

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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PROVISUR TECHNOLOGIES, INC.,  
Petitioner,

v.

WEBER MASCHINENBAU GMBH BREIDENBACH,  
Patent Owner.

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

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**PETITION FOR *INTER PARTES* REVIEW  
OF U.S. PATENT NO. 8,529,321**

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*USPTO Director’s Memorandum: Interim Procedure For  
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**PETITIONER EXHIBIT LIST**

| <b>EX</b> | <b>Description</b>                            |
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| 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                                |

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| 1021 | U.S. Patent No. 5,334,084 (“O’Brien”)                    |
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| 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. |

## I. INTRODUCTION

Petitioner respectfully requests *Inter Partes* review of claims 1-6, 8, 10, 14-16 of U.S. Patent No. 8,529,321 (the “’321 Patent”), foreign application filed October 24, 2007, and purportedly assigned to Weber Maschinenbau GmbH Breidenbach.

The ’321 patent describes a standard automatic “defatting” or “derinding” machine for food processing. It uses a computer to receive sensor data about the thickness of the fat cover layer and control the height of a cutting blade to remove that layer. These features were common and well-known in the food processing equipment industry long before the ’321 patent.

This Petition presents three separate grounds of unpatentability based on two base references.

First, the claims are anticipated by U.S. Patent No. 5,514,032 to Young (filed February 17, 1995). Young teaches a fat removal apparatus with all of the claimed elements. It has a camera measuring fat thickness based on height, length, width dimensions, for instance. Young, predating the ’321 patent by over a decade, includes far more details about its automatic defatting machine and fat sensing system than the ’321 patent.

Second, in the alternative, the claims are likewise rendered obvious by Young in view of U.S. Patent No. 4,979,269 to Norrie (filed August 3, 1989). Young gives compelling reason to combine with Norrie by identifying it by patent number as an exemplary automated fat removal system addressing the problems known in the art. Young also reflects the motivation to combine Norrie for its “additional imaging and motion functionality” for “more sophisticated profiles,” such as Norrie’s specifically described “thickness” sensing camera.

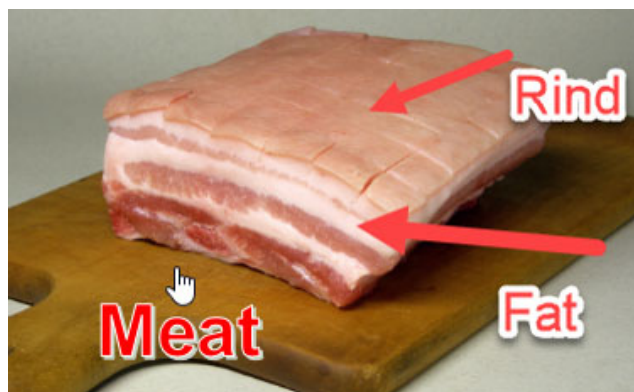
Third, the claims are rendered obvious by Johnson (filed May 14, 2004) in view of Belk (filed August 19, 1999). Johnson is one of many references teaching removal of a fat cover in food processing (without a camera), and Belk clearly teaches improved fat sensing and imaging techniques with a camera. It would have been obvious to add Belk’s camera sensing and imaging techniques to Johnson’s system for increased accuracy, quality, and functionality.

As shown in detail below, there is a high likelihood that Petitioner will prevail with respect to each of the challenged claims and, therefore, Petitioner request that the Board institute trial. Petitioner have paid the required fee under 37 C.F.R. §§ 42.15(a) and 42.103. Please assess any fee deficiency or credit to Deposit Account No. 232405.

## II. BACKGROUND OF THE '321 PATENT-AT-ISSUE

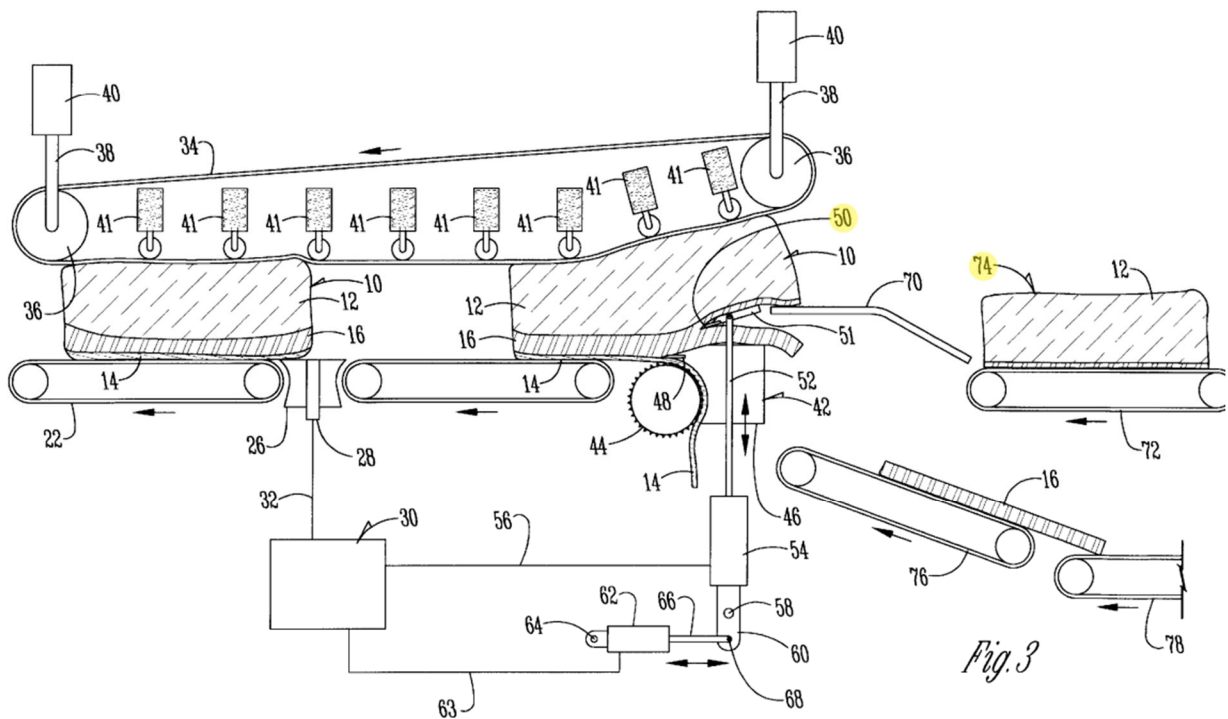
### A. Historical Automatic Fat Removal Machines

Fat removal machines, also referred to as de-fatting, de-rinding, or skinning machines, were well-developed by the time of the alleged invention around 2007. (See, e.g., EX1003, ¶¶44-50; EX1004, 1:20-27; EX1005, 1:29-36; EX1006; 1:30-40; EX1014, 2:3-10; EX1015, Abstract; EX1016, 1:18-25, 1:40-43.) Such machines were often designed to automatically remove the fat and rind/skin from meat. (EX1003, ¶¶44-79; EX1004, 1:20-27; EX1005, 1:19-36; EX1006; 1:30-40; EX1015, 2:18-24; EX1016, Abstract; EX1017, 1:40-43; EX1018, 1:18-25; EX1027, Abstract.) Automatic fat removal was known to be desirable to help increase efficiency and profit and to protect workers from injuries, for example. (See EX1003, ¶¶44-50; EX1004, 2:2-26; EX1006, 1:21-41; EX1014, 1:7-12; EX1016, 1:17-25.)



## B. Computer Controlled Cutting Blades

Before the alleged invention around 2007, fat removal machines existed that used computer controlled cutting blades based on sensor data to improve accuracy and yield. (EX1003, ¶¶45-79; *See, e.g.* EX1014, Abstract; EX1015, Abstract; EX1017, Abstract.) For example, one type of fat removal machine included “[a] cutting knife so that by moving the meat to be processed over the transportation surface, the cutting knife is continuously adjusted in height[.]” (EX1015, 1:43-45.)



EX1014, Fig. 3 (showing component 50: a trimming blade, and component 74: a trimmed meat portion).

It was known that removing the fat and skin from a meat product eases processing and increases palatability and value of the product. (EX1003, ¶¶44, 80-88; EX1007, Abstract, 1:19-32; EX1018, Abstract, 1:7-17.)

### C. Cameras and Imaging Devices to Measure Fat

It was also well-known to use sensor devices, including imaging devices, cameras, and software to automatically measure meat products for desirable and undesirable characteristics. (EX1003, 45-47, 169, 170; EX1007, 4:26-38; EX1018, 2:11-19.) A device could measure, for example, fat content, dimensions of the product, marbling, freshness, and bone position. (EX1003, ¶¶45-47, 80-88; EX1007, 4:26-38; EX1018, 3:63-4:9.)

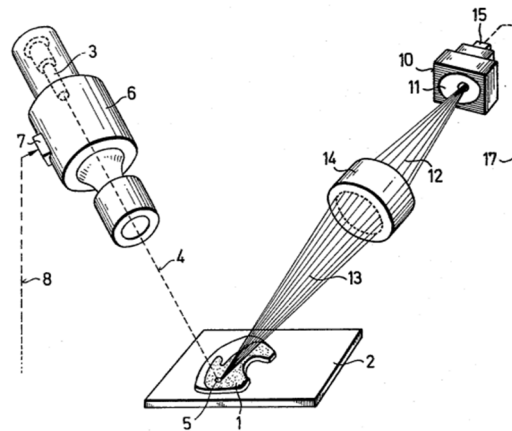


FIG. 1

EX1018, Figure 1.

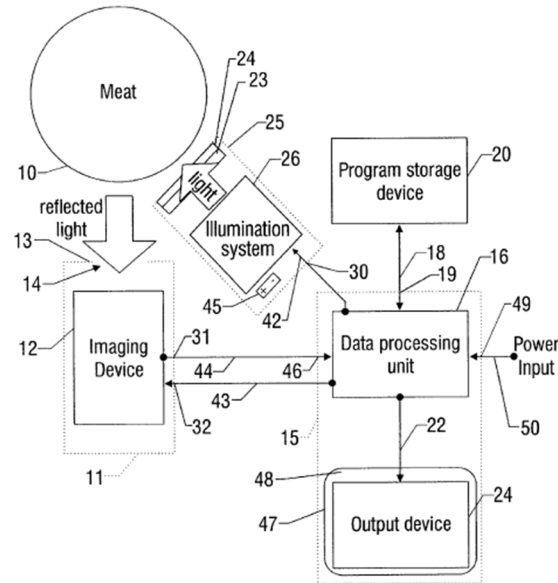


FIG. 1

EX1007, Figure 1.

Industrial machine developers were aware of various arrangements that allowed for (and in many cases used) the integration of imaging devices into automatic fat removal machines and skinners. (EX1003, ¶¶45-47, 169-174, 223-229; EX1004, Fig. 9, Abstract, 17:34-46; EX1005, Abstract, Fig. 4, 4:3-11; EX1006, 7:65-67.) This arrangement allowed for quick, automatic, and high-yield processing of meat products, replacing previous more cumbersome processes. (EX1003, ¶¶45-47, 173-174; EX1004, 2:55-64.)

For example, U.S. Patent No. 5,514,032 to Young discloses the automatic separation of fat from a meat product using a camera to detect the line separating the lean and the fat, and controlling a blade via a computer to cut along that line.

(EX1004, 3:60-4:16.) Another patent discloses a “cutting knife [that] may be adjusted in height under control of at least one sensing device which detects the separating plane between the meat and the . . . fat layer.” (EX1015, 1:36-41.) It was also known for an automatic fat removal machine to separate a fat cover layer based on a profile that reflected the contour of the fat trimming blade height over the length of the meat product. (EX1003, ¶¶48-64, 72-79, 127-132, 199-203; EX1004, 4:5-10, 17:4-14, 30-35; EX1014, 3:32-64; EX1016, 3:23-50, Fig. 9.)

#### **D. The Specification**

Nonetheless, the '321 patent attempts to claim invention of “a device for separating a layer of fat of a meat product from a premium cut part of a meat product by means of [a] type of measuring device.” (EX1001, Abstract.) The “underlying object of the invention is to provide a measurement device which allows a determination of the thickness of a fat cover of a meat product without damaging the meat product[.]” (*Id.*, 1:37-40.)<sup>1</sup> As described in the patent, the “fat cover” is the

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<sup>1</sup> Weber has asserted in the related litigation that the '321 patent is embodied by a Weber machine, the ASD 460, and provided a document purported to be the conception of the invention. (EX1009, 1-3.) The ASD460 is advertised as a

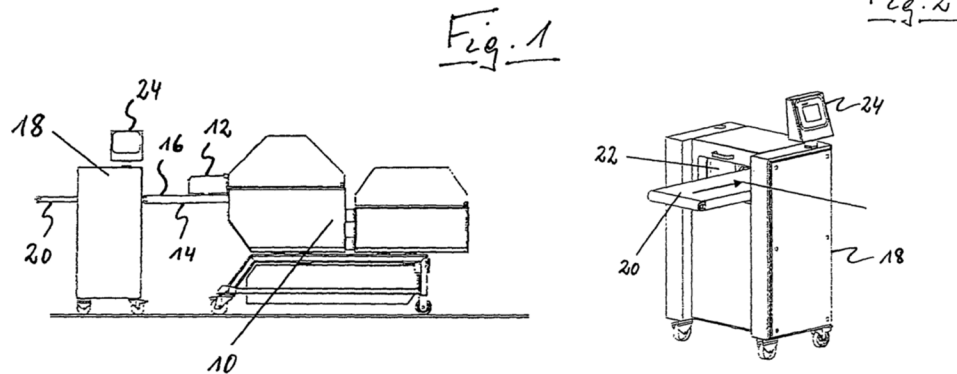
outer fat and rind/skin layer that is on top of a piece of meat, like the pork loin annotated above on page 3. (EX1001, 1:11-20; EX1003, ¶¶89-90.)

The meat product rests on a “support plane” with a “transport device” with a “first conveyor belt.” (*Id.*, 4:1-5.) The transport device supplies the meat product to a “cutting device” cutter bar. (*Id.*, 4:1-6.) The position of the cutter bar, in particular, its “height above the upper side 16 of the first conveyor belt 1[,] can be set in dependence on the thickness of the fat cover layer to be separated.” (*Id.*, 4:6-12.) The meat product is measured “in a continuous running process while the meat product[] moves through the measurement device” which is “positioned in front of the cutting device 10[.]” (*Id.*, 4:14-20.)

The '321 patent uses well-known components to allow automatic removal of the fat cover, such as adjustable blades and video cameras. It has only two generic figures.

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skinning/defatting machine that removes the fat cover from a meat product. (EX1009, 2; EX1010, 2; EX1011.)



In addition, the benefits touted by the '321 patent—namely that the “determination of the thickness of the fat cover advantageously takes place optically” —were already well-known in the food processing equipment industry. (EX1001, 1:45-46.) For example, Young teaches using a camera to detect the line separating the lean and the fat, and controlling a blade via a computer to cut along that line, thus separating the fat. (EX1004, 3:60-4:16.) Further, Norrie teaches using a camera to measure the thickness of the fat cover. (EX1005, 4:24-28.) Belk and Barten teach using a camera to measure fat content and location within a meat product. (EX1007, 8:59-63, 9:59-10:6, 10:43-51, 14:1-5, 15:25-31; EX1018, 6:23-31.)

#### **E. Independent Claims 1 and 14**

Independent claim 1 is representative of the challenged claims, shown below compared to independent claim 14:

| Claim 1                                                                                                                                                                                                        | Claim 14                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. An apparatus for separation of a fat cover of a meat product from a flesh component of the meat product, comprising:                                                                                        | 14. A method for separation of a fat cover of a meat product from a flesh component of the meat product, comprising:                                                                                          |
| [A] a measurement device for automatic determination of the thickness of the fat cover, wherein the determination of the thickness of the fat cover takes place in a contactless manner; and                   | [A] determining the thickness of the fat cover in a contactless manner;                                                                                                                                       |
| [B] cutting device coupled to the measurement device for automatic separation of the fat cover from the flesh component in dependence on the thickness determined by the measurement device                    | [B1] setting a position of a cutting blade in dependence on the determined thickness of the fat cover<br><br>[B2] in accordance with a preset travel profile and in dependence on a feed of the meat product, |
|                                                                                                                                                                                                                | [B3] wherein the setting comprises setting the position in a direction transverse to the feed direction; and                                                                                                  |
| [C] a cutting blade whose position is variable relative to a product support; and                                                                                                                              |                                                                                                                                                                                                               |
| [D] a control unit for control of the position of the cutting blade in dependence on the thickness determined by the measurement device,                                                                       |                                                                                                                                                                                                               |
| [E] wherein at least one travel profile is stored in the control unit in accordance with which the position of the cutting blade relative to the product support is to be set in dependence on a product feed. | [C] with the cutting blade, separating the fat cover from the flesh component, wherein during the separating, the cutting blade is at the set position according to the travel profile.                       |

Claim 14 shares a similar claim scope with claim 1. (EX1003, ¶¶91-94, 99, 152-153.) The claim 14 preamble is nearly identical to the claim 1 preamble except for reciting a method rather than an apparatus. Claim 14[A] is nearly identical to claim 1[A] in method form with the omission of “a measurement device.” Claim 14[B1] is nearly identical to Claim 1[B]. Claim 14[B2]’s elements are all present in Claim 1[E]. Claims 14[C] and 1[E] both claim a “travel profile” according to which the “position” of the “cutting blade” is “set.” Claim 1[E] also adds the requirements that (1) the travel profile be stored in the control unit, and that (2) the position of the cutting blade set by the travel profile is “in dependence on a product feed.” Claim 14[B3] is similar, though not identical, to claim 1[C].

Thus, the evidence cited herein for claim 1 applies to the corresponding elements of claim 14 with the additions addressed below. (EX1003, ¶¶91-94, 99, 152-153.)

#### **F. The Prosecution History**

The ’321 patent obtained allowance based on the Patent Owner’s representation that the prior art did not disclose the “travel profile” of element 1[E]. The Examiner rejected the claims as anticipated by U.S. Patent No. 7,918,718 to Christensen (EX1002, 358; *see also* EX1008). In response, the Applicant admitted Christensen teaches “measure[ment of] ‘the lean content . . . with great accuracy’”

and “derinding/fat trimming machines[.]” (EX1002, 393.) The Examiner allowed the claims of the ’321 patent only after the Applicant represented that Christensen did not teach the claimed “‘travel profiles’ (i.e. contours of the fat trimming blade)[.]” (See EX1002, 393, 421.)

#### **G. Priority Date**

The earliest possible priority date that the ’321 patent can claim the benefit of is October 24, 2007. (EX1001, Code 30.) All the cited prior art in the grounds is more than one year prior to this date.

### **III. LEVEL OF ORDINARY SKILL IN THE ART**

For the purposes of this proceeding, Petitioner applies the Board’s prior finding of the level of ordinary skill in the art (from a case between Provisur and Weber, Inc. a company related to Patent Owner Weber Maschinenbau GmbH Breidenbach) including a POSA that would typically have had (1) a bachelor’s degree (or equivalent) in mechanical engineering (or a similar field) and at least two years of experience working as an engineer (or similar role) on food processing and/or packaging systems (or in a similar field); or (2) at least seven years of experience working as an engineer (or similar role) on food processing and/or packaging systems (or in a similar field). See *Weber v. Provisur*, No. IPR2022-00599, Paper 65, \*10-11 (P.T.A.B. Aug. 23, 2023).

Further, the Board recognized a POSA would have had knowledge of the technical literature concerning food processing and packaging systems, including conveyor mechanisms (in both food processing and packaging machines, as well as other conveying machines) and may have worked as part of a multidisciplinary team and drawn upon not only her or his own skills, but of others on the team, e.g., to solve a given problem. *Id.* A POSA may have consulted with subject matter experts, such as in the fields of hygiene, meat separation, and/or software programming. (EX1003, ¶¶42-43.)

#### IV. CLAIM CONSTRUCTION

Provisur has construed the claim terms under *Phillips* according to their plain and ordinary meanings as understood by a POSA in view of the specification and prosecution history. No terms require an explicit construction to resolve the unpatentability controversy between the parties here. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

Indeed, Patent Owner has recently explained: “I think that most of our patent claims are plain and ordinary. They’re not difficult or complex claims or claim terms. I don’t envision burdening the court with much Markman at all.” (EX1028, *Provisur v. Weber III*, Sept. 5, 2023 Hearing Tr., 5.)

Nonetheless, for reference, Provisur presents below the claim constructions it has proposed in the district court to help resolve the infringement issues in that forum, along with the proposed constructions from Patent Owner Weber in the district court.

| <b>Claim Limitation</b>                                                                                                                | <b>Provisur's District Court Construction</b>                                            | <b>Weber's District Court Construction</b> |
|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------|
| Separation of the fat cover from the flesh component ('321 claim 1); separating the fat cover from the flesh component ('321 claim 14) | Removal of the outer layer of fat and skin from the meat                                 | Plain and ordinary meaning                 |
| Travel profile ('321 claims 1 and 14)                                                                                                  | Contour of the fat trimming blade height over the length of the meat product             | Plain and ordinary meaning                 |
| A cutting blade whose position is variable relative to a product support ('321 claim 1)                                                | The position of the cutting blade varies up and down above the product conveyor surface. | Plain and ordinary meaning                 |

Each of Provisur's proposed district court constructions is based on the plain and ordinary meaning under *Phillips*. Provisur does not request the Board to make these explicit constructions because Provisur does not believe these constructions are needed to resolve the unpatentability issues here. In any case, the cited prior art meets the claim terms under each of Provisur's and Weber's district court proposed constructions. (EX1003, ¶¶40-41.) Thus, Provisur applies the same

understanding of the claims in this proceeding before the Board and the district court.

## **V. IDENTIFICATION OF PRIOR ART**

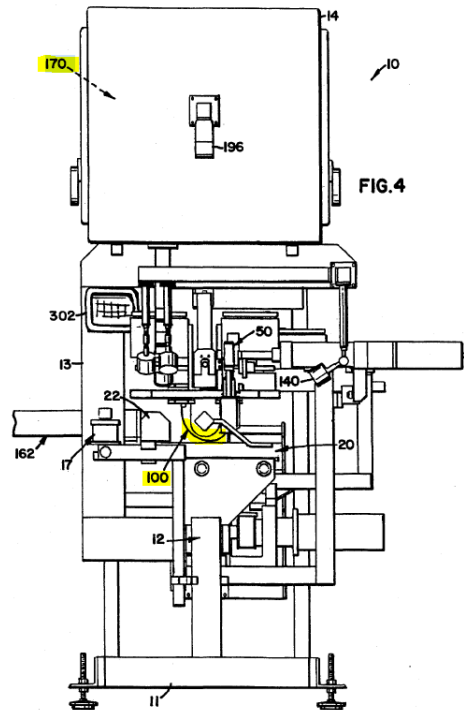
### **A. U.S. Patent No. 5,514,032 to Young (EX1004)**

Young is the base reference of Grounds 1 and 2. Young has, e.g.: [A] an imaging system 190 with cameras for determining thickness of the fat cover, [B] a variable knife assembly 100 with four axes of motion to separate fat, [C] a controller 172 that controls the position of the cutting blade based on the imaging system, and [D] “cutting profiles” generated and stored in controller 172. (EX1003, ¶¶51-64, 100-160; *see also* EX1004, 17:5-9.)

In Young, “[t]he loin separation apparatus generates customized cutting profiles and/or modifies standard cutting profiles for the loin knife assembly . . . based upon the particular dimensions, contours, etc. of a specific side of meat.” (EX1004, Abstract.)

As illustrated in Figure 4 below, Young describes “The primary components of control system 170 are a main controller 172, a motion controller 180, and an imaging/vision system 190. In particular, controller 172 coordinates the activities of motion controller 180 and imaging system 190 to actuate apparatus 10 to perform the loin separation processes. Cutting profiles for the scribe saw and loin pulling assemblies are preferably generated in controller 172 in response to image data

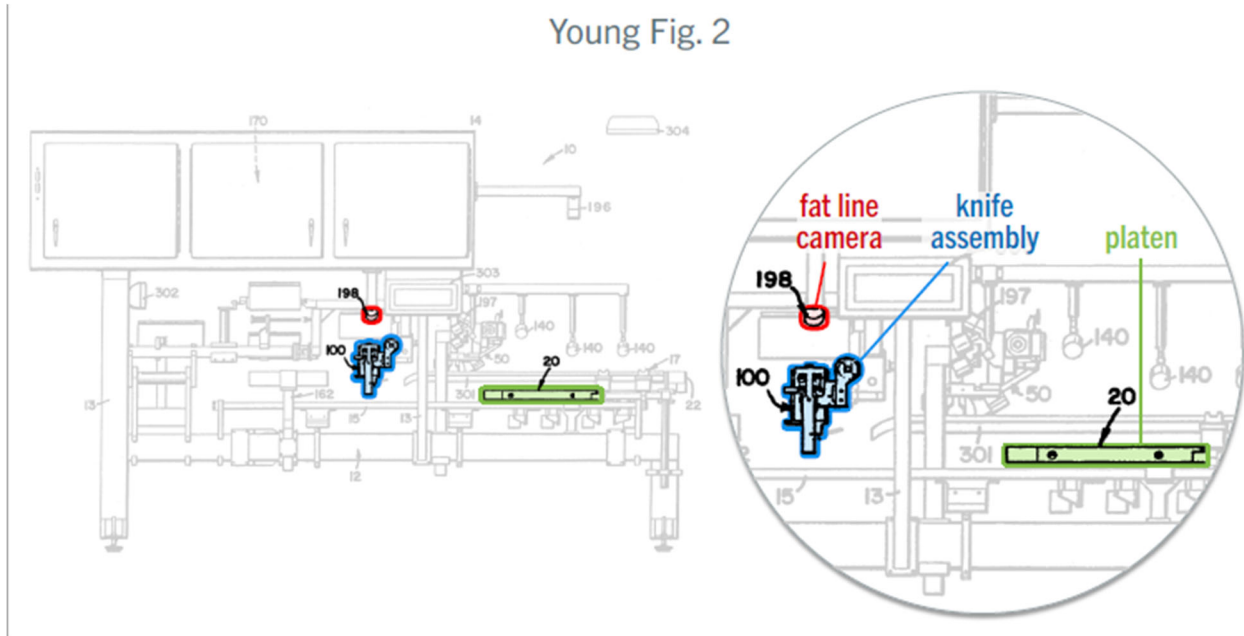
provided by imaging system 190 . . . controller 172 also communicates with motion controller 180 to coordinate the actions of scribe saw assembly 50 and loin knife assembly 100 as a [meat product] is conveyed through the apparatus.” (EX1004, 16:64-17:13.)



(EX1004, Fig. 4.)

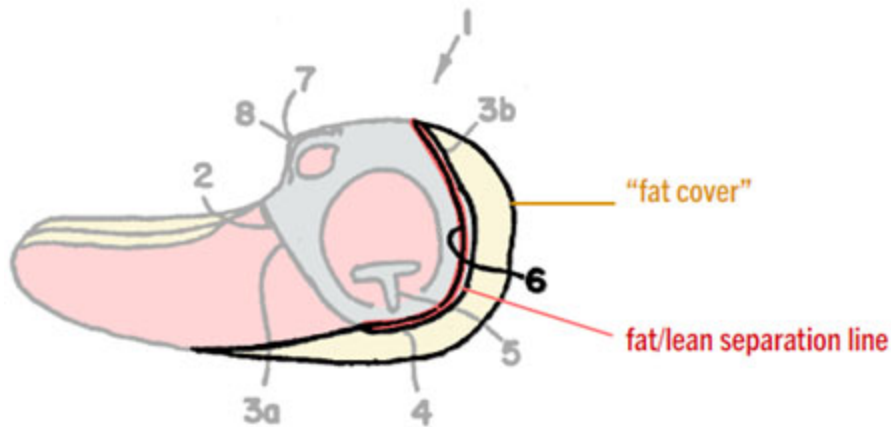
Figure 2 below shows that imaging system 190 includes a fat line camera 198 which “provide[s] dynamic (real-time) image data of the fat/lean separation line for the [meat product]. Controller 172 uses this information to dynamically modify the cutting profile of the loin knife assembly 100 so that the assembly follows a fixed

distance from the separation line to provide the optimum fat cover for the meat product].” (EX1004, 17:55-59, 18:33-40; EX1004, Fig. 2.)



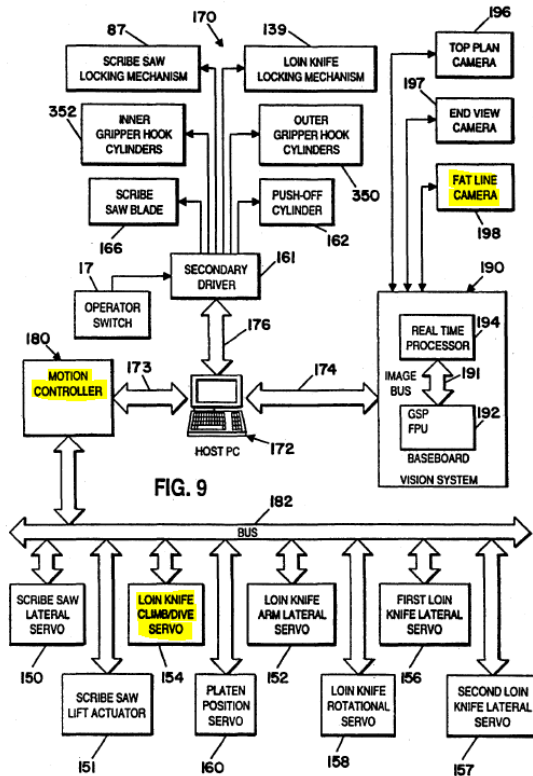
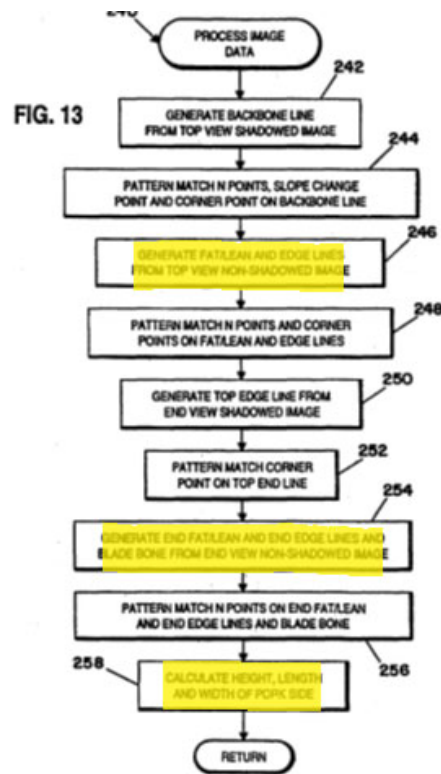
(EX1004, Fig. 2.)(annotated)

Annotated Figure 10c below shows an example of a path of the fat/lean separation line measured by fat line camera 198 and determined by controller 172 for removal of a fat cover. (See EX1004, 20:60-66, Fig. 10c.) The fat/lean separation line 6 shows the fat/lean interface, Young's knife assembly cuts a fixed distance from fat/lean separation line 6 to separate loin from belly, which is a fat cover in this example. (EX1004, 20:60-66.)



(EX1004, Fig. 10c)(annotated.)

Figure 9 below illustrates that controller 172 is coupled to knife assembly 100 and the camera that comprise imaging system 190. (EX1004, 17:55-59, 18:33-40. Figure 13 below shows that Young's imaging system 190 measures height, length, and width of the meat product and its fat cover portions. (EX1004, Fig. 13, 23:20-24, 24:10-20, 24:34-39.) Imaging system 190 uses routine 240 to calculate the fat/lean separation line and then calculates height, length, and width. (EX1004, Fig. 13, 23:20-24, 24:10-20, 24:34-39.)



During prosecution, neither the patentee nor the examiner cited or applied Young. (See EX1002.)

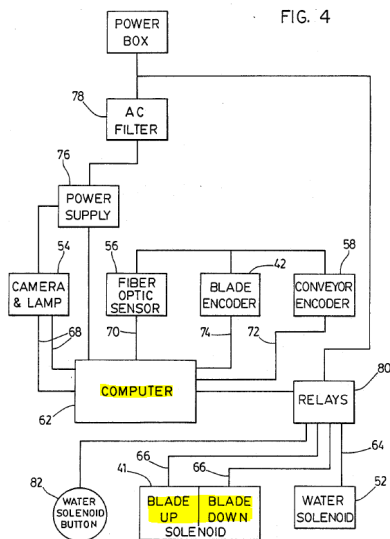
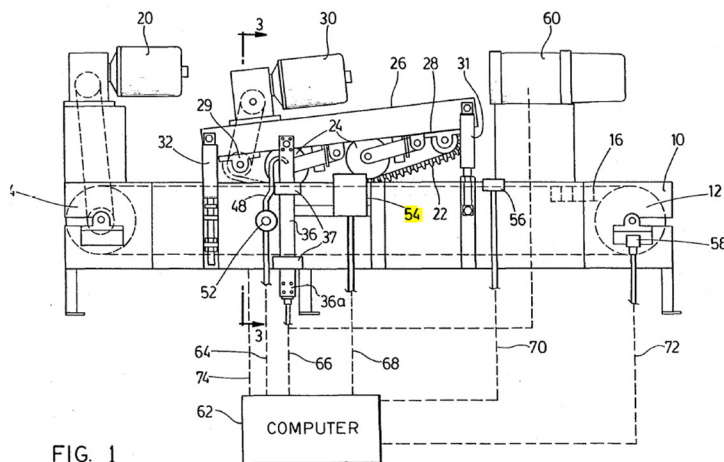
#### B. U.S. Patent No. 4,979,269 to Norrie (EX1005)

Norrie is the secondary reference of Ground 2, clearly teaching fat “thickness” sensing. Norrie relates to an apparatus for the separation of fat from a meat product using sensors (including cameras) to measure the thickness of the fat. (EX1005, Abstract, 4:27-28; *see also* EX1003, ¶¶65-71, 164-166.) Norrie’s apparatus uses a blade controlled by a computer which receives fat measurement signals to change

the blade's position and remove the fat layer from a meat product. (EX1005, 4:29-34.)

As shown in Figures 1 and 4 below show, a meat product is placed on conveyor 16 and conveyed towards knife blade 34. (EX1005, 3:15-24.) As the meat product is conveyed, it is imaged by camera 54 which “observe[s] the thickness of fat on the [meat product] lying on the conveyor.” (EX1005, 4:23-37.) The computer signals blade solenoid 41 to alter the position of blade 34 up or down based on the fat thickness sensing. (*Id.*)

During prosecution, neither the patentee nor the examiner cited or applied Norrie. (*See* EX1002.)



**C. U.S. Patent No. 6,929,540 to Johnson (EX1006)**

Johnson is the base reference of Ground 3. Johnson has e.g.,: [A] probe/sensor for determining the thickness of the fat cover, [B] a blade assembly 502 able to vary its position up and down as well as its blade pitch angle, [C] a controller that controls the blade assembly 502 based on the information received from the probe assembly, and [D] a lean/fat interface line, generated and stored in the controller, that shows the contours of a fat cover along which the blade assembly 502 cuts. (EX1003, ¶¶72-79, 177-238.)

Johnson describes “meat cut classification and fat trimming for sensing the thickness of a layer of fat of a cut of meat and various contours thereof as it travels along a conveyance and providing a fat thickness . . . information to a downstream system for performing a fat trimming operation.” (EX1006, Abstract). As shown below in Figure 1, and annotated Figures 5 and 8, Johnson uses blade assembly 502 (as part of conveyor assembly 108) to trim a fat layer from a meat product. (EX1006, 3:29-41.) Prior to trimming, a probe assembly measures the lean to fat interface contour to determine the location and thickness of fat along the meat product. (EX1006, 4:48-59.) Using these measurements, a controller sends signals representative of the lean to fat interface to variably position the blade assembly 108 to follow the lean to fat interface and trim off a layer of fat. (EX1006, 5:20-30.)

Johnson also recognizes that “Optical technology or infrared sensor technology can be utilized or any other appropriate sensor technology” to sense the fat to lean interface. (EX1007, 7:65-67.)

During prosecution, neither the patentee nor the examiner cited or applied Johnson. (*See* EX1002.)

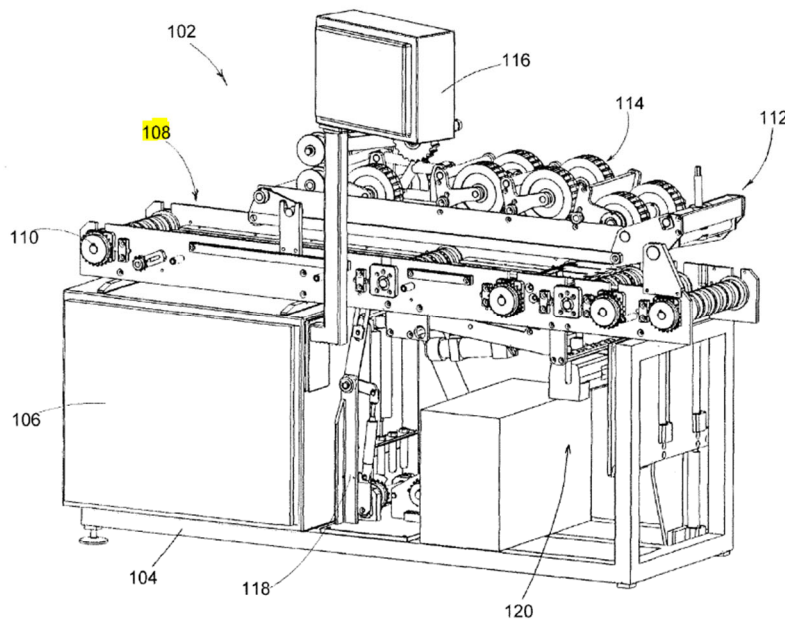
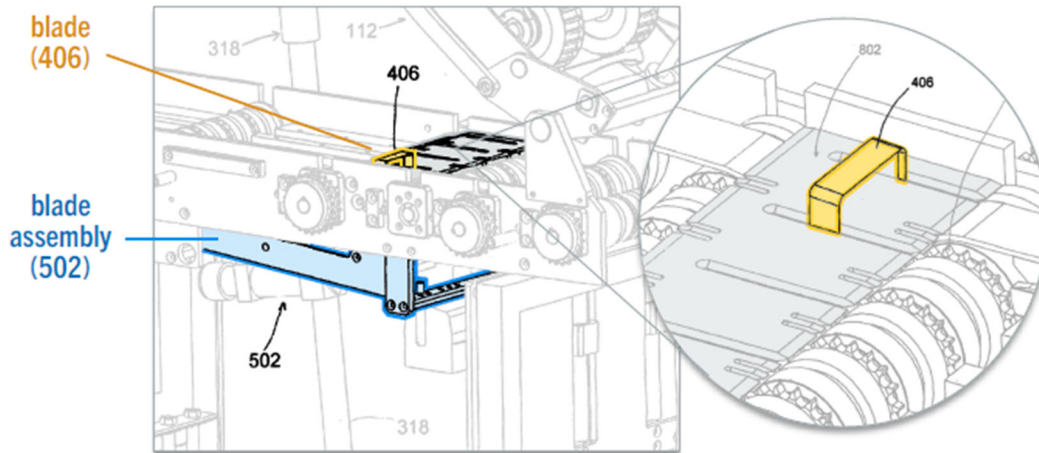


FIG. 1

(EX1006, Fig. 1.)



(EX1006, Figs. 5, 8.)

**D. U.S. Patent No. 6,198,834 to Belk (EX1007)**

Belk is the secondary reference of Ground 3, showing advanced fat thickness sensing techniques for imaging devices. Belk's imaging system has e.g.,: [A] an imaging device 12, [B] an illumination system 26, which may be any light emitting device known to a POSA according to Belk, and [C] a data processing unit 16. (EX1003, ¶¶80-88, 182-186.)

Belk is titled "Meat Imaging System for Palatability Yield Prediction." It describes a detailed image analysis system for determining the characteristics of a meat product such as its fat content. (EX1007, Abstract.) Belk explains that improved imaging systems were needed and made in the art to help improve USDA yield and palatability grading, for example. (EX1007, 2:40-54.)

As shown in Figure 3 below, Belk's imaging system collects image data and then analyzes it to measure a characteristic of interest, such as the presence and size of fat. (EX1007, 4:14-38, 9:59-10:11.) The system comprises any type of imaging system "known to those of skill in the art, such as a camera, tomographic imaging, radio wave imaging, microwave imaging, or a particle beam imaging[.]" (EX1007, 3:43-62.) In this area of interest, Belk is capable of measuring the length, width, and surface area. (EX1007, 15:22-31.)

During prosecution, neither the patentee nor the examiner cited or applied Belk. (See EX1002.)

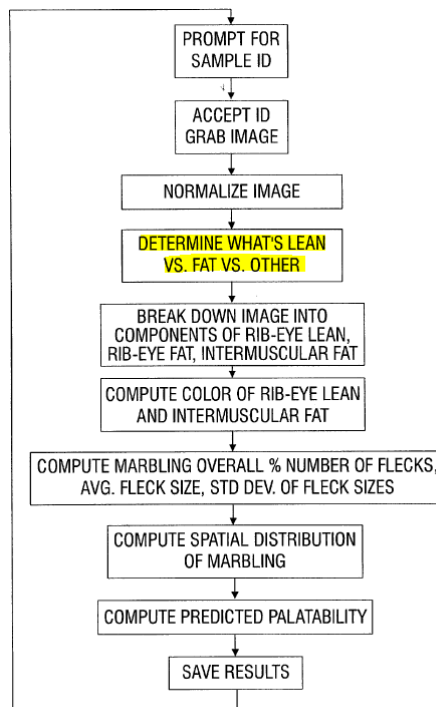


FIG. 3

(EX1005, Fig.3.)

**E. Other Evidence of the State of the Art (EX1008-1027)**

The references in EX1008-EX1027 further reflect the state of the art, level of ordinary skill in the art, common knowledge in the art, and/or common sense in the art, and are relevant to the background of the invention and the unpatentability analysis herein.

**VI. IDENTIFICATION OF CHALLENGE**

Petitioner requests *Inter Partes* Review of claims 1-6, 8, 10, 14-16 of the '321 patent and requests that the Board find these claims to be unpatentable based on the following specific statutory grounds and prior art.

**Ground 1:** U.S. Patent No. 5,514,032 to Young (EX1004) anticipates claims 1-6, 8, 10, 14-16 under § 102.

**Ground 2:** Young (EX1004) in combination with U.S. Patent No. 4,979,269 to Norrie (EX1005) renders obvious claims 1-6, 8, 10, 14-16 under § 103(a).

**Ground 3:** U.S. Patent No. 6,929,540 Johnson (EX1006) in combination with U.S. Patent No. 6,198,834 Belk (EX1007) renders obvious claims 1-6, 8, 10, 14-16 under § 103(a).

Petitioner's grounds are summarized in the chart below.

| Ground | Claims Challenged | 35 U.S.C. § | References |
|--------|-------------------|-------------|------------|
| 1      | 1-6, 8, 10, 14-16 | 102         | Young      |

| Ground | Claims Challenged | 35 U.S.C. § | References    |
|--------|-------------------|-------------|---------------|
| 2      | 1-6, 8, 10, 14-16 | 103(a)      | Young, Norrie |
| 3      | 1-6, 8, 10, 14-16 | 103(a)      | Johnson, Belk |

Grounds 1-3 are substantially different from the art and arguments previously considered by the Patent Office. During prosecution, neither the patentee nor the examiner cited or applied Young, Norrie, Johnson, or Belk.

Moreover, the art and arguments presented herein are not cumulative to those considered during examination. Unlike art included in this Petition, none of the art applied during examination disclosed a travel profile, for example. Thus, the same or substantially the same prior art or arguments were not previously presented to the Patent Office.

## **VII. GROUND 1: YOUNG ANTICIPATES CLAIMS 1-6, 8, 10, 14-16.**

Young anticipates and discloses all of the elements of claims 1-6, 8, 10, and 14-16, generally including: [A] a measurement device for determining thickness of the fat cover, [B] a cutting blade whose position is variable, [C] a control unit that controls the position of the cutting blade in dependence on the measurements made by the measurement device, and [D] a travel profile stored in the control unit, as reflected below in the following exemplary summary chart for Young. (EX1003, ¶¶51-64.)

| <u><b>Claim Language</b></u>               | <u><b>Exemplary Young Disclosures</b></u>                                |
|--------------------------------------------|--------------------------------------------------------------------------|
| Apparatus for separation                   | Loin separation apparatus 10                                             |
| Measurement device                         | Imaging system 190 including several cameras such as fat line camera 198 |
| Cutting device/cutting blade               | Knife assembly 100 with U-shaped blade 121 and/or scribe saw assembly 50 |
| Control unit                               | Controller 172, motion controller 180                                    |
| Variable position relative to product feed | Vertical axes of motion above platen 20                                  |
| Travel profile                             | Cutting profile (generated in controller 172)                            |

## **A. Independent Claim 1**

### **1. Preamble**

To the extent the preamble is considered a limitation on the scope of the claims, Young discloses “[a]n apparatus for separation of a fat cover of a meat product from a flesh component of the meat product.” (*See, e.g.*, EX1003, ¶¶100-102.)

Young’s title is “[a] loin separation apparatus and method of operation therefor.” (EX1004, Title.) “FIGS 1-4 show a preferred loin separation apparatus 10 consistent with the principles of the invention.” (*Id.*, 5:47-55.)

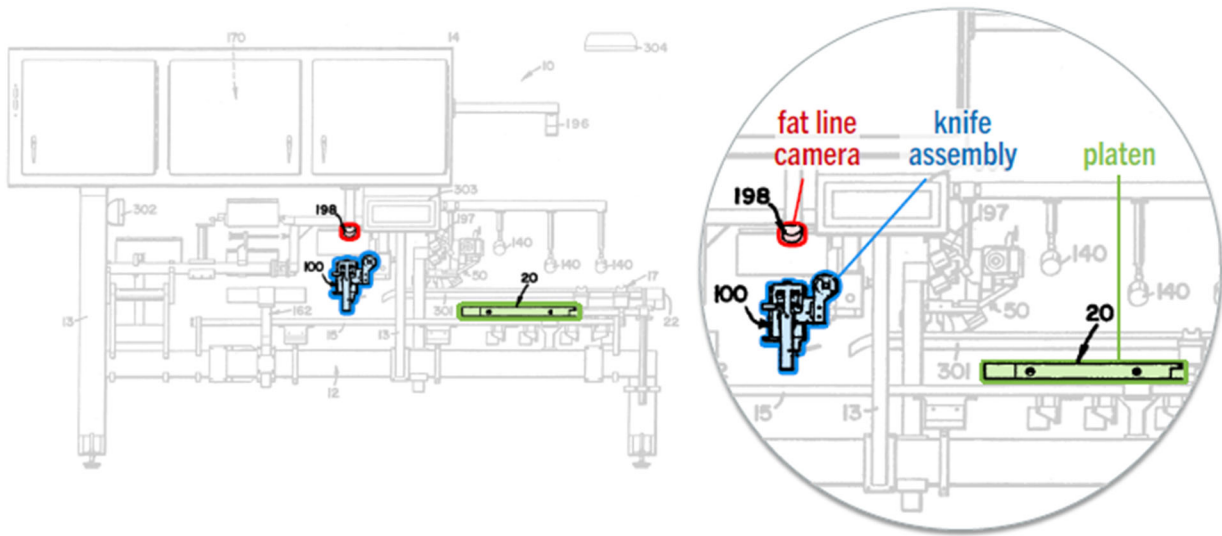
For example, “[a] loin knife assembly 100 is used to separate the pork loin from the pork belly[.]” (*Id.*, 10:35-37.) “Through control of the knife blade along several axes, assembly 100 preferably produces an optimum separation between loin and belly, with a desired fat covering left on the loin.” (*Id.*, 10:39-42; *see also id.*,

1:24-27, 1:38-67, 20:26-36, Figs. 10a-c.) In addition, Young states that its invention may be applied to “other butchering operations, as well as to other forms of meat including beef, lamb, veal, etc.” (*Id.*, 6:53-61.)

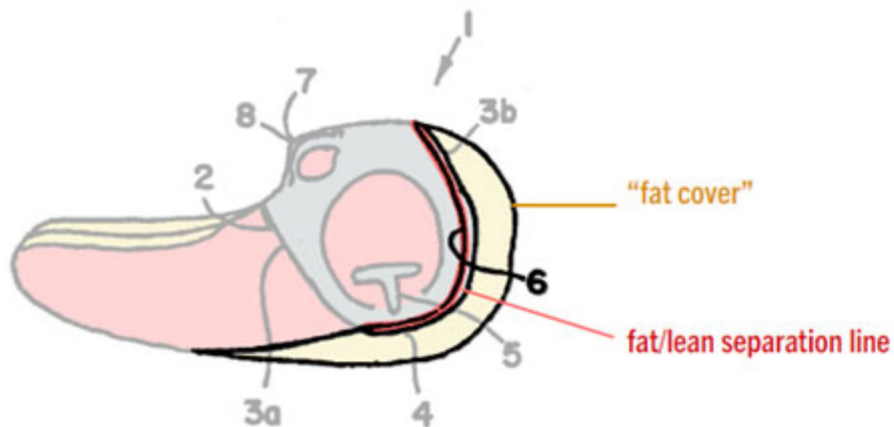
For example, the claimed “fat cover” corresponds to Young’s “belly” layer that is removed along with fat and skin, and the claimed “flesh component of the meat product” corresponds to Young’s “loin.” (EX1003, ¶¶108-109; EX1004, Fig. 10c, 20:28-37.) As an example, Young states it can remove a fat covering layer thicker than 0.1 inch, and “[o]ther fat thicknesses may be desired in the alternative.” (EX1004, Fig. 10c, 20:28-37, 20:55-66.) A POSA would have appreciated that Young can fully remove the fat cover layer, and/or remove various thicknesses of a fat cover layer, depending on the application and customer need. (EX1003, ¶¶100-102, 108-113.)

Thus, Young teaches the preamble.

Young Fig. 2



(EX1004, Fig. 2.)

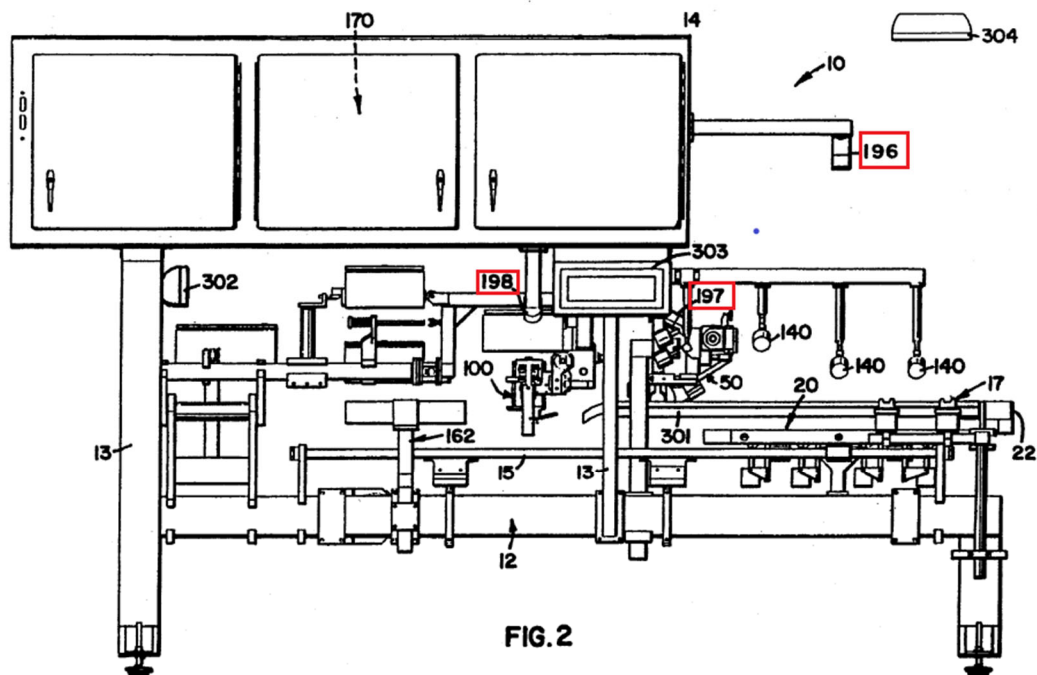


(EX1004, Fig. 10c.)

## 2. Element 1[A]

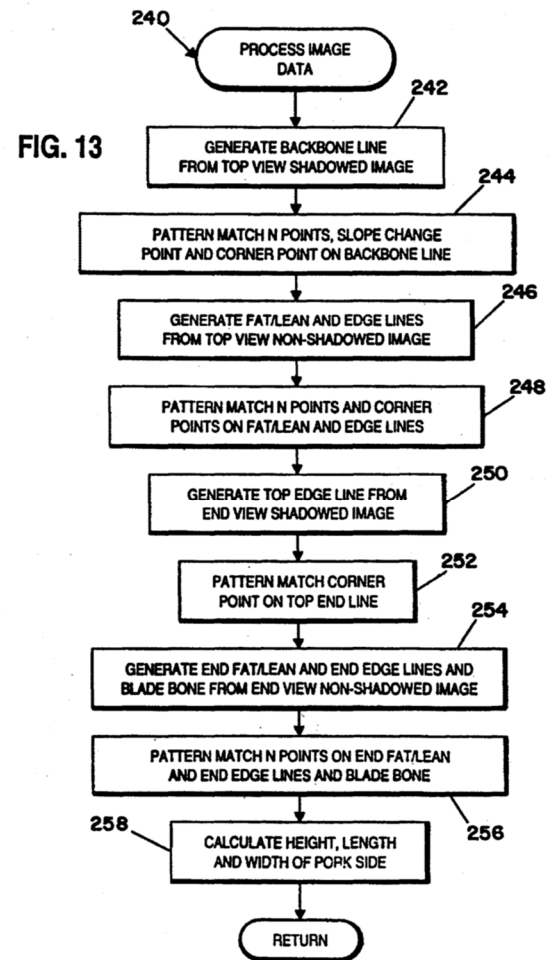
Young discloses “a measurement device for automatic determination of the thickness of the fat cover, wherein the determination of the thickness of the fat cover takes place in a contactless manner.” (See, e.g., EX1003, ¶¶103-107.)

Young's "measurement device..." is the imaging system 190, which may include one or more cameras, such as top plan camera 196, end view camera 197, fat line camera 198, as well as Young's controller 172 which includes a visioning processor. (EX1003, ¶¶104-105; EX1004, 17:55-62, 18:46-56, 17:34-46.) The annotated Figure 2 below shows the position of these cameras. (EX1004, Fig. 2.)



(EX1004, Fig. 2.)

In particular, the Young imaging system 190 makes an automatic determination of the thickness of the fat cover, for example, through analysis of “a backbone line and a fat/lean separation line on the side of meat.” (EX1003, ¶¶104-106; EX1004, 18:33-45; *see also id.* 4:26-30.) Figure 13 shows that imaging system 190 “generate[s] fat/lean and edge lines” and “calculate[s] height, length and width of [the meat product]” during image processing routine 240. (EX1004, Fig. 13, 22:53-24:38.) Following generation of the fat/lean line, the height, length and width of the meat product are calculated. (*Id.*) Young also calculates separate measurements of other portions of the meat product, such as the height of the ribs. (EX1004, 22:53-65, 22:10-22, 24:34-39, Fig. 13.)



More specifically, Young’s fat/lean separation line camera 198 dynamically captures image data that is processed by real time processor 194. (EX1003, ¶¶104-106; EX1004, 17:48-54, 18:33-36.) Images are processed via controller 172’s image processing routine 240, which corresponds to the “automatic determination of the

thickness of the fat cover.” (*See, e.g.*, EX1003, ¶¶104-105; EX1004, 22:41-45.) After the data is collected, controller 172 performs a full image analysis, including generation of a fat/lean separation line which “will be distinguished by the interface between the loin meat and the *fat covering*[.]” (EX1004, 23:11-24)(emphasis added.) Controller 172 then performs an additional step where height, width and, length of the meat product is calculated, using the “known values calculated in the aforementioned image processing steps[.]” (EX1004, 24:10-15.) Controller 172, via routine 240, also calculates the height, width, and length of other portions of the meat product such as the distance between the fat/lean separation line, and the edge of the meat product related to the thickness of the fat cover. (EX1004, 22:53-65, 22:10-22, 24:34-39, Fig. 13.)

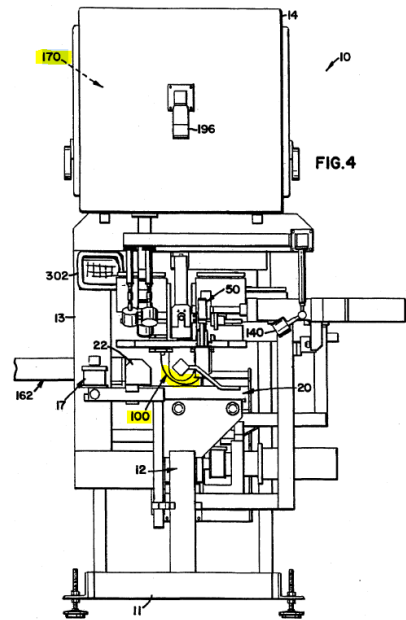
This analysis results in Young’s determination of the thickness of the fat covering (e.g., belly portion) and its subsequent separation from the meat product. (EX1003, ¶¶105-111; EX1004, 4:25-30, 10:34-43; *see also* EX1004, 23:11-24.) This determination is made by the camera without human intervention. (*See, e.g.*, EX1003, ¶¶105-106; EX1004, 18:33-42.) This determination is made in a contactless manner because the camera imaging does not touch the meat. (*See, e.g.*, EX1003, ¶¶106; EX1004, 18:33-42.)

Thus, Young teaches element 1[A].

### 3. Element 1[B]

Young discloses a “cutting device coupled to the measurement device for automatic separation of the fat cover from the flesh component in dependence on the thickness determined by the measurement device.” (*See, e.g.*, EX1003, ¶¶108-113.)

Young’s “cutting device...” includes knife assembly 100. (EX1003, ¶¶109-111.) Young states that “knife assembly 100 is used to separate the pork loin from the pork belly. . . . Through control of the knife blade along several axes, assembly 100 preferably produces an optimum separation between loin and belly, with a desired fat covering left on the loin.” (EX1004, 10:33-53.) Young states “preferably .1 inch [thick] fat covering sufficiently keeps the loin from drying out . . . Other fat thicknesses may be desired in the alternative [such as no fat covering remaining].” (EX1004, 10:33-53, 20:60-66 Figs. 1, 4, 7a-c.) As stated above, Young can fully remove a fat cover layer of a range of thicknesses, depending on the application and customer need. (EX1003, ¶¶109.)



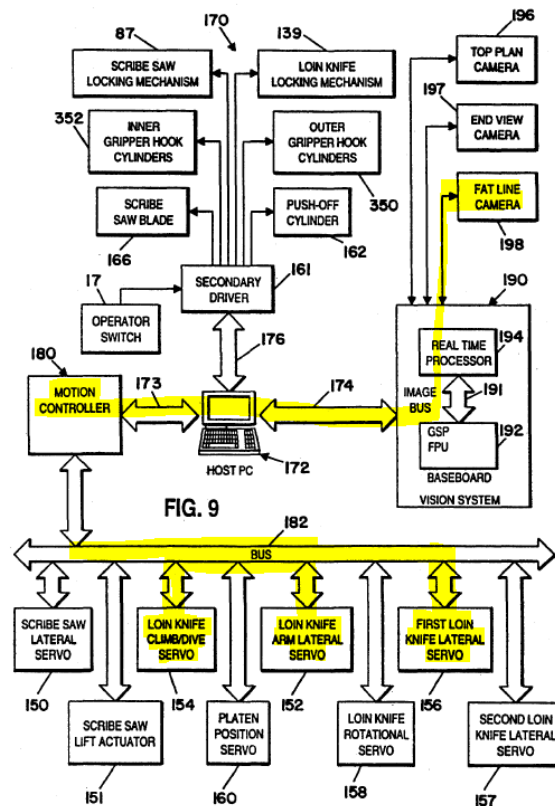
(EX1004, Fig. 4.)

Young's imaging system 190 corresponds to the claimed "measurement device." (EX1003, 103-104.) The loin knife assembly 100 is coupled to the measurement device, including the fat/lean separation camera 198, via the Controller 172. (See, e.g., EX1003, ¶¶110-111; EX1004, 18:33-40; see also EX1004, 4:1-5.) For example, Young discloses "a controller, coupled to the . . . vertical moving means and the first and second lateral moving means, for controlling the movement of the loin knife assembly [is also], coupled to the imaging system[.]" (EX1004, 3:23-26, 4:29-31.) Young states that imaging system 190 measures the thickness of a fat cover via its cameras, such as "the fat/lean separation line camera 198[.]

[Which] is primarily used to provide dynamic (real-time) image data of the fat/lean separation line for the pork side proximate the backbone.” (EX1004, 18:33-36.)

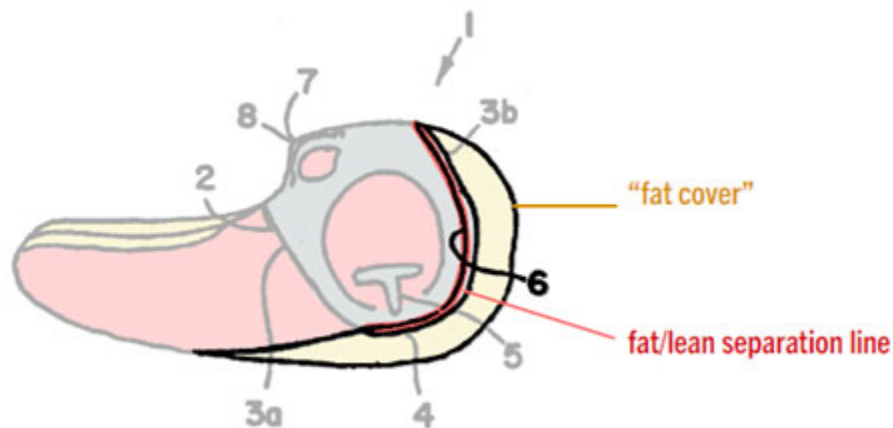
Young explains that “[c]ontroller 172 uses this information to dynamically modify the cutting profile of loin knife assembly 100 so that the assembly follows a fixed distance from the separation line to provide the optimum fat cover for the loin.”

(*Id.*) Figure 9 illustrates that the loin knife is connected to and sends information to controller 172 and the imaging system 190 over a Bus.



(EX1004, Fig. 9.)

Young's separation operation depends on the thickness determined by the imaging system 190. (EX1003, ¶¶110-113.) For example, imaging system, 190 "controls several cameras that provide image data" including "fat/lean separation line camera 198, [which] is primarily used to provide dynamic (real-time) image data of the fat/lean separation line for the pork side proximate to the backbone. (EX1004, 17:55-58, 18:33-38.) Controller 172 uses this thickness determination to "dynamically modify the cutting profile of loin knife assembly 100[.]" (*Id.*, 18:33-40, Fig. 13.) In this way, Young teaches removal of the outer layer of fat and skin from the meat based on the thickness of the fat cover as measured by imaging system 190. (EX1003, ¶¶108-113.)



(EX1004, Fig. 10c)

Thus, Young teaches element 1[B].

#### 4. Element 1[C]

Young discloses “a cutting blade whose position is variable relative to a product support[.]” (EX1003, ¶¶114-119.)

Young’s “cutting blade” includes the knife assembly 100 with four axes of motion for knife blade 121. (EX1003, ¶¶115-116.) For example, knife assembly 100 moves vertically up and down above platen 20 that supports the meat product. (EX1004, 5:52-55, 21:13-16.) Young discloses that “platen 20 transport[s] a [meat product] between the different stations in apparatus 10. (EX1004, 6:15-17.) Young’s “platen 20” corresponds to the claimed product support. (EX1003, ¶115.)

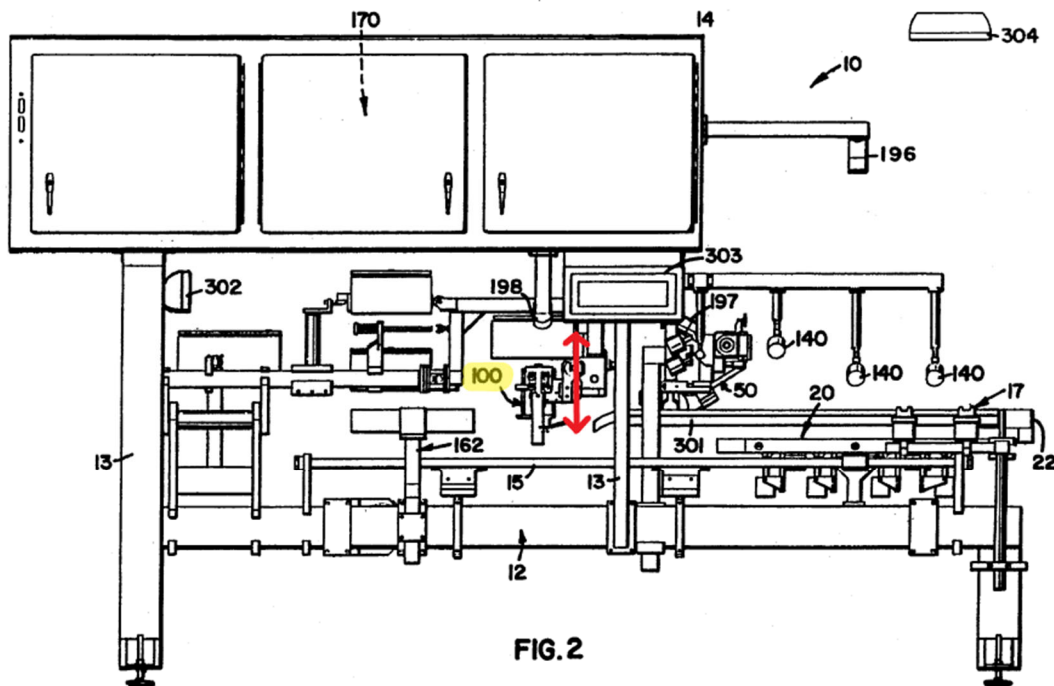


FIG. 2

In particular, “[a] first or vertical axis of motion is defined by lateral axis 119b and controlled by a first moving means (servo 154) displacing vertical member 114b of arm 114. This axis of motion provides climb/dive or vertical displacement (i.e., to raise or lower the knife blade (from the product support, i.e. platen 20 or the conveyor].)” (EX1004, 14:21-26.) The blade also moves in two other axes for a total of four variable axes of movement. (EX1004, 5:52-55, 21:13-16, 14:21-26.) In other words, the position of the cutting blade varies up and down above the platen 20 and side to side relative to platen 20. (EX1003, ¶¶116-118.) Therefore, Young’s knife assembly’s position is variable relative to platen 20, a product support in this example. (EX1003, ¶¶114-119.)

Thus, Young discloses element 1[C].

## **5. Element 1[D]**

Young discloses “a control unit for control of the position of the cutting blade in dependence on the thickness determined by the measurement device[.]” (*See, e.g.,* EX1003, ¶¶120-126.)

Specifically, Young’s “control unit...” includes controller 172. (EX1003, ¶121.) Controller 172 corresponds to the claimed control unit. (EX1003, ¶121.) Controller 172 controls the position of knife assembly 100. (*Id.*) The position of the blade, controlled by the Controller 172, depends on the thickness determined by

the information received from imaging system 190. (EX1004, 4:40-42, 5:62-67, 18:36-40.)

For example, after imaging system 190 measures the thickness of the fat cover, it sends signals representative of the thickness to controller 172. (EX1004, 17:24-34.) Controller 172 receives these signals and generates cutting profiles based on imaging system 190's measurements. (*Id.*, 17:7-10.) After generating cutting profiles, controller 172 sends corresponding signals to knife assembly 100. (*Id.*, 17:7-8.) These signals cause knife assembly 100 to change its position. As knife assembly 100 changes its position it cuts along a fixed distance from the fat/lean separation line, i.e. the cutting profile. (*Id.*, 18:36-40.) The cutting profiles and signals generated by controller 172 are based on the fat thickness measurements taken by imaging system 190. (EX1003, ¶¶123-124; EX1004, 17:1-12, 18:33-46.) Therefore, knife assembly 100 is changing its position in dependence with the thickness measurements determined by imaging system 190. (EX1003, ¶¶120-126; *see also* EX1004, 17:1-12, 18:33-46.)

Thus, Young teaches element 1[D].

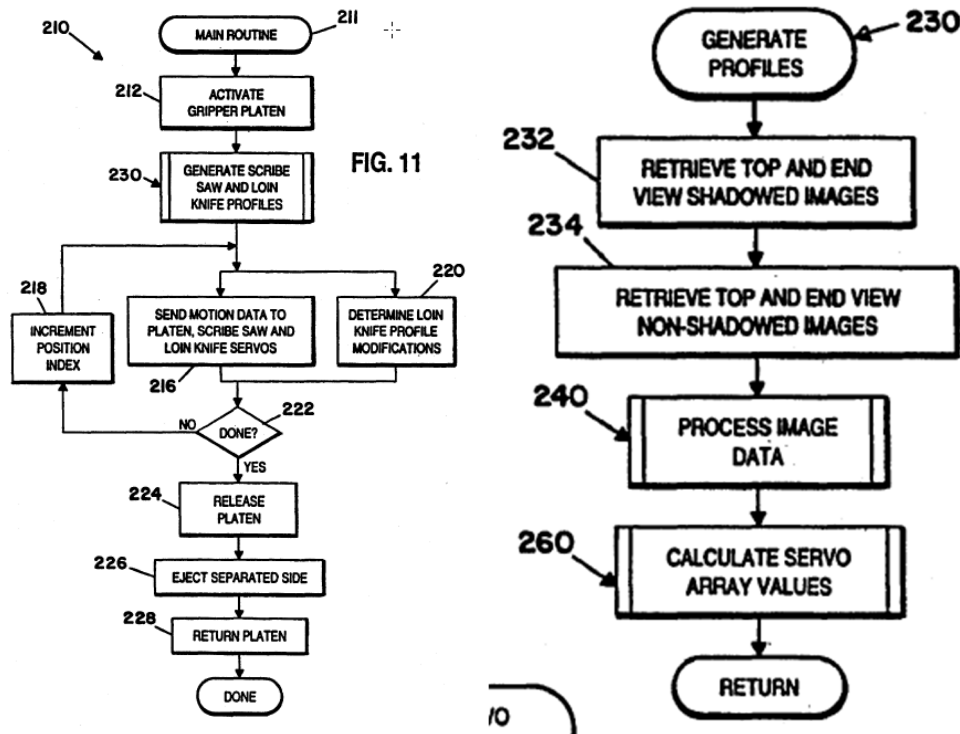
## 6. Element 1[E]

Young discloses “wherein at least one travel profile is stored in the control unit in accordance with which the position of the cutting blade relative to the product support is to be set in dependence on a product feed.” (EX1003, ¶¶127-132.)

Young refers to the claimed “travel profile” as a “cutting profile.” (EX1003, ¶128.) Young’s cutting profile corresponds to the claimed travel profile. (EX1003, ¶¶128-129.) Young states its cutting profile controls the vertical position of the cutting implement relative to the fat/lean separation line. (EX1004, 4:5-10, 17:4-14, 30-35.) Controller 172 generates cutting profiles for the cutting implements based on data received by imaging system 190. (*Id.*, 17:4-8.) After the “profiles are calculated, controller 172 also communicates with motion controller 180 to coordinate the actions of scribe saw assembly 50 and loin knife assembly 100 as the meat product is conveyed through the apparatus. (EX1004, 17:1-12.)

More specifically, as shown in Figures 11 and 12 below, Young’s “travel profile” includes “profiles” generated in software “routine 230” (also referred to as “block 230”) which occurs after the meat product is placed on platen 20. (*See, e.g.*, EX1003, ¶129; EX1004, Fig. 11, 21:11-13, 21:23-33.) These profiles are stored as arrays of data points within controller 172. (*See* EX1004, 21:25-27.) The profiles are generated by routine 230 via the image processing analysis of preferably two

separate images of the top and end views of the meat product. (EX1004, 22:33-41.) Following this analysis, a plurality of points are generated along the fat/lean separation line and noise reduction, thresholding, and convolution on performed. (EX1004, 22:58-61, 23:1-4, 23:12-26.) “In general, the fat/lean separation line will be distinguished by the interface between the loin meat and the fat covering, which is typically much lighter than meat.” (*Id.*) Young, therefore, discloses a cutting profile having the contour of the fat trimming blade height over the length of the meat product. (EX1003, ¶¶130-132.) Young further discloses that knife assembly 100’s position is set according to the cutting profile. (EX1003, ¶¶130-131.)



(EX1004, Fig. 11, Fig. 12.)

Thus, Young teaches element 1[E].

**B. Dependent Claims 2 and 3**

Young discloses claim 2 “wherein the determination of the thickness of the fat cover takes place optically” and claim 3 “further comprising a light detector for the detection of light reflected at the meat product.” (*See, e.g.*, EX1003, ¶¶133-138.)

For example, as discussed above, Young’s thickness determination utilizes imaging system 190, with one or more cameras, which are optical devices. (EX1003, ¶¶104-106, 134; EX1004, 17:55-62, 18:46-56, 17:34-46.) Therefore, Young discloses the determination of the thickness of the fat cover takes place optically. (EX1003, ¶¶134-135.)

Young also discloses that “It has been found that certain types of supplemental lighting may also be used to enhance the imaging capabilities of imaging system 190” such as “lighting systems 302 and 304.” (EX1003, ¶¶136-137; EX1004, 18:56-65.) In addition, “[l]ight source 140 may be used to project high intensity light on the top surface of the pork side to create a clear delineation along the top edge of the end of the pork side.” (EX1004, 18:26-28.) Young discloses that these additional light sources are used to illuminate the meat product so that imaging system 190 may take both illuminated and shadowed image data to aid in image processing. (EX1003, ¶137; EX1004, Fig. 12, 33-41.) Because Young’s cameras are detecting

the difference between illuminated and shadowed image data, they accordingly function as light detectors. (EX1003, ¶¶137-138.) Therefore, Young discloses a light detector for the detection of light reflected at the meat product. (EX1003, ¶¶136-138.)

Thus, Young discloses dependent claims 2 and 3.

#### **C. Dependent Claim 4**

Young discloses a “light detector [which] comprises a camera.” (*See, e.g.*, EX1003, ¶¶133-141.)

As discussed above, Young’s imaging system 190 corresponds to “light detectors [which] comprises a camera.” (EX1003, ¶¶136-141.) Imaging system 190 controls “several cameras that provide image data regarding each of [meat product] processed by apparatus 10: a top plan camera 196, an end view camera 197, and a fat line camera 198.” (EX1004, 55-62.) These cameras process images that are brightly lit, as well as images that are shadowed, and thus are able to detect light. (EX1003, ¶140; *see also* EX1004, 22:33-52.)

Thus, Young discloses dependent claim 4.

#### **D. Dependent Claim 5**

Young discloses “further comprising a light source configured to illuminate a region of the meat product.” (*See, e.g.*, EX1003, ¶¶142-144.) As mentioned above, Young teaches “It has been found that certain types of supplemental lighting may

also be used to enhance the imaging capabilities of imaging system 190” such as “lighting systems 302 and 304.” (EX1003, ¶¶139-141; EX1004, 18:56-65.) In addition, “Light source 140 may be used to project high intensity light on the top surface of the pork side to create a clear delineation along the top edge of the end of the pork side.” (*Id.*, 18:26-28.)

Thus, Young discloses dependent claim 5.

#### **E. Dependent Claim 6**

Young discloses “wherein the light source comprises at least one light emitting diode.” (EX1003, ¶¶145-148.)

The Young “light source” corresponds to, e.g., “lights 140” that project high intensity light against the top surface of the meat product. (*See, e.g.*, EX1003, ¶¶146-147; EX1004, 18:16, 18:26-32, Fig. 1.) The lights 140 may be used in a variety of positions, but in all positions illuminates a surface of the meat product. (EX1004, 18:11-17.) This positioning allows for different dimensional data to be captured. (*Id.*) Young also discloses lighting system 302 and lighting system 304 to illuminate the meat product. (EX1004, 18:60-65.) Young Figure 1 illustrates the lights 140 illuminating the meat product.

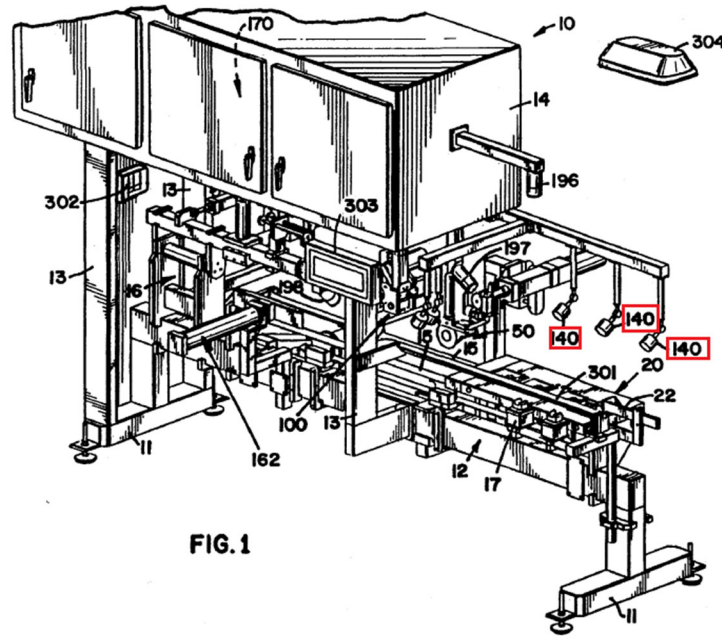


FIG. 1

Young states that it is preferred that lights 140 be a lighting system that uses “light wavelengths in the order of 380 to 760 nanometers . . . (more preferably about 550 to 600 nanometers), which may be provided by different lighting systems[.]” (EX1004, 18:65-19:2.) A POSA would have known by the time of invention that light emitting diodes produce light within this wave length range, and therefore are within Young’s disclosure. (EX1003, ¶147; EX1020, 2-3; EX1004, 18:65-19:2.) Additionally, by the priority date of the ’321 patent, light emitting diodes were well-known in the art and had significant advantages. (EX1003, ¶147; EX1025, 18; EX1017, 2:31-33; EX2016, 4; EX1027, 2:14-16; *see also* EX1024, 1-2.). Specifically, light emitting diodes are low cost and very efficient. (EX1003, ¶147.)

Therefore, a POSA would have been aware of and motivated to use them when implementing Young's lights 140. (EX1003, ¶¶145-148.)

Thus, Young discloses dependent claim 6.

#### **F. Dependent Claims 8 and 10**

Young discloses claim 8 “further comprising a transport device configured to transport the meat product through the measurement device” and claim 10 “wherein the transport device further configured to supply the meat product to the cutting device.” (*See, e.g.*, EX1003, ¶¶149-154.) “A gripper platen 20 is provided which supports a pork side and transports it throughout the different operations in the loin separation process.” (EX1004, 5:52-55.) Platen 20 corresponds to the claimed transport device. (EX1003, ¶¶115, 153.) Therefore, platen 20 transports the meat product both through imaging system 190, i.e. the measurement device, and knife assembly 100, i.e. the cutting device. (EX1003, ¶¶149-154.)

Thus, Young discloses dependent claims 8 and 10.

#### **G. Independent Claim 14**

As discussed above in section VII.A, Young anticipates the subject matter a whole of claim 1. The evidence for claim 1 preamble, [A], [B], [D], [E] applies here to disclose the subject matter of the corresponding elements of the claim 14. (*See, e.g.*, EX1003, ¶¶155-157.)

The claim 14 preamble is nearly identical to the claim 1 preamble except for reciting a method rather than an apparatus. (*Id.*) Claim 14[A] is nearly identical to claim 1[A] in method form with the omission of “a measurement device.” (*Id.*) Claim 14[B1] is nearly identical to claim 1[B]. (*Id.*) Claim 14[B2]’s elements are all present in Claim 1[E]. Claims 14[C] and 1[E] both claim a “travel profile” according to which the “position” of the “cutting blade” is “set.” (*Id.*) Claim 1[E] also adds the requirements that (1) the travel profile be stored in the control unit, and that (2) the position of the cutting blade set by the travel profile is “in dependence on a product feed.” (*Id.*) In addition, Young anticipates the additional requirements of claim 14[B3]. (EX1003, ¶¶155-160.)

### **1. Element 14[B3]**

Young discloses claim 14[B3] “wherein the setting comprises setting the position in a direction transverse to the feed direction.” (EX1003, ¶¶158-160.)

Young’s “cutting blade” includes the “U-shaped blade” of the knife assembly 100 with four axes of motion. (*See, e.g.,* EX1003, ¶159.) For example, this U-shaped blade moves vertically up and down above the platen 20 that supports the meat product. (EX1004, 5:52-55, 21:13-16.) Young’s “platen 20” corresponds to a claimed product support. (EX1003, ¶¶115, 59; *see* EX1004, Fig. 2.)

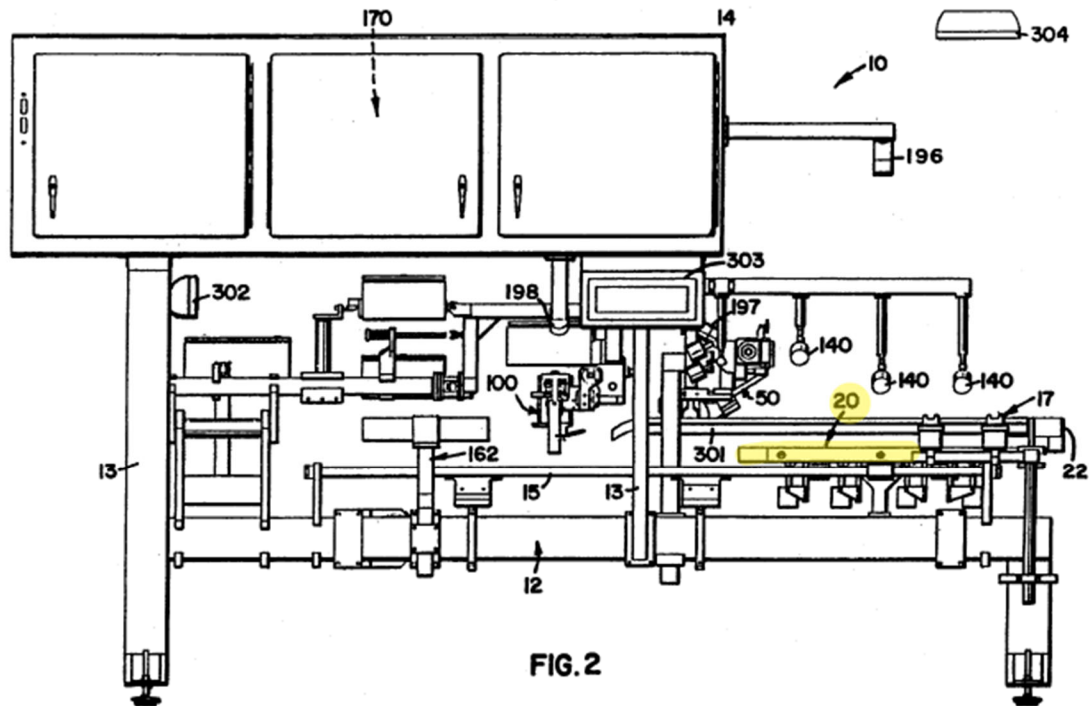
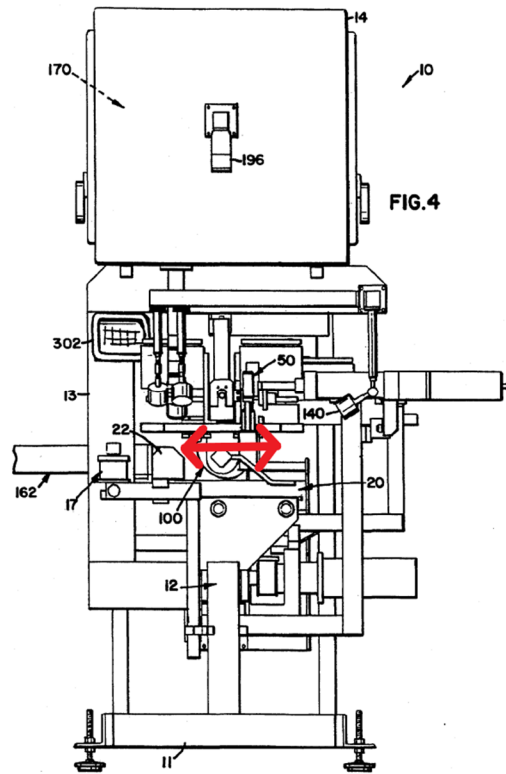


FIG. 2

(EX1004, Fig. 2.)

In particular, “In operation, loin knife assembly 100 provides four axes of motion for knife blade 121. . . A second axis of motion is defined by axis 199c and controlled by a second moving means (servo 152) displacing lateral member 114e of arm 114. This axis of motion provides lateral displacement (i.e., to move the knife blade side-to-side).” (EX1004, 14:21-22, 14:27-31.) The blade also moves in two other axes for a total of four variable axes of movement. (EX1004, 5:52-55, 21:13-16, 14:21-26, Fig. 4.) Annotated Figure 4 below demonstrates Young’s lateral axis of movement. (EX1004, Fig. 4.)



(EX1004, Fig. 4.)

Thus, Young discloses element 14[B]3.

#### H. Dependent Claim 15

Young discloses “wherein determining the thickness of the fat cover comprises an optical measurement.” (EX1003, ¶¶161-163.)

As discussed above in Section VII.A.2, the claimed “measurement device” corresponds to Young’s imaging system 190. (EX1003, ¶¶103-105.) Young’s imaging system uses one or more optical cameras and therefore is measuring the

thickness optically. (EX1003, ¶¶104-106, 161-163; EX1004, 17:55-62, 18:46-56, 17:34-46.)

Thus, Young discloses claim 15.

### **I. Dependent Claim 16**

Young discloses “determining the thickness of the fat cover during a transport movement of the meat product.” (EX1003, ¶¶164-165.)

For example, Young describes using its imaging system 190 to determine the thickness of the fat cover while pork meat is transported through the machine on platen 20. (EX1003; ¶165; EX1004, 6:13-17, 6:1-7:2, Fig. 5.) Young explains that “gripper platen 20 is provided which supports a pork side and *transports* it throughout the different operations in the loin separation process.” (EX1004, 5:51-55, Figs. 1-2, emphasis added.) Young explains its apparatus includes steel rails 15, which support platen 20, and allow platen 20 to slide on the rails while “transporting a side of pork between the different stations in apparatus 10.” (EX1004, 6:13-17.) This transportation of a meat product by platen 20 corresponds to the claimed transport movement of the meat product. (*See, e.g.*, EX1003, ¶165.) During this transport movement, Young’s imaging system 190 captures image data of the meat product using top plain camera 196, end view camera 197, and fat line camera 198. (*See, e.g.*, EX1003; ¶165; EX1004, 17:55-57.)

As discussed above in Section VII.A.2 imaging system 190 determines the thickness of the fat cover. For example, the image data is processed by controller 172 via routine 240 and the fat lean separation line is calculated. (EX1004, Fig. 13.) This fat lean separation line “will be distinguished by the interface between the loin meat and the fat covering[.]” (EX1004, 23:11-24.) This interface shows the boundary of the fat cover. (*See, e.g.*, EX1003, ¶105; *see also* EX1004, 23:12-27.) Controller 172 then performs an additional step where height, width and length of the meat product is calculated, using the “known values calculated in the aforementioned image processing steps[.]” (EX1004, 24:10-15.) Because this process is performed as platen 20 is transporting a meat product through the machine, the thickness of the fat cover is determined during a transport movement. (*See, e.g.*, EX1003, ¶¶164-166.)

Thus, Young discloses claim 16.

#### **VIII. GROUND 2: YOUNG IN COMBINATION WITH NORRIE RENDERS OBVIOUS CLAIMS 1-6, 8, 10, 14-16.**

As shown above, Young includes all of the relevant elements of the challenged claims. To the extent that Weber argues that Young does not disclose determining the “thickness” of a fat cover, as claimed, the claimed subject matter would have been obvious in view of Young in combination with Norrie and the knowledge in the art. (*See, e.g.*, EX1003, ¶¶167-179.) In this ground, Young’s loin

separator and imaging system is improved with Norrie's imaging capabilities. (*See, e.g.,* EX1003, ¶¶175-176.)

First, Norrie clearly discloses the claimed determining the thickness of a fat cover and related limitations. (*See, e.g.,* EX1003, ¶¶170-174.) Norrie's Abstract describes "a device for sensing the **thickness** of back fat on the loin portion between the conveyor and the lean portion of the loin" in a loin separator. (EX1004, Abstract.) Specifically, Norrie has a camera and light source 54 that "functions to observe and sense the thickness of the portion of fat the loin lying lowermost on the conveyor as it approaches the knife blade. The knife blade is then adjusted automatically." (EX1005, 3:55-59; *see also, id.* 2:3-9, 4:27-37, 5:20-27, 6:3-8, 6:16-21, Figs. 1, 2.) Additionally, by the priority date of the '321 patent, light emitting diodes were well-known in the art and had significant known advantages. (EX1003, ¶147; EX1025, 18; EX1017, 2:31-33; EX2016, 4; EX1027, 2:14-16. Specifically, light emitting diodes are low cost and very efficient. (EX1003, ¶147.) Therefore, a POSA would have been aware of and motivated to use LEDs when implementing Norrie's light source 54. (EX1003, ¶¶147, 170-176.)

Second, a POSA would have been strongly motivated to combine Young and Norrie. (*See, e.g.,* EX1003, ¶¶175-177.) Young explicitly points to "U.S. Patent No. 4,979,269 to Norrie" as "an automated loin separation system" that addresses

“the problems associated with manual loin separation processes.” (EX1004, 2:25.) Moreover, Young explicitly states “additional imaging and motion functionality may be included to provide more sophisticated profiles using the preferred scribe saw and knife assemblies. Also, the design or control system 170 can be modified to incorporate different accessory components.” (EX1004, 20:17-24.) Young gives Norrie as an example “resulting in more efficiency and more repeatable results.” (EX1004, 2:27-29.) Young also emphasizes the general needs in the art to achieve greater control, customization, and consistency, as well as to optimize yield and reduce waste. (EX1004, 2:43-51.)

A POSA looking at Young would have been directly led to Norrie to achieve additional imaging functionality, such as Norrie’s thickness sensing, in view of these well-established and explicit stated needs in the art. (EX1003, ¶¶175-176; EX1004, 2:27-29.)

Third, a POSA would have had a reasonable expectation of success in combining Young and Norrie, as claimed. Indeed, as described above, Young could not have been clearer that it could be combined with the teachings of Norrie. A POSA would have been able to apply the determination of thickness by the camera and controller taught in Norrie in the context of Young’s camera. This combination would only require routine modifications, like changing the cameras and connecting

the components. (*See* EX1003, ¶¶177-179.) Young even states “[v]arious modifications and changes may be made to control system 170 consistent with the invention... [T]he design of control system 170 may be modified to incorporate different accessory components on apparatus 10.” (EX1004, 20:17-24.) This simple modification would have been well within the abilities of a POSA. (EX1003, ¶¶177-179.)

**IX. GROUND 3: JOHNSON IN COMBINATION WITH BELK  
RENDERS OBVIOUS CLAIMS 1-6, 8, 10, 14-16.**

Johnson in combination with Belk renders obvious the subject matter of claims 1-6, 8, 10, and 14-16, generally including : [A] a measurement device for determining thickness of the fat cover (e.g., Belk’s imaging device 12), [B] a cutting blade whose position is variable (e.g., Johnson’s blade assembly 502), [C] a control unit that controls the position of the cutting blade in dependence on the measurements made by the measurement device (e.g., Johnson’s controller), and [D] a travel profile stored in the control unit (e.g., Johnson’s fat/lean interface), as reflected below in the following exemplary summary chart for Johnson and Belk. (*See, e.g.*, EX1003, ¶¶180-181, 229-231.) In this ground, Johnson’s loin separator, which includes a probe assembly and does not include a contactless imaging system, is improved with Belk’s imaging capabilities. (EX1003, ¶¶242-248.)

| <u><b>Claim Language</b></u>               | <u><b>Exemplary Johnson &amp; Belk Disclosures</b></u>                                                                |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Apparatus for separation                   | Johnson: Loin separation apparatus 10                                                                                 |
| Measurement device                         | Belk: imaging device 12                                                                                               |
| Cutting device/cutting blade               | Johnson: Blade assembly                                                                                               |
| Control unit                               | Johnson: Controller                                                                                                   |
| Variable position relative to product feed | Johnson: The entire blade assembly elevates or lowers about a pivot point 45 established by the device 706. (Fig. 10) |
| Travel profile                             | Johnson: Fat/lean interface                                                                                           |

## **A. Independent Claim 1**

### **1. Preamble**

To the extent the preamble is considered a limitation on the scope of the claims, Johnson discloses “[a]n apparatus for separation of a fat cover of a meat product from a flesh component of the meat product.” (EX1003, ¶¶182-184.)

For example, Johnson’s title is “automated classifier and meat cut fat trimming method and apparatus.” (EX1006, Title, Abstract). In particular, Figure 1 shows “a right side isometric view of the meat cut classification and trimming system 102[.]” (EX1006, 3:29-33.) “[D]ata representative of the lean to fat interface [is sent] to a controller which is operable to interpret the information and generate a signal responsive to the data or map of that contour that will vary the attack angle . . . of the cutting blade to follow the contour of the lean to fat interface.” (EX1006, 4:54-67.)

Specifically, the claimed “fat cover” corresponds to Johnson’s “fat” that is removed and the claimed “flesh component of the meat product” corresponds to what Johnson refers to as “lean” or “meat cut.” (EX1003, ¶183.) Johnson states: “[a]s the meat cut travels over the blade, thereby trimming the fat from the lean, the meat cut is then grabbed.” (EX1005, 5:42-45.) In this way, Johnson removes an outer layer of fat and skin from the meat. (EX1003, ¶¶182-184.)

Thus, Johnson discloses the preamble.

## **2. Element 1[A]**

Johnson in combination with Belk renders obvious “a measurement device for automatic determination of the thickness of the fat cover, wherein the determination of the thickness of the fat cover takes place in a contactless manner.” (EX1003, ¶¶185-189.)

Belk’s “measurement device for automatic determination. . . .” includes imaging device 12. (EX1003, ¶¶185-186.) Belk states imaging device 12 is preferably a video camera, but also may be any imaging device known to a POSA. (EX1007, 5:9-19.) Imaging device 12 captures images which are then processed by a data processing unit 16. (EX1007, 5:9-19.) Data processing unit is linked to imaging device 12. (EX1007, 3:17-19.) Data processing unit 12 determines the location of fat on a meat product, and may measure its surface area, length, and

width. (EX1003, ¶¶187-189; EX1007, Figs. 2-3, 8:59-63, 9:59-10:6, 10:43-51, 14:1-5, 15:25-31.) This data processing provides the claimed automatic determination of fat cover thickness. (EX1003, ¶¶187-189.)

A POSA would have been motivated to improve Johnson's fat separation apparatus and probe assembly with Belk's advanced meat imaging and analysis system. This combination would have had the obvious advantages of greater accuracy, reliability, and functionality, as described further below in Section IX.7. (EX1003, ¶¶242-248.)

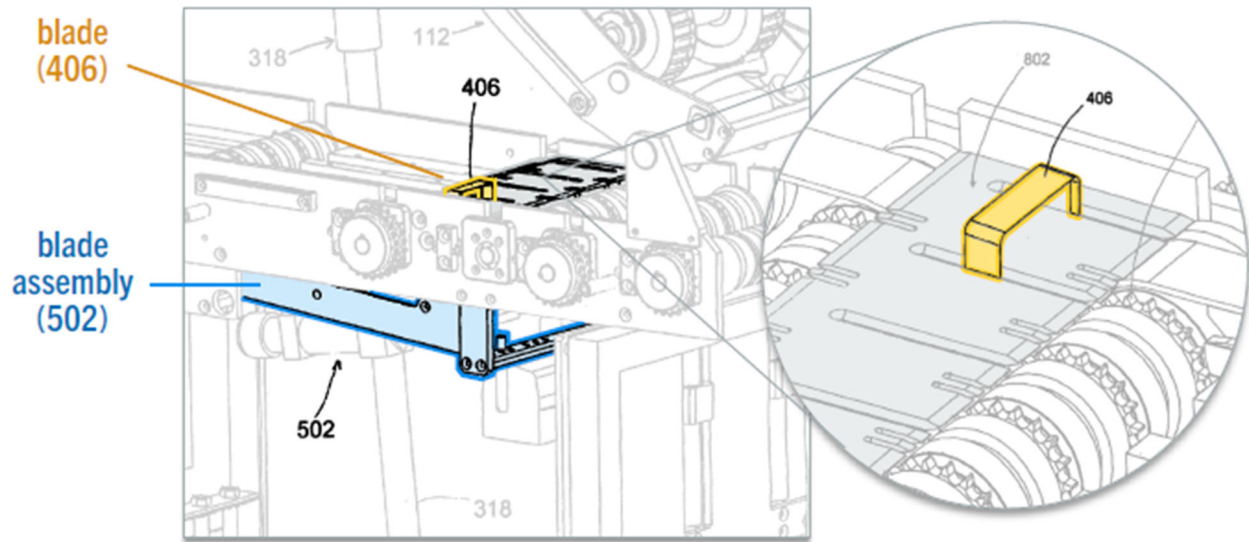
Thus, Johnson in combination with Belk renders obvious element 1[A].

### **3. Element 1[B]**

Johnson discloses a “cutting device coupled to the measurement device for automatic separation of the fat cover from the flesh component in dependence on the thickness determined by the measurement device.” (EX1003, ¶¶190-194.)

Johnson's “cutting device. . .” includes the blade assembly 502. (*See, e.g.*, EX1003, ¶¶191-192.) Blade assembly 502 is coupled to the controller. (EX1006, 5:20-26; EX1003, ¶¶190-193.) “The controller sends a signal representative of the fat to lean interface which will control the blade assembly to variably position the blade to follow the contour of the lean to fat interface. . . . multiple blades can be

utilized in order to conform more closely to the three dimensional path or contour described by the fat/lean interface map.” (EX1006, 5:20-26, Fig. 5, Fig. 8.)



(EX1006, Figs. 5, 8 (annotated))

The blade assembly is coupled to the measurement device, including the probe assembly via the controller. (EX1006, 5:20-23; EX1003, ¶¶191-193.) For example, the controller receives data on the thickness of the fat cover from the probe assembly, it then creates control signals based on this data. (EX1006, 4:53-59, 5:20-23, 5:30-35.) The controller then uses those signals to control and actuate the blade assembly and separate the fat cover from the meat product by trimming along the fat to lean interface. (EX1006, 4:53-59, 5:20-23, 5:30-35.) In this way, Johnson teaches removal of the outer layer of fat and skin from the meat. (EX1003, ¶¶190-194.)

Thus, Johnson in combination with Belk renders obvious element 1[B].

#### **4. Element 1[C]**

Johnson discloses “a cutting blade whose position is variable relative to a product support[.]” (EX1003, ¶¶195-197.)

Johnson’s “cutting blade. . .” includes an array of cutting blades, i.e. the “blade assembly,” that follow the fat/lean interface of the meat product as it is fed through the apparatus. (*See, e.g.*, EX1003, ¶196; EX1006, 2:28-35, 2:48-50, 4:14-19.) As the cutting blades follow the fat/lean interface and trim the fat their position relative to the conveyor assembly 108 varies relative to the conveyor surface up and down. (EX1006, 5:20-26, 10:42-45.) “[T]he entire blade assembly elevates or lowers about a pivot point established by the device 706.” (*Id.*) The conveyor assembly 108, comprising multiple conveyors belts that act as a product support and feed the meat product through the apparatus, corresponds to the claimed product support. (*See, e.g.*, EX1003, ¶196; EX1006, 4:9-19.)

In other words, the position of the cutting blade varies up and down above the product conveyor surface. (EX1003, ¶¶195-196.)

Thus, Johnson in combination with Belk renders obvious element 1[C].

## **5. Element 1[D]**

Johnson discloses “a control unit for control of the position of the cutting blade in dependence on the thickness determined by the measurement device[.]” (EX1003, ¶¶198-201.)

Specifically, Johnson’s “control unit. . . .” includes a “controller” which receives data taken the measurement device, i.e., the probe assembly, on the position of the lean to fat interface and the thickness of the fat cover. (*See, e.g.*, EX1003, ¶199; EX1006, 4:53-55, 5:20-26.) After receiving data from the probe assembly, the controller then sends a signal representative of the fat to lean interface and the thickness of the fat cover to the blade assembly. (EX1006, 5:20-24.) This signal controls an articulating arm mounted to the blade. (EX1006, 5:30-32.) In response to the signal, the articulating arm actuates and changes the position of the blade. (EX1006, 5:30-33). Specifically, due to the actuation of the articulating arm, “the blade assembly varies the position of the blade to follow the contour of the fat/lean interface.” (EX1006, 5:20-26.) Therefore, the controller is controlling the position of the blade assembly based on the thickness determined by the probe assembly. (*See, e.g.*, EX1003, ¶¶198-201.)

Thus, Johnson in combination with Belk renders obvious element 1[D].

## 6. Element 1[E]

Johnson discloses “wherein at least one travel profile is stored in the control unit in accordance with which the position of the cutting blade relative to the product support is to be set in dependence on a product feed.” (EX1003, ¶¶202-206.)

Johnson’s “travel profile . . .” includes the “fat to lean interface” contour measured by the probe assembly. (*See, e.g.*, EX1003, ¶204; EX1006, 4:48-59.) “The probe assembly completes this [measurement] cycle multiple times along the length of the meat cut thereby taking a plurality of measurements for the fat to lean interface along the length of the meat cut. This mechanism allows . . . to map the lean to fat interface contour[.]” (*Id.*)

Johnson’s controller stores this lean to fat interface map and then transmits a fat to lean interface signal representative of the map to Johnson’s blade assembly. (EX1006, 5:20-30.) This signal causes the blade assembly to vary its position relative to the product feed, i.e. conveyor assembly 108. (EX1006, 5:20-30.) The fat to lean interface signal corresponds to the claimed travel profile. (*See, e.g.*, EX1003, ¶204; EX1006, 4:53-59.) Johnson, therefore, teaches a travel profile having the contour of the fat trimming blade height over the length of the meat product, as described during prosecution. (EX1003, ¶¶202-206; EX1002, 358.)

Thus, Johnson in combination with Belk renders obvious element 1[E].

## 7. Motivation to Combine

A POSA would have been motivated to improve Johnson's fat separation apparatus and probe assembly by combining it with the concept of Belk's advanced meat imaging and analysis system. (EX1003, ¶¶242-248.) This combination would have had the obvious advantages of greater accuracy, quality, and functionality. (*Id.*)

For example, Johnson recognized the known desire for greater accuracy in fat sensing in the art that would have encouraged the combination. Johnson sought accuracy by implementing "multiple probes" to "ensure a better mapping of the profile." (EX1006, 2:40-42.) Multiple other references recognized the same known need for accuracy. (*See, e.g.*, EX1012, [0007]; EX1016, 1:26-38; EX1021, 1:21-2:42.) Sigurdsson, for example, explained "Modern food processing demands high levels of productivity and precision. It is the aim of the producer and requests of the buyer to obtain as accurate portion size as possible. It is also an important factor that the object in this case, fish or meat portions, have certain configurations and/or thickness due to the end buyer's request." (EX1012, [0007].)

However, a POSA would have appreciated that Johnson's probes had several drawbacks that would have affected meat quality. (EX1003, ¶¶245-246; EX1007, 2:24-26, 4:48-41.) The probes required multiple physical insertions into the meat, which was known to cause potential damage to the meat and was known to be a

potential source of contamination. (EX1003, ¶¶245; EX1014 1:28-42; EX1018, 1:312:8; EX1022, 1:6-45; *see also* EX1001, 1:31-36.) Indeed, it was known that “a distinct disadvantage of these probes is that they puncture the product to be trimmed and cause damage to the product.” (EX1014: 1:39-41.) Such disadvantages would have led a POSA to consider other forms of sensing. (EX1003, ¶¶245-247.) In particular, Johnson points to imaging technology like Belk by suggesting “Optical technology or infrared sensor technology can be utilized or any other appropriate sensor technology.” (EX1007, 7:65-66; *see also* EX1021, 2:7-32.) A POSA would have appreciated that Johnson provides reason to upgrade imaging systems. (EX1003, ¶¶246-247.)

Belk meanwhile recognized the need for accurate fat sensing in food processing and provided an improved solution. (EX1003, ¶¶243-244, EX1007, 1:57-59, 2:59-63.) Belk linked this known need for accuracy to USDA regulations for quality and yield grading. (EX1007, 2:59-63.) Belk sought to achieve “meat palatability to be more accurately predicted and USDA Quality grades to be more accurately assigned” for “greater consumer confidence” and “economic benefit to those at all segments of the meat production system” as well as scientific research purposes. (EX1003, ¶¶243-244; EX1007, 1:40-52, 1:57-59, 60-66.) Belk explains its imaging techniques “can be used in methods for predicting the palatability, yield,

and/or defect conditions of, or augmenting the assignment of USDA or other international grade Standards to, meat animal carcasses or cuts, or for Sorting for other purposes (e.g. brand names, product lines, etc.).” (EX1007, 12:1-5.) Thus, a POSA would have recognized Belk as a way to improve accuracy, as suggested by Johnson. (EX1003, ¶¶242-246.)

In addition, a POSA would have been further motivated to combine Johnson and Belk to improve the sensing functionality of Johnson. (*See, e.g.*, EX1003, ¶247.) Johnson’s probe assembly was only capable of sensing the thickness of the fat cover and the location of the lean to fat interface. (*See, e.g.*, EX1007, 4:51-53.) Belk’s imaging system was capable of measuring a much larger variety of characteristics of a meat product, e.g. marbling quality, firmness, surface area, lengths, and widths of areas of interest, density of lean tissue, and density of fat tissue in addition to measuring the thickness of the fat cover. (EX1007, Abstract, 12-24, 4:26-36, 4:39-45, 9:7-18, 5:9-19, Fig. 3.) A POSA would have been drawn to Belk’s camera system because it had greater functionality and utility compared to Johnson’s probe assembly and without the known drawbacks of contact sensing and probing. (EX1003, ¶¶246-247.)

This combination would have included nothing more than using a known device, Belk’s improved imaging camera and processor, into a machine with similar

components, i.e. Johnson's probes, to achieve known advantages. (EX1003, ¶¶249-252.) Therefore, a POSA would have been motivated to pursue such a combination.

Finally, a POSA would have had a reasonable expectation of success in combining Johnson and Belk, as claimed. A POSA would have been able to apply the determination of thickness by the camera taught in Belk in the context of Johnson's probes. (EX1003, ¶¶250-251.) Johnson foresaw the potential to replace its probe assembly with alternate sensor devices with superior sensing or functionality, and expressly indicates its apparatus may function with "any other appropriate sensor technology." (EX1006, 7:65-66; EX1003, ¶¶246-251.) Belk's imaging system is specifically designed for the analysis and grading of meat products, and would be familiar to a POSA in this industry. (EX1007, 2:46-51.) A POSA would therefore expect success in modifying Johnson via removing its probe assembly, and installing a different sensor system, such as Belk's imaging system, with a clear view to capture image data of a meat product as it is conveyed through Johnson's apparatus. (EX1003, ¶¶250-252.) The newly installed imaging system would be coupled to Johnson's controller, and send data analogous to Johnson's probe assembly's signals. (EX1003, ¶¶250-251.) A POSA would know of other fat separation machines that use imaging systems in a similar way and expect in

implementing such a configuration into Johnson's apparatus due to the similarity of the design. (EX1003, ¶¶250-529.)

This combination would only require routine modifications, like attaching the cameras and connecting the components to a controller. (*See* EX1003, ¶¶251-252.)

**B. Dependent Claims 2 and 3**

Belk discloses claim 2 “wherein the determination of the thickness of the fat cover takes place optically” and claim 3 “further comprising a light detector for the detection of light reflected at the meat product.” (*See, e.g.*, EX1003, ¶¶207-213.)

For instance, Belk discloses an imaging device 12, which “can be any such imaging device known to those of skill in the art, such as a camera[.]” (EX1007, 5:10-12.) A camera, such as imaging device 12, does not contact the meat product it is observing, and measures the meat product visually, i.e. optically. (EX1003, ¶208; *see also* EX1007, 6:21-23.) Belk's imaging device 12 observes an area of interest on a meat product and collects image data with real time data output within 5-15 seconds. (EX1007, 4:14-38, 5:40-44.) As the image data is collected, Belk's processing unit 16 processes and analyzes the image data to calculate desired characteristics, such as the presence and size of fat in the area of interest. (EX1007, 4:14-38, 9:59-10:11.) Image processing unit 16 then is capable of measuring the length, width and surface areas of these characteristics of interest. (EX1007, 15:22-

31, Fig. 3.) Belk uses this process to measure the length, width and surface area of fat within a meat product. (EX1003, ¶209; EX1007, 15:22-31.) The combination of Johnson and Belk made for the reasons described above, therefore, would have included this limitation.

Thus, Johnson in combination with Belk renders obvious dependent claims 2 and 3. (EX1003, ¶¶207-213.)

#### **C. Dependent Claim 4**

Belk discloses a “light detector compris[ing] a camera.” (*See, e.g.*, EX1003, ¶¶214-216.) Belk’s “light detector” includes “an imaging device 12 [which] can be any such imaging device known to those of skill in the art, such as a camera[.]” (*See, e.g.*, EX1003, ¶¶214-2154; EX1007, 5:9-12.) Belk’s imaging device 12 explicitly teaches the use of “a known camcorder or video camera” which is capable of detecting light. (EX1007, 5:40-46.) Therefore, Belk’s imaging device 12 functions as a light detector, and comprises a camera. (EX1003, ¶¶214-215.) The combination of Johnson and Belk made for the reasons described above, therefore, would have included this limitation.

Thus, Johnson in combination with Belk renders obvious dependent claim 4.

#### **D. Dependent Claim 5**

Belk discloses “further comprising a light source configured to illuminate a region of the meat product.” (*See, e.g.*, EX1003, ¶¶217-219.) Belk’s “light source

. . . “includes “[a]n illumination system 26, [which] can be used to illuminate the meat[.]” (*See, e.g.*, EX1003, ¶218; EX1007, 5:62-65.) Illumination system 26 can be “[a]ny known or future developed illumination system” which includes light emitting diodes. (*See, e.g.*, EX1003, ¶¶217-219; EX1007, 6:1-6.) The combination of Johnson and Belk made for the reasons described above, therefore, would have included this limitation.

Thus, Johnson in combination with Belk renders obvious dependent claim 5.

#### **E. Dependent Claim 6**

Belk discloses a “light source compris[ing] at least one light emitting diode.” (*See, e.g.*, EX1003, ¶¶220-222.) Belk’s “light source . . . includes “[a]n illumination system 26, [which] can be used to illuminate the meat[.]” (*See, e.g.*, EX1003, ¶¶217-222; EX1007, 5:62-65.) Illumination system 26 can be “[a]ny known or future developed illumination system” which includes light emitting diodes. (EX1007, 6:1-6.) The combination of Johnson and Belk made for the reasons described above, therefore, in light of the knowledge in the art would have rendered obvious this limitation and the subject matter of the claim as a whole. (EX1003, ¶¶221-222; *see also* EX1025, 2:33-35, 6:41-40; EX1027, 2:13-16; EX1026, 4.) Additionally, by the priority date of the ’321 patent, light emitting diodes were well-known in the art and had significant advantages. (EX1003, ¶221; EX1025, 18; EX1017, 2:31-33;

EX2016, 4; EX1027, 2:14-16; EX1024, 1-2.). Specifically, light emitting diodes are low cost and very efficient. (EX1003, ¶221.) Therefore, a POSA would have been aware of and motivated to use them when implementing Belk’s illumination system 26. (EX1003, ¶¶220-222.)

Thus, Johnson in combination with Belk renders obvious dependent claim 6.

#### **F. Dependent Claims 8 and 10**

Johnson discloses claim 8 “further comprising a transport device configured to transport the meat product through the measurement device” and claim 10 “wherein the transport device further configured to supply the meat product to the cutting device.” (*See, e.g.*, EX1003, ¶¶223-228.)

The Johnson “transport device . . .” includes conveyor assembly 108. (EX1003, ¶¶224-227.) Conveyor assembly 108 transports “the meat cut through the . . . multi-probe mechanism assembly . . . to penetrate the meat cut for measuring fat thickness.” and “along the path of conveyance to engage the cutting blades.” (EX1006, 3:51-55, 4:5-8.) The combination of Johnson and Belk made for the reasons described above, therefore, would have included this limitation.

Thus, Johnson in combination with Belk renders obvious dependent claims 8 and 10. (EX1003, ¶¶223-228.)

## **G. Independent Claim 14**

As discussed above in section IX.A, Johnson in combination with Belk renders obvious the subject matter a whole of claim 1. The evidence for claim 1 preamble, [A], [B], [D], [E] applies here to render obvious the subject matter of the corresponding elements of the claim 14. (*See, e.g.*, EX1003, ¶¶229-234.)

The claim 14 preamble is nearly identical to the claim 1 preamble except for reciting a method rather than an apparatus. Claim 14[A] is nearly identical to claim 1[A] in method form with the omission of “a measurement device.” Claim 14[B1] is nearly identical to Claim 1[B]. Claim 14[B2]’s elements are all present in Claim 1[E]. Claims 14[C] and 1[E] both claim a “travel profile” according to which the “position” of the “cutting blade” is “set.” Claim 1[E] also adds the requirements that (1) the travel profile be stored in the control unit, and that (2) the position of the cutting blade set by the travel profile is “in dependence on a product feed.” In addition, Johnson in combination with Belk renders obvious the additional requirements of claim 14[B3]. (EX1003, ¶¶229-234.)

### **1. Claim Element 14[B3]**

Johnson discloses claim 14[B3] “wherein the setting comprises setting the position in a direction transverse to the feed direction.” (EX1003, ¶¶232-234.)

Johnson’s “cutting blade” includes the “blade assembly 502.” (EX1003, ¶¶196, 233.) For example, blade assembly 502 is attached to an articulating arm

capable of dive and climb movement, i.e. up and down movement. (EX1006, 5:34-35.) Blade assembly 502 is also capable of changing its pitch. (EX1006, 5:37-39.) Johnson sets the height and pitch of blade assembly 502 based on the fat to lean interface signal sent from the controller. (EX1006, 5:20-23.) This fat to lean interface signal corresponds to the claimed travel profile.

Johnson also discloses a conveyor assembly 108, which conveys and *feeds*, the meat product through the apparatus and into blade assembly 502. (EX1006, 3:35-36, 4:3-26.) The claimed feed direction corresponds to the path the meat product follows while it rests on conveyor assembly 108. (*See, e.g.*, EX1003, ¶233.) Because Johnson's blade assembly 502 moves up and down while cutting, it necessarily moves closer and further away from the conveying assembly 108 in a transverse direction. (EX1006, 3:35-36, 4:3-26.) Johnson's blade assembly alters its position in a direction transverse to the feed direction defined by conveyor assembly 108. (*See, e.g.*, EX1003, ¶¶233-234.)

Thus, Johnson discloses claim element 14[B3] and renders obvious the subject matter of claim 14 as whole in combination with Belk. (*See, e.g.*, EX1003, ¶¶229-234.)

## **H. Dependent Claim 15**

Belk discloses “wherein determining the thickness of the fat cover comprises an optical measurement.” (*See, e.g.*, EX1003, ¶¶235-237.)

As discussed above in Section IX.A.2, the claimed “measurement device” corresponds to Belk’s imaging device 12. (EX1003, ¶236.) Belk’s imaging device measures the thickness of the fat cover. (EX1004, 17:55-62, 18:46-56, 17:34-46.) Belk’s imaging 12 uses one or more optical cameras and therefore is measuring the thickness optically. (EX1003, ¶¶235-237; EX1004, 17:55-62, 18:46-56, 17:34-46.) The combination of Johnson and Belk made for the reasons described above, therefore, would have included this limitation.

Thus, Belk discloses claim 15.

## **I. Dependent Claim 16**

Johnson in combination with Belk discloses claim 16 “wherein determining the thickness of the fat cover takes place during a transport movement of the meat product.” (*See, e.g.*, EX1003, ¶¶238-241.)

For example, Johnson describes that a meat product is moved through the apparatus on conveyors “along the path of conveyance.” (EX1006, 6:1-10.) This movement along the path of conveyance corresponds to the claimed transport movement. (*See, e.g.*, EX1003, ¶239.) As explained above in Section IX.A.2, Johnson’s apparatus measures the thickness of the fat cover using a probe assembly.

(EX1006, 4:48-51.) As the meat product moves along the path of conveyance, the probe assembly takes several measurements of the meat product and determines the thickness of the fat cover. (EX1006, 4:27-33, 4:48-59.) Therefore, Johnson discloses determining the thickness of the fat cover during a transport movement of the meat product. (*See, e.g.*, EX1003, ¶¶239-241.) As discussed above in Sections IX.A.2 and IX.A.7, it would have been obvious to incorporate Belk's imaging system 190 into Johnson's fat trimming apparatus. (*See, e.g.*, EX1003, ¶¶185-189, 242-252.) If incorporated into Johnson's apparatus, Belk's imaging system 190 would measure the thickness of the fat cover with its camera at the same time as Johnson's probe assembly measured the thickness, i.e. during the transport movement. (*See, e.g.*, EX1003, ¶¶238-241.) The combination of Johnson and Belk made for the reasons described above, therefore, would have included this limitation.

Thus, Johnson in combination with Belk renders obvious dependent claim 16.

**X. DISCRETIONARY DENIAL WOULD BE INAPPROPRIATE.**

The Board should not discretionarily deny this petition. On balance, the *Fintiv* factors weigh against denial. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential).

While no motion to stay pending IPR has yet been filed in the district court case, *Fintiv* factor one is neutral given that courts commonly stay cases upon IPR

institution, including the W.D. Mo. where the district court case is pending. *See VMWare, Inc. v. Intell. Ventures II LLC*, IPR2020-00859, Paper 13 at 12 (P.T.A.B. Nov. 5, 2020) (finding factor one neutral, even though Petitioner had not previously sought a stay, and despite Patent Owner’s argument that the district court judge was “unlikely” to issue a stay pending IPR institution). In previous cases between the parties, the assigned district court judge has granted multiple stay motions. *See, e.g., Provisur v. Weber*, No. 21-cv-06113, Doc. #95 (W.D. Mo. Sept. 16, 2022); No. 20-cv-6069, Doc. #74 (W.D. Mo. April 8, 2021); No. 19-cv-6021, Doc. #43 (W.D. Mo. Aug. 29, 2019).

*Fintiv* factors two (trial date), three (investment in proceedings), and four (overlap of issues) weigh against the Board’s exercising its discretion to deny institution.

This is Petitioner’s first and only petition against the ’321 patent. Petitioner filed this petition within months of Patent Owner asserting the ’321 patent (and three other patents) against Petitioner on August 24, 2023. The median time from filing to trial for civil cases in the W.D.Mo., the location of the parallel litigation, is 25.5 months, which would be around September 2025. Thus, a hearing in this proceeding would occur before the median time from filing to trial. *See USPTO Director’s Memorandum: Interim Procedure For Discretionary Denials In AIA*

*Post-Grant Proceedings With Parallel District Court Litigation*, 3, 7 (June 21, 2022) (“Additionally, when considering the proximity of the district court’s trial date to the date when the PTAB final written decision will be due, the PTAB will consider the median time from filing to disposition of the civil trial for the district in which the parallel litigation resides.”).

Petitioner just recently answered the August 24, 2023 allegations on October 30, 2023, there has been no claim construction hearing or decision, fact and expert discovery is ongoing, and there have not been any depositions yet. The most recent supplemental scheduling order in the case sets the current close of fact discovery for March 6, 2024, close of expert discovery for May 29, 2024, dispositive motions due, June 14, 2024, pre-trial order due October 23, 2024, and trial November 18, 2024. *Provisur v. Weber*, No. 21-cv-06113, Doc. #214 (W.D. Mo. Sept. 5, 2023).

*Fintiv* explained that “it is often reasonable for a petitioner to wait to file its petition until it learns which claims are being asserted against it in the parallel proceeding.” *Fintiv*, IPR2020-00019, Paper 11 at 11. Patent Owner Weber identified its asserted claims on November 10, 2023. Accordingly, Petitioner has been diligent in pursuing its Petition.

Furthermore, there is not direct overlap of issues. The Petition challenges seven claims that are not asserted in the district court (in addition to four asserted claims), and the prior art grounds here are not the same as the district court. Petitioner will not raise the same grounds from this Petition in the district court.

*Fintiv* factor five is neutral because Petitioner and Patent Owner are the same parties as in the district court. *See Weatherford U.S. v. Enventure Global Tech., Inc.*, IPR2020-01684, Paper 16 at 11–13 (P.T.A.B. Apr. 14, 2021).

Finally, *Fintiv* factor six (other circumstances) weighs strongly against denying institution. *See Netflix, Inc. v. GOTV Streaming, LLC*, IPR2023-00757, Paper 11, \*25-27 (P.T.A.B. Nov. 7, 2023) (granting institution and declining discretionary denial in light of compelling merits, even though *Fintiv* factors (1) through (5) favored discretionary denial); *USPTO Director's Memorandum: Interim Procedure For Discretionary Denials In AIA Post-Grant Proceedings With Parallel District Court Litigation*, 3, 7 (June 21, 2022) (stating the Board “will not rely on the *Fintiv* factors to discretionarily deny institution in view of parallel district court litigation where a petition presents compelling evidence of unpatentability.”). In the ongoing district court litigation between the parties, Patent Owner’s related company, Weber, has petitioned for IPR of Provisur’s asserted patents more than ten times. Weber was never discretionarily denied—

only denied on the merits—and was given the opportunity to have the Board review each of the patents that went to trial in the district court. Fairness dictates that Provisur be afforded the same opportunity.

This Petition has compelling merits and demonstrates that the claims of the '321 patent are rendered anticipated or obvious based on clear unpatentability theories and several express teachings in the prior art for obviousness.

Considering the *Fintiv* factors overall, institution would best serve the efficiency and integrity of the system.

## **XI. MANDATORY NOTICES (37 C.F.R. §42.8(A)(1))**

### **A. Real Parties in Interest**

Petitioner Provisur Technologies, Inc. is the real party-in-interest.

### **B. Related Proceedings**

The '321 patent is subject to the following civil action: *Provisur Technologies, Inc. v. Weber, Inc. et al.*, Case No 5-21-cv-06113 (WDMO), where counterclaims were filed asserting the '321 patent and three other patents August 24, 2023.

### **C. Grounds for Standing**

Provisur certifies that the '321 patent is eligible for IPR and that Provisur is not barred from requesting IPR of the '321 patent on the grounds in this Petition.

**D. Counsel & Service Information**

Pursuant to 37 C.F.R. 42.10(a), Petitioner appoints **Michael G. Babbitt** (Reg. No. 59,288) as its lead counsel and **Sara T. Horton** (Reg. No. 61,449), **Ren-how H. Harn** (Reg. No. 73,620), and **Mitchell M. Feldhake** (Reg. No. 79,902) as its backup counsel, all at the address: Willkie Farr & Gallagher LLP, 300 N LaSalle Dr., Chicago, IL 60654.

Petitioner consents to electronic service by email at the email addresses **mbabbitt@willkie.com**, **shorton@willkie.com**, **rharn@willkie.com**, **mfeldhake@willkie.com**, and **ProvisurPTAB@willkie.com**.

**XII. CONCLUSION**

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

Respectfully submitted,

Dated: November 29, 2023

/Michael G. Babbitt/

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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 13,004 words as counted by the word processing program used for its preparation (Microsoft Word 2013).

Respectfully submitted,

Dated: November 29, 2023

/Michael G. Babbitt/

Michael G. Babbitt (Reg. No. 59,288)

*Counsel for Petitioner*

## CERTIFICATE OF SERVICE

I hereby certify that on November 29, 2023, I caused a true and correct copy of the foregoing materials:

- **PETITION FOR *INTER PARTES* REVIEW OF  
U.S. PATENT NO. 8,529,321**

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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