentable.

II. GROUND 1: YOUNG TEACHES THE ONLY DISPUTED DETERMINATION AND CUTTING LIMITATION.

Patent Owner does not dispute Young discloses all of the limitations of the '321 patent except for the determining the thickness of the fat cover and cutting the fat cover based on the determined thickness. *See* POR, 14-24.

Contrary to Patent Owner's assertions, Young discloses the determination of thickness of the fat cover, which occurs while Young generates its cutting profiles. EX1004, 23:20-27, 24:18-22, 24:34-39, 24:46-51, Figs. 12-14. Young teaches determining a fat/lean separation line and an edge line. *Id.*, 23:11-13. Young also teaches that its system measures the length, height, or width between points. *Id.*, 23:28-30, 24:10-15, 35-38. The distance between the fat/lean separation line, and the edge line, corresponds to the thickness of the fat cover. *Id.*, 23:20-27, 24:34-39. Therefore the generation of cutting profiles includes determining the thickness of the fat cover. *See id.*, Figs. 12-14.

Young then uses its profiles to control its knife assembly as it separates the fat cover, therefore controlling its blade based on the measured fat cover thickness. EX1004, 23:20-27, 24:18-22, 24:34-39, 24:46-51, Figs. 13-14. Because Young discloses the only elements of the '321 patent disputed by Patent Owner, Young anticipates all elements of the '321 patent claims.

A. Young Determines the Thickness of the Fat Cover.

Young teaches the “determination of the thickness of the fat cover” as required by the '321 patent. Patent Owner argues that Young's system is fat thickness “agnostic” and only “identifies the . . . fat/lean separation line . . . and uses this internal line as a reference for its cutting path” without ever determining the

thickness of the fat cover. POR, 17-22. Patent Owner is wrong. Patent Owner ignores Young's detailed disclosure regarding its imaging and cutting profile generation processes, including determining the fat cover thickness. *Compare* EX1004, 23:20-30, 24:18-22, 24:34-39, 24:46-51, *with* POR, 18-22.

Young explains that a meat product is inserted fat side down into its system on a product support, i.e., platen 20, for imaging. EX1004, 7:16-20. Young's imaging system then uses multiple cameras, such as fat line camera 198, top plan camera 196, and end view camera 197 (among others), to take images from multiple angles of the meat product under multiple lighting conditions. *Id.*, 4:2-3, 17:55-62, 18:40-46. Using these images, block 246 of Young's image processing system determines the fat/lean separation line (defined as the interface between the fat cover and the meat), the edge line (the line between the downward facing fat cover and the product support, platen 20), and the top edge line (the top edge of the meat product). EX1004, 23:20-27, 23:34-36, Figs. 12-13.

FIG. 12

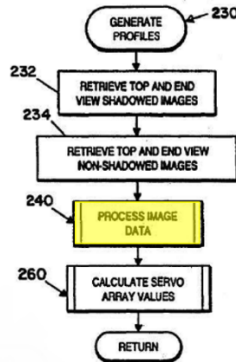
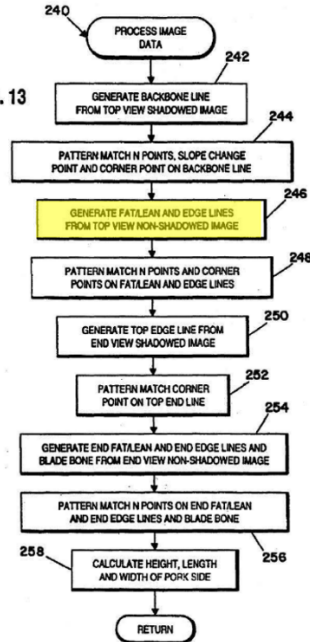


FIG. 13



Figures 12-13: Demonstrating Young's image processing routine shows determination of the fat/lean separation line, edge line, and top edge line.

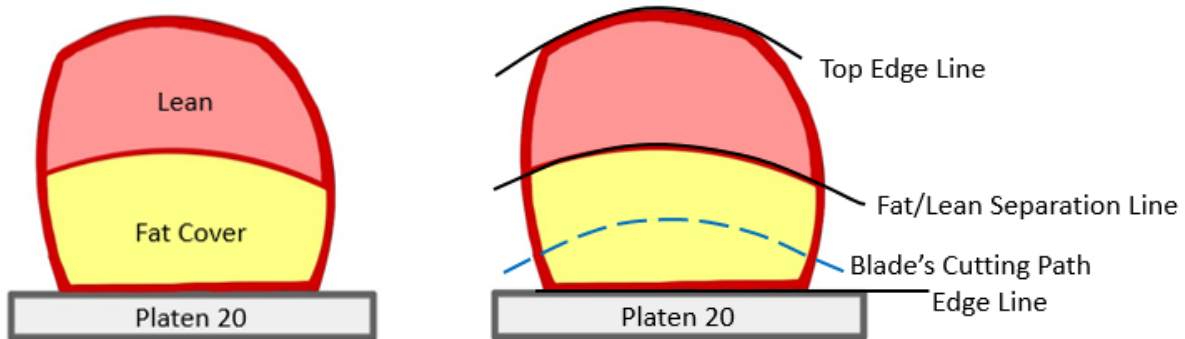


Figure: Exemplary points determined by Young's system.¹

¹ As explained by Dr. Collins POSA would understand Young's disclosure as teaching the measurement of height along any defined points, including between the fat/lean line and the edge line, i.e. the thickness of the fat cover. See EX1004, Figs. 12-13, 23:20-27, 23:34-36; EX1035, ¶ 16.

The distance between the edge line and the fat/lean separation line corresponds to the thickness of the fat cover. EX1004, 23:20-27, 24:34-39. A POSA, as an individual with the requisite experience in the food industry, would understand Young as disclosing the determination of the thickness of the fat cover. *See Anthrocare Corp. v. Smith & Nephew, Inc.* 406 F.3d 1365, 1373 (Fed. Cir. 2005) (finding that a patent was anticipated because the accused infringer presented expert testimony that a POSA “would understand that” the reference did disclose a disputed limitation).

Therefore, Young determines the thickness of the fat cover using its image processing system.

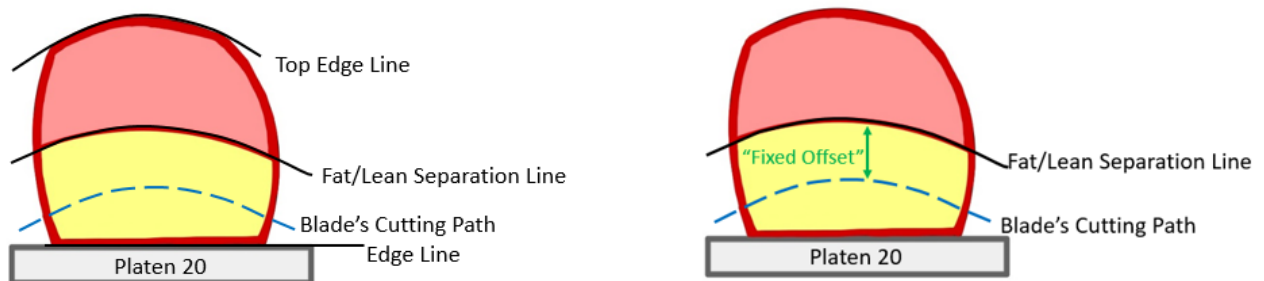


Figure: What Young Teaches (Left) vs What Weber Claims
Young Teaches (Right).

Patent Owner's arguments fail to appreciate Young's full disclosure and instead rest on an improper reading of Young as teaching only the measurement of the fat cover *removed* by Young's system. POR, 20-22, 29 (arguing “*Young*

determines its cut line based on only *two variables*: the lean/fat separation line and the user-defined preset distance from [said line]”). This is false. As shown in the figure above, a POSA would understand Young as teaching that process image routine 240 determines the thickness of the fat cover defined by the distance between the fat/lean separation line and the edge line. EX1004, 23:12-14, 23:28-30, 23:34-36, 24:34-39 (“[R]outine 240 generates a fat/lean separation line and an edge line [A] plurality of points . . . are generated for each of the fat/lean separation and edge lines using known pattern matching routines. . . . [I]t may also be preferable to calculate a separate height . . . by pattern matching the shadowed end view image to find the desired point[.]”). Accordingly, Young teaches this disputed limitation of the ’321 patent.

B. Young Controls its Knife Assembly and Removes the Fat Cover Based on the Determined Thickness.

Young’s knife apparatus is controlled and positioned based on its generated cutting profiles. *Id.*, Figs. 11-12, 14. These generated profiles are based on the measurements taken by Young’s imaging system, including the determined thickness of the fat cover. *See id.*, 22:53-55, 23:20-30, Fig. 13. Young’s system uses these generated profiles to control the servos which actuate Young’s knife assembly. *Id.*, 25:12-24, Figs. 12-14. Therefore, Young’s knife assembly is

controlled in dependence on the thickness of the fat cover and meets the disputed limitation of the '321 patent. *Id.*

Patent Owner misreads Young to say that its cutting path is based solely on a “fixed distance” offset from the fat/lean separation line, and therefore Young’s cuts are fat thickness agnostic.² POR, 29 (“*Young’s* process is agnostic to fat thickness.”). Patent Owner argues that Young teaches using the fat/lean separation line and a user-defined fixed offset as the sole reference points which Young’s cutting profiles use to calibrate their path. *Id.*, 18. Patent Owner further alleges that only “two variables define [Young’s] cutting profile: the lean/fat separation and the user-defined preset distance from the lean/fat separation line.” *Id.*, 8.

This overly limited reading fails to appreciate Young’s full teachings and is inconsistent with how a POSA would understand Young’s disclosure. Young’s knife assembly is controlled by servo motors. EX1004, 5:64-66, Figs. 9, 14. These servo motors are positioned according to cutting profiles which are generated *in dependence* on Young’s image processing system—including the determination of

² This argument is a simple rehashing of Weber’s argument prior to institution. D.I., 8-9 (“Weber further explains that ‘Young is agnostic to the thickness of the fat, and will separate at the junction point between the tissues regardless of the fat thickness.’ . . . We disagree with Weber’s position, at least on the current record [D]isclosures by Young clearly contemplate determining specific dimensions of the meat product, and not simply identifying the fat/lean separation lean, as Weber suggests.”).

the thickness of the fat cover performed by said system. *Id.*, 25:42-26:16, Fig. 12-

13. Young's apparatus includes lateral, rotational, and climb/drive (i.e., up and down) servo motors to allow the knife to move along the cutting line. *Id.*, 11:36-41.

Specifically, Young explains that the servo array values, i.e., the instructions that control the position of the knife assembly, are dependent on "image processing routine 240," which is used to calculate these values. *Id.*, 22:53-55, 24:40-51, Fig. 13. Process image routine 240 includes the steps of block 246 (which determines fat/lean separation and edge lines), block 258 (which performs pattern matching point detection and further image processing on said lines), and block 258 (which calculates desired heights, lengths, and widths of known points). *Id.*, 23:12-27, 23:61-67, 24:10-23, Figs. 12-13.

Thus, process image routine 240 determines the thickness of the fat cover, as explained in more detail in Section II(A) above. *Id.* Therefore, the calculation of the servo array values, i.e., the position of Young's knife assembly during the separation of the fat cover, is performed in dependence on the determined thickness of the fat cover, amongst other variables. EX1004, 23:12-27, 23:61-67, 24:10-23, Figs. 12-13; EX1035, ¶ 20 ("Specifically, Young's controller 'calculate[s] servo array values' which control the position of the servos. These array values themselves are calculated in dependence on image process routine 240. . . . [a] POSA would

understand that image process routine 240 determines thickness of fat cover via calculating the height distance between the edge line and the fat/lean separation line.”).

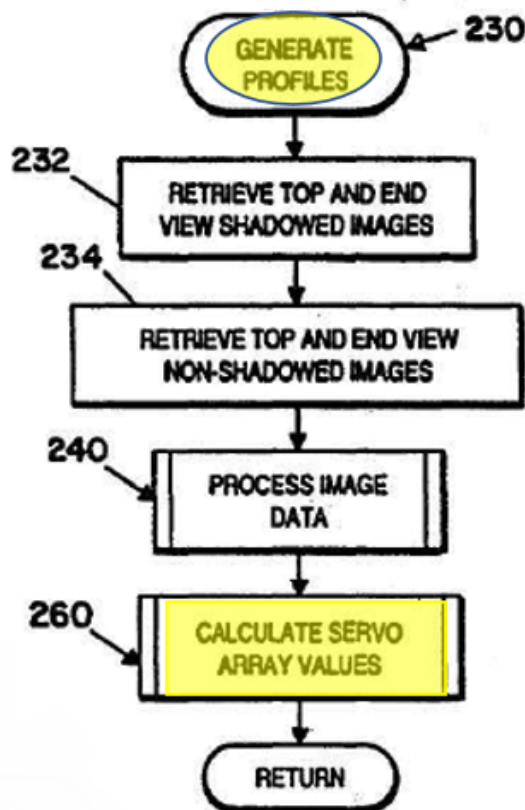
Patent Owner mischaracterizes Dr. Collins’ testimony to say that Dr. Collins’ agrees that Young’s system and cutting path are agnostic to the thickness of the fat cover. POR, 21-24; EX1035, ¶¶16-24. However, when Dr. Collins’ testimony is viewed in full context, this is false. Dr. Collins explained that Young’s system allows a user to input a desired amount of fat to be left on the meat product. *See* EX2006, 34:18-19, 21 (“Q: And that layer of fat is dictated by the value that the user inputs; correct? A: That’s my understanding.”). For example, Young’s system may be programmed to separate the fat cover and leave a remaining layer of 0.1 inches of fat remaining on the meat product. EX1004, 20:60-66; EX1035, ¶ 24.

If a user inputs a desired remaining fat value of 0.1 inches, the final product will always have 0.1 inches of fat remaining after processing by Young’s system, regardless of the initial thickness of the meat product’s fat cover. EX2006, 35:12-20.

Patent Owner’s argument confuses the outputs (i.e., the trimmed end product) of Young’s system, with the inputs used to make that product (i.e., the measurements

taken by Young's visual system). As explained above, Young's multiple cameras image the meat product, after which Young's image processing system makes multiple determinations based on the image data, including determination of the fat thickness of the fat cover. EX1004, 23:20-27, 24:18-22, 24:34-39, 24:46-51, Figs. 12-14. Because Young's system adjusts based on the determination of the thickness of the fat cover, Young is adjusting *in dependence* on the thickness of the fat cover.

Id.

FIG. 12

EX1004, Fig. 12 (annotated): The blade servos depends on the generation of cutting profiles, which includes the determination of the thickness of the fat cover.

Further, as a practical matter and as explained by Young and Patent Owner's expert, Dr. Reinholtz, meat products are anatomical formations and naturally vary. EX1004, 2:34-35; EX1036, 78:19-79:3; EX1016, 1:52-59. Even if users input a desired remaining fat cover value into Young's system for two different meat products, the path of Young's blade will necessarily vary in dependence on the determined thickness of the fat cover (and other measurements) because Young's system takes into account the different anatomies present in each belly, such as, for example, different meat shapes, presence of fibrous tissue, presence of uneven fat pockets, etc. EX1004, 34-35; *see also* EX1016, 1:52-59, EX1027, 1:21-25.

Therefore, Young meets the two limitations disputed by Patent Owner and, in turn, anticipates all the limitations of the '321 patent. Accordingly, the '321 patent should be found unpatentable.

III. GROUND 2: A POSA WOULD BE MOTIVATED TO COMBINE NORRIE'S IMAGING DISCLOSURES WITH YOUNG AND ARRIVE AT THE CLAIMED INVENTION.

As explained above, Patent Owner does not dispute that Young meets all the limitations except for the determination of the thickness of the fat cover and the separation of the fat cover in dependence on that determined thickness. *See* POR, 13-24. Patent Owner and Dr. Reinholtz do not dispute that Norrie teaches the determination of the thickness of the fat cover and the separation of the fat cover in

dependence on that determined thickness. EX1036, 57:8-12; *see* POR, 24-32; EX1005, Claim 1. Instead, Patent Owner’s nonobviousness argument rests on motivation to combine, a misunderstanding of the proposed combination relying on cherry-picked testimony, and a legally flawed bodily incorporation argument.

The ’321 patent should be found unpatentable over Young and Norrie because (1) Young specifically refers to Norrie, and a POSA would be motivated to combine their teachings as claimed to achieve increased accuracy and yield; (2) Petitioner has provided the requisite specificity under the proper legal standard; and (3) Patent Owner’s argument on “redundancy” misunderstands the proposed combination and ignores its known benefits.

A. Young Does Not Teach Away from the Proposed Combination.

Young is clear that it contemplates adding to or modifying its system in support of greater functionality and efficiency—particularly with additional imaging or sensing functionality—and explicitly cites to Norrie as a known example. EX1004, 2:43-50, 2:18-26, 20:17-24 (“[A]dditional imaging and motion functionality may be included to provide more sophisticated profiles . . . [T]he design of control system 170 may be modified to incorporate different accessory components[.]”) Despite this facially obvious disclosure, Patent Owner argues that

Young somehow *teaches away* from Norrie.³ POR, 30. This is non-sensical attorney argument. A reference teaches away via “criticiz[ing], discredit[ing], or otherwise discourage[ing]”; teaching away does not exist because the prior art made a different design choice. *Meiresonne v. Google, Inc.*, 849 F.3d 1379, 1382 (Fed. Cir. 2017).

Young contemplates incorporating other imaging/sensing systems and cites to Norrie as an example. EX1004, 2:18-26, 20:17-24. Incorporation of additional imaging from Norrie would allow Young to reduce waste using its native multi-axis blade. *Id.*, 14:33-40, 20:17-24. Further, Young does not discredit or disparage imaging sensors or detecting the thickness of the fat cover and, therefore, cannot teach away from those features. *See Meirseonne*, 849 F.3d at 1382.

The proposed combination would implement Norrie’s fat thickness sensing functionality into the image processing of Young, for example, via a software change. Pet., 52-54; EX1003, ¶ 177. This allows for greater refinement of Young’s

³ Petitioner notes that Patent Owner relies on Young’s explanation that prior systems had less sophisticated blade control compared to Young. POR, 30-31. Patent Owner provides no support for its argument that because Norrie has a simpler blade control, Norrie has no useful imaging disclosures that could be utilized by Young’s more sophisticated blade control. *See id.* Therefore, at best, Patent Owner’s *teaching away* argument would apply to the combination of Young and Norrie’s *blade control*, which is not the proposed combination before the Board. Accordingly, Patent Owner’s argument should not be given significant weight.

cutting profiles. EX1003, ¶¶ 175-176; EX1004, 2:43-50, 20:17-24; EX1035, ¶¶ 32, 35-36. The additional data provided by the “additional imaging . . . functionality” would allow Young’s system to “provide more sophisticated profiles” and take advantage of its native multi-axis blade assembly—as explicitly contemplated by Young. EX1004, 20:17-24. Norrie’s fat thickness sensing information would provide useful data to Young’s controller; this data would then be utilized by Young’s multi-axis blade. *Id.*

Young explains that “[v]arious modifications to the aforementioned profile generation routine 230 may be made . . . For example, standard [cutting] profiles . . . may be used and modified . . . based upon the images obtained from the imaging system.” *Id.*, 26:17-23. The implementation of Norrie’s thickness sensing would, for example, increase the accuracy of Young’s image processing system’s calculations and the ability to make minute adjustments to reduce waste as Young’s system cuts alongside the fat/lean separation line’s axis. *Id.*, 2:43-50, 20:17-24, 26:42-46.

Here, Patent Owner does not dispute that Young and Norrie meet the limitations of the claims and does not show that Norrie’s imaging teachings are disparaged by Young. POR, 30-32. For the reasons discussed above, a POSA would be motivated to implement Norrie’s teachings of thickness sensing into Young’s

system, for example, as a routine software change to Young's image processing algorithm, to achieve the goals of mimicking the nuanced movements of a manual fat trimming and minimizing waste.

B. Patent Owner's Arguments Rest on Legally Flawed Bodily Incorporation Regarding the Proposed Combination's Camera.

The Petition explained that Young foresaw the potential utility of modifying its imaging system and controller to grant increased functionality and efficiency and cites to Norrie as a known system. Pet., 52-53; EX1004, 2:18-29, 20:17-24. Despite the simplicity of this combination, Patent Owner argues that Petitioner fails to provide sufficient detail as to the proposed combination of Young and Norrie. This is false.⁴ As Provisur explained in its Petition and Dr. Collins' explained in his accompanying report, a POSA would have known to modify Young to include Norrie's teachings in at least two specific, predictable ways, each of which would have given a POSA a reasonable expectation of success. Pet., 52-54; EX1035, ¶¶28-29.

⁴ Again, Patent Owner rehashes arguments already made, and discredited, at institution. D.I., 12 ("Weber faults Provisur for failing to provide sufficient detail regarding 'how Young is modified by Norrie ... but, as Provisur's expert credibly explains ... such an addition [of Norrie's teachings] would have been nothing more than a 'routine change of components.'").

For example, a POSA would have simply modified Young's controller 172, which is responsible for image processing and blade control, to include Norrie's thickness sensing disclosure as a "routine software modification within the level of skill of a POSA." EX1003, ¶ 177. In fact, Young contemplates this. EX1004, 17:21-23 ("It will be appreciated, however, that other computer systems, either commercially available or custom designed, may be used in the alternative.") (emphasis added). Furthermore, Patent Owner's expert agrees that a software modification of an imaging processing system, such as the one proposed by Petitioner, would not be beyond the skill of a POSA. EX1036, 191:4-18, 192:6-18.

As another example, a POSA would have been able to implement Norrie's camera 54 alongside its own imaging devices. Pet., 53-54. Such a combination would have been well within the expertise of a POSA and would have only required routine modifications, as Young explicitly contemplates. EX1004, 20:17-24 ("[T]he design of control system 170 may be modified to incorporate different accessory components on apparatus 10."). Patent Owner's argument misstates the test for obviousness as requiring Petitioner to explain bolt-by-bolt the proposed combination. The Petition, along with the explanation provided by Dr. Collins, provided sufficient detail on the proposed combination to show the obviousness of

the '321 patent under the correct standard. *See Corephotonics, Ltd. v. Apple Inc.*, 84 F.4th 990, 1003 (Fed. Cir. 2023).

To the extent that Patent Owner argues that the Petition fails to explain *where* components would be placed within the proposed combination spatially, this is a legally improper bodily incorporation argument. It is improper to construe the test for obviousness as requiring the Petitioner to “prove” that the teachings of one reference “could be ‘bodily incorporated’ into” the other reference. *Intel Corp. v. PACT XPP Schweiz AG*, No. 2022-1038, 2023 WL 2198649, at *3 (Fed. Cir. Feb. 24, 2023). Accordingly, Patent Owner’s arguments along this line should be accorded no weight.

C. Patent Owner’s Arguments re Redundancy Misunderstand the Combination and Dr. Collins’ Testimony.

Patent Owner further argues that Norrie’s thickness teaching is redundant of Young and, therefore, a POSA would not have been motivated to combine the two. Patent Owner cherry-picks Dr. Collins’ testimony to support this position. However, Dr. Collins was clear that he believes (1) Young anticipates each and every limitation of the '321 patent and (2) if Young is found to lack the “fat cover thickness” limitations of the '321 patent, then Young’s system could be modified by the teachings of Norrie to meet these limitations with or without the addition of Norrie’s physical camera. EX2006, 42:4-6, 42:19-22. Specifically, Dr. Collins explained on

cross examination that Norrie’s camera may be redundant for the combination as a POSA could “just modify [Young’s image processing] algorithm to be explicit in providing a dimension of the . . . fat thickness.” *Id.*, 42:19-22. This is supported by Young’s disclosure, which notes that communication between Young’s controller and various peripherals (such as cameras) from which “it will be appreciated that the programming and data exchange . . . in the manner described herein is generally known in the art.” EX1004, 19:9-12.

IV. GROUND 3: JOHNSON AND BELK TEACH EVERY LIMITATION OF THE ’321 PATENT.

Patent Owner does not dispute that the proposed combination of Johnson and Belk teaches all limitations of the ’321 patent. *See* POR, 32; *see also* EX2007, ¶¶ 57-68. Nor does Patent Owner dispute or rebut any of the offered reasons a POSA would be motivated to achieve the combination. *See* POR, 32; *see also* EX2007, ¶¶ 57-68. Instead, Patent Owner’s argument rests on (1) Johnson’s disclosure of measuring internal fat of a meat product and the benefits of that teaching and (2) assertions that Belk’s disclosure cannot support this process. *Id.* These arguments boil down to disputing that a POSA would be motivated to achieve the proposed combination and a legally flawed bodily incorporation argument about the position of Belk’s camera.

Therefore, the '321 patent should be found unpatentable over Johnson and Belk because (1) Patent Owner does not dispute that Johnson and Belk teach every limitation of the '321 patent; (2) a POSA would be motivated to make the proposed combination to achieve the advantages of improved yield, hygiene, and throughput; and (3) Patent Owner's remaining argument relies on legally flawed bodily incorporation.

A. Patent Owner Does Not Dispute that the Proposed Combination Teaches Every Limitation of the '321 Patent.

Patent Owner concedes that the proposed combination of Johnson and Belk discloses each and every limitation of the '321 patent. *See* POR, 32. Patent Owner only disputes the motivation to make the proposed combination. Patent Owner's arguments (1) ignore the significant benefits and advantages provided by the combination and (2) rely on legally flawed bodily incorporation theories.

Accordingly, all that remains for the Board to determine is if a POSA would be motivated to combine the teachings of Johnson and Belk. As the Petition demonstrated, a POSA would be so motivated. Therefore, the '321 patent is unpatentable.

B. A POSA Would Be Motivated to Make the Proposed Combination by Its Significant Advantages.

Patent Owner makes multiple arguments which boil down to disputing whether a POSA would be motivated to combine Belk's image sensing functionality

with Johnson's apparatus. POR, 32-38. None of these arguments dispute or outweigh the significant known benefits provided by the proposed combination. On the contrary, Patent Owner's expert agrees that the motivations put forward by Petition are important to a POSA and would be considered when designing a food processing machine. EX1036, 90:8-16, 91:19-92:7, 95:5-8, 153:5-11. Therefore, a POSA would be motivated to arrive at the proposed combination of Johnson and Belk.

Patent Owner asserts that a POSA would not be motivated to combine Johnson's apparatus with the teachings of Belk because Johnson discloses creating a three-dimensional map of internal variations in the fat cover using its measurement probes. According to Patent Owner, a visual sensor cannot replicate a three-dimensional map because a sensor would be unable to measure internal fat through the surface of the fat cover. POR, 32-24.

As a preliminary matter, Patent Owner fails to recognize that Belk's imaging system is not limited to cameras and other surface sensors.⁵ EX1007, 3:56-60, 67-4:9. As pointed out in the Petition, Belk's imaging system "may be any imaging

⁵ Patent Owner argues that "Petitioner focused exclusively on Belk's camera-based embodiments . . . [and, therefore,] Ground 3 must be limited to these camera-based embodiments." POR, 40. This is incorrect. The Petition made clear that Belk's "imaging device 12 is preferably a video camera, but may be any imaging device known to a POSA." Pet., 56.

device known to a POSA” including “tomographic imaging, magnetic resonance imaging (MRI), sound wave imaging, [or] radio wave imaging,” and its light source may “be any light emitting device known [to a POSA] or a source of energy of equivalent function meant to impinge on the sample of meat for measurement . . . including visible light, infrared light, ultraviolet light, x-rays.” Pet., 56-57; EX1007, 3:56-60, 3:67-4:9, 5:9-19. Many of these imaging systems are capable of penetrating the surface of the fat cover to measure internal fat, demonstrating that Belk teaches the sensing of interior fat, contrary to Patent Owner’s arguments. EX1035, ¶¶ 57, 59-61.

Additionally, even if Belk were limited to a conventional camera unable to measure interior fat, Patent Owner ignores the clear and significant benefits of the proposed combination provides, which would motivate a POSA to arrive at the combination regardless. For example, Patent Owner identified, Johnson’s probe system “repeatedly detect[s] the fat depth . . . us[ing] a series of probes that repeatedly puncture the fat side of the strip during conveyance—both across the width . . . and along the length via multiple punctures over time as the meat is conveyed.” POR, 35.

By the time of the ’321 patent, these punctures were known as undesirable, as they cause significant hygiene concerns and increase the risk of disease and product

recalls. *See* EX1032, 1; EX1033 1-2; EX1001, 1:21-36. Further, Dr. Reinholtz testified that these punctures were a known hygiene risk, and that hygiene and safety would be the “most important consideration” of a POSA. EX1036, 91:19-92:7, 96:8-17. Surfaces within a machine that contact the meat product during processing are known as food contact surfaces and are of particular concern to a POSA in this industry. EX1032, 1; EX1033 1-2. The leading principles of machine design in the food processing industry explain that machines should be designed to “bacteria ingress, survival, growth and reproduction.” EX1032, 1-2; EX1036, 153:5-11 (Dr. Reinholtz agreeing this principle is correct). A POSA would understand that replacing Johnson’s probes with a contactless sensor would eliminate a food contact surface entirely and, therefore, result in a more hygienic design. EX1035, ¶¶43-44.

Additionally, as described by Belk, meat product palatability and quality are important factors that impact the value of the product. EX1007, 1:19-39. The ’321 patent itself explains it was known in the art that punctures, such as those caused by Johnson’s probes, reduce this value and, therefore, the desirability and profit of the end product. EX1001, 1:21-36. Patent Owner’s expert, Dr. Reinholtz, agrees and testified that these punctures reduce quality and value of the meat product. EX1036, 96:3-7. The proposed combination entirely lacks these disadvantages. EX1035, ¶¶43-45 (“replacing Johnson’s probe assembly sensor system with a contactless system

. . . would significantly improve hygiene[.]”). The proposed combination provides a meat product with significantly less hygienic risk and improved end-product quality and value due to a lack of repeated punctures by Johnson’s probe sensor. Patent Owner fails to engage with or dispute these significant advantageous put forth in the Petition. *Compare* Pet., 62-65, *with* POR, 32-38.

As explained by the Petition and Dr. Collins, the proposed combination has numerous additional benefits beyond increased hygiene and product value, such as increased sensing functionality, lower cost and complexity, fewer moving parts and greater reliability, and greater throughput. EX1035, ¶¶ 48-52. As acknowledged by Patent Owner, Johnson relies on a complicated assembly of physical probes that must “elevate upward [to] penetrate” and then “continue along the circular path” until they “begin descent while continuing to translate along the path of conveyance.” EX1006, 4:27-33. This cycle repeats “multiple times along the length of the” meat product, and necessarily requires multiple intricate moving parts which make up the probe assembly. *See* EX1006, 4:27-33; EX1035, ¶¶ 50-51. Dr. Reinholtz testified that complex moving parts are expensive to manufacture and less reliable. EX1036, 94:2-14 (“[T]here’s a correlation between the number of components and the price. . . . Again, as a general trend, the more complex the machine, the less reliable it is.”). Therefore, replacing these parts with a different

sensor would be desirable to a POSA and motivate them to achieve the proposed combination. EX1035, ¶¶ 50-51; EX1036, 94:15-16 (“Q: Would a POSA . . . care about reliability? A: Yes.”). This is especially true of moving parts, which are more likely to fail than simple stationary parts. EX1035, ¶ 50. Increased reliability would be highly desirable to a POSA in this industry because a breakage of parts reduces throughput, which is highly important to a POSA. EX1007, 1:28-59; EX1031, 2:5-9; EX1035, ¶ 51.

Further, because Johnson’s fat cover measuring process requires insertion, removal, and reinsertion of the probe assembly, it is necessarily not instantaneous. *See* EX1006, 4:27-33; EX1035, ¶ 52. Belk’s system teaches real time measurement of characteristics of the meat product, such as the thickness of the fat cover. EX1007, 5:40-49 (“Preferably the output is in real-time.”). If integrated into Johnson’s apparatus, this would create the significant advantage of greater throughput as Johnson’s apparatus would process the meat product more quickly, which would be desirable to a POSA. EX1007, 1:28-59; EX1031, 2:5-9; EX1035, ¶ 51.

Belk’s sensor system also presents multiple advantageous on its face compared to Johnson’s complex probe assembly. For example, as described in the Petition, Johnson’s probe assembly is limited to sensing only the thickness of fat and

its contours. Belk's sensor, by contrast, is capable of far greater functionality and can detect a greater quantity of characteristics of a meat product, such as marbling quality, firmness, surface area, lengths, and widths of areas of interest, density of lean tissue, and density of fat tissue. *See* Pet., 64; EX1007, Abstract, 12-24, 4:26-36, 4:39-45, 9:7-18, 5:9-19, Fig. 3. This functionality would assist in more accurate separation of the fat cover and, therefore, increase the value of the final meat product. EX1007, 1:28-59; EX1031, 2:5-9; EX1035, ¶¶ 48-49.

Due to the plethora of advantages provided by the proposed combination, a POSA would be motivated to implement Belk's contactless sensing disclosures within Johnson's apparatus.

C. Patent Owner Relies on a Legally Flawed Bodily Incorporation Argument about the Exact Location of the Camera.

Patent Owner argues that Petitioner failed to specify “where Belk's camera would be placed within *Johnson's* system.” POR, 41 (emphasis added). Patent Owner further argues that “there is no location at which *Belk's* cameras could provide the same information as *Johnson's* probes.” POR, 42 (emphasis added). Patent Owner's argument relies on improper bodily incorporation. Petitioner does not need to show exactly where Belk's sensors would be bodily incorporated into Johnson's apparatus. *See Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016) (affirming PTAB decision

finding patent unpatentable on obviousness grounds). Indeed, the Federal Circuit has explained that “Claims may be obvious in view of a combination of references, even if the features of one reference cannot be substituted physically into the structure of the other reference. What matters . . . is whether a person of ordinary skill in the art, having all of the teachings of the references before him, is able to produce the structure defined by the claims.” *Orthopedic Equip. Co. v. United States*, 702 F.2d 1005, 1013 (Fed. Cir. 1983) (citations omitted).

Instead, the proper standard is whether a POSA would be motivated to incorporate Belk’s teachings with Johnson’s teachings to arrive at the invention. *Id.* As explained above, a POSA would be so motivated, and therefore Petitioner has met its burden.

Accordingly, because a POSA would be motivated to arrive at the proposed combination of the teachings of Johnson and Belk, the Board should find the challenged claims of the ’321 patent unpatentable.

V. CONCLUSION.

Provisur requests cancellation of claims 1-6, 8, 10, 14-16 of the '321 patent.

Respectfully submitted,

Dated: November 21, 2024

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CERTIFICATE OF COMPLIANCE

The undersigned certifies that this brief complies with the applicable type-volume limitations of 37 C.F.R. § 42.24. Exclusive of the portions exempted by 37 C.F.R. § 42.24(a), this brief contains 5,182 words as counted by the word processing program used for its preparation (Microsoft Word 2013).

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on November 21, 2024, I caused a true and correct copy
of the foregoing materials:

- **PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE**

to be served via electronic mail to the Patent Owner of Record as provided for in
the service information in the Petition:

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