

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PROVISUR TECHNOLOGIES, INC.,
Petitioner,

v.

TEXTOR MASCHINENBAU GMBH,
Patent Owner.

Patent No. 9,457,487

**DECLARATION OF JOHN M. COLLINS, PH.D., IN SUPPORT OF
PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 9,457,487**

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	SUMMARY OF OPINIONS	2
III.	BACKGROUND AND QUALIFICATIONS	4
IV.	DOCUMENTS CONSIDERED	10
V.	LEGAL PRINCIPLES	12
VI.	CLAIM CONSTRUCTION	15
VII.	LEVEL OF ORDINARY SKILL IN THE ART	16
VIII.	STATE OF THE RELEVANT ART BEFORE DECEMBER 3, 2012	17
	A. Historical Conveyor Systems	17
	B. Prior Art Food Processing Equipment Used Conveyors	18
	C. Using Removable Conveyors in Food Slicing Machines was Known	20
	D. JPH06117905 to Konishi et al. (“Konishi”)	21
	E. WO03/065789 to Lindee (“Lindee”)	25
	F. U.S. Patent No. 9,296,120 to McLaughlin et al. (“McLaughlin”)	26
IX.	BACKGROUND OF THE ’487 PATENT-AT-ISSUE	32
	A. The Specification	32
	B. Representative Claim 1	34
	C. The Prosecution History	35
	D. Priority Date	36
X.	SUMMARY OF THE GROUNDS	36

XI.	GROUND 1: CLAIMS 1, 6, 9, 15, 16 ARE ANTICIPATED BY KONISHI.....	37
A.	Independent Claim 1	37
1.	Element 1[A]: “a removable conveyor belt unit (13) having at least one track and a base (25)”	37
2.	Element 1[B]: “a substructure (41) having a mount (11) coupled to the base (25)”	40
3.	Element 1[C1]: “a drive (15) coupled to the conveyor belt unit (13) by a drive belt (27)”	41
4.	Element 1[C2]: “the conveyor belt unit is configured to be cancelled by relaxing the drive belt and is configured to be established by tautening the drive belt, with the relaxing and tautening of the drive belt each being provided by a relative movement between the drive and the conveyor belt unit.”	43
5.	Element 1[Pre]	48
B.	Dependent Claim 6	48
C.	Dependent Claim 9	51
D.	Dependent Claim 15	53
E.	Dependent Claim 16	55
XII.	GROUND 2: CLAIMS 1-4, 6, 9, 10, 14-16, AND 22 WOULD HAVE BEEN OBVIOUS OVER KONISHI AND LINDEE IN LIGHT OF THE KNOWLEDGE OF A POSA.....	56
A.	Independent Claim 1	57
B.	Motivation to Combine Konishi and Lindee.....	58
C.	Reasonable Expectation of Success Combining Konishi and Lindee	65

D.	Dependent Claims 2 and 3	67
E.	Dependent Claims 4 and 14	69
F.	Dependent Claim 6	73
G.	Dependent Claim 9	77
H.	Dependent Claim 10	78
I.	Dependent Claim 15	81
J.	Dependent Claim 16	83
K.	Independent Claim 22	84
1.	Element 22[C1]	84
2.	Element 22[C2]	85
3.	Element 22[C3]	87
4.	Motivation to Combine	89
XIII.	GROUND 3: CLAIMS 1-4, 6, 9, 10, 14-16, AND 22 WOULD HAVE BEEN OBVIOUS OVER MCLAUGHLIN IN LIGHT OF THE KNOWLEDGE OF A POSA.	92
A.	Independent Claim 1	92
1.	Preamble.....	93
2.	Element 1[A]: “a removable conveyor belt unit (13) having at least one track and a base (25)”	93
3.	Element 1[B]: “a substructure (41) having a mount (11) coupled to the base (25)”	97
4.	Element 1[C1]: “a drive (15) coupled to the conveyor belt unit (13) by a drive belt (27)”	98
5.	Element 1[C2]: “the conveyor belt unit is configured to be cancelled by relaxing the drive belt and is configured	

	to be established by tautening the drive belt, with the relaxing and tautening of the drive belt each being provided by a relative movement between the drive and the conveyor belt unit.”	100
6.	Additional Obviousness Support	103
B.	Dependent Claims 2 and 3	104
C.	Dependent Claims 4 and 14	106
D.	Dependent Claim 6	110
E.	Dependent Claim 9	113
F.	Dependent Claim 10	115
G.	Dependent Claim 15	118
H.	Dependent Claim 16	119
I.	Independent Claim 22	122
1.	Element 22[C1]	123
2.	Element 22[C2]	124
3.	Element 22[C3]	126
4.	Additional Obviousness Support	128
XIV.	GROUND 4: CLAIMS 1-4, 6, 9, 10, 14-16, AND 22 WOULD HAVE BEEN OBVIOUS OVER MCLAUGHLIN AND KONISHI.....	131
A.	Independent Claim 1	132
B.	Motivation to Combine	132
C.	Reasonable Expectation of Success Combining the Teachings of McLaughlin and Konishi	138
D.	Dependent Claims 2-4, 6, 9, 10, and 14-16.....	140

E. Independent Claim 22 141

XV. THERE ARE NO OBJECTIVE INDICIA OF NONOBVIOUSNESS 142

XVI. CONCLUSION.....143

XVII. APPENDIX A – KONISHI CLAIM CHART 145

XVIII. APPENDIX B – MCLAUGHLIN CLAIM CHART 162

I. INTRODUCTION

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

1. I have been retained as an expert witness on behalf of Petitioner Provisur Technologies, Inc. (“Petitioner” or “Provisur”) for the above-captioned *inter partes* review (“IPR”). I am an expert in mechanical engineering. I am being compensated for my time in connection with this IPR at my standard consulting rate, which is \$450 per hour. My compensation is not contingent upon the outcome of this IPR. I understand that the Petition for IPR involves U.S. Patent No. 9,457,487 (EX1001, the “’487 patent”). The ’487 patent names one inventor, Josef Mayer. EX1001, Cover Page. I further understand that current USPTO records show that the ’487 patent is assigned to Textor Maschinenbau GmbH (“Textor”). I understand that the earliest possible priority date for the ’487 patent is December 3, 2012.

2. When preparing my Declaration, I reviewed the ’487 patent and its prosecution history (EX1002), and I have considered and reviewed all of the documents cited in this declaration and the accompanying petition. I have also considered the general knowledge in the field of the relevant art before around December 3, 2012. When formulating my opinions, I relied on my more than 40 years of experience, education, and knowledge in the relevant art. When forming

my opinion, I also considered the viewpoint of a Person of Ordinary Skill in the Art (a “POSA”) as of December 3, 2012.

II. SUMMARY OF OPINIONS

3. The ’487 patent claims a removable conveyor belt unit, and I offer opinions on two independent claims. The first independent claim recites a removable conveyor belt unit. It recites a track, a base, a substructure, and a mount. The first independent claim additionally recites a drive coupled to the conveyor belt unit by a drive belt. The first independent claim further recites a canceling and establishing of the drive belt by a relative movement between the drive and the conveyor belt unit.

4. The second independent claim shares many common requirements with the first independent claim. In addition to other differences, the second independent claim recites that the removable conveyor belt unit be coupled to a first and second drive.

5. As I discuss in this declaration, the prior art taught and rendered obvious all of the features of the ’487 patent’s removable conveyor belt unit. I discuss that some of the prior art cited in my declaration discloses all of the elements of the challenged claims. I also discuss that, well before the earliest possible priority date of the ’487 patent, a person of ordinary skill in the art would have had reason

to combine the prior art references to arrive at the claimed removable conveyor belt unit, and they would have had a reasonable expectation of success when implementing the combination.

6. A person of ordinary skill in the art would have been motivated to combine the discussed references for several reasons, including to improve maintenance, cleanliness, efficiency, as well as improved throughput, yield, and space saving, as known in the prior art. A person of ordinary skill in the art would have had a reasonable expectation of success in combining the prior art because the prior art all relates to similar technologies (e.g., conveyance technology), and the prior art identifies common, well-known arrangements of routine components and techniques. A person of ordinary skill would have expected success in combining the elements based on basic known engineering, design, and mechanical principles before the time of invention. In short, there were several known removable conveyor examples and several known ways to implement removable conveyors, including as claimed.

7. I am not aware of any publicly available evidence of objective indicia of nonobviousness that would support the patentability of the claims of the '487 patent.

8. Therefore, I conclude that the challenged claims would have anticipated and/or been obvious in view of the disclosures in the prior art references for the reasons further expanded upon in this declaration.

III. BACKGROUND AND QUALIFICATIONS

9. My area of expertise is mechanical engineering, with most of my career focused on developing products and manufacturing methods. As described in more detail below, I have worked designing products in a wide range of industries. I have also worked in the commercial food processing industry which shares many underlying technologies and methods with medical devices, such as cutting or dissecting tissue. Other examples are outlined below.

10. I have experience as an innovator and inventor. I am a named inventor on more than 20 United States patents, in addition to foreign counterparts, on products and manufacturing processes, including food processing systems.

Educational Background

11. I received a B.S. (1980) in mechanical engineering from Rensselaer Polytechnic Institute, and an M.S. (1982) and Ph.D. (1988) in mechanical engineering from Massachusetts Institute of Technology ("MIT"). At MIT, I worked in the Fluids Lab under the direction of Professors Asher Shapiro and Roger Kamm.

12. My academic work was in mechanical engineering with a concentration on biomedical applications of fluid dynamics, including heat/mass transfer. My Ph.D. and M.S. thesis projects applied these principles to pulmonary dynamics. My M.S. thesis involved experimental hardware and analytical methods to study high frequency ventilation: at the time, a novel way to ventilate babies without over-pressurization of the lung, avoiding damage to the lung during ventilator assist. My Ph.D. thesis was on experimental, analytical, and numerical modeling of forced exhalation from the lung. The results included a computational model of the lung that allowed for more sophisticated diagnosis based on the results of the simple Forced Expiration Pulmonary Function (FEPF) test.

Relevant Professional Experience

13. I have over 40 years of product and production system design, development, and consulting expertise covering a wide range of industries and products. In addition to doing engineering work, including design, fabrication, assembly, and testing, my responsibilities have included assembling and managing teams to develop new consumer, industrial and medical products.

14. Since 2008, I have been employed at the Consortia for Improving Medicine with Innovation and Technology (“CIMIT”). Founded by Massachusetts General Hospital, Brigham and Women’s Hospital, Charles Stark Draper Laboratory

and Massachusetts Institute of Technology in 1998, CIMIT is now a consortium of thirteen of the greater Boston area's premier clinical, research and academic institutions, including the Harvard Medical School and its teaching hospitals, along with a growing list of national and international affiliates.

15. CIMIT's mission is to improve patient care by facilitating collaboration among clinicians, academics, engineers, and entrepreneurs to catalyze the discovery, development and implementation of innovative technologies and procedures/systems that improve patient care. I am generally responsible for ensuring CIMIT's "Finding, Funding, Facilitation and Following" functions are effective and for facilitating teams of clinicians and engineers emerging from academic labs in the commercialization of technologies. This involves developing CIMIT's web-based tools/platforms and working with teams of clinicians, scientists, and engineers from academic institutions and start-ups from across the globe to provide support which helps them accelerate innovative solutions into the market.

16. Several of my projects have been based on imaging or processing the transmission or reflection of light within certain wavelengths. A simple example is pulse oximeters, which rely on photoplethysmography. They use low-intensity infrared (IR) light which, as it travels through biological tissues, is absorbed and/or reflected by bones, skin pigments, and both venous and arterial blood. Among other

things, sensors can be used to detect the transmitted or reflected light to determine blood oxygenation and pulse rate. A more complex example is light reflectance spectroscopy. It measures light intensity backscattered from tissue to differentiate malignant from benign tissue. It uses light within the absorption spectrum of hemoglobin (in the blue/green spectrum range between about 400 and 600 nm) to identify angiogenic vasculature in tumors which differs from that in healthy tissue.

17. Also, since 2008, I have been the Chief Technology and Innovation Officer of Reed Collins LLC. In this role, I regularly provide technology, intellectual property, commercialization and business development consulting services for research teams, start-ups, and risk capital groups, as well as support some non-profits. I also serve on review committees as well as steering and advisory boards for non-profit organizations that support healthcare innovation.

18. Before then, from 2002 to 2008, I worked at TIAX LLC (“TIAX”). TIAX is a privately held technology transformation company focused on advancing and developing technologies for commercialization in several core technology areas, including clean energy and materials, health and wellness, commercial and residential appliances, HVAC systems, and enhanced security. During my tenure at TIAX, part of which I served as President, the World Economic Forum recognized TIAX as a Technology Pioneer in 2002 and as a New Champion in 2007. Examples

of food processing products and systems I was involved with at TIAX include commercial and residential appliances including ovens and cook-tops, as well as automated pizza maker for food service applications.

19. From 1988 to 2002, before TIAX and after taking time to return to MIT and complete my Ph.D., I was employed by the international consulting firm Arthur D. Little, Inc. (“ADL”). I joined ADL as a design engineer and progressed to being responsible for its Technology and Innovation (“T&I”) Directorate, with more than 250 staff of scientists, engineers, and technicians. Examples of food processing and other production systems I worked on include:

- A production system to process and pack fresh cucumbers into jars which were then filled with brine and pickled. The system used conveyors to move cucumbers from a hopper to a vision system that characterized the size and shape of cucumbers as they passed. Commercially available conveyors were evaluated, selected, and configured to hold cucumbers in place during transport. Diverters were then used to sort cucumbers off of the conveyors into chute where they were then pressed through a die cutter and the sliced pieces were inserted into jars in a way that filled the volume within the desired range.

- A production machine to cut and fold Ramen noodles. The system used conventional conveyors to move flat dough through rotary slicing blades to form noodle strips and then commercially available motion controlled conveyors were used to place them in a folded pattern ready for packaging.
- An automated system for French Fry cooking in a retail food setting. The system dispensed frozen fries into a basket that was transferred to a robotic arm which placed the basket in a fryer. The basket was then automatically removed, and the cooked fries emptied into a holding area for serving.
- An insulation packaging system to take fiberglass insulation webs from conveyors, cut them into “bats” (typically for residential use) and then transport them to a machine which stacked and placed them in a package.

20. From 1982 to 1986, before ADL and after receiving my M.S. degree at MIT, I worked at Booz, Allen & Hamilton, where I developed products as well as industrial production systems. Examples include:

- Diebold cash dispensing machines which utilized a variety of sensors, conveyors, clutches, motors, and other motion control techniques to “pick” and dispense cash.
- Automated flats processing machine for the U.S. Post Office which used custom designed conveyors and diverters, coupled with commercially available optical sensors for high speed/high reliability sorting.
- A flexible, high volume wire structure manufacturing system for a leading manufacturer of dishwashers.

21. A copy of my latest curriculum vitae (CV) with additional details of my education, employment, patents, and recent publications filed with this declaration as Exhibit 1032.

IV. DOCUMENTS CONSIDERED

22. When forming my opinion, I considered all of the references cited in my declaration and the Petition, including the documents listed below:

EX	Description
1001	U.S. Patent No. 9,457,487 B2
1002	File Wrapper for U.S. Patent No. 9,457,487 B2
1003	Expert Declaration of Dr. John M. Collins, Ph.D. in Support of Petition for <i>Inter Partes</i> Review of U.S. Patent No. 9,457,487

Inter Partes Review of U.S. Pat. No. 9,457,487
John M. Collins, Ph.D. Declaration

EX	Description
1004	JPH 06 117905 (“Konishi”)
1005	WO 03/065786 (“Lindee”)
1006	U.S. Patent No. 9,296,120 B2 (“McLaughlin”)
1007	U.S. Patent Publication No. 2009/0188358 (“Hansen”)
1008	U.S. Patent No. 5,499,719 (“719Lindee”)
1009	U.S. Patent Publication No. 2006/0196328 (“Pryor”)
1010	U.S. Patent No. 4,570,729 (“Rosso”)
1011	U.K. Patent Application No. GB 2 352 675 (“Doe”)
1012	U.S. Patent Publication No. 2010/0275789 (“Lee”)
1013	U.S. Patent Publication No. 2005/0279228 A1 (“Julian”)
1014	U.S. Patent Publication No. 2007/0214969 (“Mueller”)
1015	U.S. Patent No. 6,640,681 (“Weber”)
1016	U.S. Patent No. 6,201,218 (“Chandler”)
1017	U.S. Patent No. 5,704,265 (“Johnson”)
1018	U.S. Patent No. 8,408,109 (“Lindee109”)
1019	Provisur Patents Webpage
1020	<i>Provisur v. Weber III</i> , Sept. 5, 2-23 Hearing Tr., 5
1021	U.S. Patent No. 7,605,940 (“Silverbrooke”)
1022	Canadian Patent CA2499480 (“Haan”)
1023	WO 2011/056602A1 (“McLaughlin602”)

EX	Description
1024	U.S. Patent No. 6,578,705 (“Lunghi”)
1025	U.S. Patent No. 4,570,729 (“Del Rosso”)
1026	EP0713753B1 (“Lindee753”)
1027	WO2003103906A1 (“Pryor906”)
1028	U.S. Patent No. 7,603,936 (“Pryor936”)
1029	U.S. Patent No. 5,628,237 (“Lindee237”)
1030	PoweMax3000 Slicer Operating Manual
1031	PowerMax4000 Slicer Operating Manual
1032	Dr. Collins CV
1033	U.S. Patent No. 8,549,966 (“Hansen966”)
1034	Automation in the Food Industry

V. LEGAL PRINCIPLES

23. I am not an attorney, and I am not offering any opinions on the law in this proceeding. Counsel for Provisur has generally informed me of the following legal standards that are relevant to my analysis. I have considered these standards in arriving at my conclusions.

24. I generally understand that *Inter Partes* Review (“IPR”) is an administrative proceeding before the United States Patent & Trademark Office (“Patent Office”) for evaluating the patentability of an issued patent claim. IPR

essentially allows the Patent Office to reconsider a patent claim that the Patent Office has already issued as patentable and to reconsider if it is still patentable.

25. I understand that a patent claim is a legal description of the scope of the intellectual property patent right (akin to a proverbial fence or deed around a piece of real property). At least one patent claim is included at the end of each patent and includes numbered sets of claim language. I have been told that the specific language or parts of each patent claim may be referred to as claim features, elements, and/or limitations depending on the context.

26. I am informed that there are two types of U.S. patent claims: (1) independent claims, and (2) dependent claims. Independent claims include only the elements expressly stated in the properly interpreted independent claim. Dependent claims include the elements expressly stated in that dependent claim and any elements expressly stated in any other claim(s) from which that claim depends.

27. For IPRs, I understand that the Patent Office may consider whether earlier publications and patents, generally referred to as prior art or references, disclose claim features of the patent at issue. I understand prior art may act to make a patent claim unpatentable for two reasons relevant here, referred to by the legal concepts of: (a) anticipation under the 35 U.S.C. § 102 statute, and (b) obviousness under the 35 U.S.C. § 103 statute. The prior art must be viewed from the

hypothetical perspective of a person having ordinary skill in the art (“POSA”) at the time of the invention.

28. I believe a person of ordinary skill in the art (“POSA”) of the asserted patents would typically have the experience described below in Section VII.

29. I have formed my opinion regarding the person of ordinary skill in the art for the Asserted Patents by reviewing the patents, the file histories, and based on my knowledge of the level of skill of individuals in the field at the time. Other factors relevant to my opinion regarding the level of ordinary skill in the art include the nature of problems that the Asserted Patents were intended to solve.

30. I understand a patent claim is unpatentable as anticipated when a single prior art reference discloses every element in the claim, either expressly or inherently. A prior art reference may inherently teach an element if it necessarily discloses that element.

31. In general, I understand that one or more prior art references that individually disclose fewer than all elements of a patent claim may be relied upon, collectively, to render a patent claim obvious. A patent claim may be obvious if, based on the collective teachings of the prior art, the subject matter of the patent claim would have been obvious to a POSA at the time of the invention. A POSA

may rely on their personal judgment and common sense to reach conclusions that do not explicitly require explanation in a reference.

32. I further understand that a patent claim may be obvious if a POSA would have (1) been motivated to combine the references in a manner that would (2) result in the claimed invention with a reasonable expectation of success. I have also been told that the analysis of whether a claim would have been obvious to a POSA at the time of the invention requires an analysis of four criteria known as the *Graham* factors. The *Graham* factors, from a past U.S. Supreme Court case, are: (1) the level of ordinary skill in the art; (2) the scope and content of the prior art; (3) the differences between the prior art and the claims-at-issue; and (4) objective evidence of non-obviousness, such as commercial success of an invention; a long-felt need that was solved by an invention; copying of an invention by others; praise of an invention; or a surprising result an invention achieved.

VI. CLAIM CONSTRUCTION

33. I have applied the plain and ordinary meaning of the claim terms in view of the specification and prosecution history. I am not aware of any claim terms that require an explicit construction to resolve any issues. I understand that Provisur contends that under the law of claim construction the preambles of the '487 patent independent claims need no construction and do not limit the scope of the claims

because for example the preamble does not recite essential structure of “breathe life into the claims” under the case law.

VII. LEVEL OF ORDINARY SKILL IN THE ART

34. I understand that for the purposes of this proceeding, Petitioner applies the Board’s prior finding of the level of ordinary skill for a related case. That definition is that a POSA 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).

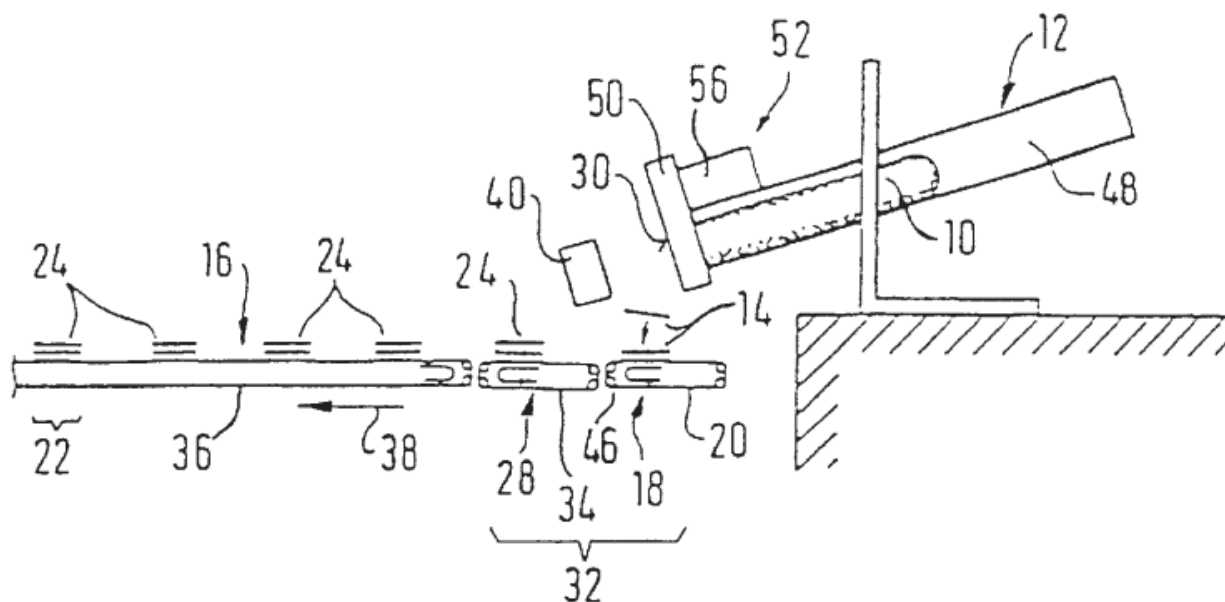
35. Further, the Board recognized a POSA would have had knowledge of the technical literature concerning food processing and packaging systems, including conveyor mechanisms (in both food processing and packaging machines, as well as other conveying machines) and may have worked as part of a multidisciplinary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

VIII. STATE OF THE RELEVANT ART BEFORE DECEMBER 3, 2012**A. Historical Conveyor Systems**

36. The prior art record shows conveyance systems were well-developed in the food processing industry for a long time, and well by 2014. Konishi; Lindee; McLaughlin. Dating back to the 80s, food processing equipment used conveyors to transfer food product. Rosso (Exhibit 1010) (“This invention relates to high speed operating weighing/conveyor machines such as are used in the food...industry[y].”). The record illustrates that a general desire to increase throughput and efficiency while making cleaning and maintenance easier was the driver of change and development in the industry, as is true in many industries in my experience. As an example, Julian stated “The control system also may operate simultaneously and independently plural sets of sensors and cutting assemblies, each defining a separate cutting lane, to increase throughput.” Julian (Exhibit 1013), ¶8. Lee also addressed some of the manners in which equipment was made to be easier to service and maintain. Lee states “No tools are required to remove the conveyor assemblies 40A and 40B, which facilitates the cleaning and maintenance.” Lee (Exhibit 1012), [0020]. Konishi also discussed simplifying design to allow for easier maintenance and cleaning. Konishi, [Purpose] (“To simplify the structure of the subframe containing the conveyor belt...[allows] reliable and efficient cleaning work.”)

B. Prior Art Food Processing Equipment Used Conveyors

37. Well before 2012, several types of food processing equipment—including slicers—existed that used driven conveyors to convey food. For example, U.S. Patent No. 5,499,719 taught a “correction conveyor system for a food loaf slicer or other food product machine.” Lindee’719 (Exhibit 1008), Abstract. As another example, U.S. Patent No. 8,549,966 was filed on October 21, 2008, and disclosed “An output conveyor for a high speed slicing apparatus having four deceleration conveyors that receive slices from a jump conveyor.” Hansen (Exhibit 1007), Abstract. Hansen also stated that “the present inventors have recognized that it would be desirable to slice up to four food articles or more with independent feeding...capabilities.” Ibid., [0008]. And Publication Number US 2007/0214969 to Mueller discloses that conveyor belts advance food products in a slicing machine. Mueller, (Exhibit 1014), [0003]. U.S. Patent No. 6,640,681 to Weber disclosed conveyors in food processing equipment in 2003. Weber (Exhibit 1015), 2:67-3:4 (“This first feeding device 20 is a belt conveyor which can be driven, which can be accurately controlled in its movements and whose length is selected such that the respectively desired shingled portions can be formed on it.”).



EX1015, Figure 1a.

38. Further, as the above prior art shows, conveying multiple food loaves towards a cutting plane was known to increase throughput and productivity. For example, Mueller taught that “The weight can be adjust by influencing the slice thickness by means of the rate of feed. For reasons of productivity, current slicers often slice a plurality of products bars next to one another using one blade.” Mueller, (EX1014), [0002]. As another example, Julian taught “The control system also may operate simultaneously and independently plural sets of sensors and cutting assemblies, each defining a separate cutting lane, to increase throughput.” Julian (Exhibit 1013), [0008]. Hansen taught that slicing up to four food loaves with independently driven conveyors was known. Hansen, Abstract, [0008]. As a further example, Lindee taught conveyors for two separate food lanes. Lindee teaches “a

dual independent feed slicer that slice two side-by-side loaves simultaneously, such as described in U.S. Patent No. 5,704,265, or EP0713753.” Lindee, 12. Similarly, McLaughlin teaches that “In other embodiments, it is possible to have multiple streams of conveying surfaces such that multiple drafts are processed simultaneously using the present invention.” McLaughlin, 5:11-16. Julian has a similar teaching of slicing multiple food items at a time. Julian’s figures show four slicing lanes, and Julian states that “The control system also may operate simultaneously and independently plural sets of sensors and cutting assemblies, each defining a separate cutting lane, to increase throughput.” Julian (Exhibit 1013), [0008], Figure 1. A different patent to Lindee, U.S. Patent No. 5,628,237 is titled “Slicing Machine for Two or More Food Loaves” and discloses a slicing machine capable of cutting two or more food loaves at the same time. Lindee237 (Exhibit 1029), Title, Abstract.

C. Using Removable Conveyors in Food Slicing Machines was Known

39. Conveyor systems, including the conveyors in the food processing industry, had used removable conveyor units before 2012, and have used many methods for removing conveyor belts. Two examples, Konishi and McLaughlin, are expanded upon below. Removable conveyors were used to facilitate maintenance and cleaning. Konishi specifically addresses the maintenance and cleaning benefits that a removable conveyor unit offers. Chandler also discloses a removable

conveyor belt unit and its benefits. Chandler is a food cooking apparatus, and it teaches “a mechanism that responds to manual pushing of the idler roller to shift the idler shaft between a drive position and a belt slack position that allows easy and quick installation or removal of the endless belt.” Chandler (Exhibit 1016), Abstract. Hansen disclosed a removable conveyor belt unit. Hansen teaches that “The weighing conveyors each compromise a removable carrying unit for turning a conveyor belt and a drive unit for driving the carrying unit.” Hansen (Exhibit 1007), Abstract, Figures 56–58. Lee teaches a toaster with removable and adjustable conveyors. Lee explains that it “provides operator-adjustable conveyors that are also operator removable.” Lee (Exhibit 1012), Abstract. Lee also teaches that its conveyors can be removed without the use of tools. *Ibid.*, [0020].

D. JPH06117905 to Konishi et al. (“Konishi”)

40. The Konishi patent application is titled “Belt conveyor-type automatic weighing device.” It was filed on August 8, 1986 and published April 28, 1994 which makes it prior art to the ’487 patent. Konishi was not considered by the examiner.

41. Konishi is directed to a belt conveyor used to transport a product from one station to another, with the ability to measure the weight of the product while on

the conveyor. See EX1001 at [Configuration]. The conveyor is structured so that it is removable in order to perform reliable and efficient cleaning. Ibid. at [Purpose].

42. The application of the invention includes processing food products such as confectionaries. An example being having their weights measured so that when packaged in a subsequent step, the delivered weight is within a specified range. Products that are out of the desired range are separated from the subsequent packaging step. Ibid. at [0001] [Industrial field of application]. As such, it directly relates to the '487 patent's technology.

43. Below is an annotated version of Fig. 9 from Konishi which shows a schematic side-view of one embodiment of the belt conveyor-type automatic weighing device (annotations in blue text). It shows a belt 14 on which sits the product 7 (not shown) to be moved and measured. The conveyor has a sub-frame 12 in which are mounted a driving roller 10 and a driven roller 11. The belt 14 is positioned around the rollers which causes the belt 14 to move when the rollers are rotated. Collectively, the belt 14, sub-frame 12, bar shaped support pins 23F and 23R, driving and driven rollers 10 and 11 are part of a removable conveyor belt unit (highlighted in yellow). The driven roller 11 is rotated by the rotation of the interlocking timing belt 49 which is rotated by the drive motor 32. Ibid. at [0003].

44. Several positions of the conveyor belt unit are shown in annotated Fig. 8 below and described in Konishi [0022]. Fig 8. Shows the conveyor belt unit in three positions during removal and/or installation.

45. The positions are:

- a. **Position 1**, highlighted in yellow and outlined in red, is when the conveyor belt unit is in the operating position with its support pins 23F&R engaging the hook grooves 26F&R in the housing 31 and the interlocking timing belt 49 engaging the timing pulley 24 to drive the belt 14.
- b. **Position 2**, outlined in purple, is when the conveyor belt unit is partially removed (or installed) by with the front of the conveyor belt unit out of engagement with the front pins and grooves.
- c. **Position 3**, outlined in green, is when the conveyor belt unit is fully removed from housing 31, with the conveyor belt unit moved forward and upward relative from housing 31 and out of engagement with the front and back pins and grooves. The axial motion of the removable conveyor belt unit relative to the housing 31 tensions timing pulley 24 belt on installation or relaxes it on removal.

Figure 9

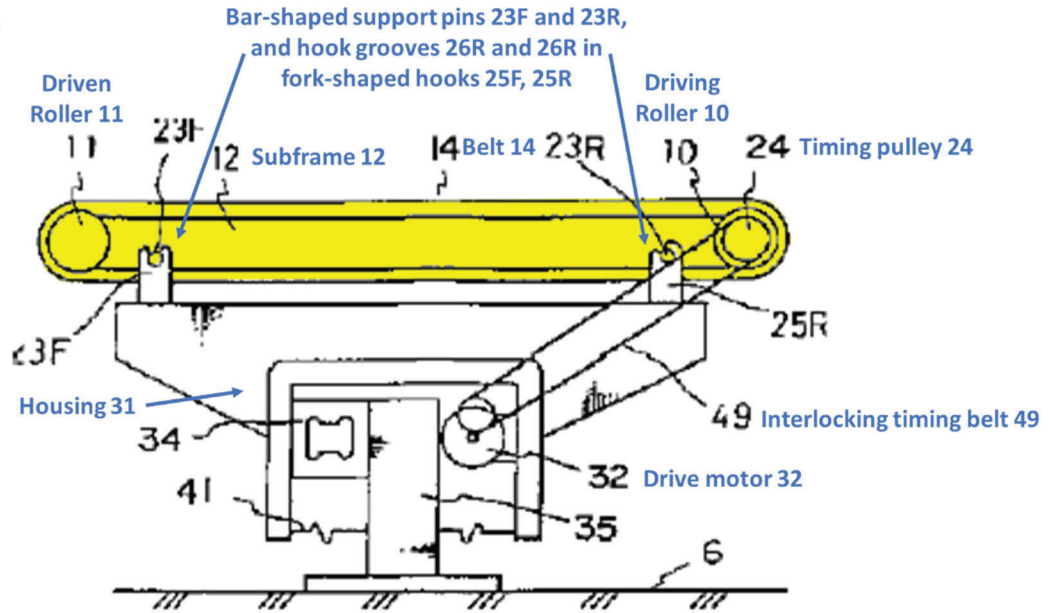
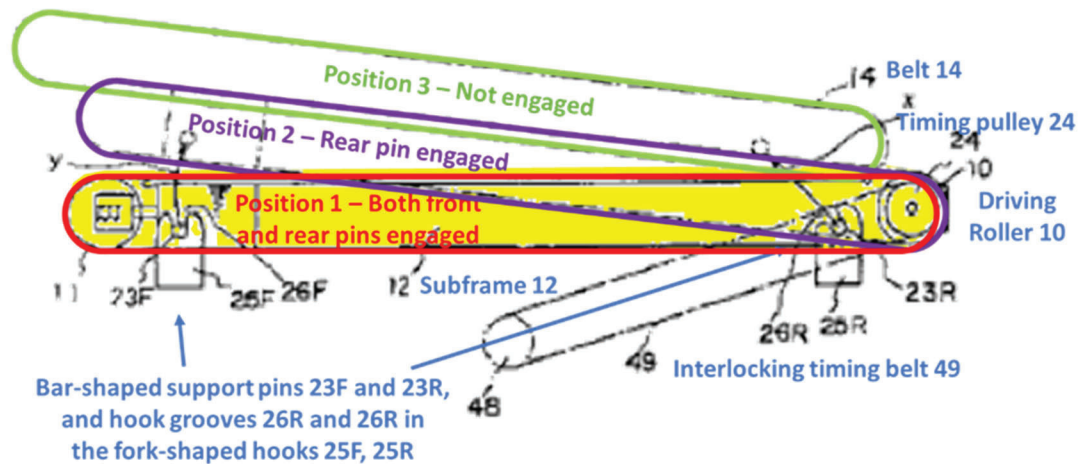


Figure 8



46. Konishi teaches that its subframe is “made simple and lightweight, making it easy to attach and detach from the frame...and maintenance of each mechanical part can be easily performed.” See *Ibid.* at [0045]. The Konishi

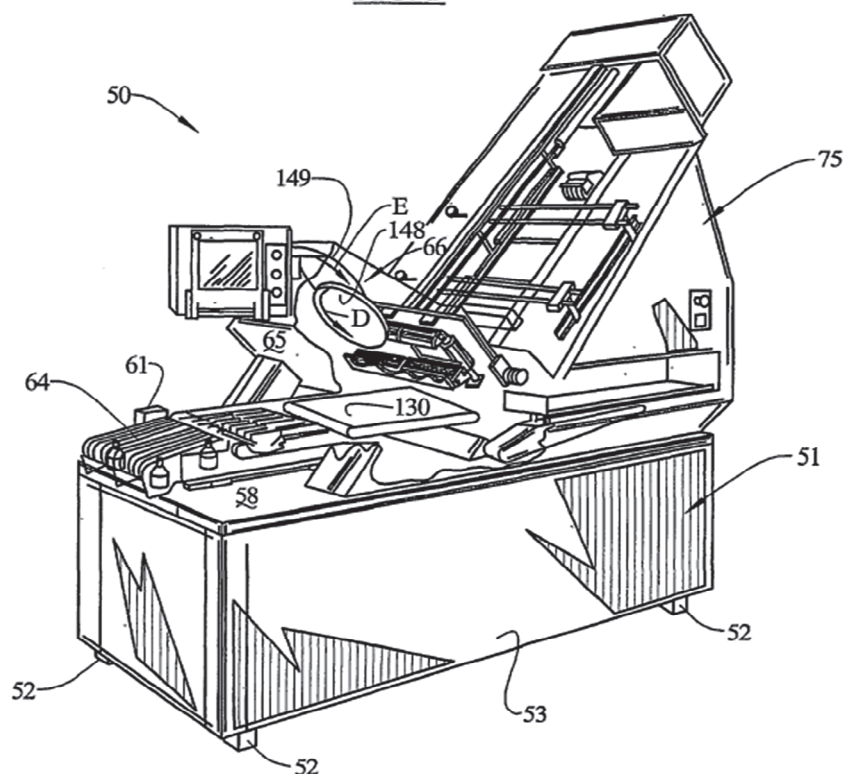
removable conveyor belt unit is basically lifted up by hand and pops out of the system for easy removal.

47. In addition, Konishi teaches a way to adjust the tension of the pulley belt 24 by rotating the sub-housing 42 which holds the motor 32. It can be rotated around its axis to move it relative to the driving roller 10 which adjusts the tension of the belt linking the drive roller and drive motor. See *Ibid.* at [0047]. This allows for variability in the dimensions of the pulley belt 24 as fabricated or as it stretches over time to be compensated, saving time and cost in set-up and maintenance.

E. WO03/065789 to Lindee (“Lindee”)

48. Lindee is titled “Conveyor System for Slicer Apparatus” and published on August 14, 2003. Lindee discloses a slicing machine that uses conveyors. Lindee also discloses a conveyor with a telescopic drive, wherein the conveyor is removable for cleaning and sanitizing. Lindee, 10. “The conveyor and telescopic drive shaft are removable for cleaning and sanitizing.” *Ibid.*, 10. Lindee further discloses a number of other conveyors, including a jump conveyor and an output conveyor. *Ibid.*, 1, 5.

FIG. 1



F. U.S. Patent No. 9,296,120 to McLaughlin et al. (“McLaughlin”)

49. The McLaughlin patent is titled “Method of producing drafts of sliced food products with desired weights and a dual scale weighing system for producing drafts of desired weights.” The PCT application was filed Oct. 26, 2010 and the publication date is May 12, 2011, which makes it prior art to the ’487. McLaughlin was not considered by the examiner.

50. McLaughlin is owned by Petitioner Provisur Technologies, Inc., and Provisur marks some of its products on its website with MacLaughlin. EX1019.

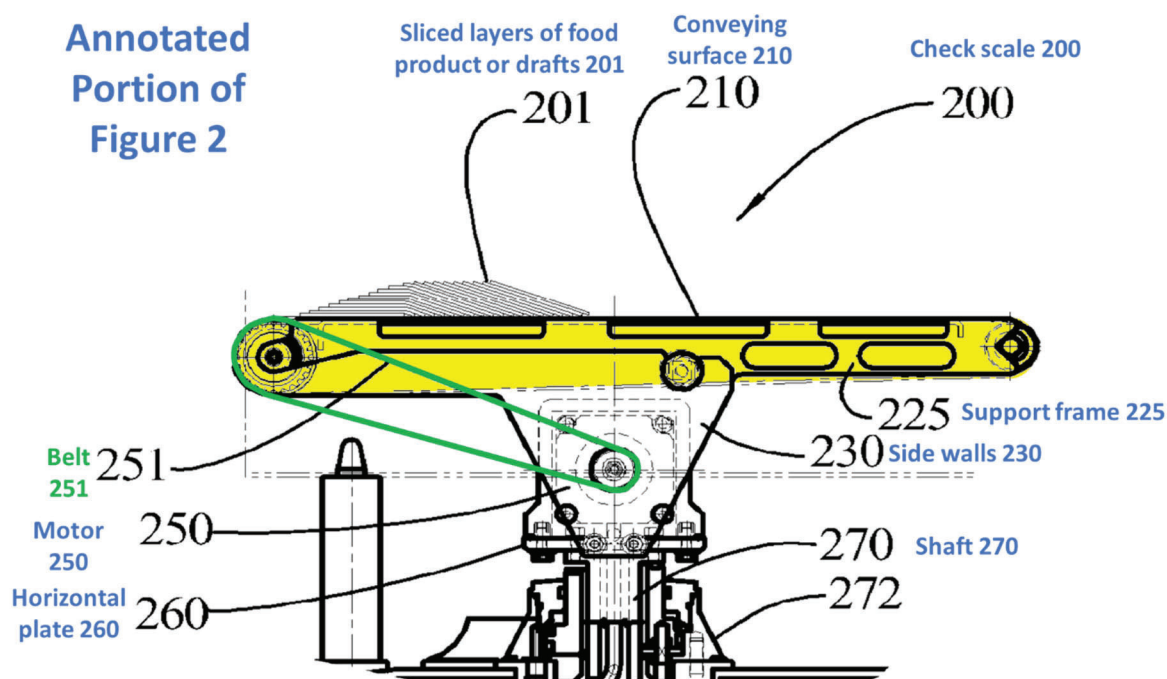
51. McLaughlin is directed to a method and apparatus for producing stacks of food slices of precise weights. See McLaughlin at 2:38-39. The field of the invention is described as relating to slicing systems and methods of weighing sliced food products. See *Ibid.* at 1:15-116. As such, it directly relates to the '487 patent.

52. The primary components of the overall system taught by McLaughlin include a conventional slicing machine 400 along with a slice scale 100 and a check scale 200. The slice scale 100 measures the weight of each slice as it is cut, and the check scale 200 measures the weight of a stack of sliced products, or “drafts.” Slice scale 100 is situated under the discharge end of a conventional slicing machine 400 such that sliced layers of food product are deposited on the slice scale 100. It has a conveyor top which is used to move the drafts to the check scale 200, which is situated between the slice scale 100 and a downstream conveyor. *Ibid.* at 3:17-27.

53. Check scale 200 measures the final weight of the draft which is compared to the final estimated draft weight to determine the variance. This variance is used on creating subsequent drafts to fine tune the accuracy of the completion slices to improve the accuracy of a draft weight. *Ibid.* at 4:50-55.

54. An annotated portion of McLaughlin Figure 2 below shows an elevation view, partly in cross section, of check scale 200. It has a removable conveyor belt unit (highlighted in yellow) at the top which includes a conveying

surface 210 and support frame 225 along with other components such as rollers on which the conveyor surface 210 rides. The conveying surface 210 is driven by a belt 251 (highlighted in green) coupled to a motor 250 which is fastened to the horizontal plate 260 and side walls 230 via screws 251 and 261. *Ibid.* at 3:40-48. Note, McLaughlin appears to label both a screw and the drive belt 251 in error.



55. The configuration of the removable conveyor belt unit can also be seen in the annotated portion of McLaughlin Figure 4 below. It is a view from the distal (far) end of check scale 200.

56. For clarity, I highlighted the side walls 230 in red, the belt 251 in green and the removable conveyor belt unit in yellow. The figure shows the conveyor

surface 210 to consist of a series of narrow bands or belts that are riding on rollers driven by the motor 250 via belt 251 and a pulley.

57. A POSA would understand that the conveyor belt unit (highlighted in yellow) is removable. First, unlike all the other structures it is not fastened to the side walls 230 by screws. Instead, as shown in the annotated portion of McLaughlin Figure 2 below, the removable conveyor belt unit has bars that extend transversely to engage the side walls. One is an extension of the front axis, and a second (the “engagement bar” in the illustration) is about mid-way in the unit. Both are highlighted in red. The figure below adds the position of the removable conveyor belt unit in the removed position, either before or after installation.

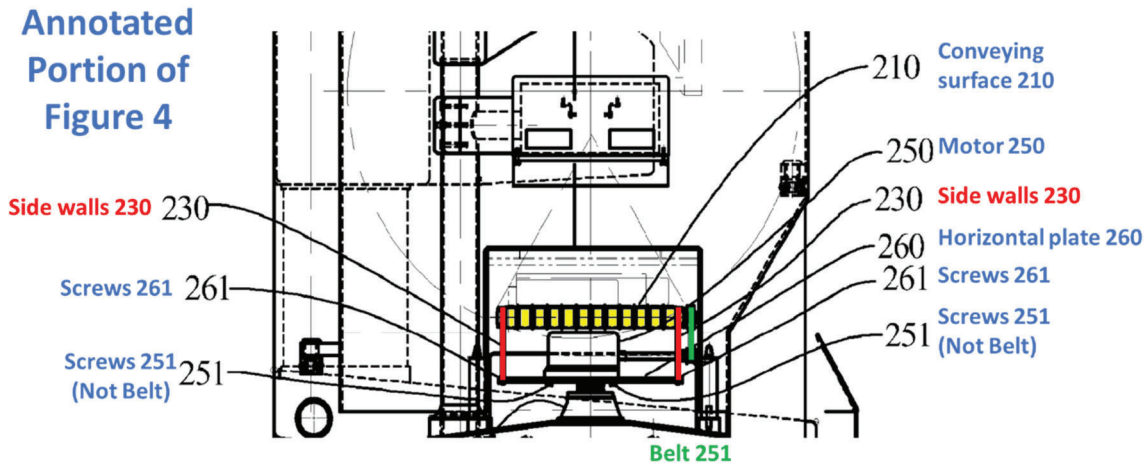
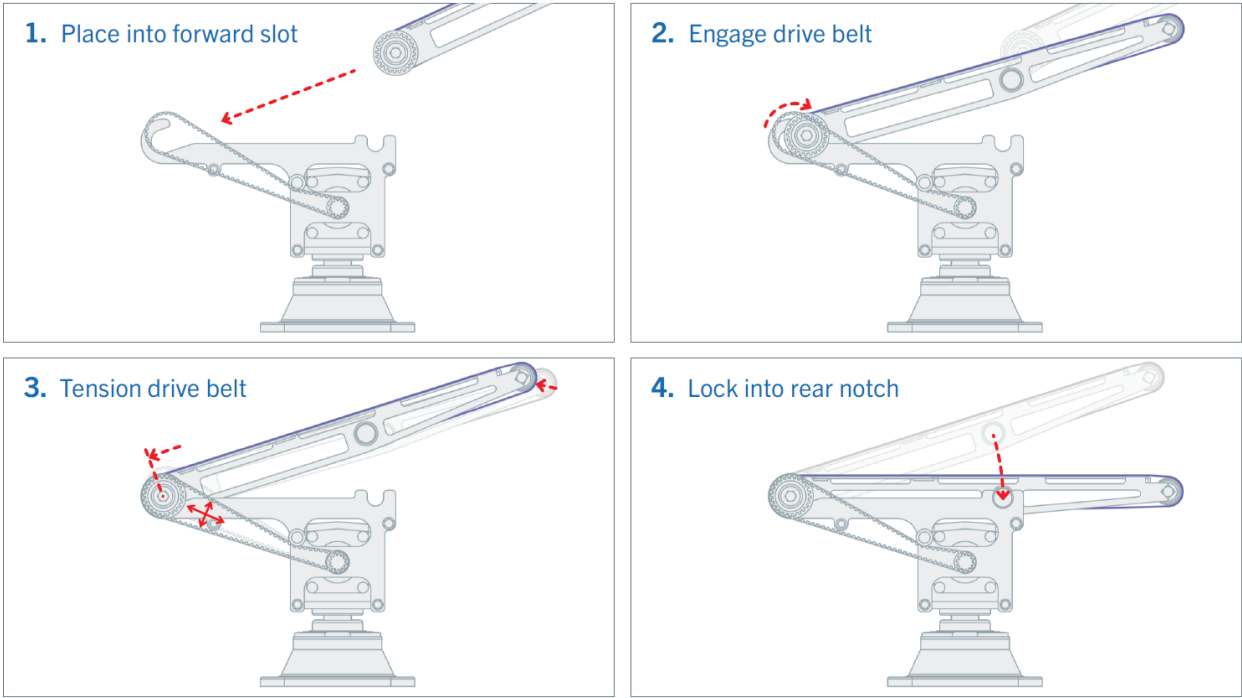
58. The process to **remove** the conveyor belt unit is as follows:

- a. **Step 1:** Lift the unit from the front (closest to the slice scale 100) to rotate it counterclockwise about the front axis which disengages the engagement bar.
- b. **Step 2:** Pull the unit back (toward the slice scale 100) to disengage the front axis from the slot in the side walls 230. This motion relieves the tension in belt 251 and frees the unit.

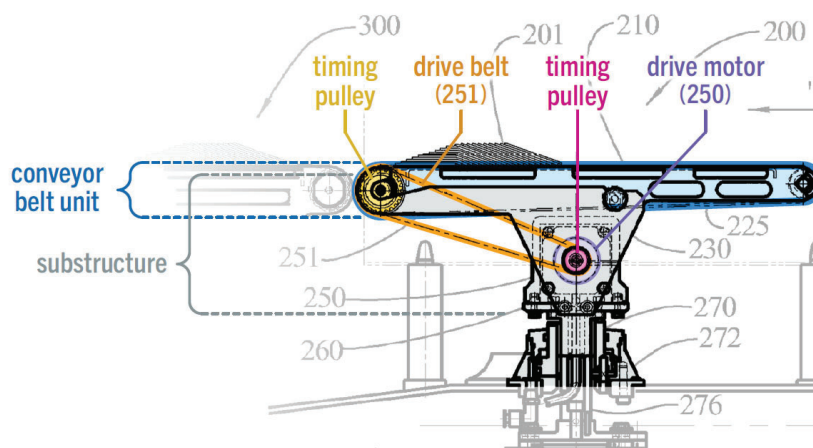
59. The process to **install** the conveyor belt unit is the reverse, as follows:

- a. **Step 1:** Place the belt 251 on the conveyor belt unit and push the unit forward (away from the slice scale 100) to engage the front axis in the slot in the side walls 230. This motion tensions the belt 251.
- b. **Step 2:** Lower the unit from the front (closest to the slice scale 100) to rotate it clockwise about the front axis to engage the engagement bar and secure the unit in place.

60. Not unlike Konishi, the McLaughlin removable conveyor belt unit is basically lifted up by hand and pops out of the system for easy removal. I was involved in the process of drafting figures of a modified portion of Figure 2 below that more clearly show the above described installation/removal of McLaughlin's conveyor belt. Using my experience and education, I helped prepare these figures to illustrate my best understanding of how a POSA would understand McLaughlin's conveyor works based on the mechanics and functions described in the patent.



McLaughlin Annotated Figure 4



McLaughlin Annotated Figure 2

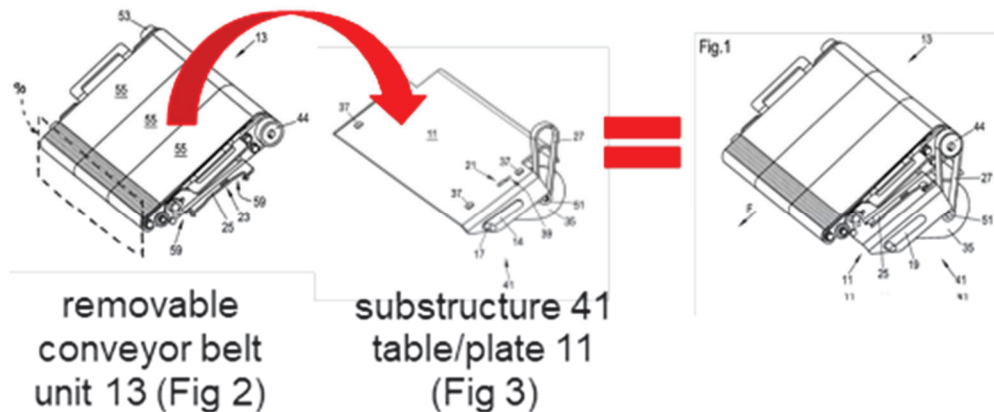
61. Further, McLaughlin teaches that it is possible to have multiple streams of conveying surfaces (which requires a corresponding drive for each stream), that is, they are arranged parallel and transverse to the direction of motion. This allows multiple drafts to be processed simultaneously, increasing production throughput. See *Ibid.* at 5:11-17. The art appreciated that instead of one lane (also referred to as a track) of food processing, two or more lanes with multiple corresponding drives could offer obvious benefits.

IX. BACKGROUND OF THE '487 PATENT-AT-ISSUE

A. The Specification

62. The '487 patent discloses “a slicing apparatus for food products” that includes “a removable conveyor belt unit.” '487 patent, Abstract, 2:25-26. The removable conveyor belt unit includes a track and a base. The base allows the conveyor belt unit to “be mechanically attached to a substructure of the belt

conveyor. The base...represents the part of a mechanical interface at the conveyor unit side between the conveyor belt unit and the substructure.” Ibid., 2:48-54.



63. The removable conveyor belt unit mounts on a “substructure.” Ibid., 7:30-37. The substructure “includes the mount” and is “provided with a drive motor.” Ibid., 8:20-29. The “cooperation” of the conveyor belt unit and substructure allows three claimed processes: “(i) the movements of the conveyor belt unit 13 required for the removal and for the installation of the conveyor belt unit 13; (ii) the unlatching and the latching of the conveyor belt unit 13; and (iii) the cancelling and the establishing of the coupling between the drive 15 and the conveyor belt unit 13.” Ibid, 8:39-46.

64. The benefits touted by the '487 patent (that removable conveyors “makes a cleaning possible which is as simple as possible with a space-saving and inexpensive manner of construction” Ibid., 2:20-24) were already known in the food processing industry. For example, U.S. Patent No 6,201,218 teaches “a quick

connect/disconnect feature that allows quick removal of one of the assemblies for cleaning, maintenance and/or belt replacement.” Chandler (Exhibit 1016), Abstract. Further, Konishi teaches that its subframe is “made simple and lightweight, making it easy to attach and detach from the frame...and maintenance of each mechanical part can be easily performed.” Konishi, [0045]. Konishi’s removable conveyor assembly further teaches the benefit of tensioning/loosening the drive belt without using a “separate mechanism.” Ibid., [0047]; Lee (Exhibit 1012), [0020] (“No tools are required to remove the conveyor assemblies.”).

B. Representative Claim 1

65. Claim 1 it recites:

[1.Pre] A slicing apparatus for food products, the slicing apparatus comprising:

[1.A] a removable conveyor belt unit (13) having at least one track and a base (25);

[1.B] a substructure (41) having a mount (11) coupled to the base (25); and

[1.C] a drive (15) coupled to the conveyor belt unit (13) by a drive belt (27),
the conveyor belt unit (13) is configured to be cancelled by relaxing the
drive belt (27) and is configured to be established by tautening the drive
belt (27), with the relaxing and tautening of the drive belt (27) each

being provided by a relative movement between the drive (15) and the conveyor belt unit (13).

66. Claim 22 is similar to claim 1. For example, if elements [1.Pre], [1.A], and [1.B] are met by a piece of prior art, then elements [22.Pre], [22.A], and [22.B] are met by the prior art, respectively. Claim 22[A] is nearly identical to claim 1[A] with the addition of “at least one” to the removable conveyor belt unit. Claim 22[B] is identical to Claim 1[B]. Claim 22 also recites:

22[C1] a first drive is coupled to the conveyor belt unit at the left side...when viewed in the conveying direction;

22[C2] at a second drive (15) at the right side, when viewed in the conveying direction;

22[C3] the coupling between the drives (15) and the conveyor belt unit (13) is configured to be simultaneously cancelled and established for at least one of the first drive and the second drive;

C. The Prosecution History

67. The '487 patent references German patent applications from which it appears to claim priority. The first of those German patent applications was filed on December 3, 2012. EX1002, 549. The Examiner issued two office actions during the prosecution of the '487 patent. *Ibid.*, 42, 134.

D. Priority Date

68. The earliest possible priority date that the '487 patent can claim the benefit of is the date of the first German patent application from which the '487 patent claims priority: December 3, 2012. EX1001, Cover Page.

X. SUMMARY OF THE GROUNDS

69. The below table summarizes the grounds for unpatentability addressed in my declaration. A POSA would have known of the below identified prior art, and also would have been aware of the state of the art I discussed in Section VIII.A–C. The discussion of the state of the art is relevant to the entire discussion in my declaration.

Ground	Claims Challenged	35 U.S.C. §	References
1	1, 6, 9, 15-16	102	Konishi
2	1-4, 6, 9-10, 14-16, 22	103(a)	Konishi, Lindee
3	1-4, 6, 9-10, 14-16, 22	103(a)	McLaughlin
4	1-4, 6, 9-10, 14-16, 22	103(a)	McLaughlin, Konishi

XI. GROUND 1: CLAIMS 1, 6, 9, 15, 16 ARE ANTICIPATED BY KONISHI.

70. Below, I explain how Konishi discloses and anticipates each and every limitation of claims 1, 6, 9, 15, 16 of the '487 patent.

A. Independent Claim 1

71. Independent claim 1 is anticipated by Konishi. The below chart briefly summarizes the teachings of Konishi that correspond to the relevant claim limitations in the '487 patent's independent claim 1:

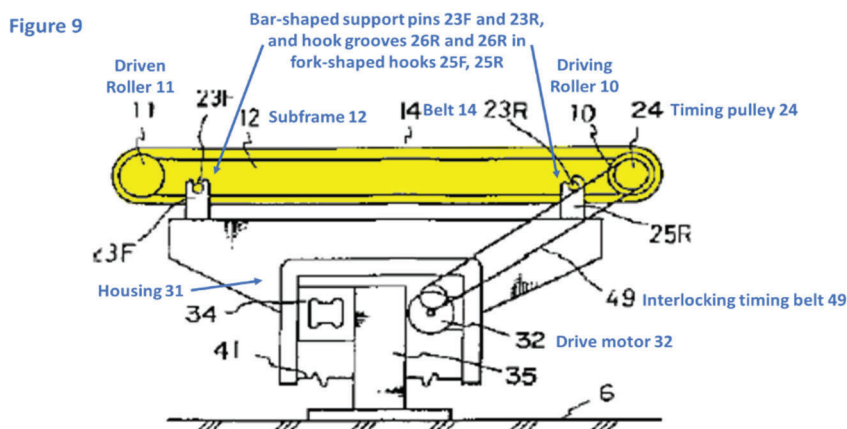
Claim Element	Konishi Exemplary Disclosures
removable conveyor belt unit	conveyor belt 14, subframe 12, and rollers 10-11, timing pulley 24
base	subframe 12
substructure	frame 9
mount	hooks 25R, 25F
drive	drive motor 32
drive belt	timing belt 49, timing pulley 48, conveyor belt 14, timing pulley 24
relaxing/tautening/relative movement	[0033]–[0041]; Figs. 8-9

1. Element 1[A]: “a removable conveyor belt unit (13) having at least one track and a base (25)”

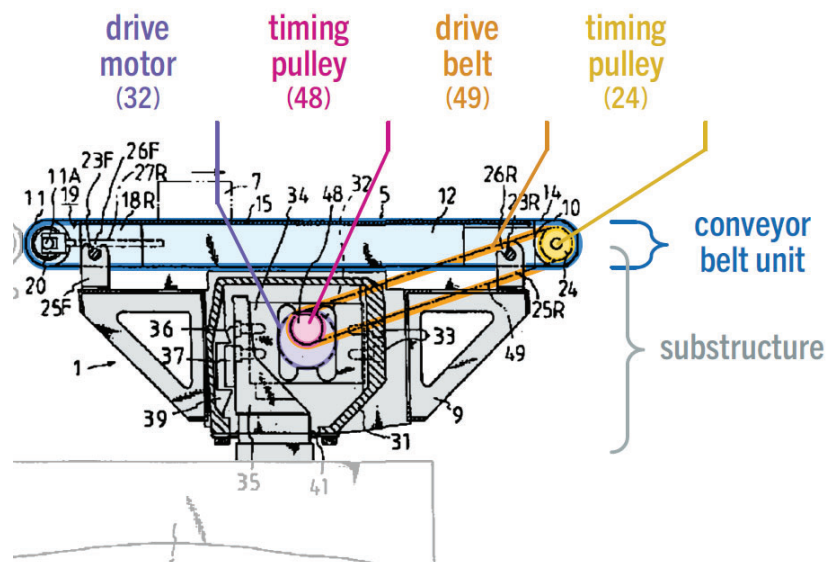
72. Konishi discloses a removable conveyor belt unit having at least one track and a base.

73. Konishi discloses a removable conveyor belt unit. For instance, Konishi discloses a conveyor belt 14, a subframe 12, rollers 10, 11, and a timing pulley 24. The claimed removable conveyor belt unit corresponds to this structure,

which is described as “removably attached” to the frame. Konishi, [Configuration], [0008]. Konishi states that “a subframe 12 having a conveyor belt 14 for conveying objects to be weighed is removably attached to the frame 9.” *Ibid.*, [0034]. To remove the subframe, a person would pivot the subframe about the connection at 23R and then remove the subframe from the base. Konishi also describes that “the sub-frame 12 still equipped with the conveyor belt 14, the drive roller 10, and the driven roller 11 can be separated from the frame 9 side and can be processed with predetermined cleaning or the like.” *Ibid.*, [0034]. Below annotated Figure 9 illustrates all of the relevant components.



Annotated Konishi Figure 9.



Annotated Konishi Figure 1.

74. Konishi's removable conveyor belt unit has a track. The conveyor belt that conveys objects to be weighed is the track.

75. I note that throughout the specification, the '487 patent discusses "tracks" as being independently driven. For instance, the '487 patent states that the embodiment in Figure 8 is a single track system even though there are multiple conveyor belts. EX1001, 7:54-58. These types of "tracks" are also referred to as "lanes" or "feeds" in the conveyance industry and food processing industry.

76. Konishi's removable conveyor belt unit also has a base. The subframe 12 disclosed in Konishi and annotated in the above figure corresponds to the claimed base. Konishi's subframe is discussed throughout Konishi's specification. See, e.g. Konishi, [0019], [0022].

77. Thus, Konishi discloses Element 1[A]: “a removable conveyor belt unit (13) having at least one track and a base.”

2. Element 1[B]: “a substructure (41) having a mount (11) coupled to the base (25)”

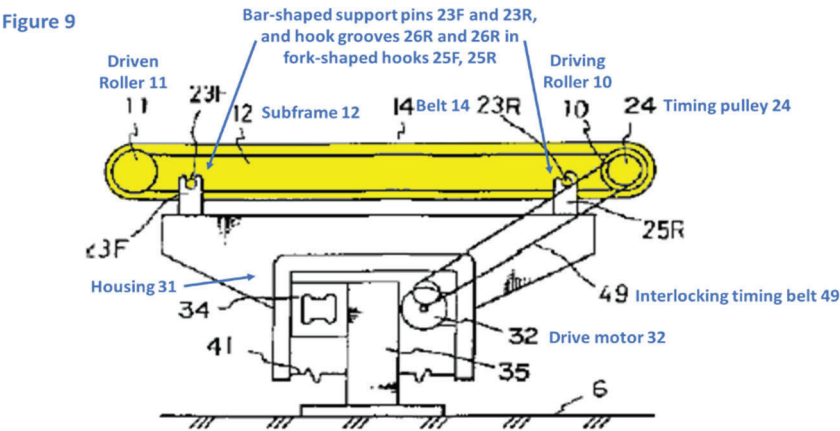
78. Konishi discloses a substructure having a mount coupled to the base.

79. The below chart summarizes the disclosure from Konishi that corresponds to the claimed elements in the '487 patent.

Claim Element 1[B]	Konishi Exemplary Disclosures
substructure	frame 9
mount	hooks 25R, 25F
base	subframe 12

80. The claimed substructure having a mount corresponds to Konishi's frame 9. The claimed mount corresponds to Konishi's fork-shaped hooks 25F and 25R. Konishi describes that its “frame 9” has “a pair of fork-shaped hooks 25F, 25R.” EX1001, [0021]. Konishi describes that those fork-shaped hooks “protrude upward at the front and rear in correspondence with the pair of support [p]ins 23F, 23R on the subframe 12.” EX1004, [0021]. Thus, when the removable conveyor belt unit is mounted on the subframe such that Konishi's support pins 23F and 23R are attached to Konishi's fork-shaped hooks 25F and 25R, Konishi's frame is coupled to the base of the removable conveyor belt unit.

81. The below Figure 9 shows Konishi when the frame is coupled to the base via a connection between 23F, 25F and 23R, 25R.



Annotated Konishi Figure 9

82. Thus, Konishi discloses Element 1[B]: “a substructure (41) having a mount (11) coupled to the base (25).”

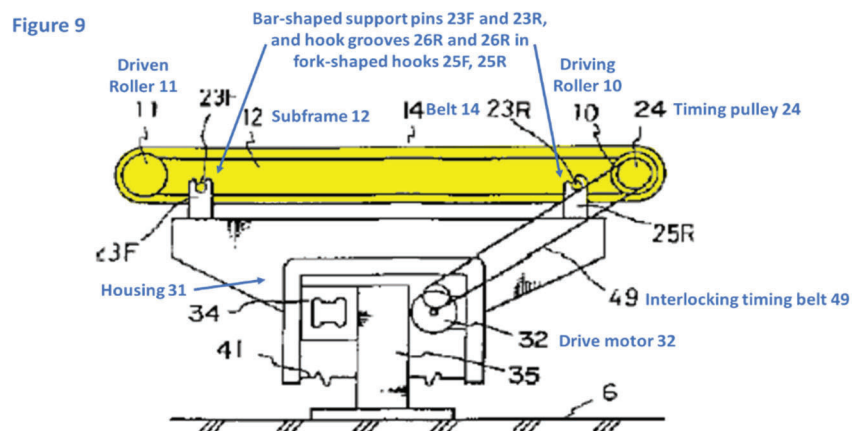
3. Element 1[C1]: “a drive (15) coupled to the conveyor belt unit (13) by a drive belt (27)”

83. Konishi discloses a drive coupled to the conveyor belt unit by a drive belt.

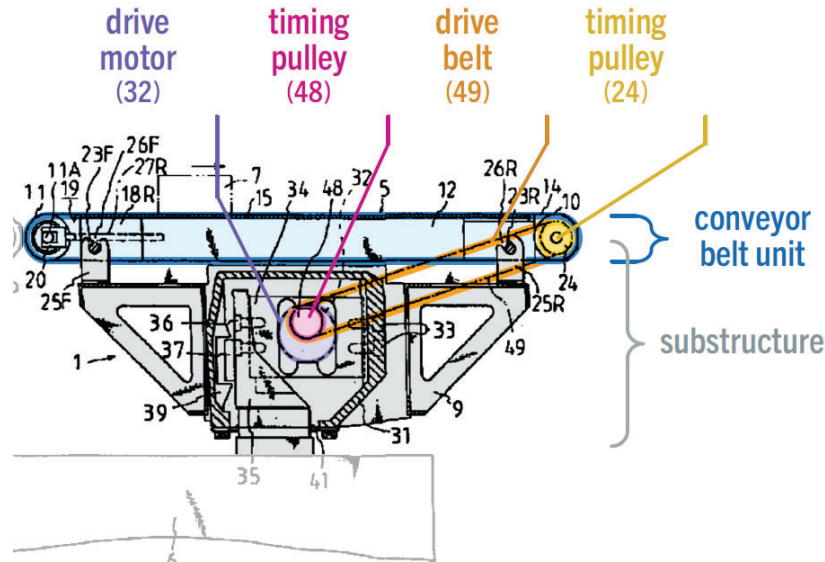
84. The below chart summarizes the disclosure from Konishi that corresponds to the claimed elements of the ’487 patent.

Claim Element 1[C]	Konishi Exemplary Disclscores
conveyor belt unit	conveyor belt 14, subframe 12, and rollers 10-11, timing pulley 24
drive	drive motor 32
drive belt	timing belt 49

85. Konishi discloses a “drive motor 32” that corresponds to the claimed drive. Konishi discloses that its drive motor is connected to the drive roller 10 of the conveyor belt 14 by interlocking timing belt 49. This drive motor, timing belt, drive roller connection corresponds to the claimed coupling between the drive and the conveyor belt unit by a drive belt.



Annotated Konishi Figure 9



Annotated Konishi Figure 1

86. Thus, Konishi discloses Element 1[C]: “a drive (15) coupled to the conveyor belt unit (13) by a drive belt (27).”

4. **Element 1[C2]: “the conveyor belt unit is configured to be cancelled by relaxing the drive belt and is configured to be established by tautening the drive belt, with the relaxing and tautening of the drive belt each being provided by a relative movement between the drive and the conveyor belt unit.”**

87. Konishi discloses the conveyor belt unit is configured to be cancelled by relaxing the drive belt and is configured to be established by tautening the drive belt, with the relaxing and tautening of the drive belt each being provided by a relative movement between the drive and the conveyor belt unit.

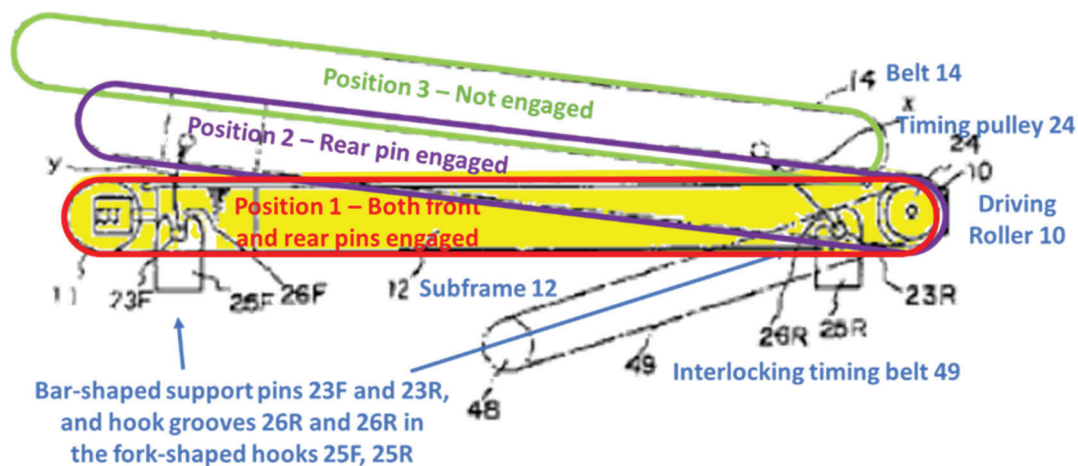
88. The '487 Patent describes the relative movement between the drive motor and the conveyor belt unit is used for “cancelling” and “establishing” a

coupling between a drive motor for the conveyor belt unit and the conveyor belt unit.

'487 Patent, 3:52-56. In other words, the belt may be tensioned during installation and loosened during removal.

89. Konishi describes and illustrates the removal/installation that corresponds to claim Element 1[D]. Figure 8, annotated below, shows the conveyor belt unit in three positions during removal and/or installation.

Figure 8



90. The positions are:

- a. **Position 1**, highlighted in yellow and outlined in red, when the conveyor belt unit is in its operating position with support pins 23F and 23R engaging the hooks 25F and 25R and the interlocking timing belt 49 engaging the timing pulley 24 to drive the belt 14.

- b. Position 2**, outlined in purple, is when the conveyor belt unit is partially removed (or installed) with the front of the conveyor belt unit out of engagement with the front pins and grooves.
- c. Position 3**, outlined in green, is when the conveyor belt unit is fully removed from housing 31, with the conveyor belt unit moved forward and upward relative from housing 31 and out of engagement with the front and back pins and hooks. The axial motion of the removable belt unit relative to the housing tensions timing pulley 24 belt on installation or relaxes the belt on removal.

In other words, Position 1 above shows when the timing belt 49 would be “established.” Position 2 above shows when the timing belt would begin to loosen on removal or tighten on installation. During removal, the belt would loosen in position two because the point of rotation, 23R, is close to the motor than the drive roller 10. As the rear of the conveyor belt unit is lifted upward, the driving roller 10 would rotate about the axis of the pin that keeps it in place, which would result in a decrease in the linear distance between driving roller 10 and the motor. The reverse happens in installation to tension the belt. Position 3 above shows when the entire conveyor belt unit has been removed from the supporting structure. The motions required to reach Position 2 and Position 3 are movements that require a relative

movement between the drive motor and the conveyor belt unit. As an example, the rear end of the conveyor belt unit is moved relative to the drive between Position 1 and Position 2. This movement means that there are multiple points in space along the conveyor belt unit that have moved relative to the drive motor.

91. Konishi describes this motion in its specification. For example, Konishi describes the motion in paragraphs 33 and 34. Konishi states that when the “subframe 12 is lightly lifted upward” the “front support [p]in 23F is removed from the hook groove 26F of the hook 25F.” Konishi, [0033]. Konishi explains that “since the timing prefix 24 fixed to the shaft 10A of the drive roller 10 moves diagonally downward, the interlocking timing belt 49 stretched between the timing pulley 24 and the timing pulley 48 fixed to the rotating shaft 62 on the sub-housing 42 side becomes loose, and the timing belt 49 can be easily removed from the timing pulley 24 of the drive roller 10.” Ibid. Therefore, Konishi states that the relative movement between the conveyor belt unit (i.e., the lifting upward and resulting diagonally downward movement) and the timing pulley 48 attached to the drive motor 32 loosens the belt. Loosening the drive belt can also be described as cancelling the conveyor belt unit. Konishi’s movement (described above in connection with Position 2) is a relative movement because the pivoting of subframe 12 about the connection point at 23R moves the removable conveyor belt unit

relative to the drive motor. Further, Konishi's movement (described above in connection with Position 3) is a relative movement because the entire conveyor belt unit is moved away from the drive motor.

92. Konishi further states that the installation is completed by repeating the removal steps in opposite order. *Ibid.*, [0022]. Konishi states that the conveyor belt unit "can be easily removed by rotating the subframe 12 upward...centering on the rear support bin 23R that is engaged with the hook groove 26R of the rear hook 25R, removing the front support [p]in 23F from the hook groove 26F of the hook 25F, and then pulling out the rear support bin 23R from the diagonal hook groove 26 R of the hook 25R." *Ibid.* Konishi later explains that this process involves tautening the drive belt: "[T]hen the timing belt 49 is freely stretched between the timing pulley 48 on the sub-housing 42 side and the timing pulley 24 on the sub-frame side. From this state, the rear support pin 23R of the subframe 12 is inserted and engaged into the diagonal hook groove 26R of the rear hook 25R from diagonally above by performing the operation opposite to that shown in Figure 8." *Ibid.*, [0039]. Tautening the drive belt can also be described as establishing the conveyor belt unit.

93. Thus, Konishi discloses Element 1[D]: "the conveyor belt unit (13) is configured to be cancelled by relaxing the drive belt (27) and is configured to be established by tautening the drive belt (2), with the relaxing and tautening of the

drive belt (27) each being provided by a relative movement between the drive (15) and the conveyor belt unit (13).”

5. Element 1[Pre]

94. Independent Claim 1’s preamble recites: “A slicing apparatus for food products, the slicing apparatus comprising.”

95. Konishi does not expressly disclose a “slicing” apparatus. I note that Konishi states that it is used for food items such as confectionaries. EX1004, [0001]. [0004]. I also note that Konishi discloses an apparatus for food products comprising the requirements of Independent Claim Elements 1[A]–1[D].

96. As I discussed above in Section VI, the preamble is not a limitation on the scope of the claims. Thus, Konishi does not need to disclose a “slicing” apparatus to anticipate Independent Claim 1.

B. Dependent Claim 6

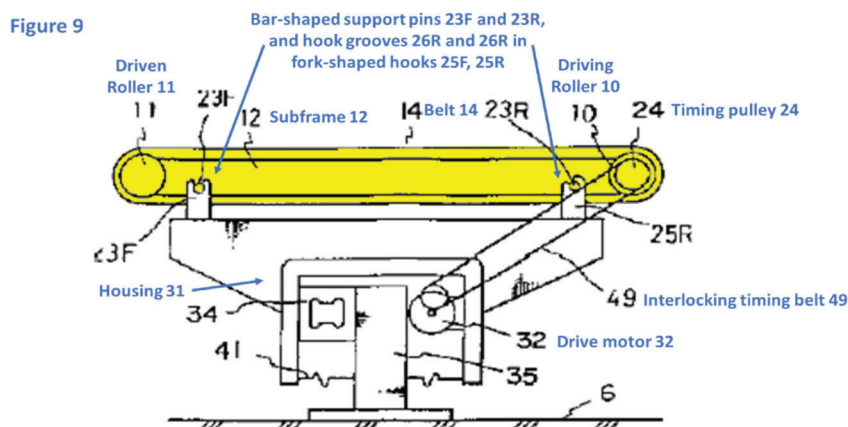
97. Dependent claim 6 recites “The apparatus in accordance with claim 1, further comprising wherein at least one drive motor (15) for the conveyor belt unit (13) is provided, with the drive motor (15) being directly coupled with the conveyor belt unit (13), and/or unit; and wherein the drive motor (15) is arranged beneath the conveyor belt unit (13).”

98. Konishi discloses the apparatus of claim 1 for the reasons discussed above in Section XI.A.

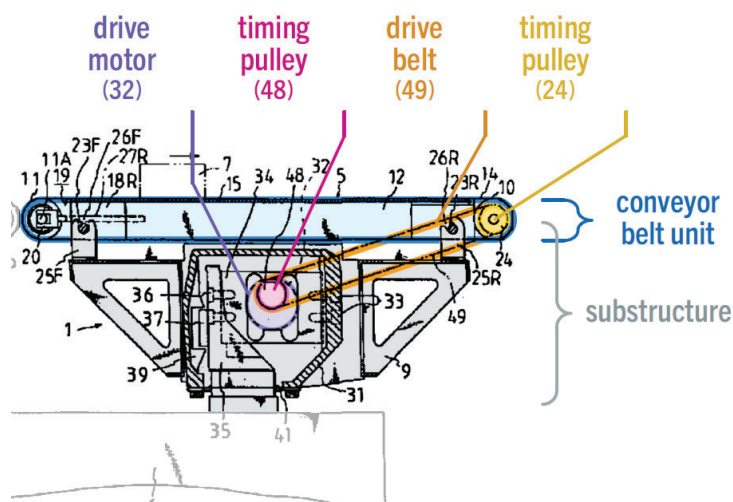
99. Konishi discloses “further comprising wherein at least one drive motor (15) for the conveyor belt unit (13) is provided, with the drive motor (15) being directly coupled with the conveyor belt unit” for the reasons discussed above in Section XI.A.3. For example, Konishi discloses a drive motor 32. Konishi, [0003], Fig. 11. Konishi states that “a drive motor 32 is attached to a subframe extension 12a...and this drive motor 32 and the drive roller 10 of the conveyor belt 14 are interlocked via a belt 49.” EX1004, [0003]. The interlocked connection via belt 49 corresponds to the claimed “directly coupled” connection, while the drive roller 10 is connected to Konishi’s subframe, all of which corresponds to the claimed “conveyor belt unit.”

100. I note that throughout its specification, the ’487 patent describes a “directly coupled” connection or a “direct coupling” connection throughout its specification. For example, the ’487 patent states “a direct coupling to the drive wheel, in particular via a belt connection or a toothed wheel arrangement.” EX1001, 3:46-48. Further, the ’487 patent states that Figure 1 shows “a direct drive connection between the drive motor and the conveyor belt unit 13 via the drive belt 27 which runs around the drive shaft 51 of the motor and the drive wheel 44 of the conveyor belt unit 13.” EX1001, 8:34-38.

101. Konishi also discloses wherein the drive motor is arranged beneath the conveyor belt unit. For example, Figure 1 shows Konishi's drive motor 32 arranged beneath the subframe 12. Figures 4 and 9 show similar arrangements.



Annotated Konishi Figure 9



Annotated Konishi Figure 1

102. Thus, Konishi discloses dependent claim 6: “The apparatus in accordance with claim 1, further comprising wherein at least one drive motor (15)

for the conveyor belt unit (13) is provided, with the drive motor (15) being directly coupled with the conveyor belt unit (13), and/or unit; and wherein the drive motor (15) is arranged beneath the conveyor belt unit (13).”

C. Dependent Claim 9

103. Dependent claim 9 recites “The apparatus in accordance with claim 1, further comprising: wherein a respective relative movement is provided between the drive motor (15) and the conveyor belt unit (13) for cancelling and establishing a coupling between a drive motor (15) for the conveyor belt unit (13) and the conveyor belt unit; and wherein the spacing between a drive axle of the drive motor (15) and a drive axle of the conveyor belt unit (13) is configured to be varied by the relative movement.”

104. Konishi discloses the apparatus in accordance with claim 1, further comprising wherein a respective relative movement is provided between the drive motor and the conveyor belt unit for cancelling and establishing a coupling between a drive motor for the conveyor belt unit and the conveyor belt unit; and wherein the spacing between a drive axle of the drive motor and a drive axle of the conveyor belt unit is configured to be varied by the relative movement.

105. Konishi discloses the apparatus in accordance for claim 1 for the reasons discussed above in Section XI.A.

106. Konishi discloses “further comprising wherein a respective relative movement is provided between the drive motor and the conveyor belt unit for cancelling and establishing a coupling between a drive motor for the conveyor belt unit and the conveyor belt unit; and” for the reasons discussed above in Section XI.A.4.

107. Konishi discloses “wherein the spacing between a drive axle of the drive motor (15) and a drive axle of the conveyor belt unit (13) is configured to be varied by the relative movement.” Konishi’s timing pulley 24 is attached to the end of a shaft 10A of the conveyor belt units drive roller 10. Konishi, [0020]. This shaft 10A acts as a drive axle to drive the drive roller 10. Konishi’s timing pulley 48 and rotary shaft 62 extend from the motor 32. The rotary shaft acts a drive axle for the drive motor. Konishi’s shaft 10A is moved relative to rotary shaft 62 during the removal and installation steps described above in Section XI.A.4. Konishi states “since the timing prefix 24 fixed to the shaft 10A of the drive roller 10 moves diagonally downward, the interlocking timing belt 49 stretched between the timing pulley 24 and the timing pulley 48 fixed to the rotating shaft 62 on the sub-housing 42 side becomes loose, and the timing belt 49 can be easily removed from the timing pulley 24 of the drive roller 10.” Ibid., [0033-34].

108. Thus, Konishi discloses dependent claim 9: “The apparatus in accordance with claim 1, further comprising: wherein a respective relative movement is provided between the drive motor (15) and the conveyor belt unit (13) for cancelling and establishing a coupling between a drive motor (15) for the conveyor belt unit (13) and the conveyor belt unit; and wherein the spacing between a drive axle of the drive motor (15) and a drive axle of the conveyor belt unit (13) is configured to be varied by the relative movement.”

D. Dependent Claim 15

109. Dependent claim 15 recites “The apparatus in accordance with claim 1, wherein at least one continuous belt or continuous band (55) or a plurality of continuous straps (57) is/are provided as conveying means of the conveyor belt unit (13).”

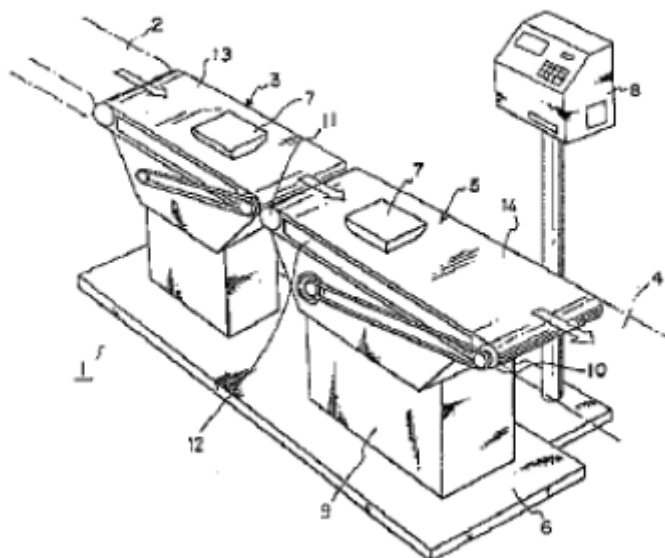
110. Konishi discloses the apparatus in accordance with claim 1, wherein at least one continuous belt or continuous band or a plurality of continuous straps is/are provided as conveying means of the conveyor belt unit.

111. Konishi discloses the apparatus in accordance for claim 1 for the reasons discussed above in Section XI.A.

112. Konishi discloses wherein at least one continuous belt or continuous band (55) or a plurality of continuous straps (57) is/are provided as conveying means

of the conveyor belt unit (13). Konishi states that it includes at least one continuous belt provided as conveying means of the conveyor belt unit. For example, Konishi states that the product 7 is placed on the conveyor belts 13 and conveyed continuously. Konishi, [0002]. Konishi's figures 1, 6, 9-10 also show that the conveyor belts 13 and 14 are continuous belts. These are considered continuous belts because they are endless belts that wrap around rollers.

【Figure 10】



Konishi Figure 10

113. Thus, Konishi discloses dependent claim 15: “The apparatus in accordance with claim 1, wherein at least one continuous belt or continuous band (55) or a plurality of continuous straps (57) is/are provided as conveying means of the conveyor belt unit (13).”

E. Dependent Claim 16

114. Dependent claim 16 recites “The apparatus in accordance with claim 1, wherein the conveyor belt unit (13) is configured to be removed and/or installed without tools.”

115. Konishi discloses the apparatus in accordance with claim 1, wherein the conveyor belt unit is configured to be removed and/or installed without tools. The removal process described in paragraphs [0033] through [0041], and nowhere does the removal process describe or require the use of tools. For removal, Konishi states that the “front part of the subframe 12 is lightly lifted upward...and the front support pin 23F is removed.” Konishi, [0033]. Konishi states that after the subframe has been lifted up, the timing belt can be removed from the conveyor belt unit. [0034]. Once the timing belt has been removed, “the sub-frame 12 still equipped with the conveyor belt 14, the drive roller 10, and the driven roller 11 can be separated from the frame 9 side.” Ibid., [0034]. None of these steps require tools, and Konishi does not discuss using tools for any of these steps. Indeed, the purpose of Konishi was to “simplify the structure of the subframe containing the conveyor belt to make it easier to remove from the frame.” Konishi, [Purpose]. A POSA would have understood that a more simple removal process would have not involved tools. See also Konishi [0047].

116. Indeed, Konishi extensively describes its tool-less removal process. Konishi describes that “First...the front part of the subframe 12 is lightly lifted upward...and the front support pin 23F is removed from the hook groove 26F of the hook 25F.” Konishi, [0033]. Konishi then explains that the timing belt is relaxed by the first movement, and that “the timing belt 49 can be easily removed from the timing pulley 24 of the drive roller 10.” Ibid., [0034]. Finally, “the rear part of the subframe 12 is pulled diagonally upward...[and t]herefore the sub-frame 12 still equipped with the conveyor belt 14, the drive roller 10, and the driven roller 11 can be separated from the frame 9 side.” Ibid., [0034]. Konishi also states that performing the operation in reverse would result in removal of the conveyor device. Ibid., [0022].

117. Thus, Konishi discloses dependent claim 16: “The apparatus in accordance with claim 1, wherein the conveyor belt unit (13) is configured to be removed and/or installed without tools.”

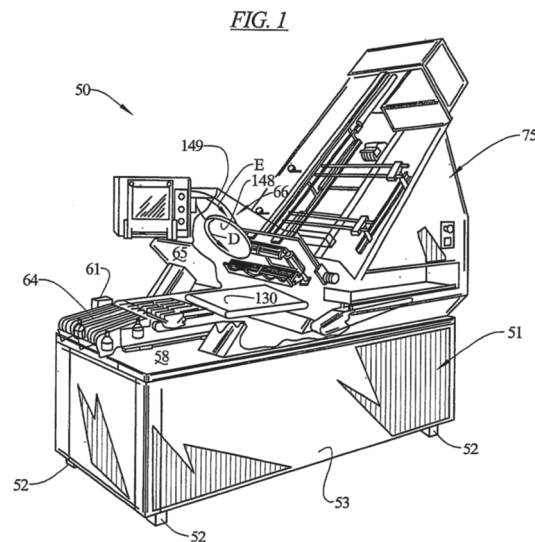
XII. GROUND 2: CLAIMS 1-4, 6, 9, 10, 14-16, AND 22 WOULD HAVE BEEN OBVIOUS OVER KONISHI AND LINDEE IN LIGHT OF THE KNOWLEDGE OF A POSA.

118. Below, I explain how claims 1-4, 6, 9, 10, 14-16, 22 of the '487 patent would have been obvious over Konishi and Lindee in light of the knowledge of a POSA.

A. Independent Claim 1

119. As shown above for Ground 1 in Section XI.A, Konishi teaches all of the elements of claim 1, except that Konishi does not include the non-limiting term in the preamble of a “slicing apparatus for food products.” However, Lindee discloses a slicing apparatus for food products, and would have been obvious to combine Konishi and Lindee with a reasonable expectation of success, as discussed below.

120. As described above in Section VIII.E, Lindee discloses a slicing apparatus for food products. The patent is title “Conveyor system for slicer apparatus.” Lindee, 1. Figure 1 of Lindee shows the slicing apparatus and a number of conveyors.



Lindee, Fig. 1.

121. Lindee states that “[t]he present invention relates to slicing apparatus and associated conveyor systems.” Lindee, 1. Lindee also states that “[s]licing apparatus and associated conveyor systems are known.” Ibid. Lindee incorporates by reference other similar arrangements. Lindee, 1. Lindee discloses a slicing machine 50 and a conveyor drive 61 that drives the output conveyor. Ibid. 4–5. Lindee states that the conveyor and telescopic drive shaft in Figures 5–7 are removable for cleaning and sanitizing. Ibid. 10.

B. Motivation to Combine Konishi and Lindee

122. A POSA would have been motivated to combine Konishi and Lindee. Konishi and Lindee are both in the same technological field as the ’487 patent, namely conveyance systems. Konishi and Lindee also disclose conveyor systems used in the food processing industry. Konishi and Lindee are also both relevant to the alleged problem addressed by the ’487 patent’s inventors—removing conveyors from conveyance lines for cleaning and maintenance.

123. As I discussed above, Konishi’s conveyance system includes a conveyor belt unit that uses belt conveyors to transport food items. See Section VIII.D. I note that Konishi discloses an apparatus for food products, a removable conveyor belt unit having at least one track and a base, a substructure having a mount coupled to the base, and a drive coupled to the conveyor belt unit that is configured

to be cancelled by relaxing the drive belt and is configured to be established by tautening the drive belt, with the relaxing and tautening of the drive belt each being provided by a relative movement between the drive and the conveyor belt unit. See Section XI.A. In addition, using a removable conveyor in a slicing machine is disclosed in Lindee. See Section VIII.E. Using removable conveyor belt units in systems similar to both Konishi and Lindee were also well known in the art. See McLaughlin, Figure 2. And it would have been obvious to modify Konishi to include Lindee's slicing apparatus to improve throughput, yield, conveyor sanitation, conveyor maintenance, and cleaning procedures.

124. A POSA would have been well aware of removable conveyor assemblies. See Konishi, Lindee, McLaughlin; see also Lee (EX1012). A POSA would have also known about the advantages of removable conveyor belts, including improving the ease of assembly/disassembly, maintenance, and sanitation. See Konishi [Purpose]. This is particularly true and importance when dealing with conveyors used in the food processing industry. Indeed, Konishi explicitly states that it's disclosure creates a "simple structure wherein the subframe side can be easily disassembled and assembled from the frame, and maintenance such as cleaning of each mechanical part can be performed reliably and efficiently, and the waterproof performance of the weight detector and motor can be ensured with a

simple configuration. Konishi, [0007], [0013]. A POSA would have understood the maintenance, cleaning, and other advantages provided by a removal conveyor belt unit and known by the time of the invention.

125. First, a POSA would have been motivated to use a removable conveyor belt unit to simplify assembly/disassembly. Simplifying the assembly/disassembly of a removable conveyor belt unit has many benefits, including reducing the amount of time to complete any task that requires removing/installing the conveyor belt assembly. Such tasks include cleaning and maintenance procedures, and also include things like initial set up of the conveyor system or disassembly/assembly required to relocate the conveyor system.

126. Second, a POSA would have been motivated to use a removable conveyor belt unit to improve maintenance. A POSA would have valued having a removable conveyor belt assembly so that the conveyor assembly could be removed to facilitate easy access to other components in the food processing line. Konishi explicitly teaches such advantage: “As described above, all mechanical parts can be disassembled and assembled as desired. Therefore, maintenance of various parts that cannot be accessed because they are obstructed by other mechanisms or parts in the assembled position, which is a normal state in use, can be easily and reliably performed by exposing them by disassembling the product.” Konishi, [0042]. Not

only would the removal the conveyor belt unit provide easier access to other components that require maintenance, but it would also promote easier and more flexible maintenance of the actual conveyor belt unit. If a worker was able to relocate the conveyor belt unit to a separate work surface or area of the factory, the worker would be able to easier manipulate the orientation of the conveyor belt unit to access different sides of the conveyor belt unit. Further, the worker could perform more intense repair/maintenance (like welding a stress fracture, of it occurred) away from the rest of the food processing line, which would reduce the risk of damaging other parts of the food processing line during the more intense repair/maintenance.

127. Third, a POSA would have been motivated to use a removable conveyor belt unit to improve cleaning. Maintaining clean and sanitize equipment is an important consideration in the food processing industry. If equipment is not regularly cleaned and/or sanitized, and food processing company risks an outbreak of bacteria or foodborne-illness, which, at a minimum would harm the food processing company's reputation, and, at worse, could result in death. Konishi explicitly teaches that the ease of removing the conveyor belt unit promotes efficient cleaning: "In addition, efficient cleaning means such as showering can be used to thoroughly clean the entire area and maintain sanitary management." Konishi, [0042]. Lindee also explicitly teaches that removing conveyor units is part of a

regular cleaning procedure: “The conveyor and telescopic drive shaft are removable for cleaning and sanitizing.” Lindee, 10. Removing the conveyor assembly allows easy access to portions of the machine that are otherwise obstructed, and that easy access allows for easier cleaning.

128. Fourth, a POSA would have been motivated to use a removable conveyor belt unit to readily facilitate swapping conveyor belt surfaces. For instance, if a drive roller began to fail, a conveyor belt began to fray, or a frame began to crack, a POSA would have recognized that a removable conveyor that could be quickly and easily removed would have decreased the down time for a conveyance line because that conveyor belt unit could be readily swapped with another similar conveyor belt unit.

129. A POSA would have been motivated to use a removable conveyor belt unit with a motor underneath the conveyor belt unit as a space saving technique. Konishi discloses that its motor is arranged beneath the conveyor belt unit. Placing the motor nearby and underneath the respective conveyor belt unit that the motor drives would reduce overall machine size by facilitating a compact arrangement. Reduction in overall machine size is a key consideration in the food processing industry, where floor space is at a premium. In addition, by placing the motor underneath and nearby the conveyor belt unit, the length of the drive belt would be

reduced. Reducing the length of the drive belt is advantageous because it reduces the overall length by which the drive belt would eventually stretch after use. The reduced length of the belt reduces the chance of breakage as well as the chance of interference from other components.

130. In my opinion, a POSA would have been motivated to use the slicer from Lindee in a system including Konishi's removable conveyor in order to achieve the benefits discussed above, including improving maintenance, cleaning, and space saving.

131. In addition to the reasons discussed above, in my opinion, a POSA would have recognized that applying Lindee's slicer to Konishi's removable conveyor belt unit is a simple combination of prior art elements according to known methods to yield predictable results. As I discussed above, removable conveyor belt units were common and well-known means of conveying objects by the time of the invention, including food product, that engineers and machine designers used in many industries. Section VIII.C. A POSA would have been well aware of the use of removable conveyor belt units, and the corresponding advantages of doing so. Implementing the removable conveyor belt unit into Lindee—or implementing Lindee's slicer into a system including Konishi's removable conveyor belt unit—

would have resulted in the predictable result of a conveyor belt unit that could be removed and installed through a series of movements and attaching a drive belt.

132. Also, claim 1 recites a known structure (e.g. Lindee's slicing apparatus) that is altered by the mere substitution of one element (e.g. the idea of Konishi's removable conveyor belt unit). This simple substitution could also be described in the opposite manner, e.g. adding Lindee's slicing apparatus to a system already including Konishi's removable conveyor belt unit. The result of this substitution yields the predictable result of conveying objects, such as food articles, while providing the benefits recognized by removable conveyor belt units, which I discussed above.

133. For similar reasons, a POSA would have recognized that using Konishi's known removable conveyor belt unit in Lindee's slicer would improve Lindee in the same way it improved Konishi. Specifically, Konishi and Lindee are similar devices because both Konishi and Lindee relate to conveyors in food processing lines. Further the conveyors in Lindee and Konishi are both belt-type conveyors that operate and function in a similar fashion. This further proves the point that the combination of Konishi and Lindee is nothing more than using a known technique to improve a similar device in the same way.

134. Therefore, a POSA would have been motivated to combine Konishi's removable conveyor belt unit with Lindee's slicer for many reasons.

C. Reasonable Expectation of Success Combining Konishi and Lindee

135. In my opinion, a POSA would have had a reasonable expectation of success implementing Lindee's slicing apparatus in a system including Konishi's removable conveyor belt unit, or implementing Konishi's removable conveyor belt unit into Lindee's slicer. As I stated above, implementing removable conveyor belt units is a common and well-known process that is used in multiple industries that use conveyors, including the food processing industry. Section VIII.C. Implementing a removable conveyor belt unit simply requires using the same components (belts, supports, rollers, motors, etc.) that are already disclosed and used in the prior art, with the potential additional requirement of basic programming. Thus, a POSA would have been well aware of how to design and implement a removable conveyor belt unit in a food slicer or slicing line like Lindee. In my experience, the sort of devices used in these systems would have been taught at an undergrad level and possibly used in an undergrad design project. Further, the relative motion principles would have been readily understandable and taught at an undergrad level. Therefore, implementing a removable conveyor belt unit would have been well within the skill of a POSA at the relevant time, and would involve

the use of well-known components in a familiar manner. Indeed, I note that the well-known components are disclosed throughout the prior art discussed in Sections VIII.A–C.

136. My opinion that a POSA would have a reasonable expectation of success in implementing a removable conveyor belt unit is further supported by the fact that the process for how to install and remove a removable conveyor belt unit are explicitly taught by Konishi. Konishi, [0033]–[0041]. Based on Konishi's express teachings (and Lindee's teaching that the machine already uses a removable conveyor belt unit), as well as both a POSA's own background knowledge and the background prior art, a POSA would have been well aware of how to implement a removable conveyor belt unit (like that taught in Konishi) into a slicing apparatus (like that disclosed in Lindee).

137. Additionally, a POSA would have been able to implement removable conveyors in Lindee either before or after the slicing blade. I note that Lindee's figures show conveyors in a slicing machine before and after the slicing blade. Lindee, Fig. 1. A POSA would have been able to design a removable conveyor belt unit to replace Lindee's conveyors arranged before or after the slicing blade. A POSA would have had a reasonable expectation of success in implementing removable conveyors before or after the slicing blade because it would have been a

simple substitution of similar components that yield a predictable result. I also note that adding Konishi's conveyor system immediately after the conveyors in Lindee's slicer would meet the requirements of the claim language.

138. For all of the above reasons, a POSA would have had a reason to combine Konishi's and Lindee's teachings to arrive at the claimed invention, with a reasonable expectation of success. Accordingly, claim 1 would have been obvious over Konishi and Lindee.

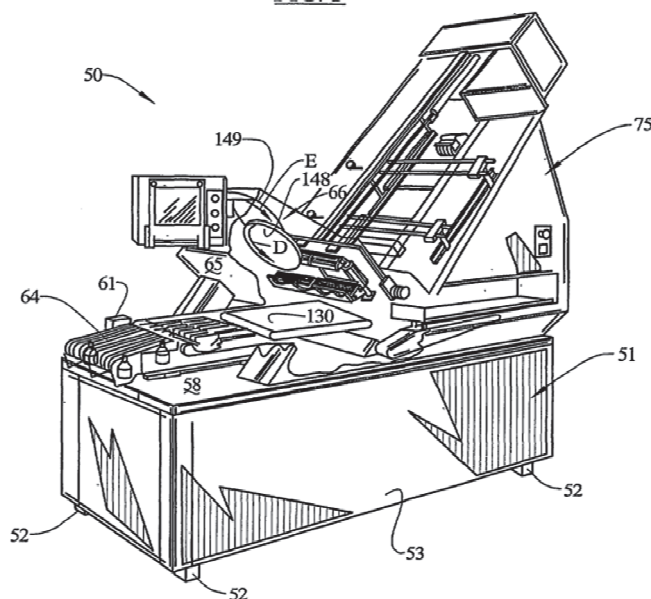
D. Dependent Claims 2 and 3

139. Dependent claims 2 and 3 would have been obvious to a POSA in light of the disclosures in Konishi and Lindee. Claim 2 depends from claim 1 and further recites "wherein the conveyor belt unit (13) is arranged in front of a cutting plane of the slicing apparatus, viewed in the conveying direction." Claim 3 depends from claim 1 and further recites "wherein the conveyor belt unit (13) is arranged behind a cutting plane of the slicing apparatus, viewed in the conveying direction.

140. As discussed above, Lindee discloses a slicing apparatus with a cutting plane. Lindee explains that the knife blade 149 rotates clockwise and thus performs an orbital motion. Lindee, 5. The knife blade and cutting plane are shown in below Figure 1. Lindee discloses that its conveyor belt unit is removable for sanitation and cleaning. Konishi also discloses that its conveyor belt units are removable for

sanitation and cleaning. In light of these disclosures, a POSA would have been motivated to make the conveyors that are arranged in front of and arranged behind the cutting plane removable. A POSA would have been motivated to do this for the reasons discussed above in connection with independent claim 1. A POSA would also have a reasonable expectation of success for the reasons discussed above in connection with Claim 1, and further because this would have been a simple substitution of similar components that yield a predictable result. A POSA would have been motivated to make Lindee's short conveyors arranged in front of the cutting plane removable, and the POSA would have simply had to follow the disclosures of Lindee and Konishi to implement removable conveyors arranged behind the cutting plane.

FIG. 1



141. For all of the above reasons, a POSA would have had a reason to combine Konishi's and Lindee's teachings to arrive at the claimed invention, with a reasonable expectation of success. Accordingly, claims 2 and 3 would have been obvious over Konishi and Lindee.

E. Dependent Claims 4 and 14

142. Dependent claims 4 and 14 would have been obvious to a POSA in light of the disclosures in Konishi and Lindee. Claims 4 and 14 depend from claim 1. Claim 4 further recites "the conveyor belt unit (13) has, viewed in the conveying direction, a belt length or conveyor length which amounts to less than 500 mm." Claim 14 depends from claim 1 and further recites "the conveyor belt unit (13) has a conveying width in the range from approximately 300 mm to 700 mm."

143. A POSA would have been motivated to combine Konishi and Lindee for the reasons discussed above in Section XII.B, and a POSA would have had a reasonable expectation of success when combining Konishi and Lindee for the reasons discussed above in Section XII.C.

144. I note that Lindee discloses the dimensions of its conveyor, and it falls within the scope of claim 4, and falls within the scope of claim 14. Lindee states that "According to the preferred embodiment, the conveying surface has a working area (X, Y) of about 9 inches (229 mm) by 9 inches (229 mm.)" Lindee, 7. To a

POSA, a width of about 9 inches, would include widths of 9.05 inches (230 mm). In addition to Lindee's explicit teaching, implementing conveyors as claimed, which uses a conveyor less than 500 mm long and a width in the range of 300 mm to 700 mm, it would have been obvious for a number of reasons. First, a POSA would have been motivated to implement a removable conveyor belt unit with the claimed dimensions because the claimed dimensions are practical for purposes of installation and removal. A practically sized conveyor would be easier for one person to install or remove. A conveyor significantly larger would be unwieldy to lift and carry around a factory floor. A conveyor significantly larger would also likely require more than one person to remove and carry throughout a factory floor. It is beneficial to require only one person to remove and carry a removable conveyor belt unit because if the unit needs to be removed for maintenance purposes, only one maintenance person would need to be dispatched to address any issues. Another benefit of only requiring one person for removal is that one person is able to disassemble and reassemble the conveyor for cleaning. Though there may be reasons to have more than one person involved in the assembly and disassembly of a conveyor belt unit (e.g., safety), the option to have one person perform these actions is beneficial. Automation in the Food Industry (Exhibit 1034), 23.

145. Further, conveyors of a relatively short size are beneficial in many manufacturing and processing applications, including food processing, because floor space on a factory floor is in high demand. Designing machines and conveyors that are of relative short size help to save floor space so that additional manufacturing and processing equipment can be fit into the factory. Additionally, having shorter conveyors on a line saves time during manufacturing and processing. Shorter conveyors can save time because there would necessarily be a shorter overall distance that the objects would need to be conveyed. Increasing the speed of a conveyor can make up for long distances in some cases, but is sometimes disfavored, because faster speeds increase the likelihood that the objects being conveyed would be disturbed by higher accelerations and decelerations.

146. Second, I understand that the simple structural rearrangement of parts is an obvious matter of design choice, especially if the functionality of those devices remains the same. Here, rearranging the structure of the conveyor belt units by marginally changing the size of the conveyor belt units would not have changed the functionality of the conveyor belt units. I also note that the '487 patent does not tie any particular advantages to the claimed dimensions. Indeed, in my experience, changing the dimensions of a conveyor would not change the basic function of the conveyor, or create any unanticipated results.

147. Third, a POSA would have been aware of prior art that discloses conveyors with the same dimensions as the conveyors described in the specification and the claims. For instance, Exhibits 1021 at 64:64-65:1 (“To accommodate as large a proportion as possible of the full range of product items which may need to be scanned, the Hyperlabel scanner 1500 is designed to accurately scan any item which fits on the 500 mm wide conveyor 1014 of the checkout 1000.”), 1022 at 5 (“In the illustrated embodiment, zone conveyors 24 are illustrated at .5 meters in length, but may be of greater or lesser length.”), 1027 at 7-8 (“The conveyor length is not critical; a typical length for conveyors 1163 and 1165, Figure 2, is about twelve inches (30 cm).”), 1028 at 6:49-67 (“Slicing machine 50 further comprises a system of short conveyors for advancing food loaves from loaf feed mechanism 75 into slicing head 66. The short conveyor systems are actually a part of loaf feed mechanism 75.”), and 1029 at 25:57-26:7 (“FIG. 16 illustrates three typical loaf cross-section outlines L1, L2, and L3 that may be sliced in slicing machine 50. The two outlines L1 are illustrative of rectangular loaves approximately four inches (102 mm) in height by six and one-half inches (165 mm) in width.”) disclose conveyors that fall within the claim ranges. In fact, I have personal experience with conveyors that fall within the dimensions described in the claims.

148. A POSA would have had a reasonable expectation of success to for adjusting the dimensions of a conveyor to meet the claim limitations. There are no changes in principles or relevant physics by decreasing or increasing the size of a conveyor belt unit. Increasing or decreasing the size of a conveyor belt unit would involve all of the same components as the components disclosed in the prior art. In fact, increasing or decreasing the size of a conveyor belt unit would be as simple as buying smaller versions of all of the parts to construction the conveyor belt units disclosed in Konishi and Lindee.

149. For all of the above reasons, a POSA would have had a reason to combine Konishi's and Lindee's teachings to arrive at the claimed invention, with a reasonable expectation of success. Accordingly, claims 4 and 14 would have been obvious over Konishi and Lindee.

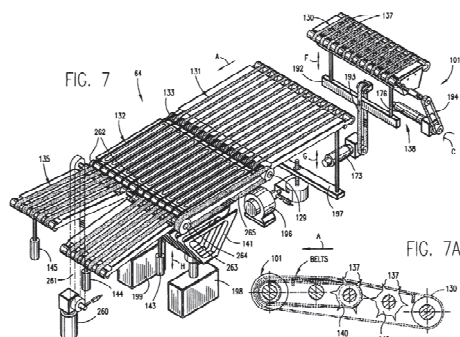
F. Dependent Claim 6

150. Dependent claim 6 would have been obvious to a POSA in light of Konishi and Lindee. Claim 6 depends from claim 1 and further recites "wherein at least one drive motor (15) for the conveyor belt unit (13) is provided, with the drive motor (15) being directly coupled with the conveyor belt unit (13), and/or unit; and wherein the drive motor (15) is arranged beneath the conveyor belt unit (13)."

151. Konishi discloses this claim for all of the reasons discussed above in Section XI.B, related to how Konishi anticipates claim 6. Also, the '487 patent's specification describes what it contemplates a "direct drive" connection to include: "there is consequently a direct drive connection between the drive motor and the conveyor belt unit 13 via the drive belt 27 which runs around the drive shaft 51 of the motor and the drive wheel 44 of the conveyor belt unit 13." '487 patent, 8:34-38.

152. The claimed drive motor is disclosed by both Konishi and Lindee. For example, Konishi discloses a drive motor 32. Konishi, [Configuration]. Lindee, for example, discloses motor 224. Lindee, 5. Both of these drive motors are directly coupled with respective conveyor belt units. Konishi's Figure 9 illustrates that the drive motor 32 is directly coupled to removable conveyor belt unit via belt 49. Konishi, [Figure 9]. Konishi states that "the drive motor and the drive roller of the conveyor belt are interlocked via an interlocking belt." *Ibid.*, [0008]. Konishi describes that its drive roller is one part of the conveyor belt unit that is removably attached to the frame that has the drive motor. *Ibid.* Lindee's figures disclose a number of motor and belt connections, and Figure 2 discloses motor 224 directly coupled to a conveyor belt unit. Lindee, Fig. 2. Therefore, both Konishi and Lindee disclose a drive motor that is directly coupled with a conveyor belt unit.

153. Konishi and Lindee also both disclose that their drive motors are arranged beneath conveyor belt units. In the figures I discussed in the above paragraph, Konishi shows that its drive motor is beneath its removable conveyor belt unit. Konishi, [Figure 9]. Lindee also illustrates that servo-motor 304 is arranged beneath a conveyor belt unit. Servo-motor 294 is also arranged beneath that conveyor belt unit. Lindee, 8, Fig. 4. Lindee also incorporates by reference a set of other patents that further illustrate the location of the motors. A POSA that knew of Lindee would also know of these incorporated patents. Johnson is one of the patents incorporated by reference into Lindee, and Figure 7 of Johnson shows that its motor 176 is arranged beneath the conveyor belt unit. Figure 7, and the rest of Johnson, discloses other motors and locations.



Johnson discloses that “[c]onveyor 130...also requires a drive motor, shown as the servo motor 176, driving conveyor 130 through a belt 194 in drive 101.” Johnson, 13:30-32.

154. Additionally, a POSA would have had a reason to place the motor beneath the conveyor belt unit. This would allow for the overall footprint of the machine to be smaller, as compared to having the motor place to the side of the conveyor belt unit, which provided known advantages in the food processing factory industry. Additionally, a POSA would typically avoid placing a motor above a conveyor belt unit that handles food because any drips or debris coming from the motor (or maintenance of the motor) would fall into the food being conveyed.

155. Further, I note that other similar prior art explicitly states that its motors are arranged beneath a conveyor belt unit. For example, McLaughlin states that “[t]he conveying surface is driven by a belt 251 coupled to a motor 250, situated beneath the conveying surface 210.” McLaughlin, 3:42-44.

156. A POSA would have had a reasonable expectation of success when placing the motor beneath the conveyor belt unit because the arrangement is already taught by the prior art. Placing a motor beneath a conveyor belt unit would only require a simple rearrangement of components, and structural changes, that would not yield any unpredictable benefits or results. Further, there would be a reasonable expectation of success because a POSA would generally be aware of the drive and supporting components required to place a motor on any side of the conveyor belt

unit, including beneath a conveyor belt unit. These would have been seen as common components in common locations.

157. For all of the above reasons, a POSA would have had a reason to combine Konishi's and Lindee's teachings to arrive at the claimed invention, with a reasonable expectation of success. Accordingly, claim 6 would have been obvious over Konishi and Lindee.

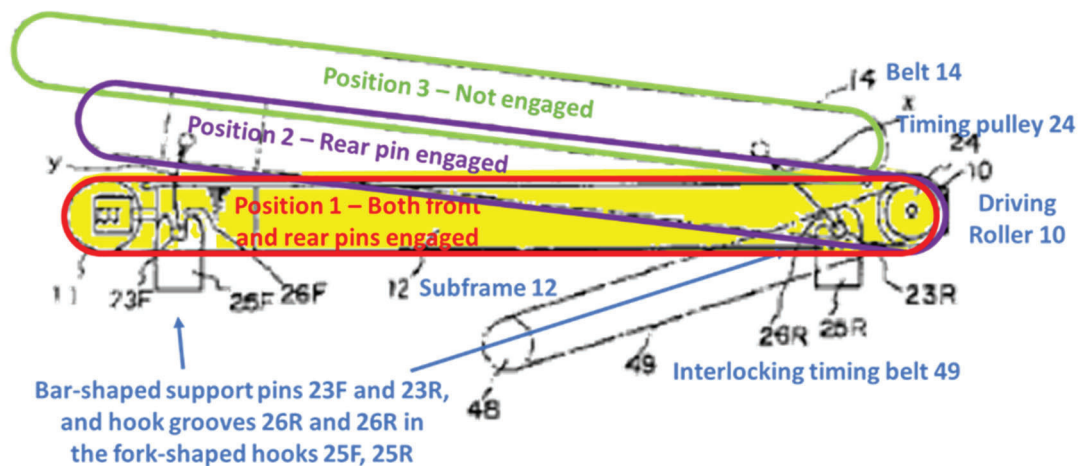
G. Dependent Claim 9

158. Dependent claim 9 would have been obvious to a POSA in light of Konishi and Lindee. Claim 9 depends from claim 1 and further recites "wherein a respective relative movement is provided between the drive motor (15) and the conveyor belt unit (13) for cancelling and establishing a coupling between a drive motor (15) for the conveyor belt unit (13) and the conveyor belt unit; and wherein the spacing between the drive axle of the drive motor (15) and a drive axle of the conveyor belt unit (13) is configured to be varied by the relative movement."

159. Konishi discloses the claim requirements for all of the reasons I discussed above in Section XI.C, related to how Konishi anticipates claim 9. Konishi's relative movement is illustrated in below annotated Figure 8. A POSA would have been motivated to combine Konishi and Lindee for the reasons discussed above in Section XII.B, and a POSA would have had a reasonable expectation of

success when combining Konishi and Lindee for the reasons discussed above in Section XII.C. A POSA would have had even more expectation of success because the POSA would not need to change any of the teachings regarding Konishi's removable conveyor belt unit in order to meet the additional limitations of claim 9.

Figure 8



160. For all of the above reasons, a POSA would have had a reason to combine Konishi's and Lindee's teachings to arrive at the claimed invention, with a reasonable expectation of success. Accordingly, claim 9 would have been obvious over Konishi and Lindee.

H. Dependent Claim 10

161. Dependent claim 10 would have been obvious to a POSA in light of Konishi and Lindee. Claim 10 depends from claim 1 and further recites "a mount (11) is provided for the conveyor belt unit (13) which remains at the apparatus with

a removed conveyor belt unit (13) and at which the conveyor belt unit (13) is configured to be latched, with the latched connection configured to be cancelled for removing the conveyor belt unit (13) and configured to be established for installing the conveyor belt unit (13).”

162. Konishi discloses “a mount (11) is provided for the conveyor belt unit (13) which remains at the apparatus with a removed conveyor belt unit (13).” I addressed this limitation above in Section XI.A.2.

163. A POSA would have been aware of simple latches that hold components in place while in use as well as other prior art that discusses latch connections for conveyor belt units. As a first example, Lee teaches removable conveyors. Lee, Abstract. Lee states that its conveyor assemblies can be held in place in different manners disclosed in multiple embodiments. *Ibid.*, [0047]. As a first example, Lee states that “the use of one or more hold down springs and/or common barrel-bolt latches” are used to prevent the conveyors from being accidentally lifted out of place. *Ibid.* Lee also teaches that a latch provides the additional benefit of preventing the conveyor from being lifted out of place due to any reactive force created by conveying food product. *Ibid.* Thus, in my opinion, a POSA would have been motivated to add a latch to the Konishi/Lindee combination for the reasons described in Lee. Use of a latch, or other known ways to secure

mechanical structures, was an obvious matter of common sense and could be tailored to the appropriate application by one of ordinary skill.

164. A POSA would have had a reasonable expectation of success when adding a latch, like that disclosed in Lee, to the combination of Konishi and Lindee. Lee already teaches how to implement a latch system for a removable conveyor belt unit. *Ibid.* In my experience, using latches to secure devices would have been assumed at the undergrad level and expected as an optional design choice. Thus, implementing a latch system to hold a removable conveyor belt unit into place would have been well within the skill of a POSA at the relevant time, and would involve the use of well-known components in a familiar manner. A POSA would have had a further expectation of success in implementing the latch because other prior art discloses the use of latches to secure conveyors. For instance, Exhibit 1025 at 5:19-39 discloses using a latch device to secure components related to a weighing conveyor. Also, Exhibit 1024's Abstract discusses a "releasable" conveyor belt system, and discusses using a "quick release" mechanism to release the conveyor belt system.

165. For all of the above reasons, a POSA would have had a reason to combine Konishi's and Lindee's teachings to arrive at the claimed invention, with a

reasonable expectation of success. Accordingly, claim 10 would have been obvious over Konishi and Lindee.

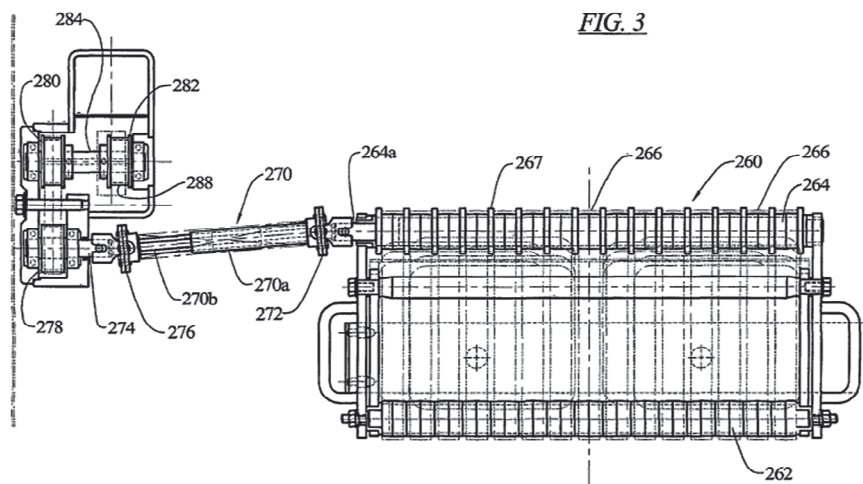
I. Dependent Claim 15

166. Dependent claim 15 would have been obvious to a POSA in light of Konishi and Lindee. Claim 15 depends from claim 1 and further recites “wherein at least one continuous belt or continuous band (55) or a plurality of parallel continuous straps (57) is/are provided as conveying means of the conveyor belt unit (13).”

167. Konishi discloses the claim requirements for all of the reasons I discussed above in Section XI.D, related to how Konishi anticipates claim 15.

168. Lindee discloses the plurality of parallel continuous straps. For example, Lindee states that Figure 3 illustrates an exemplary alternative conveyor. The conveyor includes “front and rear rolls 262, 264 and belts 266 wrapped around the rolls at spaced intervals. The belts provide the conveying surface 216. The rear roll 264 includes rings 267 that ensure spacing of the belts 266.” Lindee, 7. A POSA would consider these belts to be parallel continuous straps in light of Lindee’s figures and because the belts are endless belts that wrap around two rollers in a conveyor belt assembly. Lindee also clarifies that these types of belts are interchangeable. For instance, Lindee states that “The conveying surface 216 is

shown schematically as a wide belt, but could also be a plurality of spaced apart ribbons.” *Ibid.*, 6.



I also note that Konishi discloses the use of one continuous belt throughout its figures.

169. A POSA would have had a reasonable expectation of success in implementing either a continuous belt or a plurality of parallel continuous straps. Using a single conveyor belt or a plurality of continuous straps would have only required substituting one type of conveyor belt for another, along with changing out some of the components of the rollers that directly interface with the conveyor belt. There would have been no unexpected results when implementing either a single conveyor belt or a plurality of continuous straps.

170. For all of the above reasons, a POSA would have had a reason to combine Konishi’s and Lindee’s teachings to arrive at the claimed invention, with a

reasonable expectation of success. Accordingly, claim 15 would have been obvious over Konishi and Lindee.

J. Dependent Claim 16

171. Dependent claim 16 would have been obvious to a POSA in light of Konishi and Lindee. Claim 16 depends from claim 1 and further recites “the conveyor belt unit (13) is configured to be removed and/or installed without tools.”

172. Konishi discloses the claim requirements for all of the reasons I discussed above in Section XI.E, related to how Konishi anticipates claim 16. In addition to Konishi’s disclosure of a removable conveyor belt unit that does not require tools to remove/install, a POSA would have been aware of other prior art that teaches toolless installation and removal. For example, Lee states that “No tools are required to remove the conveyor assemblies 40A and 40B, which facilitates the cleaning and maintenance of both the conveyor assemblies 40A and 40B as well as the platen 26.” Lee, [0020]. Lee also states that “The length of the mounting pins 38 that extend toward each other is such that the conveyor assemblies 40A and 40B can be mounted onto them and therefore into the toaster 10 without requiring tools or fasteners. The conveyor assemblies can be removed simply by lifting the conveyor assemblies off the pins without tools or special fasteners.” Lee, [0023]. Additionally, Lee states that “The toaster 10 is thus comprised of conveyors that are

both removable, without requiring disassembly or tools and which are adjustable, even while the conveyors are operating. *Ibid.*, [0033]. Lee discusses its toolless installation and removal elsewhere. *Ibid.*, [0051], [0053]. Thus, in addition to Konishi teachings, a POSA would have been aware of other designs that facilitated removing and installing conveyors without tools and the time saving advantages of the designs.

K. Independent Claim 22

173. As discussed above in Section XII.A, Konishi and Lindee would have rendered obvious all elements of claim 1. The evidence that I discussed above for claim 1's preamble, element 1[A], and element 1[B] applies here to render obvious the independent claim 22 preamble, element 22[A], and element 22[B]. In addition to this evidence, Konishi and Lindee would have rendered obvious the additional elements of claim 22[C1], 22[C2], and 22[C3], for the reasons I explain below.

1. Element 22[C1]

174. Element 22[C1] would have been obvious to a POSA at the time of the '487 patent in light of Konishi and Lindee. Element 22[C1] recites "a first drive is coupled to the conveyor belt unit at the left side...when viewed in the conveying direction."

175. Konishi discloses a drive motor that is coupled to its conveyor belt unit at the right side of the conveyor when viewed in the conveying direction. It would

have been a matter of obvious design choice to implement the drive motor at the left side when viewed in the conveying direction. This would have only required that the designer flip the drive roller so its drive pulley was on the opposite side of the machine, and that the designer move the motor so that its drive extended from the other side of the machine. This may have required moving some other components, but rearranging components like this would have been well within the skill level of a POSA. Relocating parts is a simple design technique that would have been taught at the undergrad level, and potentially implemented during a design project. A POSA would have had a reasonable expectation of success because the rearrangement would have been simple. Additionally, McLaughlin discloses driving a conveyor belt unit from the left side when viewed in the conveying direction. A POSA would have been aware of McLaughlin, and if required, the POSA could have relied on McLaughlin for how to design a conveyor belt unit with a drive on the left side.

2. Element 22[C2]

176. Element 22[C2] would have been obvious to a POSA at the time of the '487 patent in light of Konishi and Lindee. Element 22[C2] recites “at a second drive (15) at the right side, when viewed in the conveying direction.”

177. Lindee discloses a slicing machine with two independently driven tracks, those motors on either side of the two independently driven tracks, described as a “dual independent feed slicer.” Lindee, 12, Figure 1. Further, Lindee refers to Johnson for this exemplary teaching, a patent that it incorporates by reference. Johnson’s Figure 6 and Figure 7 specifically illustrate motors driven on the left or right side, and, specifically, Figure 6 shows the drive configuration for a two-track conveyor system. Johnson also provides a detailed explanation of Figure 6 at 12:36-53. This kind of two drive system was common in the art by the alleged invention around 2012, as I discussed above in Section VIII.B. As the below Figure 6 shows, creating a two-lane conveyor system would only require the duplication of drive components and would be an obvious matter of design choice.

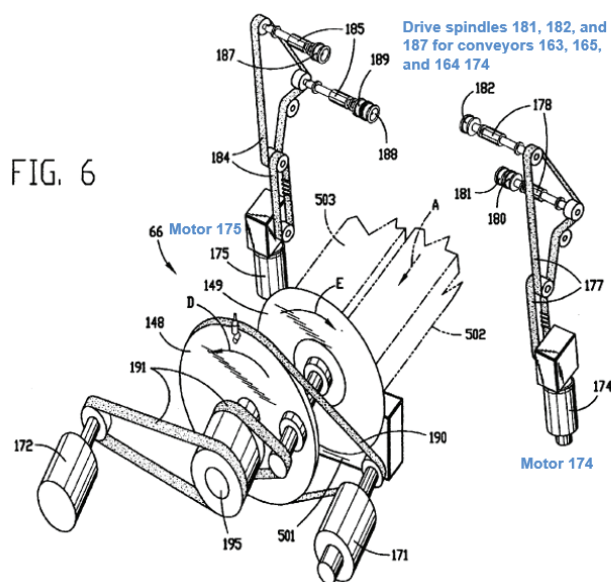
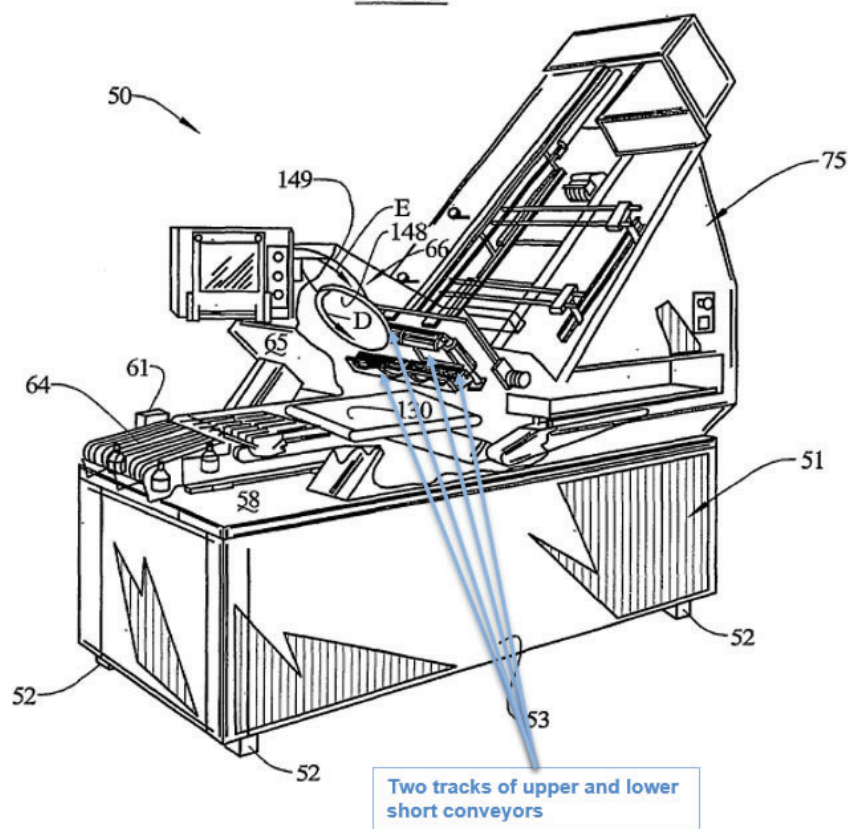


FIG. 1



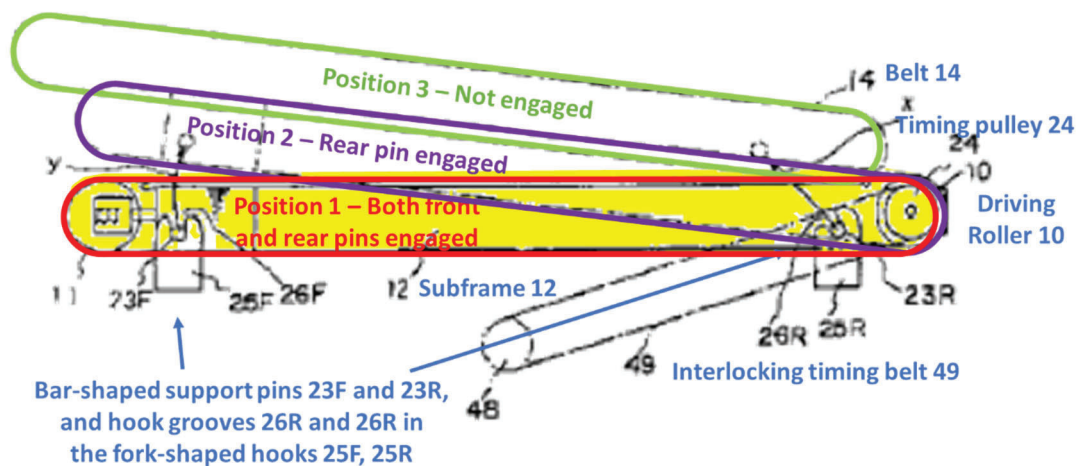
3. Element 22[C3]

178. Element 22[C3] would have been obvious to a POSA at the time of the '487 patent in light of Konishi and Lindee. Element 22[C3] recites “the coupling between the drives (15) and the conveyor belt unit (13) is configured to be simultaneously cancelled and established for at least one of the first drive and the second drive.”

179. One means to cancel or establish a drive is by tautening or loosening a drive belt around a timing gear or pulley. Konishi teaches this type of cancelling/establishing. For example, Konishi states: “[S]ince the timing prefix 24

fixed to the shaft 10A of the drive roller 10 moves diagonally downward, the interlocking timing belt 49 stretched between the timing pulley 24 and the timing pulley 48 fixed to the rotating shaft 62 on the sub-housing 42 side becomes loose, and the timing belt 49 can be easily removed from the timing pulley 24 of the drive roller 10.” Konishi, [0033], [0034]. Konishi also discloses this movement in its Figure 8, which I annotated below.

Figure 8



Position 1 above shows when the timing belt 49 would be “established.” Position 2 above shows when the timing belt would begin to loosen on removal and tighten on installation. The belt would loosen during removal in position 2 because the point of rotation, 23R, is close to the motor than the drive roller 10. As the rear of the conveyor belt unit is lifted upward, the driving roller 10 would rotate about the axis of the pin that keeps it in place, which would result in a decrease in the linear distance

between driving roller 10 and the motor, with the opposite during installation. Position 3 above shows when the entire conveyor belt unit has been removed from the supporting structure and fully disengaged.

4. Motivation to Combine

180. All of the reasons I discussed above in Section XII.B and XII.C also apply here. For those reasons, it would have been well within the skill of a POSA to combine Lindee and Konishi, and a POSA would have been motivated at the time of the '487 patent to make such a combination.

181. A POSA would have been motivated to include Lindee's second lane with a second drive for a number of reasons. A POSA would have known that a second lane and a second drive would have increased production and throughput. This is supported by the prior art. For example, Julian teaches that increasing the number of cutting lanes increases throughput. Julian, [0008]. Throughput would be increased because the number of food products capable of being independently fed through the slicing blade would be increased. Mueller also teaches that simultaneously slicing a number of products next to each other increases overall productivity. Mueller, [0002]. Productivity would be increased for similar reasons as the throughput increase. These benefits would be magnified by allowing each food loaf to be individually driven at its own unique speed. Allowing each food loaf

to be driven at its own rate would allow for the slicer to adjust the thickness of slices to get on weight portions. Mueller, [0002]. I also note that, as I discussed above in Section VIII.B, a number of food slicing machines with multiple lanes were known before the time of the '487 patent.

182. Further, it would have been obvious to a POSA to combine Konishi and Lindee in a manner that would allow for the two drives to be cancelled at the same time. This would have only required a mirroring of Konishi's teachings. For example, the POSA would only need to put the second driving roller on the same axis as the first driving roller. The POSA would also only need to put the second drive motor approximately in the same location as the first drive motor, and arrange the drive pulleys on the conveyor belt unit. This arrangement would mean that moving the two-lane conveyor belt unit in the way shown in Figure 8 would loosen or tauten the first and second drive melt simultaneously. The simultaneous loosening/tautening would simplify the installation or removal process. Those processes would be simplified because only one movement would be required to loosen or tauten both belts, as opposed to two or more intervening movements to tighten or loosen the belt. A simpler installation/removal process would provide time saving benefits during maintenance and cleanings. In fact, I note that Konishi states that the purpose of the invention is to make it "easier" to remove its conveyor

belt unit from the surrounding structure. Konishi, [Purpose]. Konishi's teaching would have further motivated a POSA to simplify the installation/removal process of a two-lane conveyor belt unit.

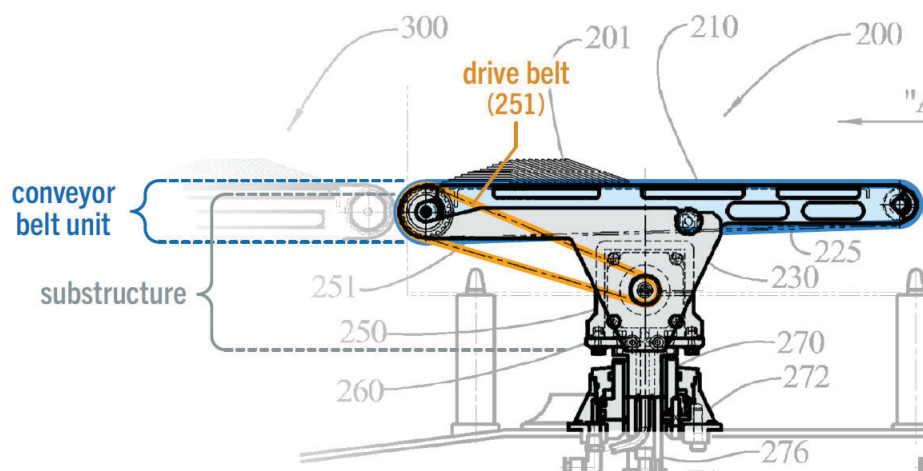
183. I also understand that the duplication of parts is generally considered to be obvious absent some technical reason that the duplication would have been difficult or provided some unanticipated benefit. A POSA would have had a reasonable expectation of success in implementing a two track removable conveyor because it would have only required a simple duplication of parts, or mirroring of teachings in the prior art. Further, Konishi discloses a conveyor, and Lindee discloses sets of conveyors. Adding additional conveyors has the benefit of increasing throughput and productivity, as I discussed above. Further, it would be more economical to have two tracks (or lanes) in one machine. Having these two tracks in one machine would take up less overall floor space, as an entire second machine would not be required. Having the second track in one machine would also benefit from efficiencies of sharing components, such as only requiring one machine controller. Therefore, adding a second track would have only required a simple duplication of existing parts by the time of the alleged invention.

XIII. GROUND 3: CLAIMS 1-4, 6, 9, 10, 14-16, AND 22 WOULD HAVE BEEN OBVIOUS OVER MCLAUGHLIN IN LIGHT OF THE KNOWLEDGE OF A POSA.

184. Below, I explain how McLaughlin and the knowledge of a POSA renders obvious each and every limitation of claims 1-4, 6, 9, 10, 14-16, and 22, and how it would have been obvious to make any modifications to McLaughlin necessary to render obvious the claim limitations, if any. Further, I explain how a POSA would have had a reasonable expectation of success when making those modifications.

A. Independent Claim 1

185. Independent claim 1 would have been obvious in view of McLaughlin and the knowledge of a POSA. The below chart briefly summarizes the teachings of McLaughlin that correspond to the relevant claim limitations in the '487 patent's independent claim 1:



Claim	McLaughlin Exemplary Disclosures
removable conveyor belt unit	conveying surface 210 and support frame 225 of check scale 200
base	support frame 225
substructure	sidewalls 230, horizontal plate 260, and motor 250
Mount	first and second attachment points
Drive	motor 250
drive belt	belt 251
relaxing/tautening/relative movement	Figure 2

1. Preamble

186. McLaughlin discloses independent claim 1’s preamble. Independent claim 1’s preamble recites “A slicing apparatus for food products, the slicing apparatus comprising.”

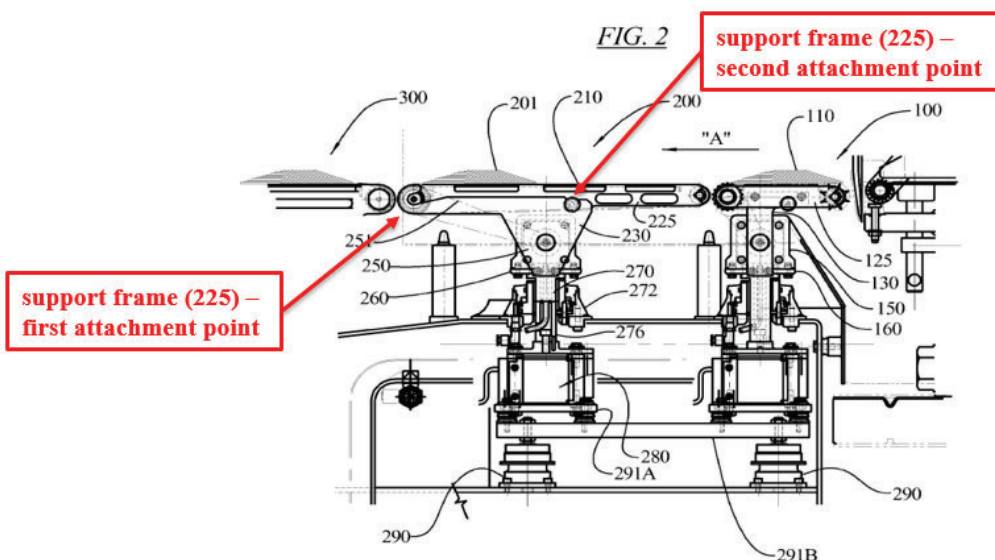
187. McLaughlin states that its disclosure is related to slicing systems that make sliced food product. McLaughlin states “This invention relates in general to slicing systems and methods of weighing sliced food products.” McLaughlin, 1:15-16. McLaughlin’s background of the invention also discusses “slicing machines” such as those disclosed in a patent incorporated by reference. McLaughlin, 1:20-26.

2. Element 1[A]: “a removable conveyor belt unit (13) having at least one track and a base (25)”

188. McLaughlin discloses a removable conveyor belt unit having at least one track and a base.

189. To start, McLaughlin’s conveying surface has tracks of food products and slices. Conveying surfaces, and individually driven lanes, are often referred to

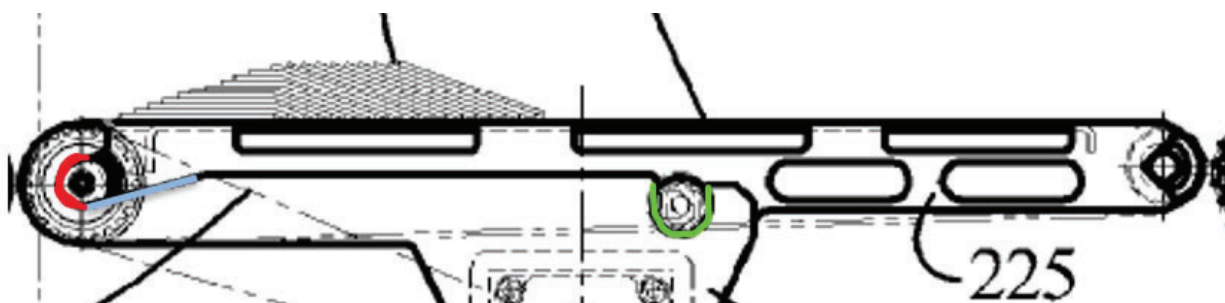
as “tracks” in the conveying and food processing industry. McLaughlin discloses a conveyor unit with a track. McLaughlin describes that its check scale 200 has a conveying surface 210 and that the conveying surface is supported by its frame 225, which acts as a base. McLaughlin, 3:44-46. The conveying surface 210 can be one continuous surface or it could be a series of belts arranged longitudinally in the direction of travel. *Ibid.*, 4:29-32. The conveying surface and support frame correspond to the track and base.



McLaughlin Annotated Figure 2.

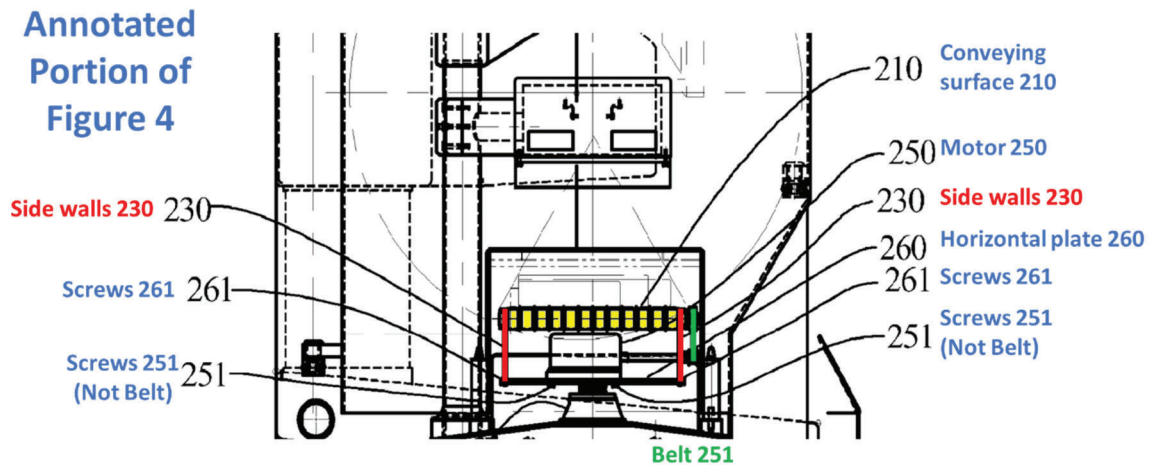
190. McLaughlin discloses that its conveyor belt unit (check scale 200) is removable. The first attachment point and second attachment point in Figure 2 show how the check scale 200 is installed/removed. The second attachment point on sidewalls 230 is shaped like a C with its opening facing upward, which means that

the frame 225 can only be inserted into side wall 230 from one direction (into the C shape). That direction is a directly above, or nearly directly above, top-down movement. The first attachment point on sidewalls 230 is also shaped like a C with its opening facing up and angled to the right. Unlike attachment point 2, attachment point 1 has an angled surface that slopes into attachment point 1. That sloped surface, and the angle of attachment point C, shows that the support frame 225 would slide into attachment point C along that angled surface. Below, I highlight in red the C shaped portion of attachment point 1, and I highlight in blue the surface that the frame 225 would slide along. To the right of that, I highlight in green the second attachment point where frame 225 would attach to the sidewalls. The open C shape of these attachment points for conveying surface 210 structure is in contrast to the closed O shape attachment points for conveying surface 110 structure to the right and towards the slicer blade in Figure 2. Thus, Figure 2 of McLaughlin shows a removable conveyor belt unit.

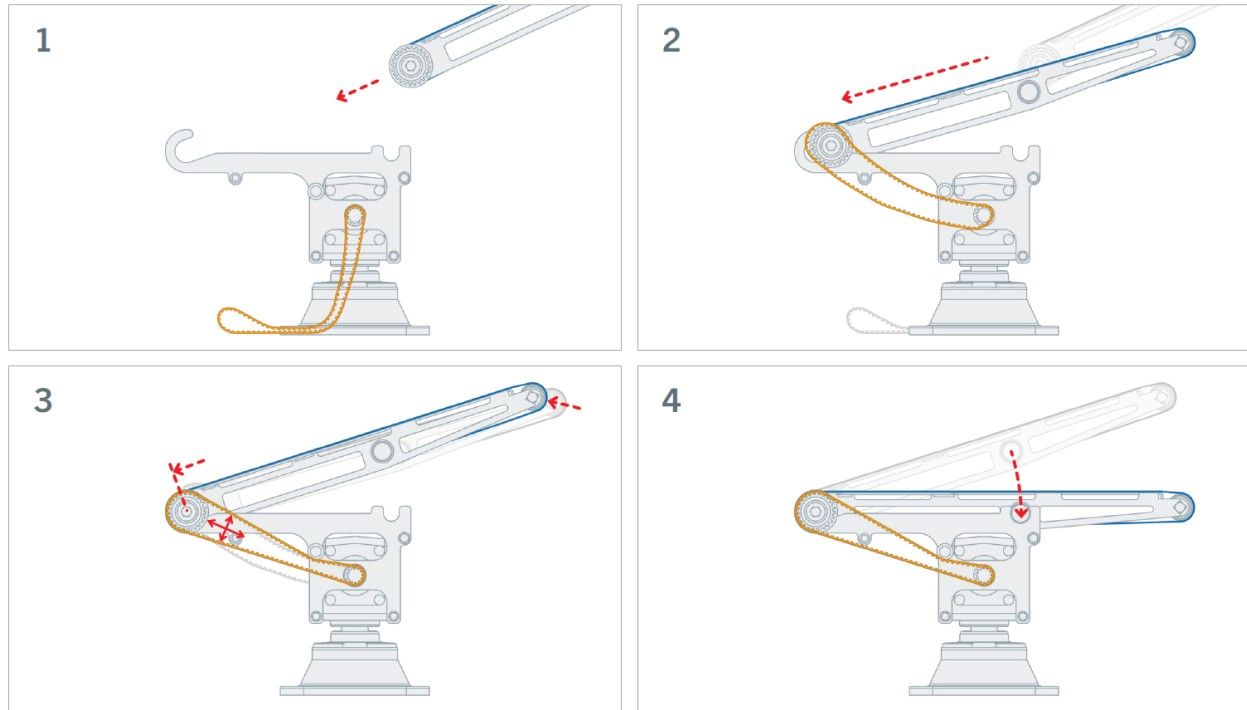


McLaughlin Annotated Figure 2.

I provide a further annotated image below that shows the removable conveyor belt unit and side walls connection from a different perspective. And below that, I provide a sequence that shows the complete installation/removal process of McLaughlin's removable conveyor belt unit.



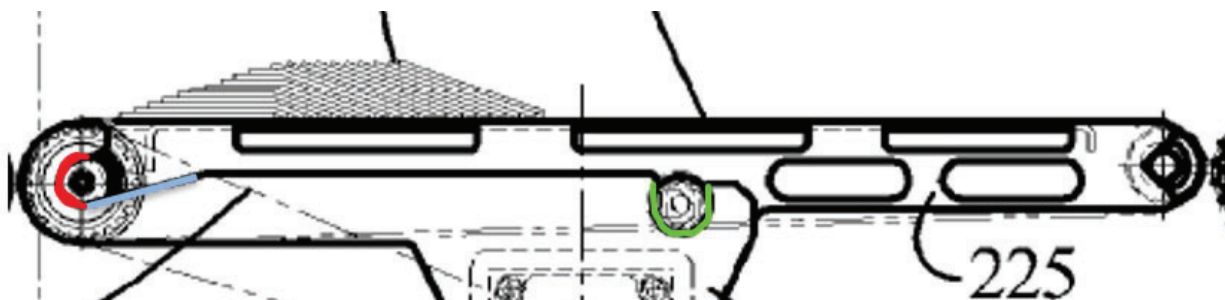
McLaughlin Annotated Figure 4.



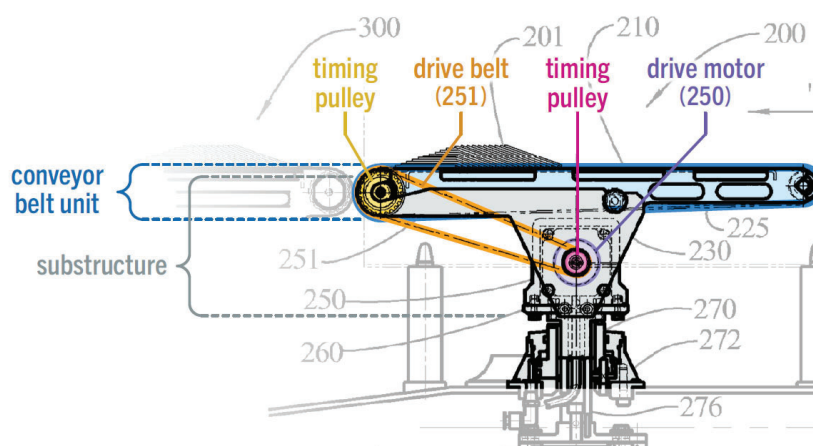
3. Element 1[B]: “a substructure (41) having a mount (11) coupled to the base (25)”

191. McLaughlin discloses a substructure having a mount coupled to the base. McLaughlin’s substructure includes the sidewalls 230 and its horizontal plate 260. McLaughlin’s figures show that the support frame 225 attaches to side walls 230, and McLaughlin states that its support frame “is attached to side walls 230 on either side of the support frame.” McLaughlin, 3:44-46. McLaughlin states that it’s support frame “is attached to side walls 230 on either side of the support frame” and that “side walls 230 are attached to the horizontal plate 260 on which the motor 250 rests.” Ibid., 3:44-48. McLaughlin’s mounts are the attachment points at which the

support frame 225 attaches. I copy below an image described above where I highlighted the two attachment points, one in red and one in green.



Annotated McLaughlin Figure 2



Annotated McLaughlin Figure 2

4. Element 1[C1]: “a drive (15) coupled to the conveyor belt unit (13) by a drive belt (27)”

192. McLaughlin discloses a drive coupled to the conveyor belt unit by a drive belt. The support frame 225 has a timing pulley around which drive belt 251 attaches. Drive motor 250 also has a timing pulley around which drive belt 251 connects. McLaughlin states that “The conveying surface is driven by a belt 251

coupled to a motor 250.” McLaughlin, 3:44-46. McLaughlin also states “In other embodiments, it is possible to have multiple streams of conveying surfaces such that multiple drafts are processed simultaneously using the present invention.” (EX1006, 5:11-14.) In this way, McLaughlin contemplates the addition of a second stream with a corresponding second conveying surface and drive motor.

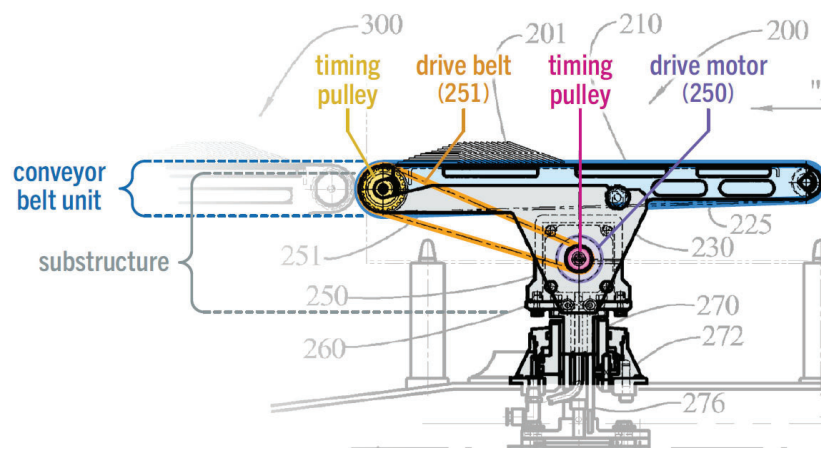
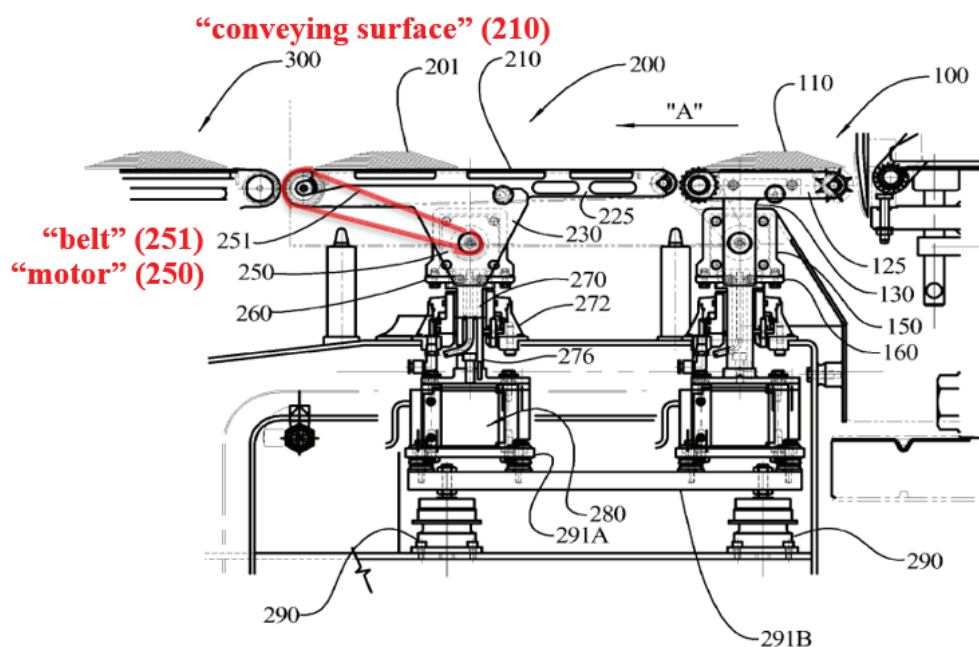


FIG. 2

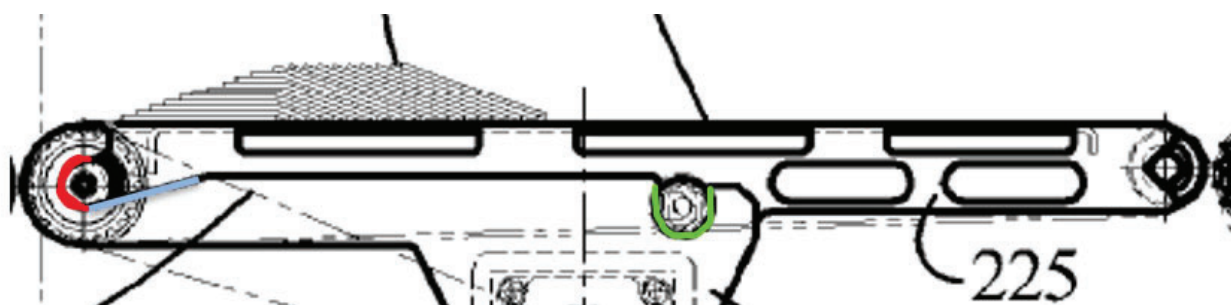


5. **Element 1[C2]: “the conveyor belt unit is configured to be cancelled by relaxing the drive belt and is configured to be established by tautening the drive belt, with the relaxing and tautening of the drive belt each being provided by a relative movement between the drive and the conveyor belt unit.”**

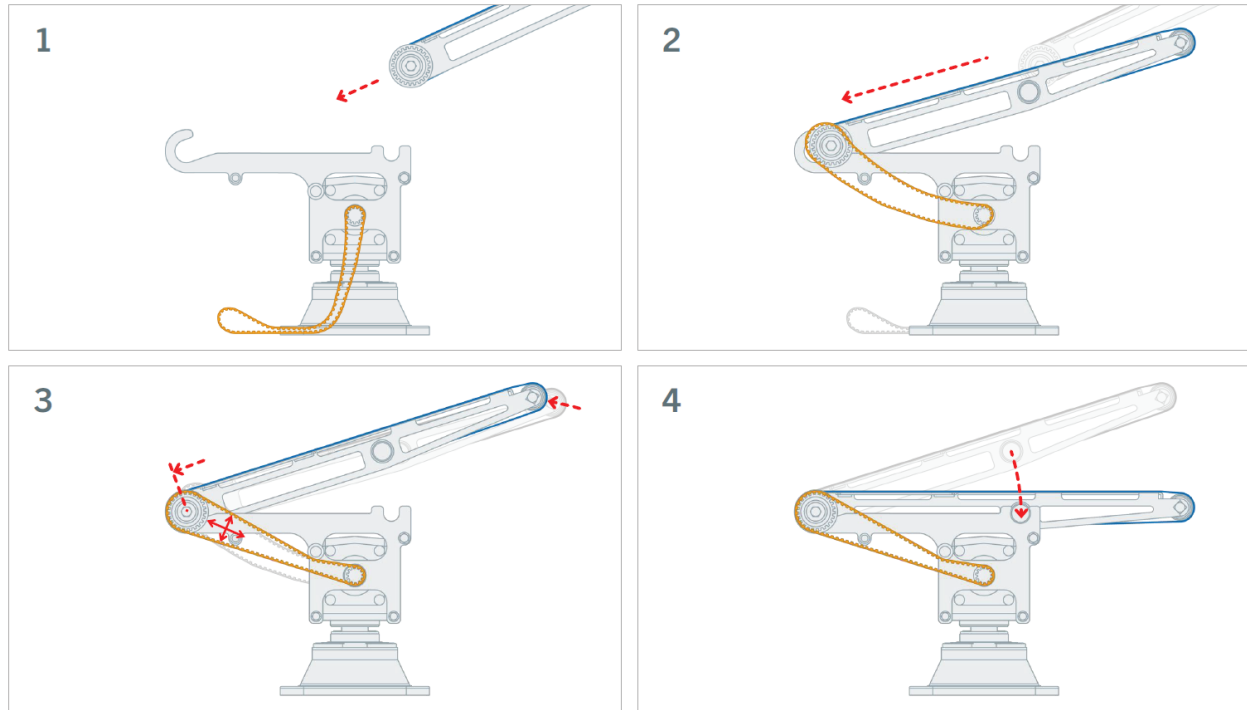
193. McLaughlin renders obvious the conveyor belt unit configured to be cancelled by relaxing the drive belt and is configured to be established by tautening the drive belt, with the relaxing and tautening of the drive belt each being provided by a relative movement between the drive and the conveyor belt unit. I note that this would have been obvious for the reasons that I discussed claim 1[A]. A POSA would have readily recognized that McLaughlin disclosed a removable conveyor

belt unit, and the shape of the attachment points and location of the motor/drive belt would have made it obvious that a relative movement between the motor and the conveyor belt unit was required to install/remove the conveyor belt unit.

194. Placing a conveyor assembly in the position it is used during normal production circumstances and attaching the drive to the conveyor assembly is sometimes referred to as “establishing” a conveyor assembly in the conveying industry. Removing a conveyor assembly from the position it is used during normal production circumstances and effectively disconnecting the drive from the conveyor assembly is sometimes referred to as “cancelling” a conveyor assembly in the conveying industry. A POSA would have understood that Figure 2 discloses a conveyor belt unit that is cancelled/established by a relative movement between that conveyor belt unit and the drive. Below, I provide the figures that I previously provided in connection with claim element 1[A].



McLaughlin Annotated Figure 2.



195. The above steps 1-4 would have been obvious to a POSA in view of the basic dimensions, functions, and mechanics of McLaughlin's Figure 2. As I described above, the shape of attachment points one and two would render obvious how the frame 225 would be installed/removed from the side walls 225. And the basic principles of relative motion would have indicated to a POSA that sliding the frame to the left (from the perspective of the above images) would tighten the drive belt, and sliding the conveyor belt to the right would loosen the drive belt. These actions would loosen or tighten the drive belt because the actions would either increase or decrease the distance between the timing pulley on the motor and the timing pulley on the frame 225.

6. Additional Obviousness Support

196. A POSA would have understood that that McLaughlin's check scale was removable in light of McLaughlin's Figure 2 and the knowledge of other prior art. The POSA would have knowledge of the plethora of removable conveyor references discussed above in Section VIII.C. I note that McLaughlin's Figure 2 is similar to the relevant figures in Konishi. Also, it would have required nothing more than common sense for a POSA to understand that McLaughlin's Figure 2 disclosed a removable conveyor unit. A POSA would have been aware of the benefits of designing food processing conveyors to be removable. For example, as discussed in connection with Ground 2, Lindee and Konishi both teach that removable conveyor belt units are preferred in the food processing industry because they simplify the cleaning process. Konishi also discloses that removable conveyor belt units simplify maintenance and repairs.

197. A POSA would have had a reasonable expectation of success making McLaughlin's conveyor belt unit removable because the figures show that the conveyor belt unit was designed that way. Additionally, no structural changes, or any other type of changes, would have been required to make McLaughlin's conveyor belt unit removable. The principles required to understand that McLaughlin discloses a removable conveyor belt unit (i.e., the principles of relative

motion) would have been taught at an undergraduate level. Further, the types of components used to create McLaughlin's removable conveyor belt unit (timing pulleys, drive belts, frames, conveyor belts, etc.) would have been known to a POSA, and might have been used in an undergraduate design level course. Again, like Konishi, a POSA would have easily recognized based on the teachings of McLaughlin as well as convention wisdom and common sense that all was need to remove the conveyor was to lift it up and pop it out by hand. These basic mechanics of these devices would have been apparent from the figures and disclosures to a POSA.

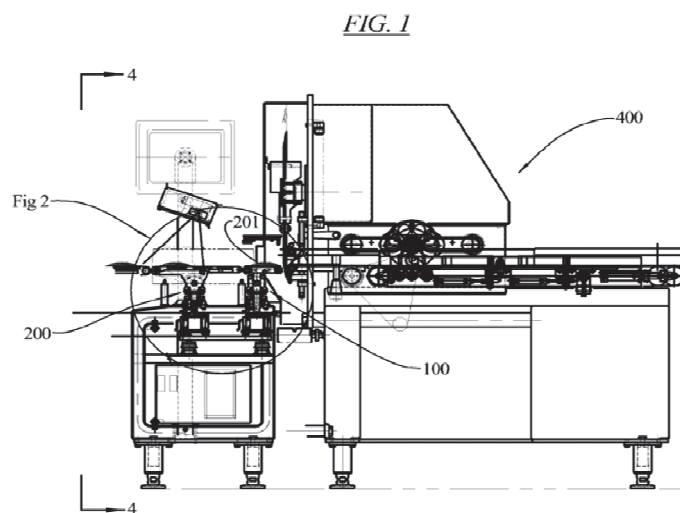
B. Dependent Claims 2 and 3

198. Dependent claims 2 and 3 would have been obvious to a POSA in light of McLaughlin and the knowledge of a POSA. Claim 2 depends from claim 1 and further recites "wherein the conveyor belt unit (13) is arranged in front of a cutting plane of the slicing apparatus, viewed in the conveying direction." Claim 3 depends from claim 1 and further recites "wherein the conveyor belt unit (13) is arranged behind a cutting plane of the slicing apparatus, viewed in the conveying direction.

199. McLaughlin discloses a slicing apparatus with a cutting plane. McLaughlin states that its disclosure is related to slicing systems that make sliced food products. McLaughlin states "This invention relates in general to slicing

systems and methods of weighing sliced food products.” McLaughlin, 1:15-16.

McLaughlin’s background of the invention also discusses “slicing machines” such as those disclosed in a patent incorporated by reference. McLaughlin, 1:20-26.



McLaughlin Figure 1

200. McLaughlin illustrates a removable conveyor belt unit. A POSA would have known the benefits of a removable conveyor belt unit that were discussed in the other relevant prior art discussed above in Section VIII.C. A POSA would have known that those benefits would have been recognized whether the removable conveyor was before or after the cutting plane. For example, Lindee discloses that its conveyor belt unit is removable for sanitation and cleaning. As another example, Konishi also discloses that its conveyor belt units are removable for sanitation and cleaning. In light of this knowledge, a POSA would have been motivated to make the conveyors that are arranged in front of and arranged behind the cutting plane

removable. A POSA would have been motivated to make these changes for the reasons discussed above regarding independent claim 1. A POSA would also have a reasonable expectation of success for the reasons that I discussed above regarding claim 1. To create a removable conveyor belt unit that is arranged before the cutting plane, a POSA would have only had to follow the design of Figure 2's check scale 200 and implement such a conveyor before the cutting plane, which would involve a simple substitution of known components, and would not change the purpose of the conveyor belt unit.

201. For all of the above reasons, a POSA would have found it obvious to modify McLaughlin's disclosure to arrive at the claimed invention, with a reasonable expectation of success. Accordingly, claims 2 and 3 would have been obvious over McLaughlin in light of the knowledge of a POSA.

C. Dependent Claims 4 and 14

202. Dependent claims 4 and 14 would have been obvious to a POSA in light of the McLaughlin and the knowledge of a POSA. Claims 4 and 14 depend from claim 1. Claim 4 further recites "the conveyor belt unit (13) has, viewed in the conveying direction, a belt length or conveyor length which amounts to less than 500 mm." Claim 14 depends from claim 1 and further recites "the conveyor belt

unit (13) has a conveying width in the range from approximately 300 mm to 700 mm.”

203. McLaughlin does not explicitly disclose the dimensions of its conveyors. However, I note that Lindee discloses the dimensions of its conveyor, and it falls within the scope of claim 4, and nearly falls within the scope of claim 14. Lindee states that “According to the preferred embodiment, the conveying surface has a working area (X, Y) of about 9 inches (229 mm) by 9 inches (229 mm.)” Lindee, 7. In addition to Lindee’s explicit teaching, implementing conveyors as claimed, which uses a conveyor less than 500 mm long and a width in the approximate range of 300 mm to 700 mm, would have been obvious for a number of reasons.

204. Further, a POSA would have found it obvious to implement conveyors within the claimed standard size dimensions. First, a POSA would have been motivated to implement a removable conveyor belt unit with the claimed dimensions because the claimed dimensions are practical for purposes of installation and removal. A practically sized conveyor would be easier for one person to install or remove. A conveyor significantly larger conveyor would be unwieldy to lift and carry around a factory floor. A conveyor significantly larger would also likely require more than one person to remove and carry throughout a factory floor. It is

beneficial to require only one person to remove and carry a removable conveyor belt unit because if the unit needs to be removed for maintenance purposes, only one maintenance person would need to be dispatched to address any issues. Another benefit of only requiring one person for removal is that one person is able to disassemble and reassemble the conveyor for cleaning. Though there may be reasons to have more than one person involved in the assembly and disassembly of a conveyor belt unit (e.g., safety), the option to have one person perform these actions is a beneficial time saving measures.

205. Additionally, conveyors of a relatively short size are beneficial in many manufacturing and processing applications, including food processing, because floor space on a factory floor is in high demand. Designing machines and conveyors that are of relative short size help to save floor space so that additional manufacturing and processing equipment can be fit into the factory. Additionally, having shorter conveyors on a line saves time during manufacturing and processing. Shorter conveyors can save time because there would necessarily be a shorter overall distance that the objects would need to be conveyed. Increasing the speed of a conveyor can make up for long distances in some cases, but is sometimes disfavored, because faster speed increase the likelihood that the objects being conveyed would be disturbed by higher accelerations and decelerations.

206. Second, I understand that the simple structural rearrangement of parts is an obvious matter of design choice, especially if the functionality of those devices remains the same. Here, rearranging the structure of the conveyor belt units by changing the size of the conveyor belt units would not have changed the functionality of the conveyor belt units. I also note that the '487 patent does not tie any particular advantages to the claimed dimensions. Indeed, in my experience, changing the dimensions of a conveyor would not change the basic function of the conveyor, or create any unanticipated results.

207. Third, a POSA would have been aware of prior art that discloses conveyors with the same dimensions as the conveyors described in the specification and the claims. As I discussed above, Lindee discloses conveyors that fall within the claim range. For instance, Exhibits 1021 at 64:64-65:1 (“To accommodate as large a proportion as possible of the full range of product items which may need to be scanned, the Hyperlabel scanner 1500 is designed to accurately scan any item which fits on the 500 mm wide conveyor 1014 of the checkout 1000.”), 1022 at 5 (“In the illustrated embodiment, zone conveyors 24 are illustrated at .5 meters in length, but may be of greater or lesser length.”), 1027 at 7-8 (“The conveyor length is not critical; a typical length for conveyors 1163 and 1165, Figure 2, is about twelve inches (30 cm).”), 1028 at 6:49-67 (“Slicing machine 50 further comprises a system

of short conveyors for advancing food loaves from loaf feed mechanism 75 into slicing head 66. The short conveyor systems are actually a part of loaf feed mechanism 75.”), and 1029 at 25:57-26:7 (“FIG. 16 illustrates three typical loaf cross-section outlines L1, L2, and L3 that may be sliced in slicing machine 50. The two outlines L1 are illustrative of rectangular loaves approximately four inches (102 mm) in height by six and one-half inches (165 mm) in width.”) disclose conveyors that fall within the claim ranges.

208. A POSA would have had a reasonable expectant of success to for adjusting the dimensions of a conveyor to meet the claim limitations. There are no changes in principles or relevant physics by decreasing or increasing the size of a conveyor belt unit. Increasing or decreasing the size of a conveyor belt unit would involve all of the same components as the components disclosed in the prior art.

209. For all of the above reasons, a POSA would have had a reason to modify McLaughlin’s teachings to arrive at the claimed invention, with a reasonable expectation of success. Accordingly, claims 4 and 14 would have been obvious over McLaughlin.

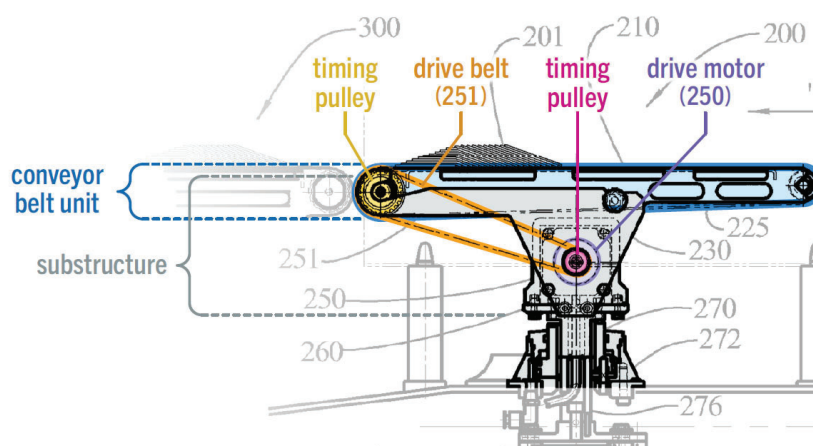
D. Dependent Claim 6

210. Dependent claim 6 would have been obvious to a POSA in light of McLaughlin and the knowledge of a POSA. Claim 6 depends from claim 1 and

further recites “wherein at least one drive motor (15) for the conveyor belt unit (13) is provided, with the drive motor (15) being directly coupled with the conveyor belt unit (13), and/or unit; and wherein the drive motor (15) is arranged beneath the conveyor belt unit (13).”

211. The '487 patent's specification describes what it contemplates a “direct drive” connection to include: “there is consequently a direct drive connection between the drive motor and the conveyor belt unit 13 via the drive belt 27 which runs around the drive shaft 51 of the motor and the drive wheel 44 of the conveyor belt unit 13.” '487 patent, 8:34-38.

212. McLaughlin discloses a drive motor. McLaughlin states that “The conveying surface is driven by a belt 251 coupled to a motor 250, situated beneath the conveying surface 210.” McLaughlin, 3:40-44. McLaughlin's Figure 2 illustrates this connection.



McLaughlin Annotated Figure 2

The drive motor 250 is directly coupled with the timing pulley that is a part of support frame 225. Further, as the preceding quote and Figure shows, McLaughlin specifically teaches that its motor is “situated beneath the conveying surface 210.” A POSA would have also been aware of other prior art that discloses arranging a motor beneath a conveying surface. Johnson, 13:30-32, Figure 7; Konishi. Additionally, these teachings would have informed a POSA that motor placement is an obvious matter of design choice.

213. Additionally, a POSA would have had a reason to place the motor beneath the conveyor belt unit. This would allow for the overall footprint of the machine to be smaller, as compared to having the motor place to the side of the conveyor belt unit. Reducing machine footprint size is an important consideration in processing and manufacturing facilities where floor space is at a premium. Additionally, a POSA would typically avoid placing a motor above a conveyor belt unit that handles food because any drips or debris coming from the motor (or maintenance of the motor) would fall into the food being conveyed.

214. A POSA would have had a reasonable expectation of success when placing the motor beneath the conveyor belt unit because the arrangement is already taught by the prior art. Further, there would be a reasonable expectation of success because a POSA would generally be aware of the drive and supporting components

required to place a motor on any side of the conveyor belt unit, including beneath a conveyor belt unit.

215. For all of the above reasons, a POSA would have found it obvious based on McLaughlin's disclosure to arrive at the claimed invention, with a reasonable expectation of success. Accordingly, claim 6 would have been obvious over McLaughlin in light of the knowledge of a POSA.

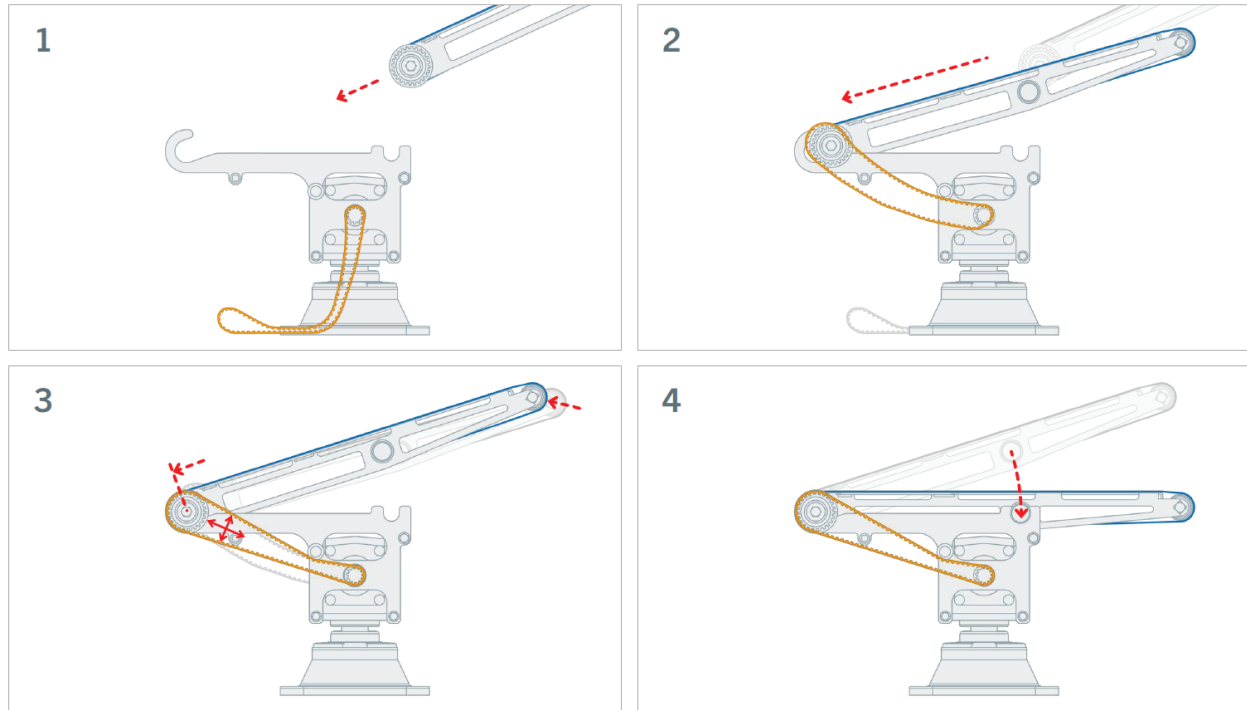
E. Dependent Claim 9

216. Dependent claim 9 would have been obvious in light of McLaughlin and the knowledge of a POSA. Claim 9 depends from claim 1 and further recites "wherein a respective relative movement is provided between the drive motor (15) and the conveyor belt unit (13) for cancelling and establishing a coupling between a drive motor (15) for the conveyor belt unit (13) and the conveyor belt unit; and wherein the spacing between the drive axle of the drive motor (15) and a drive axle of the conveyor belt unit (13) is configured to be varied by the relative movement."

217. McLaughlin discloses the apparatus in accordance with claim 1 further comprising wherein a respective relative movement is provided between the drive motor and the conveyor belt unit for cancelling and establishing a coupling between a drive motor for the conveyor belt unit and the conveyor belt unit; and wherein the spacing between a drive axle of the drive motor and a drive axle of the conveyor belt

unit is configured to be varied by the relative movement. McLaughlin discloses these requirements for all of the reasons I discussed above in connection with Independent Claim 1 at Section XIII.A.1–5.

218. McLaughlin discloses “wherein the spacing between a drive axle of the drive motor (15) and a drive axle of the conveyor belt unit (13) is configured to be varied by the relative movement.” McLaughlin’s timing pulley that is attached to the conveyor belt unit frame 225 acts as a drive axle for that conveyor belt unit. McLaughlin’s timing pulley that is attached to the drive motor, and the shaft that connects the drive motor to that timing pulley, act as the drive axle for the drive motor. McLaughlin’s conveyor belt unit timing pulley is moved relative to McLaughlin’s drive motor timing pulley and shaft during the removal and installation steps described above in Section XIII.A.5. The relative movement discussed in those steps varies the spacing between the conveyor belt unit’s drive axle and the drive motors drive axle.



219. For all of the above reasons, a POSA would have found it obvious based on McLaughlin's disclosure to arrive at the claimed invention, with a reasonable expectation of success. Accordingly, claim 9 would have been obvious over McLaughlin in light of the knowledge of a POSA.

F. Dependent Claim 10

220. Dependent claim 10 would have been obvious in light of McLaughlin and the knowledge of a POSA. Claim 10 depends from claim 1 and further recites "a mount (11) is provided for the conveyor belt unit (13) which remains at the apparatus with a removed conveyor belt unit (13) and at which the conveyor belt unit (13) is configured to be latched, with the latched connection configured to be

cancelled for removing the conveyor belt unit (13) and configured to be established for installing the conveyor belt unit (13).”

221. McLaughlin discloses “a mount (11) is provided for the conveyor belt unit (13) which remains at the apparatus with a removed conveyor belt unit (13).” I addressed this limitation above in Section XIII.A.3.

222. A POSA would have been aware of other prior art that discusses latch connections for conveyor belt units. As a first example, Lee teaches removable conveyors. Lee, Abstract. Lee states that its conveyor assemblies can be held in place in different manners disclosed in multiple embodiments. *Ibid.*, [0047]. As a first example, Lee states that “the use of one or more hold down springs and/or common barrel-bolt latches” are used to prevent the conveyors from being accidentally lifted out of place. *Ibid.* Lee also teaches that a latch provides the additional benefit of preventing the conveyor from being lifted out of place due to any reactive force created by conveying food product. *Ibid.* Thus, in my opinion, a POSA would have been motivated to add a latch to the McLaughlin for the reasons described in Lee. Use of a latch, or other known ways to secure a mechanical structure, was an obvious matter of common sense and could be tailored to the appropriate application by one of ordinary skill.

223. A POSA would have had a reasonable expectation of success when adding a latch, like that disclosed in Lee, to the McLaughlin. Lee already teaches how to implement a latch system for a removable conveyor belt unit. *Ibid.* In my experience, using latches to secure devices would have been well known even at the undergrad level and potentially used in an undergrad design exercises and an obvious design choice. Thus, implementing a latch system to hold a removable conveyor belt unit into place would have been well within the skill of a POSA at the relevant time, and would involve the use of well-known components in a familiar manner. A POSA would have had a further expectation of success in implementing the latch because other prior art discloses the use of latches to secure conveyors. For instance, Exhibit 1025 at 5:19-39 discloses using a latch device to secure components related to a weighing conveyor. Also, Exhibit 1024's Abstract discusses a "releasable" conveyor belt system, and discusses using a "quick release" mechanism to release the conveyor belt system.

224. For all of the above reasons, it would have been obvious to a POSA in light of McLaughlin and the knowledge of a POSA to arrive at the requirements of claim 10, with a reasonable expectation of success. Accordingly, claim 10 would have been obvious.

G. Dependent Claim 15

225. Dependent claim 15 would have been obvious in light of McLaughlin and the knowledge of a POSA. Claim 15 depends from claim 1 and further recites “wherein at least one continuous belt or continuous band (55) or a plurality of parallel continuous straps (57) is/are provided as conveying means of the conveyor belt unit (13).”

226. McLaughlin states that “The conveying surface can be on continuous surface or a series of belts arranged longitudinally along the direction of travel, as shown in FIG. 1, or other conveying arrangements commonly known to one skilled in the art.” McLaughlin, 4:29-32. Thus, McLaughlin explicitly teaches that its conveyor surfaces could have been either one continuous belt or band or a plurality of parallel continuous straps. Further, a POSA would have been aware of other disclosures in the art, like Lindee, that I discussed above. Lindee states that “The conveying surface 216 is shown schematically as a wide belt, but could also be a plurality of spaced apart ribbons.” Lindee, 6. The disclosures in McLaughlin and Lindee show that using either one continuous belt or a plurality of strap belts were known in the art, and known to be interchangeable for most applications.

227. A POSA would have had a reasonable expectation of success in implementing either a continuous belt or a plurality of parallel continuous straps.

Using a single conveyor belt or a plurality of continuous straps would have only required substituting one type of conveyor belt for another, along with changing out some of the components of the rollers that directly interface with the conveyor belt. There would have been no unexpected results when implementing either a single conveyor belt or a plurality of continuous straps.

228. For all of the above reasons, it would have been obvious to a POSA in light of McLaughlin and the knowledge of a POSA to arrive at the requirements of claim 15, with a reasonable expectation of success. Accordingly, claim 15 would have been obvious.

H. Dependent Claim 16

229. Dependent claim 16 would have been obvious in light of McLaughlin and the knowledge of a POSA. Claim 16 depends from claim 1 and further recites “the conveyor belt unit (13) is configured to be removed and/or installed without tools.”

230. A POSA would have recognized that the installation/removal process that I detailed above in Section XIII.A.2 and XIII.A5 would not require any tools. As I detailed, the shape and structure of McLaughlin’s sidewalls 230 and support frame 225 show that those two components are designed to interconnect. A POSA would appreciate that the interconnecting fit between the two components could be

designed to be tight enough to not require any additional tools to secure the conveyor belt unit to the substructure and hold it in place through gravity alone. To securely couple a conveyor unit to its subframe, the conveyor unit needs to be supported from at least three points, with at least one on two different sides, thus reducing all of its available degrees of freedom of motion to one, which, as described above, is the one motion used to cancel, or remove, the conveyor belt unit. McLaughlin's Figure 2, Figure t, and the knowledge of a POSA would render obvious an installation that couples McLaughlin's conveyor unit to its subframe and secure it in place, with only needing to overcome gravity to remove it. Figures 2 and 4 illustrates that McLaughlin's side walls 230 would remove any in-plane motion with respect to the conveyor surface (X or Y direction degrees of freedom, both linear translation and rotational). Figure 2 illustrates that McLaughlin's side walls 230 would further remove any vertical (Z direction degrees of freedom) motion, other than the counterclockwise rotation of the unit about the front axis for removal or installation. Thus, McLaughlin illustrates a support system capable of securing a conveyor belt unit in place and removing it without any tools.

231. Additionally, a POSA would have been aware of other prior art that teaches toolless installation and removal. For example, Lee states that "No tools are required to remove the conveyor assemblies 40A and 40B, which facilitates the

cleaning and maintenance of both the conveyor assemblies 40A and 40B as well as the platen 26.” Lee, [0020]. Lee also states that “The length of the mounting pins 38 that extend toward each other is such that the conveyor assemblies 40A and 40B can be mounted onto them and therefore into the toaster 10 without requiring tools or fasteners. The conveyor assemblies can be removed simply by lifting the conveyor assemblies off the pins without tools or special fasteners.” Lee, [0023]. Additionally, Lee states that “The toaster 10 is thus comprised of conveyors that are both removable, without requiring disassembly or tools and which are adjustable, even while the conveyors are operating. Ibid., [0033]. Lee discusses its toolless installation and removal elsewhere. Ibid., [0051], [0053]. Thus, in addition to McLaughlin’s teachings, a POSA would have been aware of other designs that facilitated removing and installing conveyors without tools.

232. The culmination of McLaughlin, Konishi, Lee, and other prior art that does not require tools to remove conveyor belt units would support that a POSA would have a likelihood of success to create a removable conveyor belt that can be installed/removed without tools. The types of components and principles required to accomplish this (detent fits, snap fits, latches, drive belts, conveyor belts, etc.) would have been the type of components a person would learn about at the undergraduate level. Further, these types of components and principles would have

likely been used during an undergraduate design class. A POSA would have had a reasonable expectation of success when implementing a tool-less removal/installation because it would have required nothing more than the predictable use of known components.

233. For all of the above reasons, it would have been obvious to a POSA in light of McLaughlin and the knowledge of a POSA to arrive at the requirements of claim 16, with a reasonable expectation of success. Accordingly, claim 16 would have been obvious.

I. Independent Claim 22

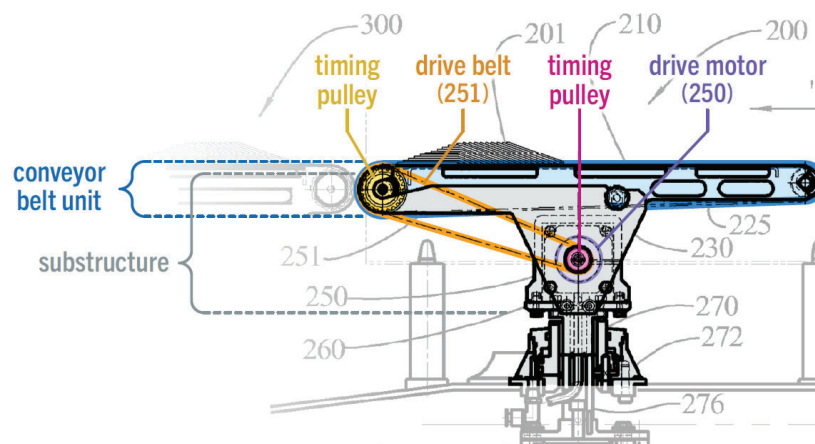
234. Independent claim 22 would have been obvious in view of McLaughlin and the knowledge of a POSA. Appendix B briefly summarizes teachings in McLaughlin that would correspond to the relevant claim requirements in the '487 patent. As discussed above in Section XIII.A, McLaughlin would have rendered obvious all elements of claim 1. The evidence that I discussed above for claim 1's preamble, element 1[A], and element 1[B] applies here to render obvious the claim 22 preamble, element 22[A], and element 22[B]. In addition to this evidence, McLaughlin would have rendered obvious the additional elements of claim elements 22[C1], 22[C2], and 22[C3], for the reasons I explain below.

235. A POSA would understand many benefits could be recognized by adding a second lane. For example, a second lane with a second drive would increase production by allowing a second food loaf, sliced food product, or object to be conveyed. As another example, a second lane with a second drive would increase throughput by essentially doubling the number of conveyed food loaves objects that would be conveyed at any given time.

1. Element 22[C1]

236. Element 22[C1] would have been obvious in light of McLaughlin and the knowledge of a POSA at the time of the '487 patent. Element 22[C1] recites “a first drive is coupled to the conveyor belt unit at the left side...when viewed in the conveying direction.”

237. McLaughlin discloses a drive motor that is coupled to its conveyor belt unit at the left side of the conveyor when viewed in the conveying direction.



2. Element 22[C2]

238. Element 22[C2] would have been obvious in light of McLaughlin and the knowledge of a POSA at the time of the '487 patent. Element 22[C2] recites “at a second drive (15) at the right side, when viewed in the conveying direction.”

239. McLaughlin states that its disclosure contemplates multiple drives. McLaughlin states that “In other embodiments, it is possible to have multiple streams of conveying surfaces such that multiple drafts are processed simultaneously using the present invention.” McLaughlin, 5:11-13. Further, a POSA would have been aware of the significant number of references discussed in Section VIII.B–C that teach slicers with two and more individually driven lanes. As one example, Lindee discloses a slicing machine with two independently driven tracks, those motors on either side of the two independently driven tracks, described as a “dual independent feed slicer.” Lindee, 12, Figure 1. Lindee refers to Johnson for this exemplary teaching, a patent that it incorporates by reference. Johnson’s Figure 6 and Figure 7 specifically illustrate motors driven on the left or right side, and, specifically, Figure 6 shows the drive configuration for a two-track conveyor system. Johnson also provide a detailed explanation of Figure 6 at 12:36-53. This kind of two drive system was common in the art by the time of the alleged invention around 2012, as I discussed above in Section VIII.B.

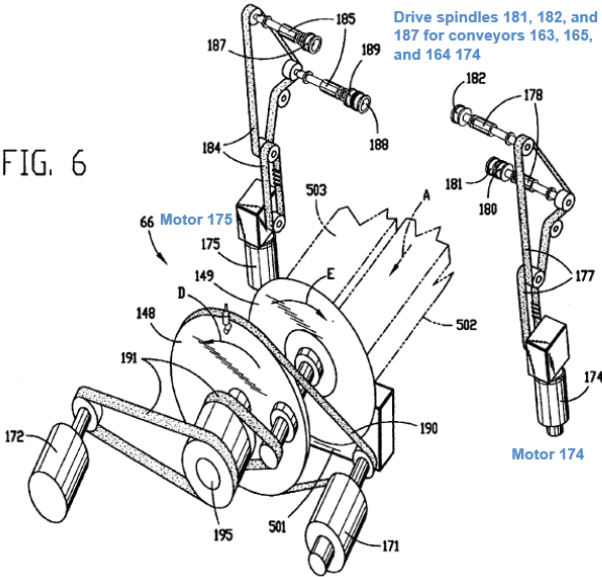
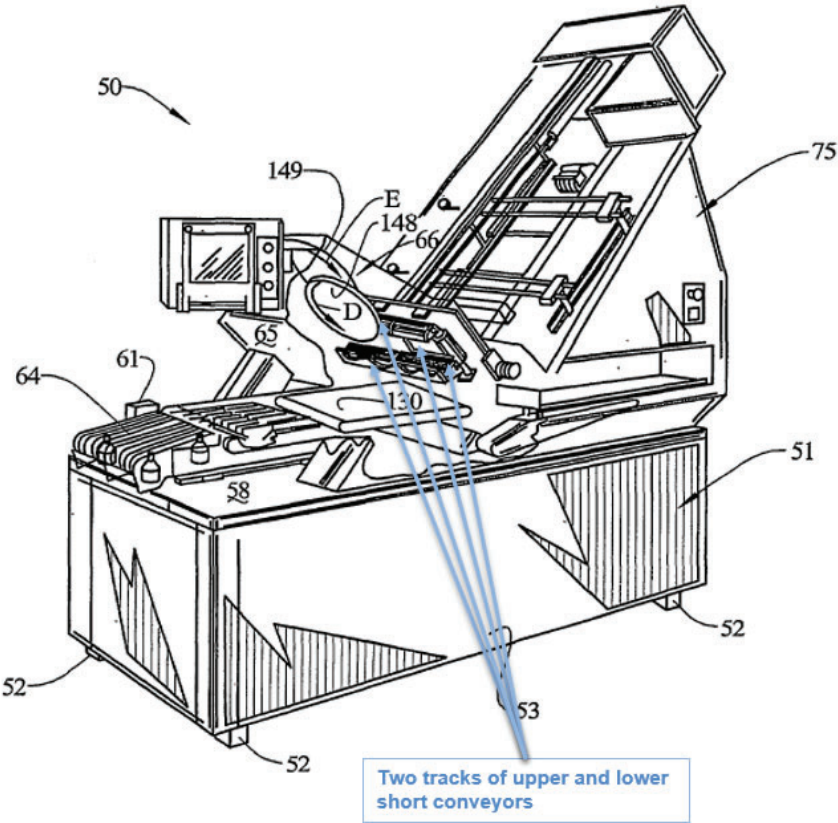


FIG. 1



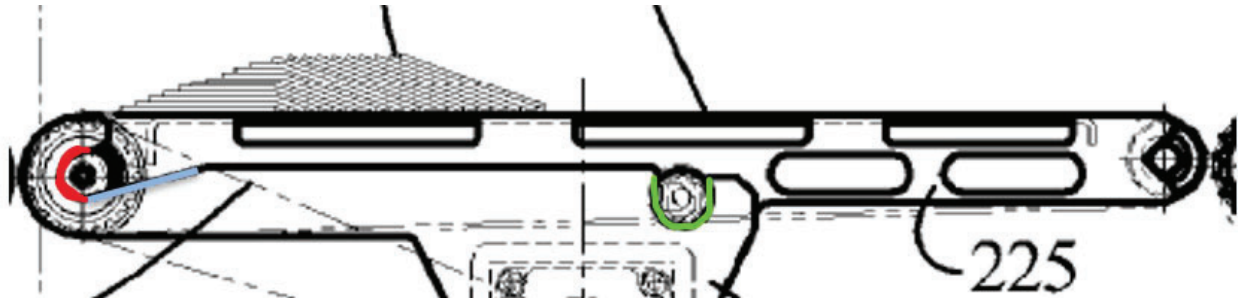
240. Additionally, adding an additional drive motor to McLaughlin would only require mirroring the embodiment shown in Figure 2. This would have only required that the designer flip the drive roller so its drive pulley was on the opposite side of the machine, and that the designer move the motor so that its drive extended from the other side of the machine. This may have required moving some other components, but rearranging components like this would have been well within the skill level of a POSA. Relocating parts is a simple design technique that would have been taught at the undergrad level, and potentially implemented during a design project. A POSA would have had a reasonable expectation of success because the rearrangement would have been simple.

3. Element 22[C3]

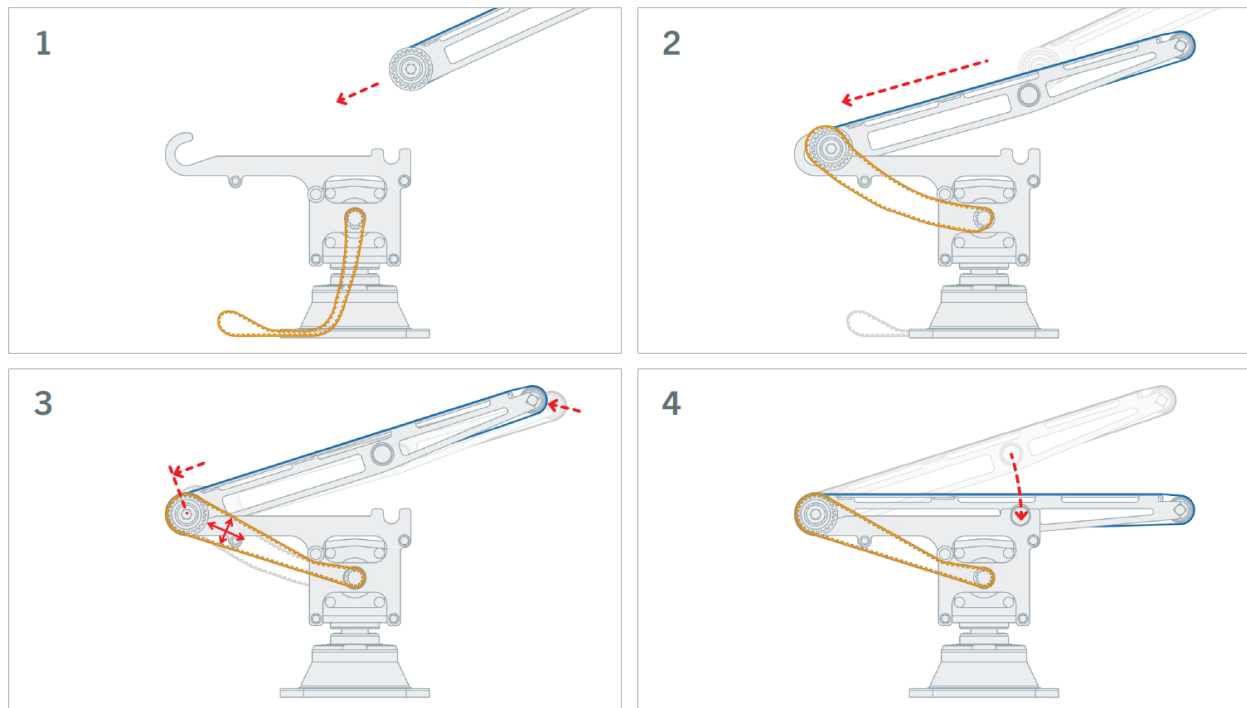
241. Element 22[C2] would have been obvious in light of McLaughlin and the knowledge of a POSA at the time of the '487 patent. Element 22[C3] recites “the coupling between the drives (15) and the conveyor belt unit (13) is configured to be simultaneously cancelled and established for at least one of the first drive and the second drive.”

242. One means to cancel or establish a drive is by tautening or loosening a drive belt around a timing gear or pulley. McLaughlin teaches this type of cancelling/establishing. As I explained above in Section XIII.A.5, a POSA would

have understood based on McLaughlin's Figure 2 that McLaughlin's removable conveyor belt unit has a drive that is cancelled or established when the conveyor belt unit is moved to the right. I paste below the Figures that illustrate the movement of installing/removing McLaughlin's conveyor belt unit.



McLaughlin Annotated Figure 2.



Further, a POSA would have been aware of other prior art that discloses the cancelling and establishing of a drive coupling. For instance, as discussed above, Konishi discloses this.

4. Additional Obviousness Support

243. All of the reasons I discussed above in Section XIII.A.6 also apply here. For those reasons, it would have been well within the skill of a POSA to make any necessary modifications to McLaughlin, and a POSA would have been motivated at the time of the '487 patent to make such a combination.

244. A POSA would have been motivated to implement an embodiment of McLaughlin with two independently driven lanes for multiple reasons. A POSA would have known that a second lane and a second drive would have increased production and throughput. This is supported by the prior art. For example, Julian teaches that increasing the number of cutting lanes increases throughput. Julian, [0008]. Throughput would be increased because the number of food products capable of being independently fed through the slicing blade would be increased. Mueller also teaches that simultaneously slicing a number of products next to each other increases overall productivity. Mueller, [0002]. Productivity would be increased for similar reasons as the throughput increase. These benefits would be magnified by allowing each food loaf to be individually driven at its own unique

speed. Allowing each food loaf to be driven at its own rate would allow for the slicer to adjust the thickness of slices to get on weight portions. Mueller, [0002]. I also note that, as I discussed above in Section VIII.B, a number of food slicing machines with multiple lanes were known before the time of the '487 patent.

245. Further, it would have been obvious to a POSA to modify McLaughlin in a manner that would allow for the two drives to be cancelled at the same time. This would have only required a mirroring of McLaughlin's Figure 2 teachings. For example, the POSA would only need to put the second driving roller on the same axis as the first driving roller. The POSA would also only need to put the second drive motor approximately in the same location as the first drive motor. This arrangement would mean that moving the two-lane conveyor belt unit in the way that Figure 2 makes obvious would loosen or tauten the first and second drive melt simultaneously. The simultaneous loosening/tautening would simplify the installation or removal process. Those processes would be simplified because only one movement would be required to loosen or tauten both belts, as opposed to two or more intervening movements to tighten or loosen the belt. A simpler installation/removal process would provide time saving benefits during maintenance and cleanings.

246. I also understand that the duplication of parts is generally considered to be obvious absent some technical reason that the duplication would have been difficult or provided some unanticipated benefit. McLaughlin discloses a conveyor. Adding additional conveyors has the benefit of increasing throughput and productivity, as I discussed above. Further, it would be more economical to have two tracks (or lanes) in one machine. Having these two tracks in one machine would take up less overall floor space, as an entire second machine would not be required. Having the second track in one machine would also benefit from efficiencies of sharing components, such as only requiring one machine controller. Therefore, adding a second track would have only required a simple duplication of existing parts at the time of the alleged invention in 2012. There would be no unexpected benefits from adding this second conveyor, as the prior art already taught the benefits of increasing conveyor count (e.g., increasing throughput, productivity, etc.) A POSA would have had a reasonable expectation of success because it would have only required a duplication of well-known and predictable components.

247. For all of the above reasons, it would have been obvious to a POSA in light of McLaughlin and the knowledge of a POSA to arrive at the requirements of claim 22, with a reasonable expectation of success. Accordingly, claim 22 would have been obvious.

XIV. GROUND 4: CLAIMS 1-4, 6, 9, 10, 14-16, AND 22 WOULD HAVE BEEN OBVIOUS OVER MCLAUGHLIN AND KONISHI.

248. Independent claim 1 would have been obvious in view of McLaughlin and Konishi. The below chart briefly summarizes the teachings of McLaughlin that correspond to the relevant claim limitations in the '487 patent's independent claim 1, and below that is a chart that briefly summarizes the Konishi teachings that correspond to the relevant claim limitations of claim 1:

Claim	McLaughlin Exemplary Disclosures
removable conveyor belt unit	conveying surface 210 and support frame 225 of check scale 200
Base	support frame 225
substructure	sidewalls 230, horizontal plate 260, and motor 250
mount	first and second attachment points
drive	motor 250
drive belt	belt 251
relaxing/tautening/relative movement	Figure 2

Claim Element	Konishi Exemplary Disclosures
removable conveyor belt unit	conveyor belt 14, subframe 12, and rollers 10-11, timing pulley 24
Base	subframe 12
substructure	frame 9
mount	hooks 25R, 25F
drive	drive motor 32
drive belt	Timing belt 49, timing pulley 48, conveyor belt 14, timing pulley 24
relaxing/tautening/relative movement	[0033]–[0041]; Figs. 8-9

A. Independent Claim 1

249. I addressed above in Sections XIII.A.1–6 how McLaughlin discloses or renders obvious every element of 1-4, 6, 9, 10, 14-16, 22, except, even though it was obvious, McLaughlin does not explicitly disclose Claim Element 1[C2]: “the conveyor belt unit (13) is configured to be cancelled by relaxing the drive belt (27) and is configured to be established by tautening the drive belt (2), with the relaxing and tautening of the drive belt (27) each being provided by a relative movement between the drive (15) and the conveyor belt unit (13).” Konishi discloses Claim Element 1[C2] for the reasons discussed in Section XI.A.4. It is my opinion that it would have been obvious to combine Konishi and McLaughlin in a manner that renders obvious Claim Element 1[C2]. A POSA would have only had to apply the installation/removal actions disclosed in Konishi to the design disclosed in McLaughlin’s Figure 2 to remove McLaughlin’s removable conveyor belt unit in the same manner as described in Claim Element 1[C2]. Konishi, [0033], [0041].

B. Motivation to Combine

250. A POSA would have been motivated to combine the teachings of McLaughlin and Konishi for many reasons, including the reasons explicitly taught by Konishi. Konishi extensively discusses the benefits of removable conveyor belt units, including that they facilitate easy maintenance and make cleaning easier. Konishi, [0004].

251. Further, Konishi and McLaughlin are both in the same technological field as the '487 patent, namely conveyance systems. Konishi and McLaughlin also disclose conveyor systems used in the food processing industry. Konishi and McLaughlin are also both relevant to the alleged problem addressed by the '487 patent's inventors—removing conveyors from conveyance lines for cleaning and maintenance.

252. As I discussed above, Konishi's conveyance system includes a conveyor belt unit that uses belt conveyors to transport food items. See Section VIII.D. I note that Konishi discloses an apparatus for food products, a removable conveyor belt unit having at least one track and a base, a substructure having a mount coupled to the base, and a drive coupled to the conveyor belt unit that is configured to be cancelled by relaxing the drive belt and is configured to be established by tautening the drive belt, with the relaxing and tautening of the drive belt each being provided by a relative movement between the drive and the conveyor belt unit. See Section XI.A. Thus, I note that Konishi discloses all of the elements of claim 1 except for the preamble's "slicing apparatus for food products." But using a removable conveyor in a slicing machine is disclosed in McLaughlin. See Section VIII.E. Using removable conveyor belt units in systems similar to both Konishi and McLaughlin were also well known in the art. See Lindee. And it would have been

obvious to modify McLaughlin to include Konishi's removal process to improve conveyor sanitation, conveyor maintenance, and conveyor cleaning procedures.

253. A POSA would have been well aware of removable conveyor assemblies. See Konishi, Lindee, McLaughlin; see also Lee (Exhibit 1012). A POSA would have also known about the advantages of removable conveyor belts, including improving the ease of assembly/disassembly, maintenance, and sanitation. See Konishi [Purpose]. This is particularly true and important when dealing with conveyors used in the food processing industry at the time of the alleged invention around 2012. Indeed, Konishi explicitly states that its disclosure creates a "simple structure wherein the subframe side can be easily disassembled and assembled from the frame, and maintenance such as cleaning of each mechanical part can be performed reliably and efficiently, and the waterproof performance of the weight detector and motor can be ensured with a simple configuration." Konishi, [0007], [0013]. A POSA would have understood the maintenance, cleaning, and other advantages provided by a removal conveyor belt unit.

254. First, a POSA would have been motivated to use a removable conveyor belt unit to simplify assembly/disassembly. Simplifying the assembly/disassembly of a removable conveyor belt unit has many benefits, including reducing the amount of time to complete any task that involves removing/installing the conveyor belt

assembly. Such tasks include cleaning and maintenance procedures, and also include things like initial set up of the conveyor system or disassembly/assembly required to relocate the conveyor system.

255. Second, a POSA would have been motivated to use a removable conveyor belt unit to improve maintenance. A POSA would have valued having a removable conveyor belt assembly so that the conveyor assembly could be removed to facilitate easy access to other components in the food processing line. Konishi explicitly teaches such advantages: “As described above, all mechanical parts can be disassembled and assembled as desired. Therefore, maintenance of various parts that cannot be accessed because they are obstructed by other mechanisms or parts in the assembled position, which is a normal state in use, can be easily and reliably performed by exposing them by disassembling the product.” Konishi, [0042]. Not only would removing the conveyor belt unit provide easier access to other components that require maintenance, it would promote easier maintenance of the actual conveyor belt unit. If a worker was able to relocate the conveyor belt unit to a separate work surface or area of the factory, it would be easier for the worker would to manipulate the orientation of the conveyor belt unit to access different sides of the conveyor belt unit. Further, the worker could perform more intense repair/maintenance (like welding a stress fracture, if it occurred) away from the rest

of the food processing line, which would reduce the risk of contaminating or damaging other parts of the food processing line during the more intense repair/maintenance.

256. Third, a POSA would have been motivated to use a removable conveyor belt unit to improve cleaning. Maintaining clean and sanitized equipment is an important consideration in the food processing industry. If equipment is not regularly cleaned and/or sanitized, and food processing company risks an outbreak of bacteria or foodborne-illness, which, at a minimum would harm the food processing company's reputation, and, at worse, could result in sickness or even death. Konishi explicitly teaches that the ease of removing the conveyor belt unit promotes efficient cleaning: "In addition, efficient cleaning means such as showering can be used to thoroughly clean the entire area and maintain sanitary management." Konishi, [0042]. Removing the conveyor assembly allows easy access to portions of the machine that are otherwise obstructed, and that easy access allows for easier cleaning.

257. Fourth, a POSA would have been motivated to use a removable conveyor belt unit to readily facilitate swapping conveyor belt surfaces. For instance, if a drive roller began to fail, a conveyor belt began to fray, or a frame began to crack, a POSA would have recognized that a removable conveyor that could

be quickly and easily removed would have decreased the down time for a conveyance line because that conveyor belt unit could be readily swapped with another similar conveyor belt unit.

258. A POSA would have been motivated to use a removable conveyor belt unit with a motor underneath the conveyor belt unit as a space saving technique. Konishi discloses that its motor is arranged beneath the conveyor belt unit. Placing the motor nearby and underneath the respective conveyor belt unit that the motor drives would reduce overall machine size by facilitating a compact arrangement. Reduction in overall machine size is a key consideration in the food processing industry, where floor space is at a premium. In addition, by placing the motor underneath and nearby the conveyor belt unit, the length of the drive belt would be reduced. Reducing the length of the drive belt is advantageous because it reduces the overall length by which the drive belt would eventually stretch after use.

259. In addition to the reasons discussed above, in my opinion, a POSA would have recognized that combining the teachings of McLaughlin and Konishi would only require a simple combination of prior art elements according to known methods to yield predictable results. As I discussed above, removable conveyor belt units are common and well-known means of conveying objects, including food product, that engineers and machine designers used in many industries. Section

VIII.C. A POSA would have been well aware of the use of removable conveyor belt units, and the corresponding advantages of doing so. Implementing the motions for removing a conveyor belt unit taught by Konishi in a system as disclosed in McLaughlin's Figure 2 would have resulted in the predictable result of a conveyor belt unit that could be removed and installed through a series of movements and attaching a drive belt.

260. Also, claim 1 recites a known structure (e.g. McLaughlin's slicing apparatus) that is altered by the mere application of teachings of a patent (e.g. the idea of Konishi's removal/installation process). The result of this substitution yields the predictable result of conveying objects, such as food articles, while providing the benefits recognized by removable conveyor belt units, which I discussed above.

261. Therefore, a POSA would have been motivated to combine Konishi's removable conveyor belt unit with Lindee's slicer for many reasons.

C. Reasonable Expectation of Success Combining the Teachings of McLaughlin and Konishi

262. In my opinion, a POSA would have had a reasonable expectation of success combining the teachings of McLaughlin and Konishi. As I stated above, implementing removable conveyor belt units is a common and well-known process that is used in multiple industries that use conveyors, including the food processing industry. Section VIII.C. Implementing a removable conveyor belt unit simply

requires using the same components (belts, supports, rollers, motors, etc.) that are already disclosed and used in the prior art, with the potential additional requirement of basic programming. Thus, a POSA would have been well aware of how to design and implement a removable conveyor belt unit in a food slicer or slicing line like McLaughlin. In my experience, the sort of devices used in these systems would have been taught at an undergrad level and possibly used in a undergrad design project. Further, the relative motion principles would have been readily understandable and taught at an undergrad level. Therefore, implementing a removable conveyor belt unit would have been well within the skill of a POSA at the relevant time, and would involve the use of well-known components in a familiar manner. Indeed, I note that the well-known components are disclosed throughout the prior art discussed in Sections VIII.A–C.

263. My opinion that a POSA would have a reasonable expectation of success in implementing a removable conveyor belt unit is further supported by the fact that the process for how to install and remove a removable conveyor belt unit are explicitly taught by Konishi. Konishi, [0033]–[0041]. Based on Konishi's express teachings (and McLaughlin's figures showing that the machine already uses a removable conveyor belt unit), as well as both a POSA's own background knowledge and the background prior art, a POSA would have been well aware of

how to implement Konishi's installation/removal process into a system with a removable conveyor belt unit like McLaughlin.

264. Additionally, a POSA would have been able to implement removable conveyors in McLaughlin either before or after the slicing blade. I note that McLaughlin's figures show conveyors in a slicing machine before and after the slicing blade. McLaughlin, Fig. 1. A POSA would have been able to design a removable conveyor belt unit to replace conveyors arranged before or after the slicing blade in McLaughlin.

265. For all of the above reasons, a POSA would have had a reason to combine Konishi's and McLaughlin's teachings to arrive at the claimed invention, with a reasonable expectation of success. Accordingly, claim 1 would have been obvious over Konishi and McLaughlin.

D. Dependent Claims 2-4, 6, 9, 10, and 14-16

266. As I discussed above in Sections XIII.B–H, McLaughlin either discloses or renders obvious every element of dependent claims 2–4, 6, 9, 10, and 14–16. The combination of McLaughlin and Konishi described above in Section XIV.A would have also rendered obvious these dependent claims, as the evidence, knowledge of a POSA, motivations, and expectation of success I discussed in Sections XIII.B–H would still apply to the combination of McLaughlin and Konishi.

I have also provided an Appendix to this declaration which compares the claim language to the disclosures of McLaughlin. Appendix B.

E. Independent Claim 22

267. As I discussed above in Section XIII.I, McLaughlin teaches and renders obvious every element of Claim 22. Even though it was obvious, McLaughlin does not explicitly disclose “the coupling between the drives (15) and the conveyor belt unit (13) is configured to be simultaneously cancelled and established for at least one of the first drive and the second drive.” However, McLaughlin renders this obvious. As I discussed above, McLaughlin renders obvious a second drive because McLaughlin states “In other embodiments, it is possible to have multiple streams of conveying surfaces such that multiple drafts are processed simultaneously using the present invention.” McLaughlin, 5:11-13. Also, as I discussed above in Section XI.A.4 and XII.K.3, Konishi teaches and renders obvious how to cancel and establish a drive or multiple drives of a conveyor a conveyor belt unit. It would have been obvious to combine Konishi and McLaughlin to arrive at a removable conveyor belt unit with multiple drives because of the explicit teaching in McLaughlin that I quoted above, and because of the extensive number of references discussed in Section VIII that disclose multi-drive slicing machines with multi-drive conveyors.

268. A POSA would have been motivated to combine McLaughlin and Konishi at the time of the '487 patent for the reasons I discussed directly above in Section XIV.B. A POSA would have had a reasonable expectation of success in combining the teachings of McLaughlin and Konishi for the reasons I discussed directly above in Section XIV.C. Combining McLaughlin and Konishi to create a two drive removable conveyor belt unit would have only required a simple duplication of parts and a mirroring of either McLaughlin or Konishi's figures. A POSA would have had a reasonable expectation of success because this would have been well within the skill of a POSA at the relevant time, and would have involved principles and techniques that would have typically been taught at an undergraduate level. Thus, it is my opinion that a POSA would have been motivated to combine McLaughlin and Konishi to arrive at the requirements of Claim 22, and a POSA would have had a reasonable expectation of success in making the combination.

XV. THERE ARE NO OBJECTIVE INDICIA OF NONOBVIOUSNESS

269. I considered whether there were any objective indicia of nonobviousness when I was drawing my conclusions regarding obviousness in this declaration.

270. I understand that any objective indicia of nonobviousness must have a connection to the allegedly novel aspects of the claimed device. I understand that

the objective indicia of nonobviousness include the following: commercial success, long-felt but unmet need, failure by others, copying by others, praise in the industry, and unexpected results.

271. Considering the information I have reviewed, my general knowledge of the field of conveyance equipment, food processing equipment, general automation equipment, and publications within that and related fields, I am not aware of any objective evidence that would support the patentability of the challenged claims of the '487 patent. Further, from my review of the prosecution history of the '487 patent, I did not see any objective indicia raised during the prosecution of the patent. I am also not otherwise aware of publicly available evidence of objective indicia of nonobviousness that would support the patentability of the '487 patent. Therefore, in my opinion, no objective indicia of nonobviousness support the patentability of the challenged claims of the '487 patent.

XVI. CONCLUSION

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

Inter Partes Review of U.S. Pat. No. 9,457,487
John M. Collins, Ph.D. Declaration

273. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine of imprisonment, or both, under Section 1001 of Title 18 of the United States Code. I am over the age of eighteen years old, and I am competent to make this Declaration.

Date: November 22, 2023

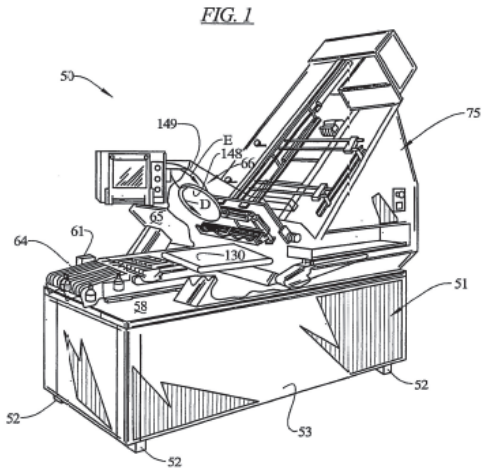
DocuSigned by:

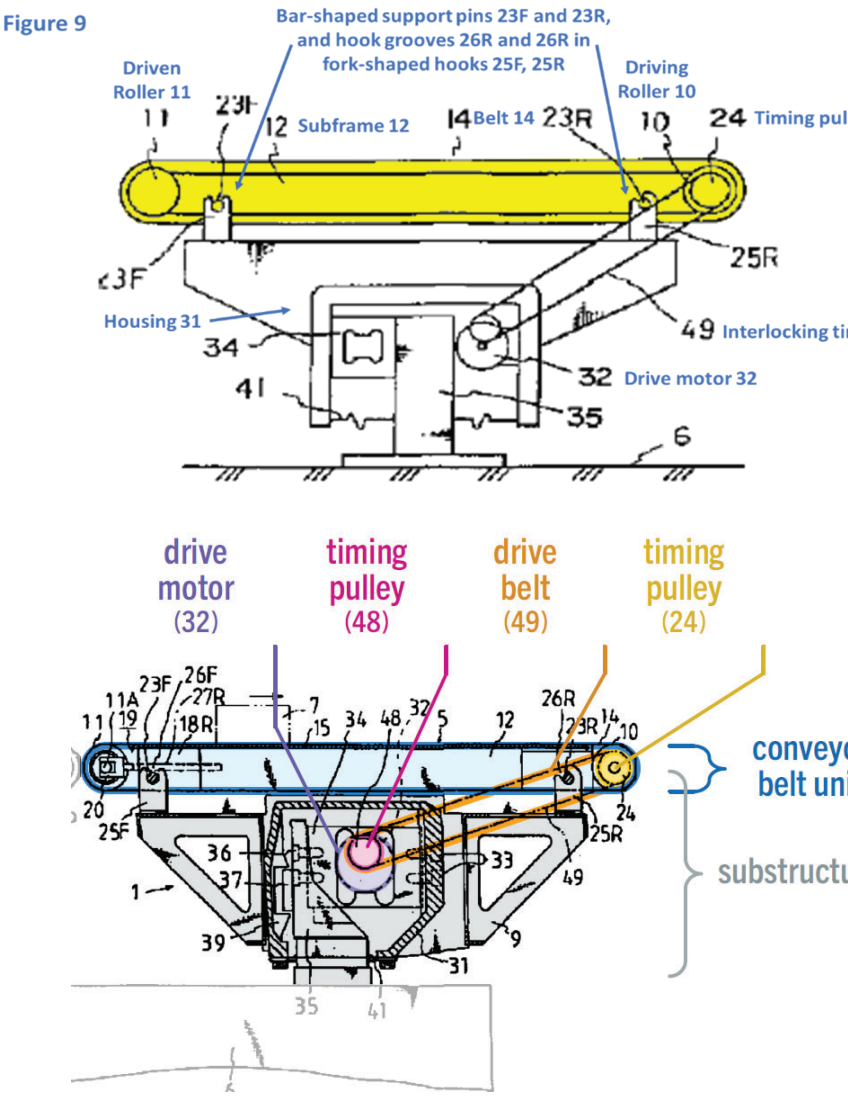
2BB201035C4A4E1...
John M. Collins, Ph.D.

Inter Partes Review of U.S. Pat. No. 9,457,487
John M. Collins, Ph.D. Declaration

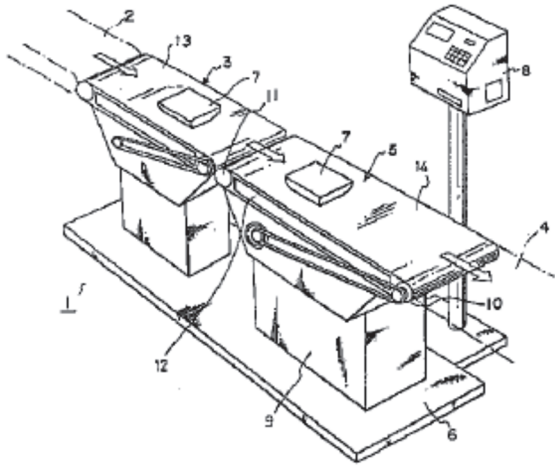
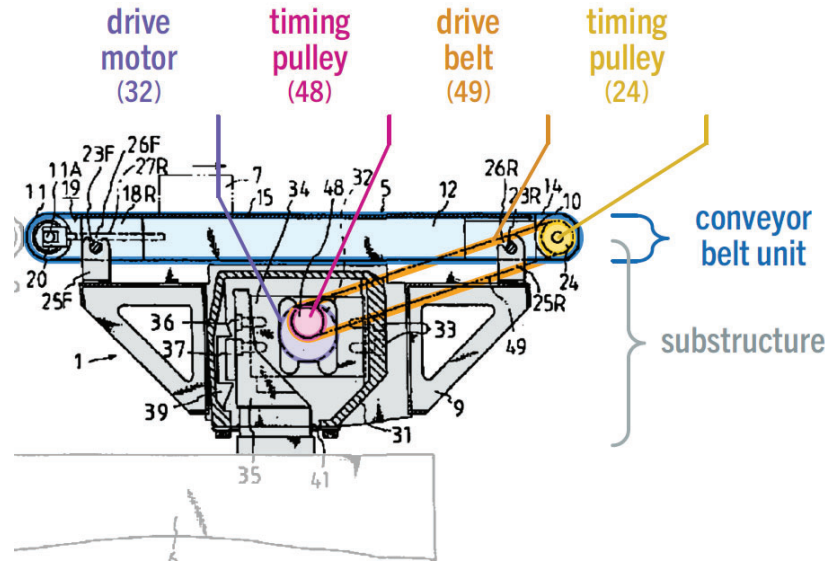
XVII.APPENDIX A – KONISHI CLAIM CHART

Claim	JPH 06 117905 to Konishi (EX1004) and Combination
1[Preamble] A slicing apparatus for food products, the slicing apparatus comprising:	The preamble here is not a limitation on the scope of the claims. Therefore, Konishi anticipates the claim. In addition, Konishi in view of Lindee renders obvious the claim as a whole. “Title CONVEYOR SYSTEM FOR <i>SLICER APPARATUS</i>.” Lindee, Cover Page. “Abstract: A conveying surface for a <i>slicing apparatus</i> that can be moved in two orthogonal directions in a coordinated manner to allow a depositing of slices in a pattern on the conveying surface. The conveying surface can be an endless belt conveyor circulated in the longitudinal direction by a servo-motor via a telescopic drive shaft and shifted in the lateral direction by servo-motor driving a crank arm mechanism.” Lindee, Cover Page. “Technical Field of the Invention: The present invention relates to <i>slicing apparatus and associated conveyor systems</i>. Particularly, the invention relates to a conveyor system that includes a mechanism for arranging slices received from the slicing apparatus in a manner to form a pattern.” Lindee, 1. “Background of the Invention: <i>Slicing apparatus and associated conveyor systems are known</i> wherein the slicing apparatus deposits slices on a jump conveyor.... Such arrangements are disclosed, for example, in U.S. Patents 5,649,463; 5,704,265; EP O 713 753; or WO 99/08844, all herein incorporated by reference. Slicing apparatus and conveyor systems are also embodied in the FORMAX FX180 Slicer available from Formax, Inc. of Mokena, Illinois, U.S.A.” Lindee, 1. “In a <i>dual independent feed slicer</i> that can slice two side-by-side loaves simultaneously, such as described in U.S. Patent No. 5,704,265, or EP O 713 753 A2, both herein incorporated by reference, using the loaf feed mechanisms to selectively slice each loaf, the jump conveyor of the present invention can be

Claim	JPH 06 117905 to Konishi (EX1004) and Combination
	synchronized with the slicer to interleave or group slices of different loaves in a common pattern, straight stack or shingled stack.” Lindee, 12, Fig. 1. 
1[A] a removable conveyor belt unit (13) having at least one track and a base (25);	“[Configuration] <i>A subframe 12 having a conveyor belt 14 for conveying objects to be weighed is removably attached to the frame 9, a housing 31 with a downward opening is fixed to the frame 9, and with this housing 31 and the support bracket 35 extending upward from the fixed base 6 and inserted into the housing 31, weight detector 34 is supported in a cantilever style, and at the same time, the drive motor 32 of the conveyor belt 14 is installed in the housing 31, and with one housing 31, the weight detector 34 and motor 34 are waterproofed.</i>” Konishi, Cover Page.

Claim	JPH 06 117905 to Konishi (EX1004) and Combination
	Figure 9  The diagram illustrates a belt conveyor-type automatic weighing device. The top portion is a side view showing a conveyor belt (14) stretched between a driven roller (11) and a driving roller (10). The belt is supported by bar-shaped support pins (23F, 23R) and hook grooves (26F, 26R) in fork-shaped hooks (25F, 25R). The unit is mounted on a subframe (12) which is part of a larger frame (6). A drive motor (32) is connected to the driving roller via an interlocking timing belt (49). A housing (31) is fixed to the frame, and a support bracket (41) extends upward from the fixed base, inserted into the housing. The bottom portion is a cross-sectional view of the weighing mechanism, including a weight detector (34) and a drive motor (32) connected to a timing pulley (48) and a drive belt (49). The timing pulley (48) is connected to a timing pulley (24) which is part of the conveyor belt unit. The substructure (9) is shown supporting the weighing mechanism.
	“[Means to solve the problem] In order to achieve above objective, the belt conveyor-type automatic weighing device according to Claim 1 of this invention is structured so that <i>a subframe supporting a drive roller and a driven roller on which a conveyor belt for conveying objects to be weighed is stretched is removably attached</i> to a frame equipped with a drive motor and a weight detector for the conveyor belt, the drive motor and the drive roller of the conveyor belt are interlocked via an interlocking belt, and a housing with a downward opening is fixed to the frame, a support bracket extending upward from the fixed base is inserted into the housing, and one end of the weight

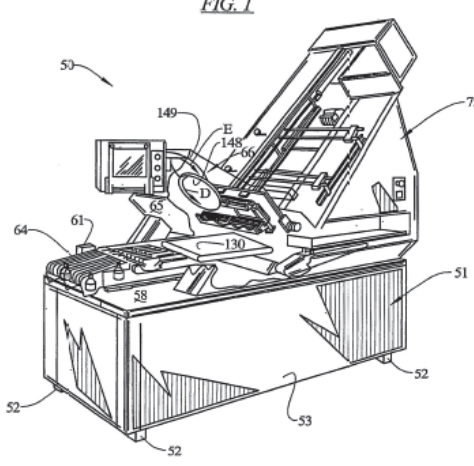
Claim	JPH 06 117905 to Konishi (EX1004) and Combination
	detector is fixed to the part of the support bracket that is inserted into the housing, while the other end of the weight detector is fixed to the housing and the drive motor is installed within the housing, a rotating shaft driven by the drive motor projects laterally from the housing via a watertight structure, and the interlocking belt is stretched between the projecting end and the drive roller of the conveyor belt.” Konishi, [0008]. “[Claim] A belt conveyor-type automatic weighing device wherein a subframe supporting a driving roller and a driven roller on which a conveyor belt for conveying objects to be weighed is stretched is <i>removably attached</i> to a frame equipped with a drive motor and a weight detector for the conveyor belt, and the drive motor and the drive roller of the conveyor belt are interlocked via an interlocking belt, having the characteristic that a housing with a downward opening is fixed to the frame, an indicator bracket extending upward from the fixed base is inserted into the housing, and one end of the weight detector is fixed to a portion of the support bracket that is inserted into the housing, the other end of the weight detector is fixed to the housing, the drive motor is installed within the housing, a rotating shaft driven by the drive motor projects laterally from the housing through a watertight structure, and the interlocking belt is stretched between the projecting end and the drive roller of the conveyor belt.” Konishi, Claim 1. “[0034] Next, as shown by the two-dot chain line in Figure 8, when the rear part of the subframe 12 is pulled diagonally upward in the direction of arrow X, the rear support bin 23R comes off from the diagonal hook groove 26R of the hook 25R. Therefore, the sub-frame 12 still equipped with the conveyor belt 14, the drive roller 10, and the driven roller 11 can be separated from the frame 9 side and can be processed with predetermined cleaning or the like.” Konishi, [0034].

Claim	JPH 06 117905 to Konishi (EX1004) and Combination
	
1[B] a substructure (41) having a mount (11) coupled to the base (25); and	“[O]n the top surface of frame 9 in belt conveyor-type automatic weighing device 5, a pair of fork-shaped hooks 25F, 25R are protruded upward at the front and rear in correspondence with the pair of support bins 23F, 23R on the subframe 12 side and the front hook 25F has a hook groove 26F that opens upward, and the rear hook 25R has a hook groove 26R that opens diagonally upward, and by engaging and disengaging the support bins 23F, 23R on the subframe 12 side with these hook grooves 26F, 26R, the subframe 12 can be attached to and removed from the frame 9, and in the attached state, the hooks 25F and 25R support the entire weight of the subframe 12.” Konishi, [0034]. 

Claim	JPH 06 117905 to Konishi (EX1004) and Combination
	“[Purpose] To simplify the structure of the subframe containing the conveyor belt to make it easier to remove from the frame, and to also simplify the waterproof structure for the weight detector and conveyor drive motor in order to perform reliable and efficient cleaning work such as showering.” Konishi, Cover Page. “[Configuration] A subframe 12 having a conveyor belt 14 for conveying objects to be weighed is removably attached to the frame 9, a housing 31 with a downward opening is fixed to the frame 9, and with this housing 31 and the support bracket 35 extending upward from the fixed base 6 and inserted into the housing 31, weight detector 34 is supported in a cantilever style, and at the same time, the drive motor 32 of the conveyor belt 14 is installed in the housing 31, and with one housing 31, the weight detector 34 and motor 34 are waterproofed.” Konishi, Cover Page.
1[C1] a drive (15) coupled to the conveyor belt unit (13) by a drive belt (27),	“[0025] A conveyor belt drive motor 32 shown in Figure 4 is attached to the side of the weight detector 34 inside the housing 31, and a waterproof and dustproof structure for the motor 32 and the weight detector 34 is constituted by the single housing 31. As shown in Figure 2 and Figure 4, on the lateral side of the housing 31, a sub-housing 42 forming a watertight structure concentric with the drive shaft of the motor 32 is connected in a watertight manner via a spigot part 43 and a seal 44, and this sub-housing 42 is configured so that its pivoting position around the axis s can be adjusted via an annular pressing plate 60 and bolts 61.” Konishi, [0025]. “[0026] Further, within the sub-housing 42, a rotary shaft 62 is rotatably supported via a bearing 47 eccentrically with respect to the axis s, and this rotating shaft 62 and the motor 32 are interlocked by meshing with a spur gear 46 fixed to the inner end of the rotating shaft 62 and a pinion gear 45, the other end of the rotating shaft 62 projects outward from the sub-housing 42, and an interlocking timing belt 49 is stretched between the timing pulley 48 fixed to the projecting end thereof and the timing pulley 24 fixed to the drive roller shaft 10A of the conveyor belt 14.

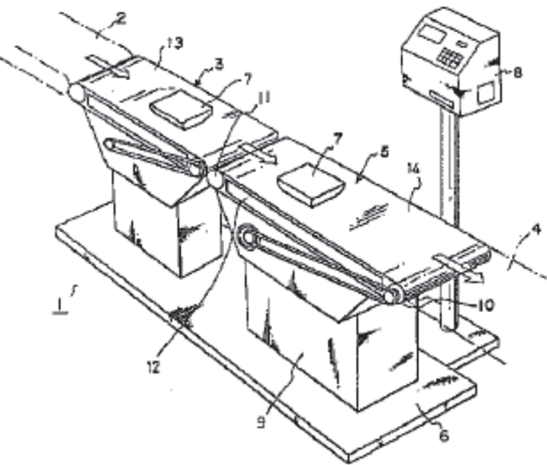
Claim	JPH 06 117905 to Konishi (EX1004) and Combination
	With the above configuration, the tension of the interlocking timing belt 49 is configured to be adjustable by rotating the sub-housing 42 around its axis s, adjusting the position, and then fixing it, while the spur gear 46 on the sub-housing 42 side is engaged with the pinion gear 45.” Konishi, [0026].
1[C2] the conveyor belt unit (13) is configured to be cancelled by relaxing the drive belt (27) and is configured to be established by tautening the drive belt (27), with the relaxing and tautening of the drive belt (27) each being provided by a relative movement between the drive (15) and the conveyor belt unit (13).	“[0033] First, after stopping the operation of motor 32 in Figure 9, centering on the support pin 23R engaged in the hook groove 26R of the rear hook 25R, the front part of the subframe 12 is lightly lifted upward in the direction of arrow y, as shown by the dashed line in Figure 8, and the front support bin 23F is removed from the hook groove 26F of the hook 25F. At this time, <i>since the timing prefix 24 fixed to the shaft 10A of the drive roller 10 moves diagonally downward, the interlocking timing belt 49 stretched between the timing pulley 24 and the timing pulley 48 fixed to the rotating shaft 62 on the sub-housing 42 side becomes loose, and the timing belt 49 can be easily removed from the timing pulley 24 of the drive roller 10.</i>” Konishi, [0033]. “[0034] Next, as shown by the two-dot chain line in Figure 8, when the rear part of the subframe 12 is pulled diagonally upward in the direction of arrow X, the rear support bin 23R comes off from the diagonal hook groove 26R of the hook 25R. Therefore, the sub-frame 12 still equipped with the conveyor belt 14, the drive roller 10, and the driven roller 11 can be separated from the frame 9 side and can be processed with predetermined cleaning or the like.” Konishi, [0034].

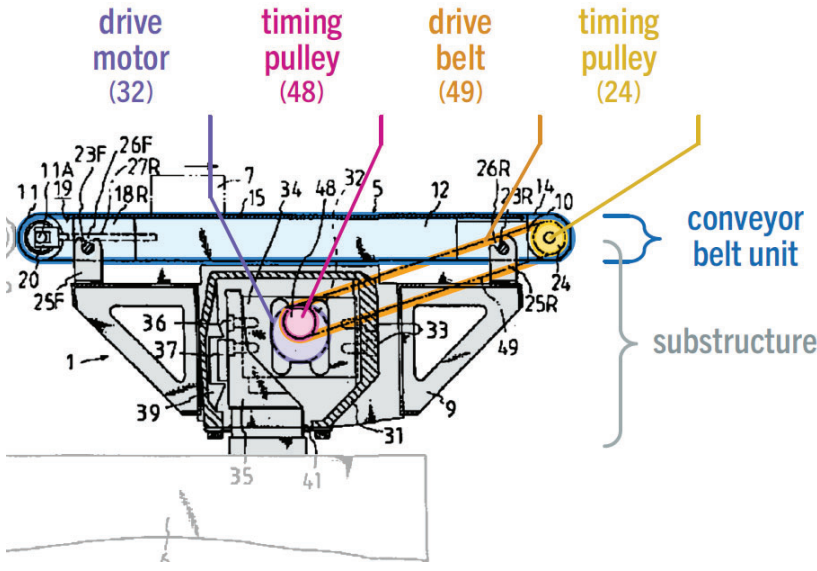
Claim	JPH 06 117905 to Konishi (EX1004) and Combination
	Figure 8 Position 3 – Not engaged Position 2 – Rear pin engaged Position 1 – Both front and rear pins engaged Bar-shaped support pins 23F and 23R, and hook grooves 26R and 26R in the fork-shaped hooks 25F, 25R
22[Preamble] A slicing apparatus for food products, the slicing apparatus comprising:	The preamble here is not a limitation on the scope of the claims. Therefore, Konishi anticipates the claim. In addition, Konishi in view of Lindee renders obvious the claim as a whole. “Title CONVEYOR SYSTEM FOR <i>SLICER APPARATUS</i>.” Lindee, Cover Page. “Abstract: A conveying surface for a <i>slicing apparatus</i> that can be moved in two orthogonal directions in a coordinated manner to allow a depositing of slices in a pattern on the conveying surface. The conveying surface can be an endless belt conveyor circulated in the longitudinal direction by a servo-motor via a telescopic drive shaft and shifted in the lateral direction by servo-motor driving a crank arm mechanism.” Lindee, Cover Page. “Technical Field of the Invention: The present invention relates to <i>slicing apparatus and associated conveyor systems</i>. Particularly, the invention relates to a conveyor system that includes a mechanism for arranging slices received from the slicing apparatus in a manner to form a pattern.” Lindee, 1.

Claim	JPH 06 117905 to Konishi (EX1004) and Combination
	“Background of the Invention: <i>Slicing apparatus and associated conveyor systems are known</i> wherein the slicing apparatus deposits slices on a ”jump conveyor.... Such arrangements are disclosed, for example, in U.S. Patents 5,649,463; 5,704,265; EP O 713 753; or WO 99/08844, all herein incorporated by reference. Slicing apparatus and conveyor systems are also embodied in the FORMAX FX180 Slicer available from Formax, Inc. of Mokena, Illinois, U.S.A.” Lindee, 1. “In a <i>dual independent feed slicer</i> that can slice two side-by-side loaves simultaneously, such as described in U.S. Patent No. 5,704,265, or EP O 713 753 A2, both herein incorporated by reference, using the loaf feed mechanisms to selectively slice each loaf, the jump conveyor of the present invention can be synchronized with the slicer to interleave or group slices of different loaves in a common pattern, straight stack or shingled stack.” Lindee, 12, Fig. 1. <i>FIG. 1</i> 
22[A] at least one removable conveyor belt unit (13) having at least one	“[Configuration] <i>A subframe 12 having a conveyor belt 14 for conveying objects to be weighed is removably attached</i> to the frame 9, a housing 31 with a downward opening is fixed to the frame 9, and with this housing 31 and the support bracket 35 extending upward from the fixed base 6 and inserted into the housing 31, weight detector 34 is supported in a cantilever style, and at the same time, the drive motor 32 of the conveyor belt 14

Claim	JPH 06 117905 to Konishi (EX1004) and Combination
track and a base (25);	is installed in the housing 31, and with one housing 31, the weight detector 34 and motor 34 are waterproof.” Konishi, Cover Page. Figure 9 drive motor (32) timing pulley (48) drive belt (49) timing pulley (24) conveyor belt unit substructure “[Means to solve the problem] In order to achieve above objective, the belt conveyor-type automatic weighing device according to Claim 1 of this invention is structured so that <i>a subframe supporting a drive roller and a driven roller on which a conveyor belt for conveying objects to be weighed is stretched is removably attached</i> to a frame equipped with a drive motor

Claim	JPH 06 117905 to Konishi (EX1004) and Combination
	and a weight detector for the conveyor belt, the drive motor and the drive roller of the conveyor belt are interlocked via an interlocking belt, and a housing with a downward opening is fixed to the frame, a support bracket extending upward from the fixed base is inserted into the housing, and one end of the weight detector is fixed to the part of the support bracket that is inserted into the housing, while the other end of the weight detector is fixed to the housing and the drive motor is installed within the housing, a rotating shaft driven by the drive motor projects laterally from the housing via a watertight structure, and the interlocking belt is stretched between the projecting end and the drive roller of the conveyor belt.” Konishi, [0008]. “[Claim] A belt conveyor-type automatic weighing device wherein a subframe supporting a driving roller and a driven roller on which a conveyor belt for conveying objects to be weighed is stretched is <i>removably attached</i> to a frame equipped with a drive motor and a weight detector for the conveyor belt, and the drive motor and the drive roller of the conveyor belt are interlocked via an interlocking belt, having the characteristic that a housing with a downward opening is fixed to the frame, an indicator bracket extending upward from the fixed base is inserted into the housing, and one end of the weight detector is fixed to a portion of the support bracket that is inserted into the housing, the other end of the weight detector is fixed to the housing, the drive motor is installed within the housing, a rotating shaft driven by the drive motor projects laterally from the housing through a watertight structure, and the interlocking belt is stretched between the projecting end and the drive roller of the conveyor belt.” Konishi, Claim 1. “[0034] Next, as shown by the two-dot chain line in Figure 8, when the rear part of the subframe 12 is pulled diagonally upward in the direction of arrow X, the rear support bin 23R comes off from the diagonal hook groove 26R of the hook 25R. Therefore, the sub-frame 12 still equipped with the conveyor belt 14, the drive roller 10, and the driven roller 11 can be separated from the

Claim	JPH 06 117905 to Konishi (EX1004) and Combination
	frame 9 side and can be processed with predetermined cleaning or the like.” Konishi, [0034]. 
22[B] a substructure (41) having a mount (11) coupled to the base (25); and	“[O]n the top surface of <i>frame 9</i> in belt conveyor-type automatic weighing device 5, a pair of fork-shaped hooks 25F, 25R are protruded upward at the front and rear in correspondence with the pair of support bins 23F, 23R on the subframe 12 side and the front hook 25F has a hook groove 26F that opens upward, and the rear hook 25R has a hook groove 26R that opens diagonally upward, and by engaging and disengaging the support bins 23F, 23R on the subframe 12 side with these hook grooves 26F, 26R, the subframe 12 can be attached to and removed from the frame 9, and in the attached state, the hooks 25F and 25R support the entire weight of the subframe 12.” Konishi, [0034].

Claim	JPH 06 117905 to Konishi (EX1004) and Combination
	 “[Purpose] To simplify the structure of the subframe containing the conveyor belt to make it easier to remove from the frame, and to also simplify the waterproof structure for the weight detector and conveyor drive motor in order to perform reliable and efficient cleaning work such as showering.” Konishi, Cover Page. “[Configuration] A subframe 12 having a conveyor belt 14 for conveying objects to be weighed is removably attached to the frame 9, a housing 31 with a downward opening is fixed to the frame 9, and with this housing 31 and the support bracket 35 extending upward from the fixed base 6 and inserted into the housing 31, weight detector 34 is supported in a cantilever style, and at the same time, the drive motor 32 of the conveyor belt 14 is installed in the housing 31, and with one housing 31, the weight detector 34 and motor 34 are waterproofed.” Konishi, Cover Page.
22[C1] a first drive (15) is coupled to the conveyor belt unit (13)	“[0025] A conveyor belt drive motor 32 shown in Figure 4 is attached to the side of the weight detector 34 inside the housing 31, and a waterproof and dustproof structure for the motor 32 and the weight detector 34 is constituted by the single housing 31. As shown in Figure 2 and Figure 4, on the lateral side of the housing 31, a sub-housing 42 forming a watertight structure concentric with the drive shaft of the motor 32 is connected in a watertight

Claim	JPH 06 117905 to Konishi (EX1004) and Combination
at the left side and	manner via a spigot part 43 and a seal 44, and this sub-housing 42 is configured so that its pivoting position around the axis s can be adjusted via an annular pressing plate 60 and bolts 61.” Konishi, [0025]. “[0026] Further, within the sub-housing 42, a rotary shaft 62 is rotatably supported via a bearing 47 eccentrically with respect to the axis s, and this rotating shaft 62 and the <i>motor 32</i> are interlocked by meshing with a spur gear 46 fixed to the inner end of the rotating shaft 62 and a pinion gear 45, the other end of the rotating shaft 62 projects outward from the sub-housing 42, and an interlocking timing belt 49 is stretched between the timing pulley 48 fixed to the projecting end thereof and the timing pulley 24 fixed to the drive roller shaft 10A of the conveyor belt 14. With the above configuration, the tension of the interlocking timing belt 49 is configured to be adjustable by rotating the sub-housing 42 around its axis s, adjusting the position, and then fixing it, while the spur gear 46 on the sub-housing 42 side is engaged with the pinion gear 45.” Konishi, [0026].
[C2] at a second drive (15) at the right side, when viewed in the conveying direction,	“In a <i>dual independent feed slicer</i> that can slice two side-by-side loaves simultaneously, such as described in U.S. Patent No. 5,704,265, or EP O 713 753 A2, both herein incorporated by reference, using the loaf feed mechanisms to selectively slice each loaf, the jump conveyor of the present invention can be synchronized with the slicer to interleave or group slices of different loaves in a common pattern, straight stack or shingled stack.” Lindee, 12, Fig. 1. “Some of the <i>drive motors</i> for the operating mechanisms in slicing machine 50 are shown in FIG. 3. The drive motor for rotating the head or spindle 148 in slicing station 66 is a variable speed servo motor 171 mounted in the machine base 51. A similar servo motor 172 drives the knife blade 149. The receiver lift 138 is driven by a receiver lift motor 173, again preferably a variable speed servo motor. On the near side of machine 50 the loaf feed drive mechanism comprising gripper 151 and the short loaf feed conveyors 163 and 165 is

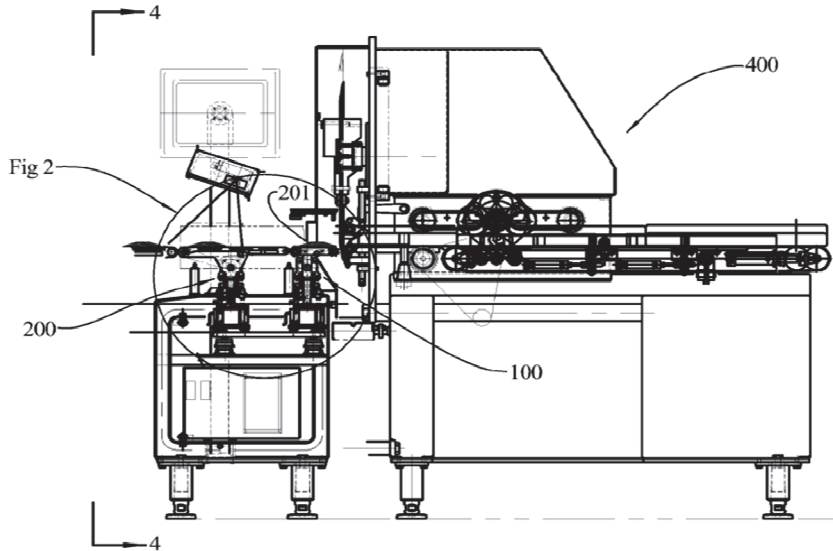
Claim	JPH 06 117905 to Konishi (EX1004) and Combination
	driven by a servo motor 174. A like motor 175 on the far side of machine 50 (not shown in FIG. 3) affords an independent drive for the gripper and the ‘short’ loaf feed conveyors 164 and 166 on that side of the slicing machine. Exhibit 1017, U.S. Patent No. 5,704,265, 7:7. (See also, e.g., EX1006, EX1013, EX1014, EX1018.)
[C3] the coupling between the drives (15) and the conveyor belt unit (13) is configured to be simultaneously cancelled and established for at least one of the first drive (15) and the second drive (15).	“[0033] First, after stopping the operation of motor 32 in Figure 9, centering on the support pin 23R engaged in the hook groove 26R of the rear hook 25R, the front part of the subframe 12 is lightly lifted upward in the direction of arrow y, as shown by the dashed line in Figure 8, and the front support bin 23F is removed from the hook groove 26F of the hook 25F. At this time, <i>since the timing prefix 24 fixed to the shaft 10A of the drive roller 10 moves diagonally downward, the interlocking timing belt 49 stretched between the timing pulley 24 and the timing pulley 48 fixed to the rotating shaft 62 on the sub-housing 42 side becomes loose, and the timing belt 49 can be easily removed from the timing pulley 24 of the drive roller 10.</i>” (EX1004, ¶33.) “[0034] Next, as shown by the two-dot chain line in Figure 8, when the rear part of the subframe 12 is pulled diagonally upward in the direction of arrow X, the rear support bin 23R comes off from the diagonal hook groove 26R of the hook 25R. Therefore, the sub-frame 12 still equipped with the conveyor belt 14, the drive roller 10, and the driven roller 11 can be separated from the frame 9 side and can be processed with predetermined cleaning or the like.” Konishi, [0034].

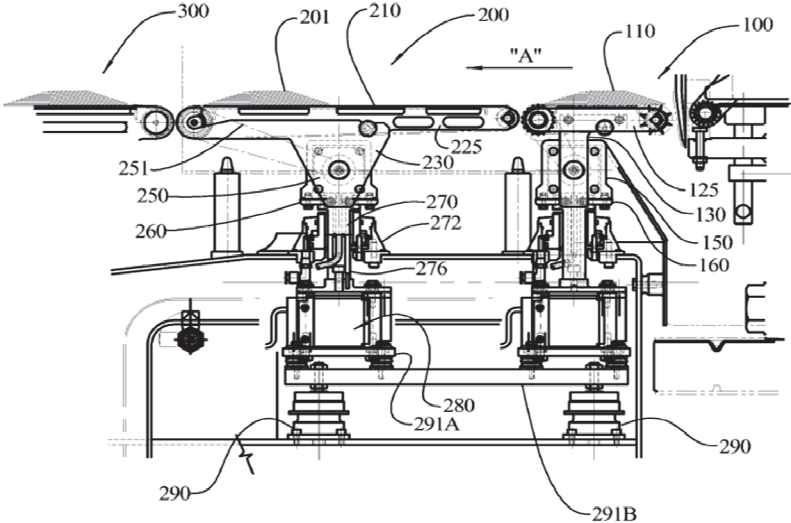
161

Inter Partes Review of U.S. Pat. No. 9,457,487
John M. Collins, Ph.D. Declaration

XVIII. APPENDIX B – MCLAUGHLIN CLAIM CHART

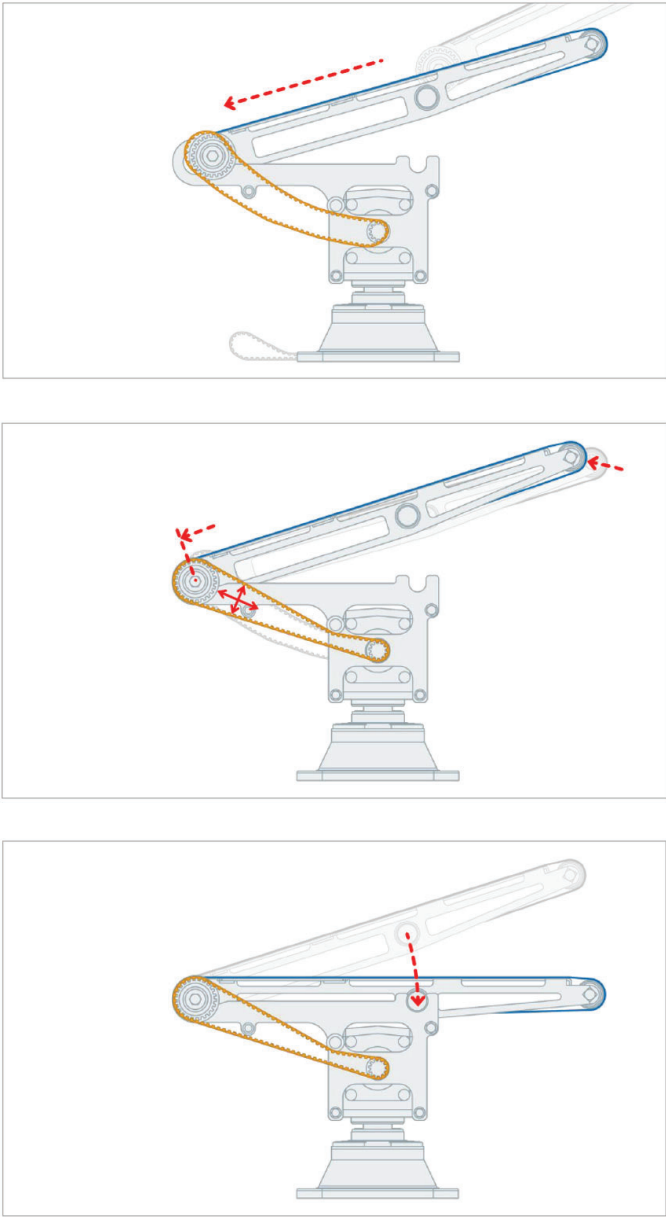
Claim	U.S. Patent No. 9,296,120 to McLaughlin (EX1006) and Combination
1[Preamble] A slicing apparatus for food products, the slicing apparatus comprising:	“FIELD OF THE INVENTION: This invention relates in general to <i>slicing systems</i> and methods of weighing <i>sliced food products</i>.” McLaughlin, 1:15-16. “SUMMARY OF THE INVENTION: The present invention provides a method and apparatus for <i>producing stacks of food slices</i> of precise weights. The present invention provides a method and apparatus for fine-tuning the weighing of Subsequent drafts. In one aspect, the slicing apparatus comprises dual scales--a slice scale and a check scale.” McLaughlin, 2:36-43. “FIGS. 1 and 2 illustrate the primary components of the dual scale weighing apparatus. The dual scale weighing apparatus comprises a slice scale 100 and a check scale 200. The slice scale 100 is situated under the discharge end of a <i>slicing machine 400</i> such that sliced layers of food product or drafts 201, are deposited on the slice scale. The drafts can be straight stacked slices or shingled slices, or any other grouped slices. The check scale 200 is downstream of the slice scale 100, and situated between the slice scale and a downstream conveyor 300.” McLaughlin, 3:18-27. “<i>The slicing machine 400 may be any one of the several different types of slicing machines presently being used in the meat packing industry</i>, for example, the slicer disclosed in U.S. Pat. No. 4,548,108. The slicer is set to slice food products of a certain thickness. Slices are deposited as they are sliced, onto the slice scale 100.” McLaughlin, 3:28-33.

Claim	U.S. Patent No. 9,296,120 to McLaughlin (EX1006) and Combination
	<i>FIG. 1</i> 
1[A] a removable conveyor belt unit (13) having at least one track and a base (25);	“Both the slice scale 100 and check scale 200, as illustrated in FIG. 2, comprise a conveying surface 110, 210, side walls 130, 230, a motor 150, 250, a horizontal plate 160, 260, and a load cell 180, 280. Each component will be further discussed with respect to the check scale 200, but it is to be understood that the slice scale 100 has corresponding components.” McLaughlin, 3:34-39. “The check scale 200 has a conveying surface 210 on which product 201 is conveyed from one end to another, in a direction ‘A’. The conveying surface is driven by a belt 251 coupled to a motor 250, situated beneath the conveying surface 210. The conveying surface is supported by a support frame 225 which is attached to side walls 230 on either side of the support frame (FIGS. 2 and 4). The side walls 230 are attached to a horizontal plate 260 on which the motor 250 rests. The motor is attached to the horizontal plate 260 by screws 251 as illustrated in FIG. 3. The side walls 230 are attached to the horizontal plate 260 by screws 261. The horizontal plate 260, and accordingly the components attached to the horizontal plate 260 the motor 250, side walls 230, and conveying surface 210, is

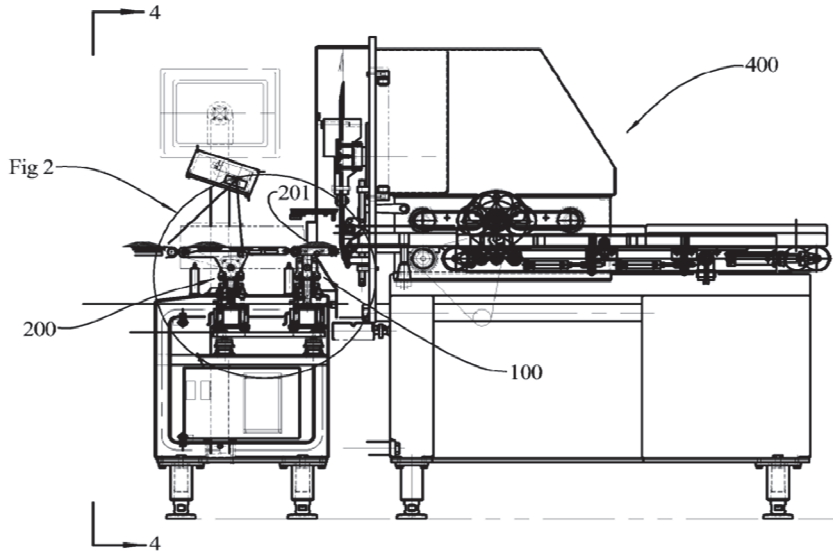
Claim	U.S. Patent No. 9,296,120 to McLaughlin (EX1006) and Combination
	attached to a shaft 270, illustrated in FIGS. 2 and 3. The shaft is housed in a conical shaped housing 272 (FIGS. 2-4). As illustrated in FIG.3, the top of the shaft contains flanges for screws 271 to attach the horizontal plate 260 to the shaft 270. A fastener 273 is situated at the bottom of the shaft and connects the shaft 270 to the load cells 280 situated beneath the shaft 270. Because the shaft 270 is hollow, an electrical cord 276 providing power to the motor can be run through the shaft to use the shaft as a conduit to prevent wires from being externally exposed. An opening 275 in the shaft near the bottom of the shaft and above the fastener 273 provides an outlet for the electrical cord 276 to exit the shaft 270.” McLaughlin, 3:40-65. <u>FIG. 2</u> 
1[B] a substructure (41) having a mount (11) coupled to the base (25); and	“Both the slice scale 100 and check scale 200, as illustrated in FIG. 2, comprise a conveying surface 110, 210, <i>side walls</i> 130, 230, a motor 150, 250, a horizontal plate 160, 260, and a load cell 180, 280. Each component will be further discussed with respect to the check scale 200, but it is to be understood that the slice scale 100 has corresponding components.” McLaughlin, 3:34-39.

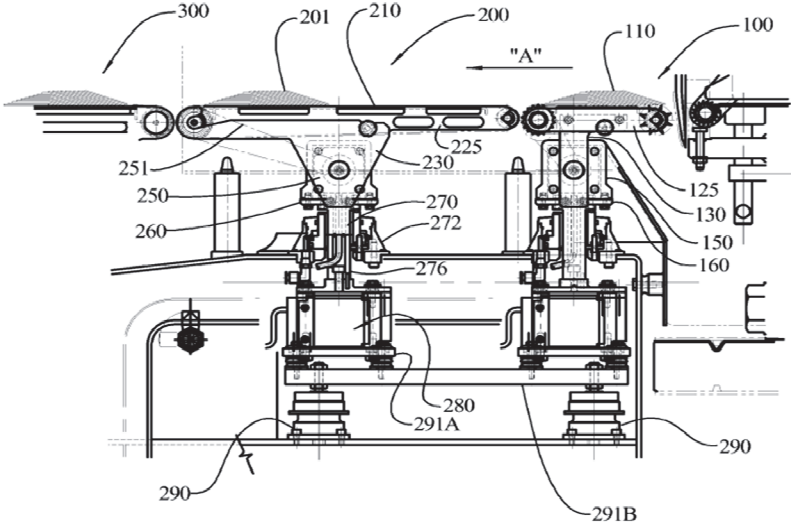
Claim	U.S. Patent No. 9,296,120 to McLaughlin (EX1006) and Combination
	“The check scale 200 has a conveying surface 210 on which product 201 is conveyed from one end to another, in a direction ‘A’. The conveying surface is driven by a belt 251 coupled to a motor 250, situated beneath the conveying surface 210. The conveying surface is supported by a support frame 225 which is attached to side walls 230 on either side of the support frame (FIGS. 2 and 4). The side walls 230 are attached to a horizontal plate 260 on which the motor 250 rests. The motor is attached to the horizontal plate 260 by screws 251 as illustrated in FIG. 3. The side walls 230 are attached to the horizontal plate 260 by screws 261. The horizontal plate 260, and accordingly the components attached to the horizontal plate 260 the motor 250, side walls 230, and conveying surface 210, is attached to a shaft 270, illustrated in FIGS. 2 and 3. The shaft is housed in a conical shaped housing 272 (FIGS. 2-4). As illustrated in FIG.3, the top of the shaft contains flanges for screws 271 to attach the horizontal plate 260 to the shaft 270. A fastener 273 is situated at the bottom of the shaft and connects the shaft 270 to the load cells 280 situated beneath the shaft 270. Because the shaft 270 is hollow, an electrical cord 276 providing power to the motor can be run through the shaft to use the shaft as a conduit to prevent wires from being externally exposed. An opening 275 in the shaft near the bottom of the shaft and above the fastener 273 provides an outlet for the electrical cord 276 to exit the shaft 270.” McLaughlin, 3:40-65.
1[C1] a drive (15) coupled to the conveyor belt unit (13) by a drive belt (27),	“Both the slice scale 100 and check scale 200, as illustrated in FIG. 2, comprise a conveying surface 110, 210, side walls 130, 230, a motor 150, 250, a horizontal plate 160, 260, and a load cell 180, 280. Each component will be further discussed with respect to the check scale 200, but it is to be understood that the slice scale 100 has corresponding components.” McLaughlin, 3:34-39. “The check scale 200 has a conveying surface 210 on which product 201 is conveyed from one end to another, in a direction ‘A’. The conveying surface is driven by a belt 251 coupled to a

Claim	U.S. Patent No. 9,296,120 to McLaughlin (EX1006) and Combination
	motor 250, situated beneath the conveying surface 210. The conveying surface is supported by a support frame 225 which is attached to side walls 230 on either side of the support frame (FIGS. 2 and 4). The side walls 230 are attached to a horizontal plate 260 on which the motor 250 rests. The motor is attached to the horizontal plate 260 by screws 251 as illustrated in FIG. 3. The side walls 230 are attached to the horizontal plate 260 by screws 261. The horizontal plate 260, and accordingly the components attached to the horizontal plate 260 the motor 250, side walls 230, and conveying surface 210, is attached to a shaft 270, illustrated in FIGS. 2 and 3. The shaft is housed in a conical shaped housing 272 (FIGS. 2-4). As illustrated in FIG.3, the top of the shaft contains flanges for screws 271 to attach the horizontal plate 260 to the shaft 270. A fastener 273 is situated at the bottom of the shaft and connects the shaft 270 to the load cells 280 situated beneath the shaft 270. Because the shaft 270 is hollow, an electrical cord 276 providing power to the motor can be run through the shaft to use the shaft as a conduit to prevent wires from being externally exposed. An opening 275 in the shaft near the bottom of the shaft and above the fastener 273 provides an outlet for the electrical cord 276 to exit the shaft 270.” McLaughlin, 3:40-65.
1[C2] the conveyor belt unit (13) is configured to be cancelled by relaxing the drive belt (27) and is configured to be established by tautening the drive belt (27), with the relaxing and	A POSA would have found it obvious that McLaughlin’s conveying surface 210 and support frame 225 detach from the side walls 230 by a relative movement between the drive and conveyor belt unit. McLaughlin, Fig. 2.

Claim	U.S. Patent No. 9,296,120 to McLaughlin (EX1006) and Combination
tautening of the drive belt (27) each being provided by a relative movement between the drive (15) and the conveyor belt unit (13).	
22[Preamble] A slicing apparatus for food products, the slicing	“FIELD OF THE INVENTION: This invention relates in general to <i>slicing systems</i> and methods of weighing <i>sliced food products</i> .” McLaughlin, 1:15-16.

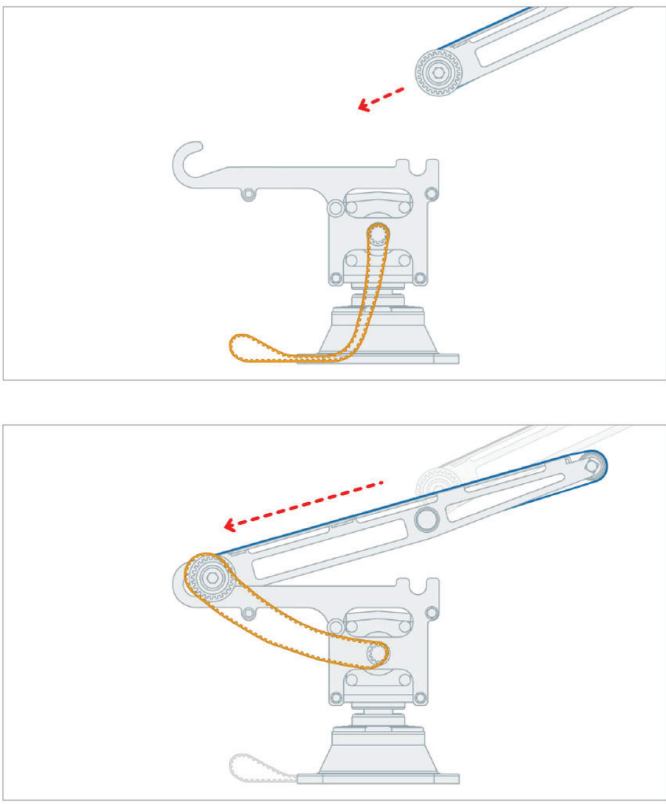
Claim	U.S. Patent No. 9,296,120 to McLaughlin (EX1006) and Combination
apparatus comprising:	“SUMMARY OF THE INVENTION: The present invention provides a method and apparatus for <i>producing stacks of food slices</i> of precise weights. The present invention provides a method and apparatus for fine-tuning the weighing of Subsequent drafts. In one aspect, the slicing apparatus comprises dual scales--a slice scale and a check scale.” McLaughlin, 2:36-43. “FIGS. 1 and 2 illustrate the primary components of the dual scale weighing apparatus. The dual scale weighing apparatus comprises a slice scale 100 and a check scale 200. The slice scale 100 is situated under the discharge end of a <i>slicing machine 400</i> such that sliced layers of food product or drafts 201, are deposited on the slice scale. The drafts can be straight stacked slices or shingled slices, or any other grouped slices. The check scale 200 is downstream of the slice scale 100, and situated between the slice scale and a downstream conveyor 300.” McLaughlin, 3:18-27. “<i>The slicing machine 400 may be any one of the several different types of slicing machines presently being used in the meat packing industry</i>, for example, the slicer disclosed in U.S. Pat. No. 4,548,108. The slicer is set to slice food products of a certain thickness. Slices are deposited as they are sliced, onto the slice scale 100.” McLaughlin, 3:28-33.

Claim	U.S. Patent No. 9,296,120 to McLaughlin (EX1006) and Combination
	<i>FIG. 1</i> 
22[A] at least one removable conveyor belt unit (13) having at least one track and a base (25);	“Both the slice scale 100 and check scale 200, as illustrated in FIG. 2, comprise a conveying surface 110, 210, side walls 130, 230, a motor 150, 250, a horizontal plate 160, 260, and a load cell 180, 280. Each component will be further discussed with respect to the check scale 200, but it is to be understood that the slice scale 100 has corresponding components.” McLaughlin, 3:34-39. “The check scale 200 has a conveying surface 210 on which product 201 is conveyed from one end to another, in a direction ‘A’. The conveying surface is driven by a belt 251 coupled to a motor 250, situated beneath the conveying surface 210. The conveying surface is supported by a support frame 225 which is attached to side walls 230 on either side of the support frame (FIGS. 2 and 4). The side walls 230 are attached to a horizontal plate 260 on which the motor 250 rests. The motor is attached to the horizontal plate 260 by screws 251 as illustrated in FIG. 3. The side walls 230 are attached to the horizontal plate 260 by screws 261. The horizontal plate 260, and accordingly the components attached to the horizontal plate 260 the motor 250, side walls 230, and conveying surface 210, is

Claim	U.S. Patent No. 9,296,120 to McLaughlin (EX1006) and Combination
	attached to a shaft 270, illustrated in FIGS. 2 and 3. The shaft is housed in a conical shaped housing 272 (FIGS. 2-4). As illustrated in FIG.3, the top of the shaft contains flanges for screws 271 to attach the horizontal plate 260 to the shaft 270. A fastener 273 is situated at the bottom of the shaft and connects the shaft 270 to the load cells 280 situated beneath the shaft 270. Because the shaft 270 is hollow, an electrical cord 276 providing power to the motor can be run through the shaft to use the shaft as a conduit to prevent wires from being externally exposed. An opening 275 in the shaft near the bottom of the shaft and above the fastener 273 provides an outlet for the electrical cord 276 to exit the shaft 270.” Mclaughlin, 3:40-65. <u>FIG. 2</u> 
22[B] a substructure (41) having a mount (11) coupled to the base (25); and	“Both the slice scale 100 and check scale 200, as illustrated in FIG. 2, comprise a conveying surface 110, 210, <i>side walls</i> 130, 230, a motor 150, 250, a horizontal plate 160, 260, and a load cell 180, 280. Each component will be further discussed with respect to the check scale 200, but it is to be understood that the slice scale 100 has corresponding components.” Mclaughlin, 3:34-39.

Claim	U.S. Patent No. 9,296,120 to McLaughlin (EX1006) and Combination
	“The check scale 200 has a conveying surface 210 on which product 201 is conveyed from one end to another, in a direction ‘A’. The conveying surface is driven by a belt 251 coupled to a motor 250, situated beneath the conveying surface 210. The conveying surface is supported by a support frame 225 which is attached to side walls 230 on either side of the support frame (FIGS. 2 and 4). The side walls 230 are attached to a horizontal plate 260 on which the motor 250 rests. The motor is attached to the horizontal plate 260 by screws 251 as illustrated in FIG. 3. The side walls 230 are attached to the horizontal plate 260 by screws 261. The horizontal plate 260, and accordingly the components attached to the horizontal plate 260 the motor 250, side walls 230, and conveying surface 210, is attached to a shaft 270, illustrated in FIGS. 2 and 3. The shaft is housed in a conical shaped housing 272 (FIGS. 2-4). As illustrated in FIG.3, the top of the shaft contains flanges for screws 271 to attach the horizontal plate 260 to the shaft 270. A fastener 273 is situated at the bottom of the shaft and connects the shaft 270 to the load cells 280 situated beneath the shaft 270. Because the shaft 270 is hollow, an electrical cord 276 providing power to the motor can be run through the shaft to use the shaft as a conduit to prevent wires from being externally exposed. An opening 275 in the shaft near the bottom of the shaft and above the fastener 273 provides an outlet for the electrical cord 276 to exit the shaft 270.” McLaughlin, 3:40-65.
22[C1] a first drive (15) is coupled to the conveyor belt unit (13) at the left side and	“Both the slice scale 100 and check scale 200, as illustrated in FIG. 2, comprise a conveying surface 110, 210, side walls 130, 230, a motor 150, 250, a horizontal plate 160, 260, and a load cell 180, 280. Each component will be further discussed with respect to the check scale 200, but it is to be understood that the slice scale 100 has corresponding components.” McLaughlin, 3:34-39. “The check scale 200 has a conveying surface 210 on which product 201 is conveyed from one end to another, in a direction ‘A’. The conveying surface is driven by a belt 251 coupled to a

Claim	U.S. Patent No. 9,296,120 to McLaughlin (EX1006) and Combination
	motor 250, situated beneath the conveying surface 210. The conveying surface is supported by a support frame 225 which is attached to side walls 230 on either side of the support frame (FIGS. 2 and 4). The side walls 230 are attached to a horizontal plate 260 on which the motor 250 rests. The motor is attached to the horizontal plate 260 by screws 251 as illustrated in FIG. 3. The side walls 230 are attached to the horizontal plate 260 by screws 261. The horizontal plate 260, and accordingly the components attached to the horizontal plate 260 the motor 250, side walls 230, and conveying surface 210, is attached to a shaft 270, illustrated in FIGS. 2 and 3. The shaft is housed in a conical shaped housing 272 (FIGS. 2-4). As illustrated in FIG.3, the top of the shaft contains flanges for screws 271 to attach the horizontal plate 260 to the shaft 270. A fastener 273 is situated at the bottom of the shaft and connects the shaft 270 to the load cells 280 situated beneath the shaft 270. Because the shaft 270 is hollow, an electrical cord 276 providing power to the motor can be run through the shaft to use the shaft as a conduit to prevent wires from being externally exposed. An opening 275 in the shaft near the bottom of the shaft and above the fastener 273 provides an outlet for the electrical cord 276 to exit the shaft 270.” McLaughlin, 3:40-65.
[C2] at a second drive (15) at the right side, when viewed in the conveying direction,	“In a dual independent feed slicer that can slice two side-by-side loaves simultaneously, such as described in U.S. Patent No. 5,704,265, or EP O 713 753 A2, both herein incorporated by reference, using the loaf feed mechanisms to selectively slice each loaf, the jump conveyor of the present invention can be synchronized with the slicer to interleave or group slices of different loaves in a common pattern, straight stack or shingled stack.” Lindee, 12, Fig. 1. “Some of the drive motors for the operating mechanisms in slicing machine 50 are shown in FIG. 3. The drive motor for rotating the head or spindle 148 in slicing station 66 is a variable speed servo motor 171 mounted in the machine base 51. A similar servo motor 172 drives the knife blade 149.

Claim	U.S. Patent No. 9,296,120 to McLaughlin (EX1006) and Combination
	The receiver lift 138 is driven by a receiver lift motor 173, again preferably a variable speed servo motor. On the near side of machine 50 the loaf feed drive mechanism comprising gripper 151 and the short loaf feed conveyors 163 and 165 is driven by a servo motor 174. A like motor 175 on the far side of machine 50 (not shown in FIG. 3) affords an independent drive for the gripper and the ‘short’ loaf feed conveyors 164 and 166 on that side of the slicing machine. Exhibit 1017, U.S. Patent No. 5,704,265, 7:7. <i>See also, e.g., Exhibits 1006, 1013, 1014, 1018.</i>
[C3] the coupling between the drives (15) and the conveyor belt unit (13) is configured to be simultaneously cancelled and established for at least one of the first drive (15) and the second drive (15).	A POSA would have found it obvious that McLaughlin’s conveying surface 210 and support frame 225 detach from the side walls 230 by a relative movement between the drive and conveyor belt unit. <i>See</i> McLaughlin, Fig. 2. 

Claim	U.S. Patent No. 9,296,120 to McLaughlin (EX1006) and Combination
	