

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

**DECLARATION ON REPLY OF JOHN M. COLLINS, PH.D, IN SUPPORT
OF PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO.
8,529,321**

**Provisur EX1035
IPR2024-00235
U.S. Patent No. 8,529,321**

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

TABLE OF CONTENTS

I. Introduction.....1

II. Summary of Opinions.....1

III. Background and Qualifications 2

IV. Materials Considered.....2

V. Legal Principles 3

VI. Claim Construction.....3

VII. Level of Ordinary Skill in the Art.....3

VIII. State of the Art Before the ’321 Patent.....3

 A. Hygiene Standards in the Meat Industry 3

 B. Stouffer (EX1031).....4

IX. Ground 1: Young Discloses the Measurement of the Thickness of the Fat Cover, and Cutting Based on Said Determined Thickness. 6

 A. Patent Owner Misunderstands Young’s Teachings. 6

 1. Young Teaches Determination of the Fat Thickness.....6

 2. Young Teaches Cutting in Dependence on the Fat Thickness. 7

 B. Patent Owner Misunderstands My Testimony. 8

X. Ground 2: A POSA Would Be Motivated to Achieve the Proposed Combination of Young and Norrie and Would Have a Reasonable Expectation of Success in Doing So.....11

 A. A POSA Would Have A Reasonable Expectation of Success in Combining Norrie’s Teachings with Young’s System as Proposed in the Petition.....11

 B. Young Does Not Teach Away from Norrie. 12

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

C.	A POSA Would Have Been Motivated to Arrive at the Proposed Combination of Young and Norrie.	15
D.	Patent Owner Misunderstands My Opinion.	16
XI.	Ground 3: A POSA Would be Motivated to Achieve the Proposed Combination of Johnson and Belk.....	17
A.	Patent Owner Does Not Dispute the Proposed Combination Discloses All of the Claimed Limitations.	17
B.	Several Significant Rationales Would Motivate a POSA to Achieve the Proposed Combination.....	18
C.	Johnson and Belk are not Technically Incompatible.....	23
D.	Patent Owner is Wrong My Opinion Only Discusses Belk’s Color Camera.	26
E.	Dr. Reinholtz is Wrong About My Opinion Regarding Belk’s Teachings.....	27
XII.	Conclusion	28

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

I. Introduction

I, John M. Collins, Ph.D., hereby declare as follows:

1. I have been retained as an expert witness on behalf of Provisur Technologies, Inc. (“Provisur”) for the above-captioned *inter partes* review (“IPR”). I am an expert in mechanical engineering. I am being compensated for my time in connection with this IPR at my standard consulting rate, which is \$450 per hour. My compensation is not contingent upon the outcome of this IPR. I understand that the Petition for IPR involves U.S. Patent No. 8,529,321 (EX1001, the “’321 patent”).

2. I provide this declaration in response to arguments made by Weber Food Technology GMBH (“Weber” or “Patent Owner”) and its expert after my initial declaration. I still hold the opinions provided in my initial declaration.

II. Summary of Opinions

3. Below, I provide opinions that respond to the points made by Weber and its expert Dr. Reinholtz since my initial declaration about the unpatentability of the ’321 patent. I maintain my opinion that the relevant claims of the ’321 patent are not patentable.

4. I understand that Dr. Reinholtz did not provide any opinion rebutting my analysis that all of the claimed limitations of the relevant claims are disclosed by the proposed Ground 2 combination of Young and Norrie or the Ground 3 combination of Johnson and Belk.

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

III. Background and Qualifications

5. My background and qualifications are discussed in my initial declaration. EX1003, ¶¶ 9-29. A copy of my latest curriculum vitae (CV) with additional details of my education, employment, and recent publications was filed as Exhibit 1019.

IV. Materials Considered

6. When forming my opinion, I considered all of the references cited in my initial declaration and the Petition. I also considered all of the documents cited in this declaration, and Dr. Reinholtz's declaration, including the documents listed below:

EX	Description
1031	U.S. Patent No. 4,785,817 ("Stouffer")
1032	[Food Safety] Sanitary Design Strategies for Preventing Cross Contamination
1033	Food Safety Magazine Hygienic Design of Equipment in Food Processing
1034	North American Meat Institute History Page
1035	Supplemental Declaration of Dr. John Collins
1036	Deposition Transcript of Dr. Reinholtz

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

V. Legal Principles

7. I am not an attorney, and I am not offering any opinions on the law in this proceeding. Counsel for Provisur has generally informed me of certain legal standards that are relevant to my analysis. I addressed those legal principles in my Initial declaration. EX1003, ¶¶ 30-39.

VI. Claim Construction

8. I have applied the plain and ordinary meaning of the claim terms in view of the specification and the prosecution history. I am not aware of any claim terms that require me to propose an explicit construction to resolve any issues.

VII. Level of Ordinary Skill in the Art

9. I provided a level of ordinary skill in the art in my initial declaration and I understand that Weber has not contested that definition and that Dr. Reinholtz has adopted that that definition. EX1036, 15:7-16:4.

VIII. State of the Art Before the '321 Patent

A. Hygiene Standards in the Meat Industry

10. The prior art record in this case demonstrates that hygienic practices and hygienic machine design were of significant importance for a variety of reasons. EX1032, EX1033. In 2002, the leading association of meat processing companies, the American Meat Institute, recognized that hygienic design and practices were particularly important for meat processing machines. EX1032, 2-3; *See also*

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

EX1034. At this time, to standardize and improve hygiene throughout the industry, the Institute developed and published a list of 10 principles of sanitary design. EX1032, 2.

11. These principles recognized that portions of machines which contact the meat product, known as contact surfaces, are particularly important to hygiene, as they can transfer dangerous pathogens from contaminated meat products to other products during processing. *See* EX1032, 1-2. The published principles of sanitary design emphasize that both contact surfaces and noncontact surfaces should be designed to “prevent bacterial ingress, survival, growth and reproduction.” *Id.*, 3. Further, any machine should be designed such that “during normal operations [it does] not contribut[e] to unsanitary conditions or the harborage and growth of bacteria.” *Id.*

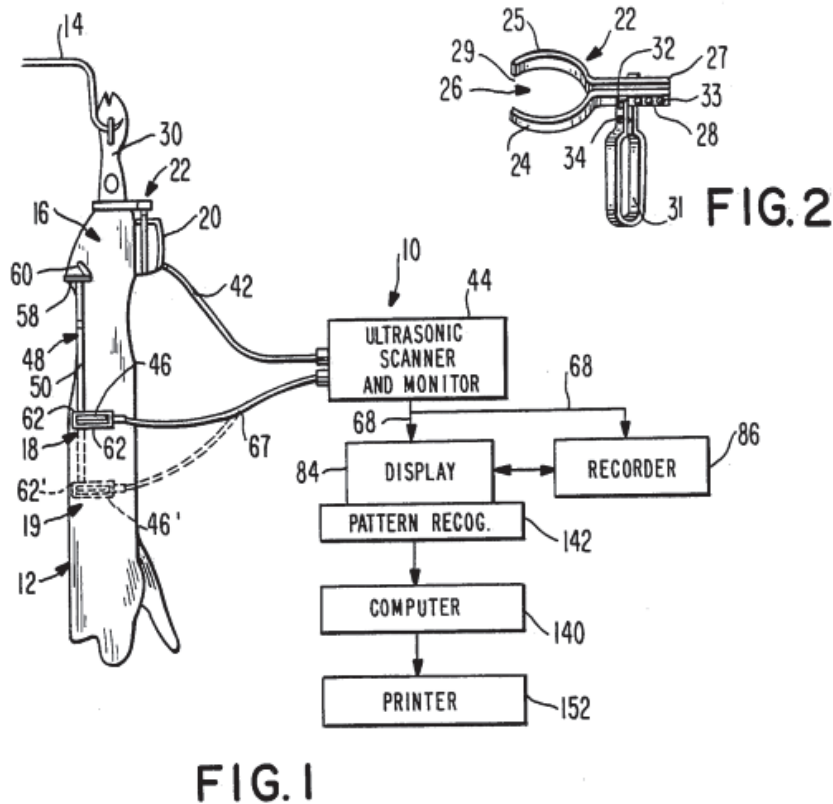
B. Stouffer (EX1031)

12. Stouffer is titled “Method and Apparatus for Ultrasonic Grading of Meat.” EX1031, Title. It was filed on October 10, 1986, and issued November 22, 1988. It was not considered by the examiner of the ’321 patent. EX1002, 358.407-408.

13. Stouffer describes an apparatus and method of automatically grading meat using ultrasonic scanners. EX1031, 2:5-9. Stouffer explains that in the meat processing industry, manual grading of carcasses is time-intensive. *Id.*, 1:19-30.

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

Additionally, it introduces subjectivity, which has a significant negative economic impact. *Id.* However, previous ultrasonic automated grading systems were too complex and contained features that slowed down processing, reducing throughput and profit. *Id.*, 1:52-62. Stouffer recognized these problems and teaches an apparatus and method for rapidly and accurately measuring fat content and meatiness to reliably grade a meat product. *Id.*, 2:5-16.



EX1031, Figs. 1-2.

14. Stouffer teaches an apparatus and method for use in evaluating fat thickness and muscle area in a hog carcass. *Id.*, 2:41-46. Stouffer's apparatus

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

determines and calculates a variety of properties about the carcass such as thickness of the fat layer, and data concerning the meat area, which can then be displayed to an operator. *Id.*, 3:38-67.

IX. Ground 1: Young Discloses the Measurement of the Thickness of the Fat Cover, and Cutting Based on Said Determined Thickness.

15. Below, I explain how the relevant claims are anticipated by Young in response to Weber's arguments and the expert opinion of Dr. Reinholtz provided after my initial declaration.

A. Patent Owner Misunderstands Young's Teachings.

1. Young Teaches Determination of the Fat Thickness.

16. I understand that Patent Owner and Dr. Reinholtz argue that Young does not disclose the determination of the thickness of the fat cover. POR, 17; EX2007, ¶ 39. Instead, Patent Owner and Dr. Reinholtz argue that Young is "agnostic as to the thickness [of fat] removed from the meat product." EX2007, ¶ 39. I disagree. As I explained in my initial declaration, it is my opinion that Young determines the thickness of the fat cover and then separates the fat cover based on that determined thickness. EX1003, ¶¶ 98-166. Young teaches that its system determines a fat/lean separation line and an edge line. EX1004, 23:20-28, Figs. 12-13. It also teaches that the edge line represents the outer surface of the pork side and is proximate the fat/lean line. *Id.*, 23:23-27. Young also teaches that it measures the length, height, or width between points. *Id.* A POSA would understand Young's disclosure as

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

teaching the measurement of height along any desired defined points, such as between the fat/lean line and the edge line, or any other desirable line connecting two defined points. *Id.*

17. The distance between the fat/lean separation line, and the edge line, corresponds to the thickness of the fat cover. This is demonstrated in the below figure.

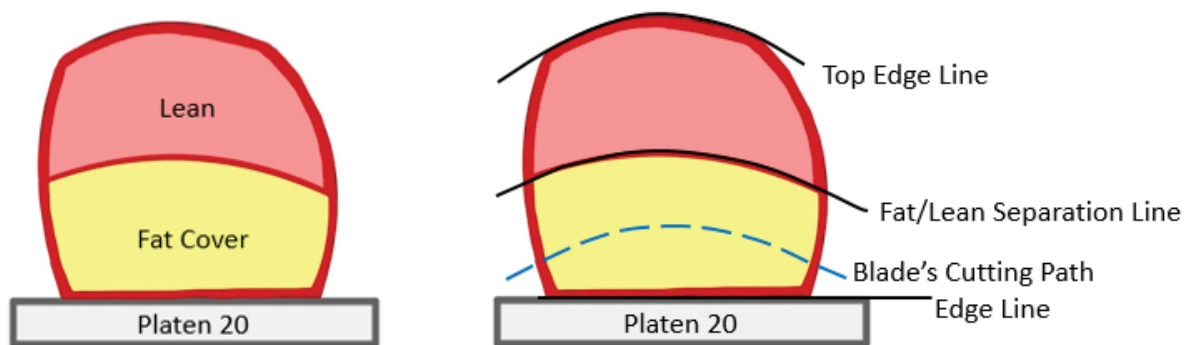


Figure: Exemplary points determined by Young's system.

18. Therefore, based on the above and the evidence provided in my initial declaration, it is my opinion that a POSA would understand Young's disclosure as directly teaching the determination of the thickness of the fat cover

2. Young Teaches Cutting in Dependence on the Fat Thickness.

19. I also understand that Patent Owner and Dr. Reinholtz argue that Young's cut position is not made "in dependence on" the determined thickness of the fat cover as claimed in the '321 patent. POR, 18-20; EX2007, ¶ 25. I disagree.

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

20. As described in my initial declaration, Young explains that its blade is controlled by servo motors which are in turn controlled by Young's controller. EX1004, 22:53-55, 24:40-51, Fig. 13; EX1003, ¶¶114-125. Specifically, Young's controller "calculate[s] servo array values" which control the position of the servos. EX1004, Fig. 12. These array values themselves are calculated in dependence on image process routine 240. *Id.* Image process 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.

21. A POSA would understand that image process routine 240 determines thickness of fat cover by calculating the height distance between the edge line and the fat/lean separation line. *Id.*, 23:12-27, 23:61-67, 24:10-23. Specifically, the position of Young's blades when cutting depends on image process routine 240, which determines the thickness of the fat cover. *See* EX1004, Figs. 12-13 ("servo array values"). Therefore, Young separates the fat cover *in* dependence on the thickness of the fat cover.

B. Patent Owner Misunderstands My Testimony.

22. I understand that Patent Owner and Dr. Reinholtz argue that Young does not separate the fat cover based on the determined fat cover thickness. POR, 20-22;

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

EX2007, ¶¶39-43. Instead, they argue, Young calculates its cutting path and separates the fat cover based only on a “fixed distance offset” as “defined by the user.” POR, 18; EX2007, ¶¶ 41-42. I also understand they further argue that I agree with this characterization of how Young functions, and quote my testimony as support. POR, 18; EX2007, ¶ 39. Patent Owner and Dr. Reinholtz are wrong and misunderstand my testimony.

23. As explained in my initial declaration and above, it is my opinion that Young separates the fat cover based on the determined thickness of said fat cover. EX1004, 23:12-27, 61-67, 24:10-23, Figs. 12-13. It is not my opinion that Young’s cutting is only determined by a “fixed distance offset” from the fat/lean separation line, as argued by Patent Owner and Dr. Reinholtz.

24. Instead, it is my opinion that Young’s system allows a user to input a desired amount of fat to be left on the meat product. EX2006, 34:18-19, 21 (“Q: And that layer of [remaining] fat is dictated by the value that the user inputs; correct? A: That’s my understanding.”) If a user inputs a value that 0.5 inches of fat should remain on the meat product, the final product after processing by Young will always have 0.5 inches of fat remaining (provided it had more fat than the inputted value to begin with, so some was able to be removed). See EX1004, 20:60-66. However, this does not mean that Young is “agnostic as to the thickness of the fat cover” as argued by Dr. Reinholtz. EX2007, ¶43. Meat products are organic objects which

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

have varying thickness of fat and are not uniform. EX1004, 2:35-36. To be able to leave user-inputted desired amount of fat on the meat product Young's system must take into account the thickness of the fat cover. Specifically, a POSA would understand that Young's system determines the thickness of the fat cover via the difference between the edge line and the fat/lean separation line, and separates the fat cover based on that determination. *Id.*, 23:12-27, 23:61-67, 24:10-23. Young uses this determination to calculate the cutting profile and, accordingly the position of Young's blade as it cuts. *Id.*, Fig. 13-14.

25. Therefore, I do not agree with the misleading argument made by Patent Owner and Dr. Reinholtz, that "Young's system simply identifies the line between the fat cover and the lean meat (fat/lean separation line) and uses this internal line as a reference for its cutting path." EX2007, ¶ 41. As described above, Young teaches to calculate the position of known points along the edge and fat/lean separation lines, which by definition determines the thickness of the fat layer. EX1004, 23:20-30, 24:34-39, Figs. 12-13. The user can select the amount of fat to remain on the lean meat to establish the cutting path and amount of fat to remove. *Id.*, 20:63-66.

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

X. Ground 2: A POSA Would Be Motivated to Achieve the Proposed Combination of Young and Norrie and Would Have a Reasonable Expectation of Success in Doing So.

26. Below, I explain how the relevant claims are obvious over Young in combination with Norrie in response to Weber’s arguments and the expert opinion of Dr. Reinholtz provided after my initial declaration.

A. A POSA Would Have A Reasonable Expectation of Success in Combining Norrie’s Teachings with Young’s System as Proposed in the Petition.

27. As I described in my initial declaration, a POSA would have a reasonable expectation of success in achieving the proposed combination. *See* EX1003, ¶177. Young explicitly contemplates incorporating other sensor teachings into its system. EX1004, 20:17-24 (“Various modifications and changes may be made to control system 170 consistent with the invention. For example, additional imaging and motion functionality may be included[.]”). Further, Young cites Norrie as known in the art. *See Id.*, 2:18-26.

28. I understand that Dr. Reinholtz and Patent Owner argue that it is unclear “how *Young is* modified by *Norrie*.” POR, 26; EX2007, ¶50. I disagree. In my initial declaration I discussed that a POSA would understand from Young and Norrie’s disclosures that Norrie’s teachings could be incorporated into Young’s system in at least two ways. EX1003, ¶177.

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

29. For example, a POSA would understand that the teachings of Norrie could be incorporated into Young's system via software change, where the software in Young's controller 172 is modified to utilize Young's multiple cameras to measure the thickness of the fat cover and cut based on that determined thickness. *Id.* It is undisputed by Patent Owner and Dr. Reinholtz that Young's cameras are capable of distinguishing between fat and muscle and of measuring distances. *See* POR, 15-17; EX2007, ¶¶ 41-44. Therefore, it would be a simple software modification to incorporate the measurement of that fat cover thickness into Young's system. In fact, I testified during questioning by Patent Owner's counsel to several possible ways a POSA would have a reasonable expectation of success in incorporating Norrie's teachings into Young's system such as, for example, adding a camera or modifying software. *See* EX2006, 42:12-22 ("Q: Which camera do you propose adding from Norrie into Young's system? A: Well the Norrie camera And, again, I'm not sure you need to add a camera or just modify the algorithm [in Young] to be explicit in providing a dimension of the—of the fat thickness[.]")

B. Young Does Not Teach Away from Norrie.

30. I understand that Patent Owner and Dr. Reinholtz argue that Young teaches away from Norrie. POR, 30-33; EX2007, ¶¶ 54-56. I disagree. As discussed in my initial declaration, Young is explicit that "[v]arious modifications and changes may be made . . . consistent with the invention. For example, additional imaging

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

and motion functionality may be included to provide more sophisticated profiles[.]” EX1004, 2:17-24. This clearly contemplates that additional imaging capabilities may be incorporated within Young’s system. The rationale for this is that Young’s blade system is capable of multi axis movement which allows it to follow sophisticated cutting profiles. *Id.*, 14:33-40 (“A third axis of motion [of the blade] is controlled by a third moving means . . . independently displacing the sliding assemblies 135 that secure each side of the knife blade . . . thereby enabling the sides to follow separate [cutting] profiles.”). Therefore, more complicated and accurate profiles can be utilized by Young’s blade to increase yield. *Id.*, 2:44-51, 14:33-40. As I also noted in my initial declaration, Young cites to Norrie as a known device in the art. *Id.*, 2:18-26.

31. Contrary to this clear disclosure, Patent Owner and Dr. Reinholtz argue that Young teaches away from Norrie. They argue that Young discusses that prior automated fat removal systems were “limited in the degree of control they provide[d] over the loin knife and scribe saw.” EX2007, ¶ 54 (quoting EX1004, 2:30-34). Dr. Reinholtz further argues that Norrie has a simple up-down blade system incapable of multi-axis movement. *Id.*, ¶ 55. Therefore, according to Dr. Reinholtz, Norrie’s imaging disclosure must also be correspondingly simple and of little use to Young’s more capable blade system. *Id.*

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

32. I disagree with Dr. Reinholtz's interpretation of Young and Norrie and believe this is not how a POSA would understand Young's disclosure. Young describes that the blade systems of previous known devices were comparably limited and there was a need to better reproduce the different subtle motions experienced human operators use to optimize end products which Young's system addressed. EX1004, 2:31-37. However, nothing in Young disparages the incorporation of additional imaging functionality into Young's system. As explained above, Young explicitly contemplates incorporating said additional imaging functionality. *See id.*, 2:17-24. Additionally, Dr. Reinholtz's allegation that Norrie's sensor teachings must be simplistic due to Norrie's simple blade system is not consistent with a POSA's understanding. *See* EX2007, ¶¶54-55. A POSA would understand that a sensor's functionality can be useful even if it is incorporated into a simpler apparatus. Because the proposed combination contemplates incorporating Norrie's imaging functionality, and not Norrie's blade teachings, Young does not teach away from Norrie. In fact, having an imaging functionality that is more accurate than the cutting profile is able to follow would allow engineers to know the value of increasing the ability of the cutting motion to better mimic the subtle motions of experienced human operators.

33. Additionally, a POSA would understand that Young's sophisticated blade system is capable of nuanced control, and can follow more than one calculated

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

cutting profile at a time, i.e. Young can have opposite ends of the blade follow different profiles. EX1004, 14:33-40. I note Dr. Reinholtz agrees that Young's blade system is more sophisticated and capable of this functionality. EX1036, 151:17-152:8. A POSA would understand from this disclosure that improving the functionality of Young's imaging capabilities would be desirable as it would allow for greater utilization of Young's sophisticated blade mechanism. Therefore, Norrie's blade system has no bearing on whether a POSA would be motivated to incorporate Norrie's sensor teaching into Young's system.

34. Accordingly, I disagree that Young teaches away from incorporating the teachings of Norrie.

C. A POSA Would Have Been Motivated to Arrive at the Proposed Combination of Young and Norrie.

35. As described in my initial declaration, it is my opinion that a POSA would be motivated to arrive at the proposed combination of Young and Norrie. EX1003, ¶¶ 175-176. I proposed several rationales that would have motivated and been important to a POSA, such as increased yield and reduced waste. *Id.*, ¶176. I understand that Patent Owner and Dr. Reinholtz do not dispute these motivations or offer any rebuttal on the merits. *See* POR, 24-25; EX2007, ¶48.

36. Instead, their arguments rest on the specificity of the combination and teaching away, both of which I addressed above. *See* POR, 24-25; EX2007, ¶ 48.

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

Because Patent Owner does not dispute the relevance of these motivations, or that the proposed combination would achieve the desired benefits, it remains my opinion that a POSA would be motivated to arrive at the proposed combination of Young and Norrie.

D. Patent Owner Misunderstands My Opinion.

37. I understand that Patent Owner and Dr. Reinholtz argue that it is my opinion that “*Norrie* is functionally redundant of *Young* and adds no additional components to the combination[.]” EX2007, ¶52. I note Dr. Reinholtz relies heavily on this understanding of my opinion, as he testified during his deposition. EX1036, 120:6-8, 129:7-11, 172:10-11. As I explained above in Ground 1, this misconstrues my opinion. As I stated in my initial declaration, I hold the opinion that Young discloses the measurement of the thickness of the fat cover. *See* EX1003, ¶¶100-101. As I also explained in my initial declaration, I also hold the opinion that Norrie discloses the thickness of the fat cover. *See id.*, ¶¶ 167-179.

38. However, should the Board disagree with me that Young discloses the disputed limitations, it is clear that Norrie teaches, and renders obvious, the disputed limitations of measuring the thickness of the fat cover and cutting based on that determined thickness. *See* EX1005, Abstract, 2:18-60, 3:21-22, 4:48-53, Figs. 3-4 (“At this time, the camera 54 will observe the thickness of fat on the underside of the loin lying on the conveyor. It will then send appropriate fat signals to the

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

computer. The computer, in turn, will either signal the blade solenoid 41 that no adjustment is necessary, or alternatively will signal the blade solenoid 41 so as to adjust the position of the blade 34 by operating the cylinder 40.”)

39. I note that Patent Owner and Dr. Reinholtz agree with me and do not dispute that Norrie teaches the disputed limitations. *See* POR, 24-25; EX2007, ¶¶47-56 (discussing the proposed Young and Norrie combination); EX1036, 54:3-7 (Dr. Reinholtz agreeing he does not dispute Norrie teaches sensing thickness of fat). To be clear, it is my opinion that if Young is found by the Board to not teach the disputed limitations, Norrie teaches these limitations, and a POSA would be motivated to incorporate those teachings into Young’s system. I described this combination extensively in my initial declaration. *See* EX1003, ¶¶67-175.

XI. Ground 3: A POSA Would be Motivated to Achieve the Proposed Combination of Johnson and Belk.

40. Below, I explain how the relevant claims are obvious over Johnson in combination with Belkin response to Weber’s arguments and the expert opinion of Dr. Reinholtz provided after my initial declaration.

A. Patent Owner Does Not Dispute the Proposed Combination Discloses All of the Claimed Limitations.

41. I understand that Patent Owner does not dispute that the proposed combination of Johnson and Belk discloses all of the claimed limitations of the relevant claims of the ’321 patent. *See* POR, 32; EX2007, ¶¶ 57-68. I also

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

understand that, instead, Patent Owner and Dr. Reinholtz argue that a POSA would not be motivated to arrive at the proposed combination because Johnson and Belk are technically incompatible. POR, 32; EX2007, ¶¶ 57-68. I disagree and address this argument below.

B. Several Significant Rationales Would Motivate a POSA to Achieve the Proposed Combination

42. As I explained in my initial declaration, a POSA would be motivated to incorporate Belk's teachings into Johnson's system. *See* EX1003, ¶¶242-248. A POSA would be so motivated for a variety of reasons, including improved hygiene; improved end product quality, and therefore sale value; improved reliability due to a less complex system; and lower cost to manufacture due to a less complex system.

43. For example, it was understood in the art that punctures in the meat product, such as those repeatedly caused by Johnson's system, were highly disadvantageous. The '321 patent itself acknowledges that it was known in the art that these punctures damaged the meat product. EX1001, 1:21-36. Dr. Reinholtz testified that these punctures were disadvantageous to end product quality, end product value, and create hygiene concerns. EX1036, 96:3-7. Dr. Reinholtz acknowledges that Johnson's apparatus requires these repeated punctures to make its measurements. EX2007, ¶ 58.

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

44. These punctures pose a significant hygiene risk because the probes are a food-contact surface, i.e. the probes physically contact the meat product. Food-contact surfaces are particular hygiene risks as they allow for the transfer of pathogens between separate meat products or introduce pathogenic bacteria or allergens. *See* EX1032, 1. I note Dr. Reinholtz testified that machine safety and hygienic design is “always the most important consideration” to a POSA. EX1036, 91:19-92:7. Additionally, these punctures allow for the harborage and growth of pathogens where no pathogens were originally present. EX1036, 96:11-17; EX1032, 3. I also understand Dr. Reinholtz testified that a POSA would care about a “design’s tendency to cause the harborage or growth of bacteria” because “[y]ou don’t like people to die from the products you produce[.]” EX1036, 153:9-11; EX1032, 3. I agree.

45. It is particularly important in the meat processing industry to maintain hygienic practices due to the risks involved with preparing meat for consumption. EX1033, 5. A POSA in this industry would understand that it is good design practice to minimize “bacteria ingress, survival, growth and reproduction” *Id.*, 4. Replacing Johnson’s probe assembly sensor system with a contactless system, such as the contactless sensor system described in Belk, would significantly improve hygiene by entirely removing the necessity of making these punctures.

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

46. Additionally, improvement of end product meat quality would be of importance to a POSA as it impacts sale value. EX1007, 1:28-39; *see also* EX1031, 1:44-51 (“Furthermore, since many available [sensors] are not able to scan a complete cross-section of an area of interest, time consuming multiple readings and interpretations have been required, and since it is necessary, on a commercial scale, to be able to grade hog carcasses at a high rate of speed, for example, 300-1000 carcasses per hour, speed . . . becomes essential.”)

47. Johnson’s probe assembly sensor system reduces quality because it punctures the meat, reducing its value. *See* EX1001, 1:31-36. Therefore, as explained with hygiene, a POSA would consider it advantageous to replace Johnson’s probe assembly sensor system with a contactless sensor system, such as disclosed in Belk, to eliminate these punctures and increase the value of the end product. Accordingly, a POSA would be motivated for that reason to arrive at the proposed combination.

48. Further, Belk’s contactless sensor system has greater functionality than Johnson’s native probe assembly. For example, Belk is capable of detecting and measuring, e.g. marbling quality, firmness, surface area, density of lean tissue, lengths and heights of areas of interest and density of fat tissue. EX1007, Abstract, 12-24, 4:26-36, 4:39-45, 9:7-18, 5:9-19, Fig. 3. Belk’s system is also capable of measuring chosen properties in only a specific “area of interest” rather than

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

throughout the entire meat product. *Id.*, 8:59-66, 15:22-31, Fig. 2. This allows Belk to take specific height, width, length measurements of various different parts of a meat product, unlike Johnson's probe assembly. *See Id.*, 15:22-31.

49. Increased sensing capability would be desirable to a POSA as it allows for more varied and accurate cutting profiles – which results in increased accuracy, yield, and reduced waste. *See* EX1004, 2:39-51, 2:65-3:3 (“[C]onventional automated systems often are not capable of separating . . . at the optimum points of separation, often resulting in unacceptable waste product and lower yields. . . . Several advantages may be realized . . . For example . . . a loin knife assembly which is controllable to enable the sides of a U-shaped knife blade to follow separate profiles.”)

50. In addition to removing the probes which damage the end product and are a food-contact risk, a POSA would also be motivated to arrive at the proposed combination due to the complexity of Johnson's native probe assembly. Johnson's probe assembly requires multiple moving probes, which, while measuring the thickness of the fat cover, “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.]” *Id.*, 4:27-33. This requires multiple complex moving parts, as shown by Johnson's disclosure and figures. EX1006, Figs. 2, 2a.

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

A POSA would understand that moving parts are more prone to breakdown and more complex, and therefore undesirable. I understand that Dr. Reinholtz testified he agrees with this opinion, and that, generally, “fewer components and lower complexity reduces the cost of a machine.” EX1036, 91:7-12. I agree.

51. For this reason, a POSA would be motivated to arrive at the proposed combination and replace the less reliable moving parts of Johnson’s probe assembly with Belk’s contactless sensing teachings.

52. A POSA would also understand that the insertion, removal, re-insertion cycle of Johnson’s probe assembly is a non-instantaneous process because the probes need time to be inserted and removed along the length of the meat product. EX1006, 4:27-51. Belk’s sensing system, by contrast, measures the thickness of the fat cover (and other desired characteristics) essentially instantaneously as the contactless sensor system receives data in the form of either images, or other means such as MRI measurements—all of which would be faster than Johnson’s probe assembly. EX1007, 5:40-49. Instantaneous measurement would be desirable to a POSA because instantaneous measurement would allow for greater processing throughput. Throughput is known to be important to a POSA because it increases total profit and productivity. EX1036, 134:2-6; EX1007, 1:28-59 (“USDA graders working at packing plants commonly must assign Grades to 250 to 450 beef carcasses per hour . . . In addition, USDA graders are required to compute Yield Grades[.]”); *see also*

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

EX1031, 1:44-51 (“[I]t is necessary on a commercial scale, to be able to grade hog carcasses at a high rate of speed, for example, 300-1000 carcasses per hour, speed and ease of operation . . . becomes essential.”)

53. For the above reasons, as well as the reasons discussed in my initial declaration, a POSA would be highly motivated to arrive at the proposed combination of Johnson and Belk.

C. Johnson and Belk are not Technically Incompatible.

54. I understand that Patent Owner and Dr. Reinholtz argue that a POSA would not be motivated to combine Johnson with Belk because they are “technically incompatible.” POR, 32-44, EX2007, ¶¶57-59. Patent Owner and Dr. Reinholtz argue that Johnson and Belk are technically incompatible because (1) Johnson probes meat products across their length and width to detect changes in fat thickness and; (2) Belk’s sensors cannot provide the necessary data to support Johnson’s system. Patent Owner further argues that Johnson does not expressly motivate the combination. I disagree with these arguments and address them in turn below.

55. Regarding (1) and (2) I understand that Patent Owner and Dr. Reinholtz argue that Johnson’s probe assembly constructs a three-dimensional map of fat thickness to control its cutting mechanism. POR, 35-36. While it is true that Johnson constructs a three-dimensional map, this is not evidence that Johnson’s

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

systems are technically incompatible with the technology disclosed by Belk. *See* EX1007, 2:15-35.

56. Johnson and Belk are within the same field of art, and as explained in my initial declaration, a POSA would have a reasonable expectation of success in implementing Belk's teaching into Johnson's system. For example, a POSA could modify Johnson's software such that Johnson's cutting mechanism is controlled via data received from Belk's imaging system, rather than from Johnson's native probe assembly, and install Belk's imaging system physically into Johnson's apparatus to provide said data. EX1003, ¶177. I note that Patent Owner and Dr. Reinholtz do not dispute that this would be within the technical abilities of a POSA. Furthermore, the plain disclosures of Johnson and Belk show that a combination would not only be technically possible, but well within the skill of a POSA.

57. If charitably interpreted, Patent Owner's argument boils down to contending that a POSA would not be motivated to make the combination, because to do so would cause Johnson to lose its three-dimensional map functionalities. *See* POR, 35-37. However, this too is incorrect. As explained below, and discussed in my initial declaration, Belk discloses sensor systems capable of penetrating the surface of the fat cover. EX1007, 5:9-23. These systems would be capable of constructing Johnson's three dimensional map. Additionally, even if Belk's sensors were unable to enable Johnson's three dimensional map (although I believe they are),

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

a POSA would still be motivated to arrive at the proposed combination due to the extensive advantages that the combination provides, as discussed above. Because the proposed combination meets all the limitations of the '321 patent, the '321 patent remains unpatentable even if Johnson's three-dimensional map is not enabled.

58. Patent Owner next argues that Johnson does not explicitly motivate the combination. But as I explained in my initial declaration, Johnson explicitly teaches that "Optical Technology or infrared sensor technology can be utilized or any other appropriate sensor technology." EX1006, 7:65-67. I understand that Patent Owner and Dr. Reinholtz argue this disclosure relates to only the sensor "*inside of* [Johnson's physical] *probe*." EX2007, ¶ 68 (emphasis in original). I disagree. Contactless sensor systems (i.e. non-probe sensors) were well known at the time of the '321 patent and a POSA would be aware of said sensors. EX1003, ¶¶ 45-47. Because of this, a POSA would read and understand Johnson as teaching that other non-probe sensor systems could be used. EX1006., 7:65-67 ("Optical Technology or infrared sensor technology can be utilized or any other appropriate sensor technology.") (emphasis added). As an example, Johnson also discusses using sensors other than the probe assembly to detect the meat product as it approaches the probe assembly to begin the measurement process. *Id.*, 4:3-5 ("When the meat [product] is conveyed upstream along the path of conveyance to a point where it is detected by a sensor. When the sensor senses the presence of a meat cut, the probing

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

and mapping can begin[.]”)) Therefore, it remains my opinion that a POSA would understand Johnson contemplates incorporating contactless sensor technology into its system.

D. Patent Owner is Wrong My Opinion Only Discusses Belk’s Color Camera.

59. I understand that Patent Owner and Dr. Reinholtz allege that the proposed combination of Johnson and Belk is limited to incorporating Belk’s color camera. POR, 39-40; EX2007, ¶ 61. Patent Owner and Dr. Reinholtz further allege that I did not discuss any of the alternative sensing technologies disclosed by Belk, such as sound wave, MRI, and x-rays. POR, 39-40; EX2007, ¶ 61. This is wrong. In my initial declaration, I discussed Belk’s disclosure of sensor devices other than a color camera. EX1003, ¶¶82, 87-88, 186, 208, 212.

60. Additionally, I note that Patent Owner questioned me on these disclosures during my deposition and I testified that I relied on other examples of imaging devices disclosed in Belk other than the color camera. EX2006, 46:8-47:5. (“Q: Okay. Have you relied on any other examples of what the imaging device can be that would satisfy limitation 1[A]? A: Yes. It states in column 5, line – about 9, it says, ‘An apparatus for use in the present invention comprises an imaging device 12 and a data processing unit 16. The imaging device 12 can be any such imaging device known to those of skill in the art, such as a camera, topographic [sic] imaging

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

(i.e.CAT or PET) device, magnetic resonance imaging (MRI) sound wave imaging device, radio wave imaging device, microwave imaging device, or particle beam imaging device.’ And it goes on. So that’s a description of imaging device 12.”) (emphasis added). It is my opinion that several of these potential imaging devices are capable of penetrating and sensing the interior of a meat product.

61. Accordingly, I disagree that my opinions regarding Belk’s sensor disclosures in the proposed combination limited to Belk’s color camera.

E. Dr. Reinholtz is Wrong About My Opinion Regarding Belk’s Teachings

62. I understand that Dr. Reinholtz testified that it is his that opinion Belk does not disclose determining the thickness of the fat cover. EX1036, 168:9-18. I also understand he testified that it is my opinion Belk does not disclose determining the thickness of the fat cover. EX1036, 171:9-21, 173:3-8, 174:17-22. This is wrong. As I explained in my initial declaration, it is my opinion that Belk discloses determining the thickness of the fat cover. EX1003, ¶¶ 188-189. Specifically, it is my opinion that Belk teaches that its system may detect the difference between fat and meat. EX1007, Abstract, 2:12-24, 4:26-45, 9:7-18. Further, Belk’s teaches that it may determine characteristics, which may include but are not limited to, height, width and length in an “area of interest.” EX1007, 15:22-31. I understand Dr. Reinholtz testified that he believes Belk’s “area of interest” would be understood by

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

a POSA to be a small section of the image, from which Belk would be unable to determine the thickness of the fat cover. EX1036, 165:7-166:7, 180:15-181:5 . I also understand he testified I agree with this reading. EX1036, 180:15-181:5. I disagree. I note that I find no teaching in Belk limiting Belk's "area of interest" to an arbitrarily and undefined small section. *See e.g.* EX1007, 15:22-31. In fact, Belk contemplates that its area of interest may, in one embodiment, comprise at least an entire muscle of the carcass. EX1007, 9:7-25.

63. Accordingly, I disagree with Dr. Reinholtz's characterization of my opinion, and of Belk's teachings.

XII. Conclusion

64. By signing this declaration, I recognize that my declaration will be filed as evidence in a contested case before the United States Patent and Trademark Office's Patent Trial and Appeal Board. I also recognize that I may be subject to cross-examination in the case. If cross-examination is required of me, I will appear for cross-examination within the United States during the allotted time.

65. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine of imprisonment, or

Inter Partes Review of U.S. Pat. No. 8,529,321
Dr. John Collins Declaration

both, under Section 1001 of Title 18 of the United States Code. I am over the age of
eighteen years old, and I am competent to make this Declaration.

DocuSigned by:

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John M. Collins, Ph.D