

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PROVISUR TECHNOLOGIES, INC.,
Petitioner,

v.

WEBER MASCHINENBAU GMBH BREIDENBACH,
Patent Owner.

Case IPR2024-00258
Patent No. 10,647,013

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 10,647,013**

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PETITIONER EXHIBIT LIST

EX	Description
1001	Patent-at-Issue: U.S. Patent No. 10,647,013
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1003	Expert Declaration of Mr. Michael Jobin in Support of Petition for <i>Inter Partes</i> Review of U.S. Patent No. 10,647,013
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1005	U.S. Patent No. 3,848,757 (“Jordan”)
1006	U.S. Patent No. 4,253,597 (“Waffner”)
1007	U.S. Patent No. 5,697,573 (“Fukuchi”)
1008	U.S. Patent No. 2,921,753 (“Lahti”)
1009	U.S. Patent No. 3,310,249 (“Bryer”)
1010	U.S. Patent No. 4,583,435 (“Fessler”)
1011	Roikum, D., <i>The Mechanics of Web Handling</i> (1998) (Excerpts)
1012	U.S. Patent No. 5,979,308 (“Kägi”)
1013	U.S. Patent No. 6,752,056 (“Weber 056”)
1014	U.S. Pub. No. 2009/0159631 (“DePoi”)
1015	Eggen, T., “Get a Grip on Your Web” (2009)
1016	U.S. Pub. No. 2012/0073249 (“Pryor 249”)
1017	U.S. Pub. No. 2012/0222528 (“Kröhnert”)
1018	Omega High Accuracy Metric Pressure Transducers (2015)

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1021	U.S. Patent No. 9,044,872 (“Pryor 872”)
1022	GEA “DualSlicer” Video (2016)
1023	U.S. Patent No. 9,399,531 (“Pryor 531”)
1024	Weber “Slicer 604” Video (2016)
1025	U.S. Patent No. 11,014,258 (“GEA 258”)
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1033	<i>Provisur v. Weber III</i> , Sept. 5, 2023 Hearing Tr. (Excerpt)

I. INTRODUCTION

Petitioner respectfully requests *Inter Partes* Review of claims 2, 3, 9, 10, 12, 13, and 16–20 of U.S. Patent No. 10,647,013, foreign application filed July 3, 2017 and purportedly assigned to Patent Owner Weber Maschinenbau GMBH Breidenbach.

The claimed “invention” in the challenged ’013 patent is a well-known technique for determining the length of a paper loop in a paper-feeding system using an ordinary pressure sensor.

The prosecution history of the ’013 patent clearly explains that the challenged claims were allowed only because the Examiner believed such use of a vacuum pressure sensor was novel: “[t]he use of vacuum measurement as a proxy for loop size is not seen in the loop formation and application arts.” (EX1002, p. 511.) However, the Examiner was mistaken. Use of vacuum measurement as a proxy for loop size had been a well-established technique for decades before the ’013 patent. As early as the 1960s, artisans understood that loop size sensing devices “are usually in the form of pressure sensitive switches” that used pressure vacuum measurement as a proxy for loop size. (See EX1009, 3:43-47.) And, there was a clear motivation to use this known vacuum pressure-sensing technique to improve accuracy, prevent breakage, and enhance control in paper feeds.

This Petition has two grounds each based on a separate base reference and combination.

First, the claims are obvious in view of Müller and Waffner. Muller teaches the basic interleaver structural elements of the claims, such as the provision of web at a cutting region, material store, removal device, loop store, and control devices. Müller does not include detection of pressure to determine loop length, but this technique was well known and long available in the art, such as shown by Waffner. And Waffner teaches that the technique allows, among other improvements, “substantially eliminate[ing] damage to the web.” (EX1006, 2:57-62.)

Second, the claims are obvious in view of Jordan and Fukuchi. Jordan teaches the generic interleaver structural elements as well as vacuum control of loop. Around the time of invention in 2017, it would have been obvious to modify the Jordan vacuum control, which was based on an optical sensor, to be based on a readily available pressure sensor, as seen in Fukuchi. Fukuchi touts its technique as allowing “instantaneously start[ing] and stop[ping]” the web material at “high speed.” (EX1007, 2:23-27.)

There is a high likelihood that Petitioner will prevail with respect to each of the challenged claims and, therefore, Petitioner requests that the Board institute trial.

Petitioner has paid the required fee under 37 C.F.R. §§ 42.15(a) and 42.103. Please assess any fee deficiency or credit to Deposit Account No. 232405.

II. BACKGROUND IN THE ART

The '013 patent relates to an “interleaver” for feeding paper to the blade of a slicing machine so paper can be placed between slices of meat or cheese, for example. (EX1003, ¶¶46-47.) This patent is an application of “web handling” arts to the food slicing industry. (EX1003, ¶¶49.) The web handling arts were well-developed at the time of the '013 patent, around 2017. (EX1003, ¶¶51.)

A. Web handling is a field of mechanics involving the feed or transport of long, thin “webs” of material.

Web handling is the process technology of moving webs through a machine. (EX1003, ¶49; EX1027). Common web materials include paper, film, foil, textiles, and tissue. (EX1003, ¶¶49-50.) Web handling is the collection of arts used to maximize productivity and minimize waste in web processes. (EX1003, ¶49.) Web handling studies controls for tension, rollers, nip and path, and winding. (*Id.*)



Exemplary Web Material

Web handling is applicable to many industries. Web handling had well-known applications in the food slicing field by the time of invention around 2017, such as in common meat and cheese “interleaver” devices. Web handling techniques—including the technique of determining the loop length using pressure detection claimed in the ’013 patent—were also used in “magnetic tape recording systems,” “printing,” and “forming fine holes on... chip paper of cigarette.” (EX1003, ¶¶50, 53-59). These examples represent only some of the many known applications of web handling techniques by the time of the invention. (See, e.g., EX1003, ¶¶60-61.)

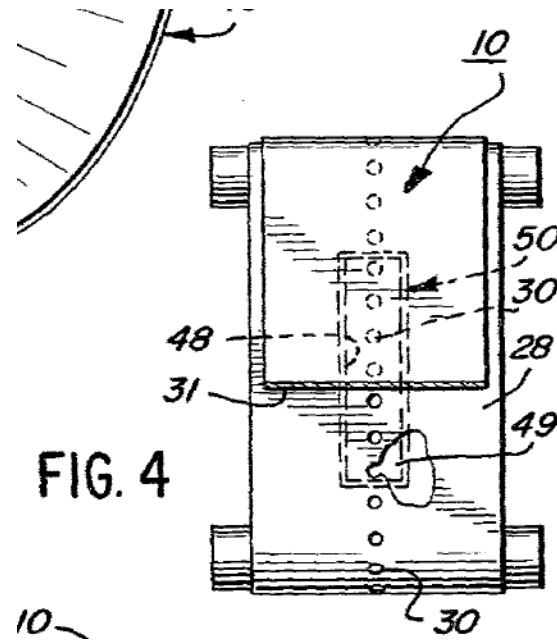
Peer reviewed scientific articles and papers in the web handling arts date back more than fifty years. (EX1003, ¶51.) Textbooks date back more than thirty years.

(*Id.*) A freely available online “library” directs artisans to nearly 4,000 articles, books, and other publications on this subject. (EX1003, ¶51; EX1028.) Experts in web handling are available to consult. (EX1003, ¶51; EX1026.) A POSA would have been aware of web handling techniques by the time of invention. (EX1003, ¶52.)

B. It was well-known in the web handling arts to use a vacuum measurement as a proxy for loop size.

A brief history of the web handling arts shows it was well-known to use a vacuum measurement as a proxy for loop size.

For example, Lahti (1960) and Bryer (1967) taught using a vacuum measurement as a proxy for loop size in a web-handling apparatus. (EX1003, ¶¶53-54.) These references taught advantages of this technique, such as “simple construction” and “reliable [] operation.” (EX1003, ¶53; EX1008, 1:58-65.) Using a pressure sensor was the “usual” technique for determining loop size, and could be used in “any transport system” for transporting web. (EX1003, ¶53-54; *see* EX1009, 1:63-65; EX1008, 8:16-24.)



(EX1006, Fig. 4.)

For further example, in 1997, a patent to Junichi Fukuchi *et al.* for an “Apparatus for Stably Transferring Belt-Like Material” (“Fukuchi”) issued. (EX1007; EX1003, ¶57.) Fukuchi (described further in section VI.D) teaches using a vacuum measurement as a proxy for loop size in a web-handling apparatus. (EX1003, ¶¶57, 59.) Using Fukuchi’s technique, “breakage of the belt-like [i.e. web] material can be prevented.” (EX1007, 4:5-7; EX1003, ¶58.)

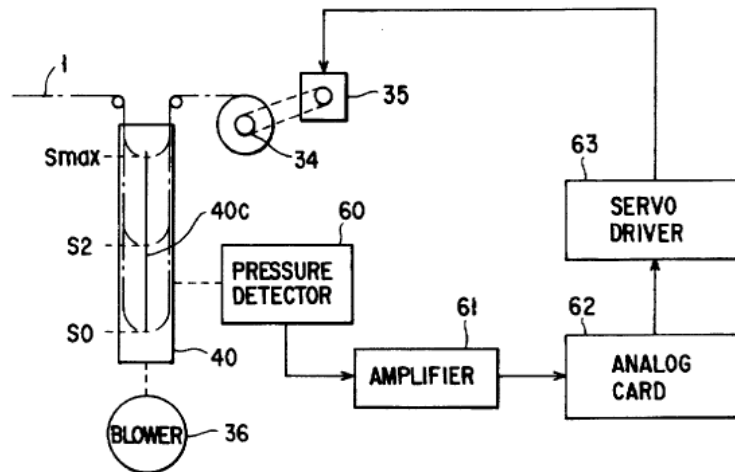


FIG. 8

(EX1007, Fig. 8.)

C. It was well-known to apply the teachings of the web handling arts to the field of food slicing.

At the time of the '013 patent in 2017, it was well known in the food slicing field to use web-handling equipment to supply a food slicer with interleaving web material. As the inventors of the '013 patent acknowledged, slicers with interleavers were “generally known in the field of the slicing of food products.” (EX1001, 1:38-40; EX1004, ¶62.)

Web-handling apparatuses that provided paper to be cut and interleaved with sliced food were known by at least the 1970s. For example, Jordan, issued in 1974, teaches such an apparatus. (EX1005; EX1003, ¶63.) Fessler, issued in 1986, does

as well.¹ (EX1010; EX1003, ¶¶65.) So do Weber 056 (2004), Dreier (2015), Pryor 872 (2015), Müller (2016), Pryor 531 (2016), and GEA 258 (2016). (EX1003, ¶¶66-72; EX1013; EX1020; EX1021; EX1004; EX1023; EX1025.) Functioning slicing-and interleaving machines had been built and advertised by suppliers in the food processing industry:



(EX1022, “GEA DualSlicer Video”; EX1024, “Weber Slicer 604 Video”; EX1003, ¶¶73-74.)

¹ Fessler and Jordan were previously cited to the Board in relation to IPRs involving food slicing-and-interleaving machines. *See Weber, Inc. v. Provisur Technologies, Inc.*, Case No. IPR 2019-01464 (Paper 38) (P.T.A.B. Feb. 18, 2021); *Weber, Inc. v. Provisur Technologies, Inc.*, Case No. IPR 2019-01465 (Paper 37) (P.T.A.B. Feb. 18, 2021).

Many of these prior-art web handling devices used techniques claimed in the '013 patent, including buffer loops, loose buffer loops, loose buffer loops controlled by vacuum or airflow, and loose buffer loops controlled by vacuum or airflow and sensed to determine size. (EX1003, ¶¶76-79). The '013 patent exists in a crowded field, and none of the techniques it claims were new.

III. THE '013 PATENT

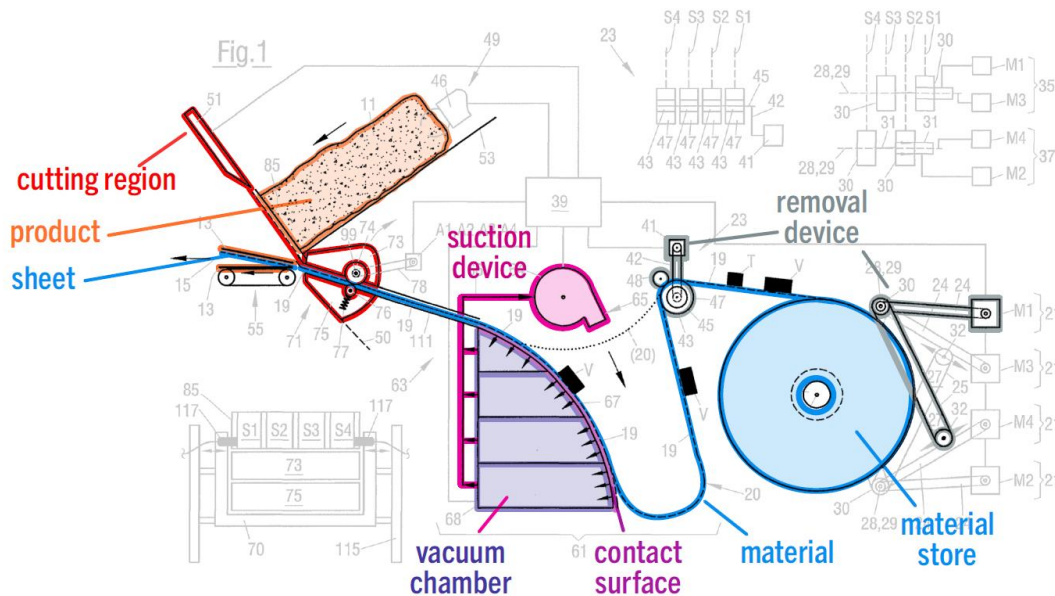
A. The '013 patent describes a conventional slicer and interleaver.

The '013 patent does not purport to disclose the invention of either slicers or interleavers. Rather, the inventors acknowledge that the “design and the mode of operation of [] slicers and also the basic principle of an interleaver are sufficiently known to the skilled person.” (EX1001, 1:12-16; EX1003, ¶84.)

The inventors describe their web handling system as improved only regarding the manner in which “the ejection of the material web into the cutting region is also reliably decoupled from the process of the removal of the material web from the material store at comparatively high cutting speeds.” (EX1001, 2:23-24; EX1003, ¶¶89-91.) Yet even their purported improvements to “decoupling” (i.e. loop control) had been long-known.

B. The '013 patent describes a conventional movement of interleaver web material throughout a web handling apparatus.

The flow of web material described in the embodiment of the '013 patent is conventional.² (*Cf.* EX1003, ¶75.) A “material web 19” begins on a “material roll 17.” (EX1001, 8:51-9:38; EX1003, ¶¶85-88.) A “roll-off drive 21” removes web from the roll. (*Id.*) A “conveying device 23” conveys the web into a “loop store 61.” (*Id.*) Finally, the web is “pulled from the loop store” and “simultaneously advanced into the cutting region” of the slicer. (*Id.*) Throughout this process, a “control device 39” controls the slicing and interleaving. (*Id.*)



² Petitioner, in IPR2024-00259, additionally challenges claims of U.S. Patent No. 11,331,823, which is a continuation of the '013 patent's application and shares a materially identical specification.

(EX1001, Fig. 1 (Petitioner annotations).)

C. The '013 patent claims the use of a pressure or airflow measurement as a proxy for loop size.

Within the loop store, the web passes over a “contact surface **67**,” which communicates with “vacuum chambers **69**.” (EX1001, 12:58-65.) A “control device **39** can recognize by means of pressure sensors in the vacuum chambers **69** which vacuum chamber **69** is covered by the material web **19** and which is not.” (EX1001, 13:15-24.) This allows the control device to derive a “measure for the current size of the material loop.” (*Id.*)

Independent claims 2 and 19 of the '013 patent claim, among other elements, “a device for determining a size of the loop formed in the loop store, the device detecting changes in at least one of a pressure differential and a flow condition ... wherein the changes in the pressure differential and/or the flow condition represent a varying influence of the material loop ... that is provided as a measure for the loop size.” (EX1001.) Independent claim 17 similarly claims, this “device for determining a size of the loop formed in the loop store based on the detection of a pressure drop within the at least one vacuum chamber when the opening is at least partially covered by the loop.” (EX1001.)

The remaining elements of the independent claims are generic elements of an interleaver system. (EX1003, ¶96.) They include a generic “material store,”

“removal device,” and “loop store.” (*Id.*) The preambles, to the extent they are limiting, describe either a generic apparatus for “single-track or multitrack provision of web-like interleaved sheet material” to the cutting region of a slicer (claim 2), or a generic apparatus for “single-track or multitrack slicing of food products” having a generic “apparatus for provision of web-like interleaved sheet material” to the cutting region (Claims 17, 19). (*Cf.* EX1003, ¶75.)

D. The sole purported point of novelty recognized in the notice of allowance was “the use of vacuum measurement as a proxy for loop size.”

Though the Examiner rejected all pending claims in a single rejection dated September 17, 2019, he noted that “[r]egarding claims 46 and 47—the use of vacuum measurement as a proxy for loop size is not recognized in the prior art.”³ (EX1002, p. 464; EX1003, ¶98). In response, Patent Owner amended its pending claims to include vacuum-measurement elements—e.g. elements [2.4] and [2.5]—in all independent claims. (EX1002, pp. 496-501; EX1003, ¶99.)

³ As noted throughout, use of vacuum measurement as a proxy for loop size was *well* recognized in the prior art. However, the relevant references were not before the Examiner.

On January 13, 2020, the PTO issued a notice of allowance. The Examiner explicitly allowed the claims only because:

[t]he use of vacuum measurement as a proxy for loop size is not seen in the loop formation arts. Loops are known to be controlled, as seen in the cited references, but not in the manner claimed using the pressure in vacuum as the control indicia for that system.

(EX1002, p. 511; EX1003, ¶100.) The claims of the '013 patent would not have issued had the Examiner been aware of the references cited in this Petition, which control loops by use of a vacuum measurement as a proxy for loop size. (EX1003, ¶101.)

E. Independent Claims 2, 17, and 19

Independent claim 2 is representative of the challenged claims, shown below and compared to independent claim 17. Claim 19 has an identical preamble to claim 17, and identical elements to claim 2.

Claim 2	Claim 17
An apparatus for a single-track or multitrack provision of web-like interleaved sheet material at a cutting region in which products supplied on one track or on multiple tracks are cut into slices and interleaved sheets are introduced which are cut off from the provided interleaved sheet material in the cutting region, the apparatus comprising:	An apparatus for a single-track or multitrack slicing of food products having a product feed which supplies products to be sliced on one track or on multiple tracks to a cutting region in which a cutting blade moves in a rotating and/or revolving manner to cut the supplied products into slices, and having an apparatus for the provision of web-like interleaved sheet material

Claim 2	Claim 17
	at the cutting region in which the products supplied are cut into said slices and interleaved sheets are introduced which are cut off from the provided interleaved sheet material in the cutting region, said apparatus comprising:
a material store;	a material store;
a removal device for a removal of a material web from the material store;	a removal device for a removal of a material web from the material store;
a loop store defining a space for the removed material web to form a loop, the loop store located between the material store and the cutting region;	a loop store defining a space for the removed material web to form a loop, the loop store located between the material store and the cutting region;
a contact surface having at least a portion thereof that is air permeable, the contact surface at least partially bounding the loop store and at least partially covered by the loop that contacts the contact surface; and	at least one vacuum chamber, the at least one vacuum chamber having at least one opening located adjacent a path of the loop; and
a device for determining a size of the loop formed in the loop store, the device detecting changes in at least one of a pressure differential and a flow condition, the pressure differential being a difference in pressure between a first side of the contact surface and a second side of the contact surface, the flow condition being a change of the flow of air through the air permeable portion of the contact surface, wherein the changes in the pressure differential	a device for determining a size of the loop formed in the loop store based on the detection of a pressure drop within the at least one vacuum chamber when the opening is at least partially covered by the loop.

Claim 2	Claim 17
and/or the flow condition represent a varying influence of the material loop on the air permeable portion of the contact surface that is provided as a measure for the loop size.	

Claim 2, 17, and 19 share similar scope. (EX1003, ¶¶92-96.) Claim 2 requires detecting a “change[d] pressure differential [or] flow condition,” while claim 17 requires detecting a “pressure drop.” However, because the prior art referenced in this Petition teaches detection of both a pressure differential and a pressure drop, any differences in scope between the independent claims are immaterial to patentability here. (EX1003, ¶94.) The differences in the preambles are likewise immaterial to patentability. (*Id.*)

Thus, the evidence cited herein for claim 2 applies to the corresponding elements of claims 17 and 19, with the additions addressed below.

F. Priority Date

The earliest possible priority date that the ’013 patent can claim the benefit of is the date of the first German patent application from which the ’013 patent claims priority: July 3, 2017. (EX1001.) All the cited prior art in the grounds is AIA prior art as of that date.

IV. LEVEL OF ORDINARY SKILL IN THE ART

For the purposes of this proceeding, Petitioner applies the Board's prior finding of the level of ordinary skill in the art (from a case between Provisur and Weber, Inc. a company related to Patent Owner Weber Maschinenbau GmbH Breidenbach) including a POSA that would typically have had (1) a bachelor's degree (or equivalent) in mechanical engineering (or a similar field) and at least two years of experience working as an engineer (or similar role) on food processing and/or packaging systems (or in a similar field); or (2) at least seven years of experience working as an engineer (or similar role) on food processing and/or packaging systems (or in a similar field). *See Weber, Inc. v. Provisur Technologies, Inc.*, Case No. IPR 2022-00599, Paper 65, *10-11 (P.T.A.B. Aug. 23, 2023).

Further, the Board recognized a POSA would have had knowledge of the technical literature concerning food processing and packaging systems, including conveyor mechanisms (in both food processing and packaging machines, as well as other conveying machines) and may have worked as part of a multidisciplinary team and drawn upon not only her or his own skills, but of others on the team, e.g., to solve a given problem. *Id.* A POSA may have consulted with subject matter experts, such as in the fields of hygiene, web handling, and/or software programming. (EX1003, ¶44.)

V. CLAIM CONSTRUCTION

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

Indeed, Patent Owner has recently explained: “I think that most of our patent claims are plain and ordinary. They’re not difficult or complex claims or claim terms. I don’t envision burdening the court with much Markman at all.” (EX1033, *Provisur v. Weber III*, Sept. 5, 2023 Hearing Tr., 5.)

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

Claim Limitation	Provisur’s District Court Construction	Weber’s District Court Construction
A removal device for a removal of a material web from the material store. Claims [1.2]; [2.2]; [17.2]; [19.2].	The removal device has two parts: (1) a roll-off drive driving material off the material roll, and (2) a conveying roller providing the material to the loop store.	Plain and ordinary meaning

	In addition, this phrase may be covered by 35 U.S.C. §112(f).	
A device for determining a size of the loop formed in the loop store... Claims [1.5]; [2.5]; [17.5]; [19.5].	The claimed “device...” is a pressure sensor, called a manometer, connected to a control device. In addition, this phrase may be covered by 35 U.S.C. §112(f).	Plain and ordinary meaning
“determining... detect[ing/ion]...” “determination” Claims [1.5]; [2.5]; [16]; [17.5]; [19.5].	Plain and ordinary meaning (which requires actually determining and detecting, rather than merely being capable of determining or detecting)	Plain and ordinary meaning

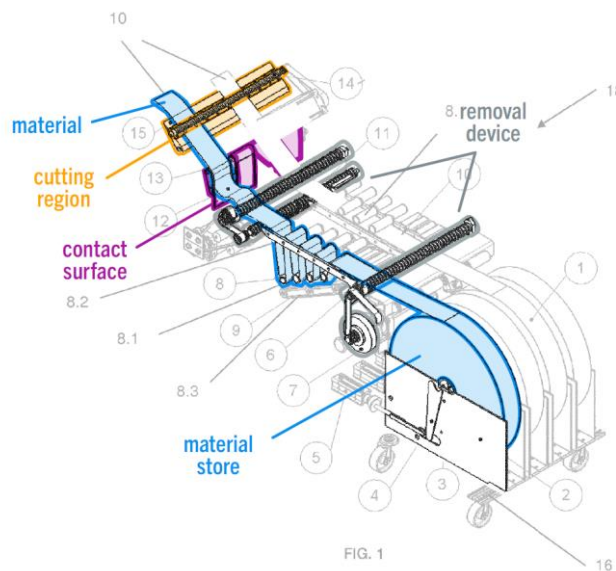
Provisur does not request the Board to make these explicit constructions because Provisur does not believe these constructions are needed to resolve the unpatentability issues here. In any case, the cited prior art meets the claim terms under each of Provisur’s and Weber’s district court proposed constructions. (EX1003, 103-105.) Thus, Provisur applies the same understanding of the claims in this proceeding before the Board and the district court.

VI. IDENTIFICATION OF PRIOR ART

A. Müller (EX1004)

Müller is the base reference of Ground 1. In general, Müller describes an interleaver with the generic claimed material store (reel **1**), removal device (device **18**), and loop store (buffer **12**).

Müller discloses a multitrack interleaver reel system for use with high-speed slicers. (EX1003, ¶¶114-115; 128-129.) Müller teaches a loose loop buffer that “buffers only as much interleaver as is needed for the ejection of an interleaver” sheet. (EX1003, ¶¶149-150.) Müller uses a “contacting sensor” and “control system” to detect and determine the length of interleaver material in the buffer. (EX1003, ¶¶175-177.) Müller refers to its “contacting sensor” and “control system.”



(EX1004, Fig. 1 (Petitioner annotations).)

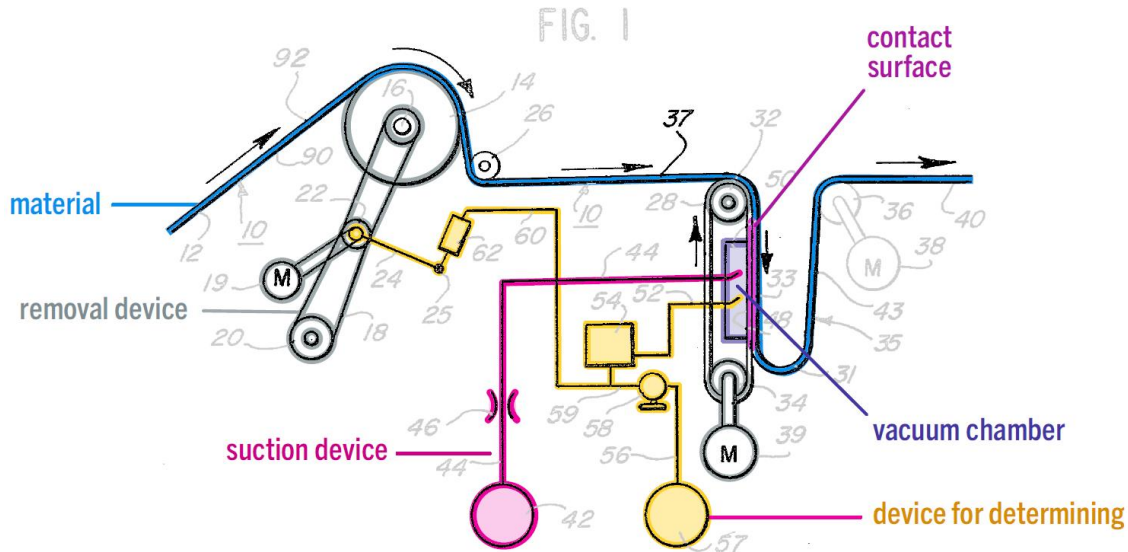
Müller’s buffer **12** is particularly important. (EX1003, ¶201.) In order to interleave paper with slices, Müller must “insert the interleaver strip into the cutting plane with a very high acceleration.” (EX1003, ¶203; EX1004, [0048].) The amount of paper in Müller’s buffer **12** would be subject to rapid changes, but, nevertheless, would need means for reliably determining its size. (EX1003, ¶¶202-203.) Müller discloses a generic “contact sensor,” but does not elaborate on the type of sensor. (EX1004, [0048] EX1003, ¶207.)

Müller, which was published on January 28, 2016, is prior art under at least 35 U.S.C. § 102(a)(2).

B. Waffner (EX1006)

Waffner is the secondary reference of Ground 1, teaching the claimed technique of determining the loop length using pressure detection.

Waffner teaches a loop control apparatus “utilized to control the infeed speed of a continuous web so that a loose loop is formed ... so as to substantially eliminate damage to the web.” (EX1006, 2:57-62; EX1003, ¶¶150-151, 205.) Waffner’s loop is controlled by recognizing that the degree of vacuum in an adjacent vacuum chamber depends on the level of the loop, and this change in pressure can be used to adjust the infeed speed to control loop length. (EX1003, ¶¶178-181.)



(EX1006, Fig. 1 (Petitioner annotations).)

Waffner teaches that its pressure detection technique allows reliably determining the size of the loop. Waffner describes its invention as “an improved apparatus” to allow “a loose loop [to be] formed and maintained.” (EX1003, ¶205; EX1006, 2:57-62.) Using Waffner’s technique, one can “substantially eliminate damage to the web.” (EX1003, ¶¶205-206; EX1006, 2:57-62.)

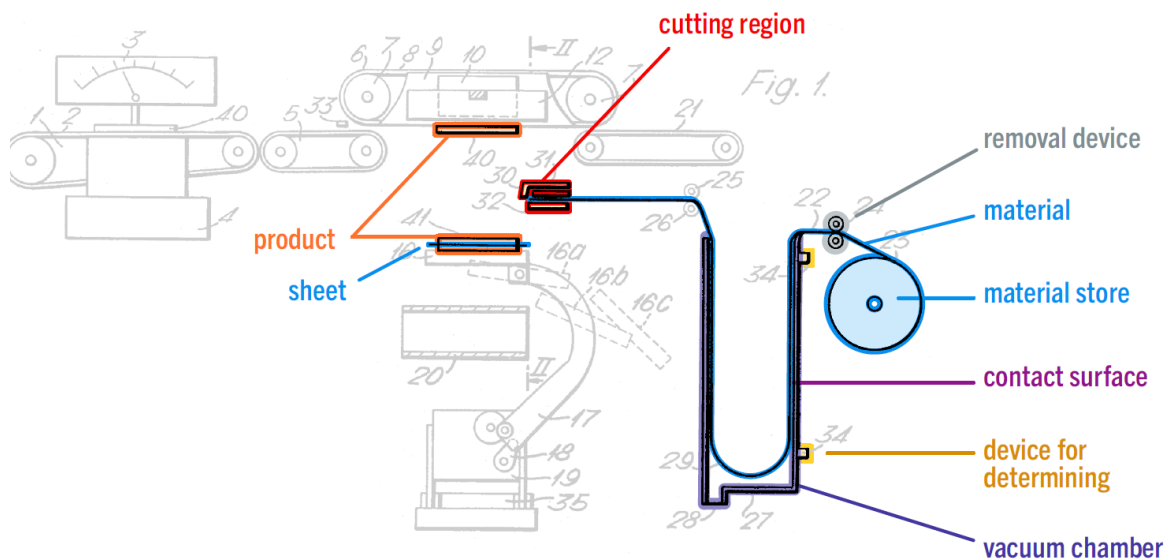
Waffner, which issued in 1981, is prior art under at least 35 U.S.C. § 102(a)(2). Waffner was not before the Examiner.

C. Jordan (EX1005)

Jordan is the base reference of Ground 2. In general, Jordan describes an interleaver with the generic claimed material store (a “magazine roll”), removal

device (the “take-up rollers”), and loop store (a “shaft”), as well as a vacuum chamber to control loop size.

Jordan discloses a device designed to be combined with known high-speed slicing machines, such as a paper feed and cutting arrangement for interleaving paper sheets between slices. (EX1003, ¶¶309-310.) Jordan teaches the use of a loose loop of interleaver material between the supply and the cutting device. (EX1003, ¶¶348-490.) Jordan uses photo sensors to detect and determine the length of interleaver material in the buffer. (EX1003, ¶¶377-378.)



(EX1005, Fig. 1 (Petitioner annotations).)

Jordan, which issued in 1974, is prior art under at least 35 U.S.C. § 102(a)(2).

D. Fukuchi (EX1007)

Fukuchi is the secondary reference of Ground 2, teaching the claimed technique of determining the loop length using pressure detection.

Fukuchi discloses an apparatus for “stably transferring belt-like material” in “reserving chambers” that accept loops of the material. (EX1003, ¶¶347, 350.) The chambers have means for “detecting the internal pressure” which changes “in accordance with the amount” of material in the loop. (EX1003, ¶¶379-380.) The length of the loop is controlled based on “electrical signal” from this detector. (*Id.*)

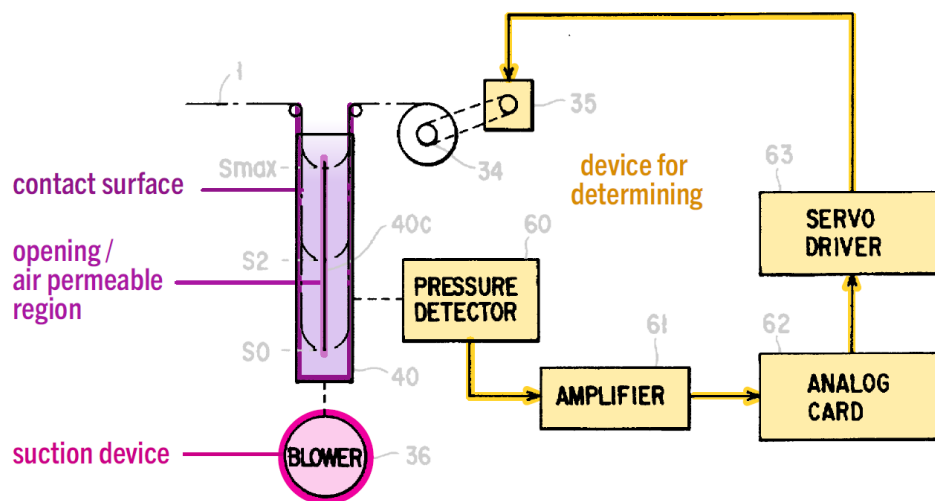


FIG. 8

(EX1007, Fig. 8 (Petitioner annotations).)

Fukuchi, which issued in 1997, is prior art under at least 35 U.S.C. § 102(a)(2).
Fukuchi was not before the Examiner.

E. Other Evidence of the State of the Art (EXS 1008–1025)

The references in EX1008–1025 (summarized in Sections II.A-C) further reflect the state of the art, level of ordinary skill in the art, common knowledge in the art, and/or common sense in the art, and are relevant to the background of the invention and the unpatentability analysis herein. (EX1003, ¶¶45-83.)

VII. IDENTIFICATION OF THE CHALLENGE

Petitioner requests *Inter Partes* Review of claims 2, 3, 9, 10, 12, 13, and 16–20 of the '013 patent and requests that the Board find these claims to be unpatentable based on the following specific statutory grounds and prior art.

Ground 1: U.S. Patent Pub. 2016/0023370 (“Müller”) (EX1004) in combination with U.S. Patent No. 4,253,597 (“Waffner”) (EX1006) renders obvious claims 2, 3, 9, 10, 12, 13, and 16–20 under § 103 (post-AIA).

Ground 2: U.S. Patent No. 3,848,757 (“Jordan”) (EX1005) in combination with U.S. Patent No. 5,697,573 (“Fukuchi”) (EX1007) renders obvious claims 2, 3, 9, 12, 13, and 16–20 under § 103(post-AIA).

Petitioner’s grounds are summarized in the chart below.

Ground	Claims Challenged	35 U.S.C. §	References
1	2, 3, 9, 10, 12, 13, and 16–20	103	Müller, Waffner

2	2, 3, 9, 12, 13, and 16–20	103	Jordan, Fukuchi.
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Grounds 1–2 are substantially different than the art and arguments previously considered by the Patent Office. During prosecution, neither the patentee nor the examiner cited or applied Waffner or Fukuchi.

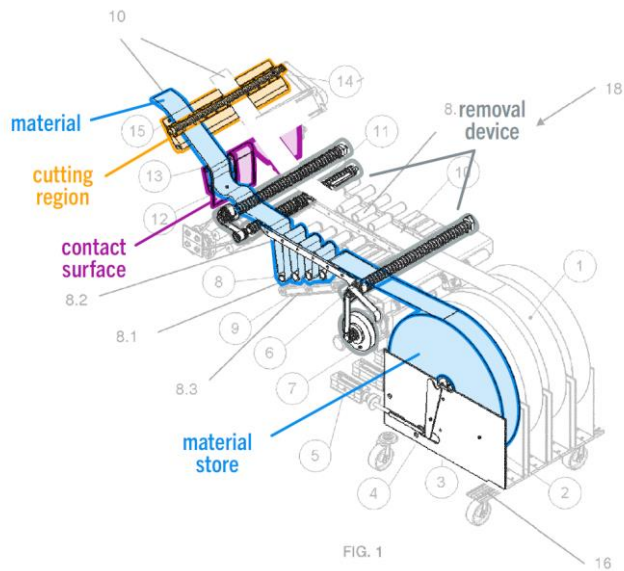
The art and arguments presented herein are not cumulative to those considered during examination. Unlike art included in this Petition, none of the art applied during examination disclosed the use of vacuum measurement as a proxy for loop size, the stated basis of allowance. (See EX1003, ¶101.) The art and combinations at issue in this Petition do not suffer from the issues of the prior art applied during examination.

Thus, the same or substantially the same prior art or arguments were not previously presented to the Patent Office.

VIII. GROUND 1: CLAIMS 2, 3, 9, 10, 12, 13, AND 16-20 WOULD HAVE BEEN OBVIOUS OVER MÜLLER IN VIEW OF WAFFNER.

Müller and/or Waffner disclose all elements of the challenged claims, as shown below in the following exemplary evidence chart. Using the teachings of Waffner’s pressure detector in Müller’s interleaver system would have been obvious, because of the known advantages including improving accuracy,

preventing breakage, and enhancing control, for example. The resulting combination would meet all elements of the challenged claims.



(EX1004, Fig. 1 (Petitioner annotations).)

'013 Patent Claim Element	Exemplary Feature in Müller (EX1004)	Exemplary Feature in Waffner (EX1006)
Apparatus for ... provision	“System” 18; “interleaver strip” 10; “cutting plane”	
Apparatus for... slicing	“Cutting device;” “products” such as “food;” “slices of food”	
Material store	“Interleaver reel” 1	“Supply roll”
Removal device	“Unreeling device” 18	“Feed roll” 14 and “belt” 28
Loop store	“Buffer” 12 for “loop”	“Belt” 28 and “outfeed roll” 36 for “loop” 35
Contact surface	“Strip guide”	“Belt 28”
Vacuum chamber		Vacuum chamber 50

Device for determining a size of the loop		Device using a “vacuum signal” to “change... the speed of rotation of... roll 14”
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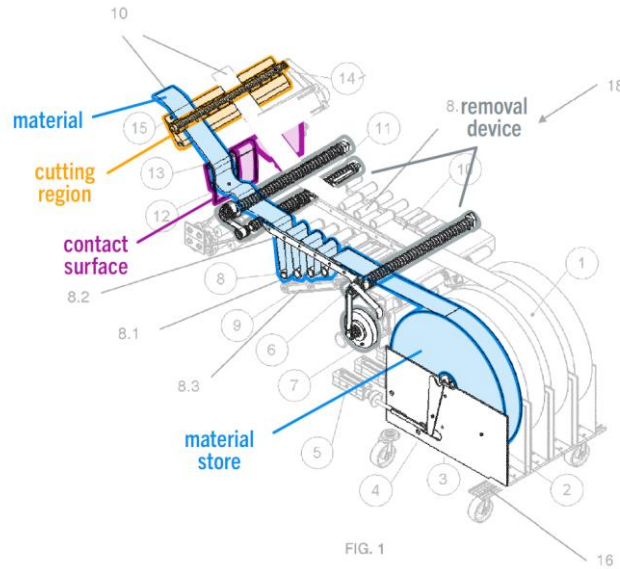
Müller and Waffner are analogous art to the ’013 patent: they relate to the field of web handling, and they are pertinent to the problem of controlling a buffer loop of material web. (EX1003, ¶232.)

A. Independent Claim 2

1. Preamble

To the extent the preamble is considered limiting, Müller discloses it, as described below. (*See, e.g.*, EX1003, ¶¶112-138.)

For example, Müller discloses “an apparatus for a single-track or multitrack provision of web-like interleaved sheet material.” (EX1003, ¶¶239-242.) The claimed apparatus is Müller’s “system” **18**. (EX1003, ¶¶114-115.) Muller’s single-track or multitrack provision is the movement of web along up to “four tracks” from “interleaver reels” to a “cutting device.” (*Id.*) Müller’s interleaved sheet material is “interleaver strip” **10**. (EX1003, ¶¶116-117.)



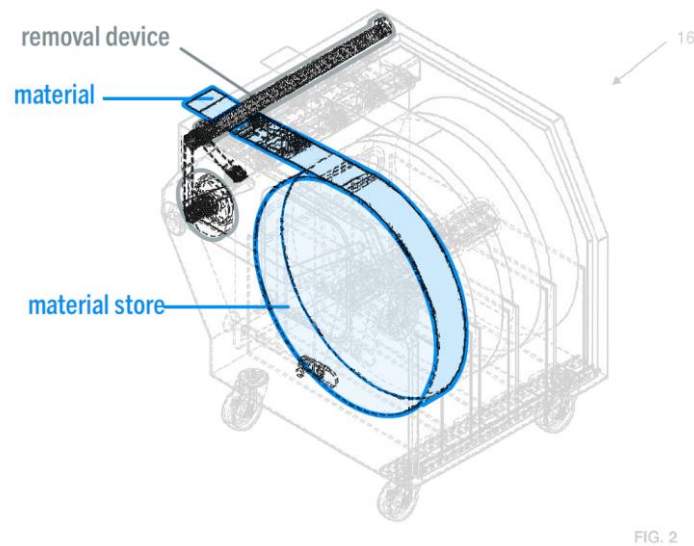
(EX1004, Fig. 1 (Petitioner annotations).)

In addition, Müller provides the web material at a cutting region in which products supplied on one track or on multiple tracks are cut into slices and interleaved sheets are introduced which are cut off from the provided interleaved sheet material in the cutting region. (EX1003, ¶¶239-242.) Müller’s cutting region is a “cutting plane.” (EX1003, ¶¶123-124.) Müller’s products are “product,” such as “food.” (EX1003, ¶¶130-131.) Müller’s tracks are “tracks.” (EX1003, ¶¶134-135.) The material is “inserted intermittently into the cutting place” and “placed between two slices.” (*Id.*)

Thus, Müller, in combination with Waffner, would meet the preamble.

2. Element 2.1

Müller discloses “a material store,” as claimed. (*See, e.g.*, EX1003, ¶¶139-140, 243-244, 199-238.)



(EX1004, Fig. 2 (Petitioner annotations).)

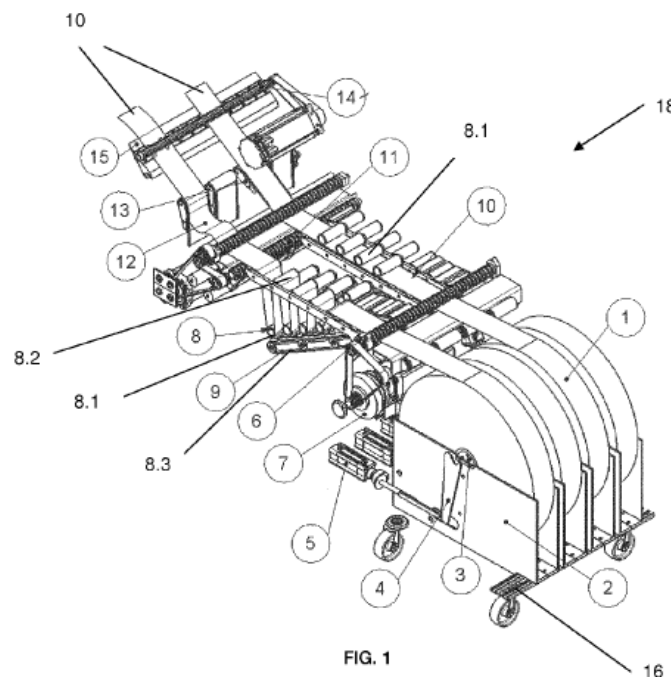
For example, Müller’s material store includes paper reel **1**. (EX1003, ¶¶243-244.) Müller’s “invention relates to an unreeling device with which an interleaver strip is unreeled from an interleaver reel.” (EX1003, ¶140, EX1004, [0001].)

Thus, Müller in combination with Waffner would meet element 2.1.

3. Element 2.2

Müller discloses “a removal device for a removal of a material web from the material store.” (*See, e.g.*, EX1003, ¶¶143-145, 246-251, 199-238.)

For example, Müller’s removal device includes “unreeling device” **18**. (EX1003, ¶¶246-251.) “The drive for the interleaver reels ... is preferably provided by the cutting device.” (EX1003, ¶144; EX1004, [0017].) A second “drive **11** can set the stationary rollers **8.1** rotating” and would feed material web into buffer **12**. (EX1003, ¶145; EX1004, [0048].)



To the extent the claimed “removal device” requires two parts, (1) a roll-off drive driving material off the material roll, and (2) a conveying roller providing the material to the loop store, Müller has (1) “drives **6, 7**” for removing material web from the material store, and (2) “drive **11**” for inserting material into the buffer loop. (EX1003, ¶¶249-250.) Thus, the removal device has two parts: (1) a roll-off drive

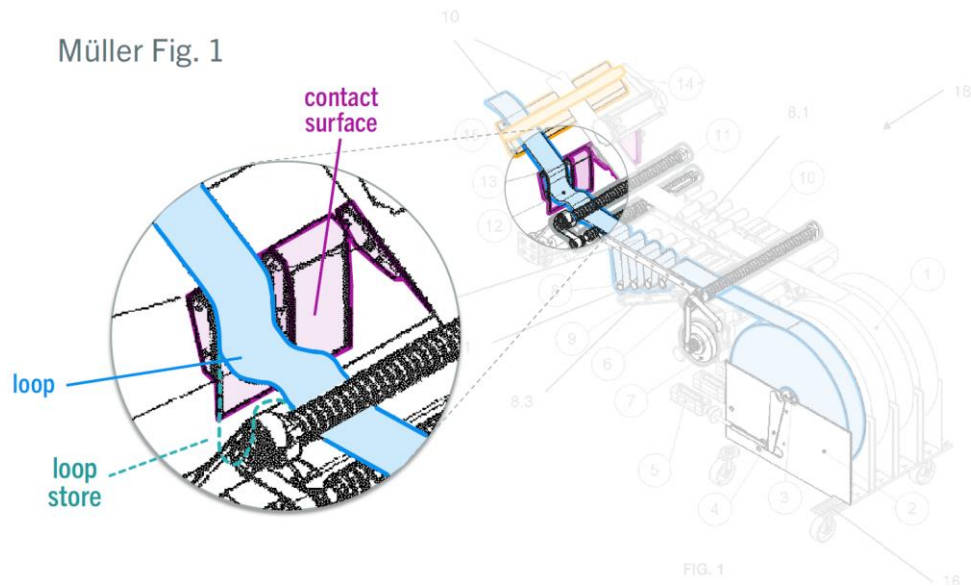
driving material off the material roll, and (2) a conveying roller providing the material to the loop store.

Thus, Müller in combination with Waffner would meet element 2.2.

4. Element 2.3

Müller discloses “a loop store defining a space for the removed material web to form a loop, the loop store located between the material store and the cutting region.” (See, *e.g.*, EX1003, ¶¶149-150, 167-168, 252-254, 199-238.)

Müller discloses a loop store defining a space for the removed web to form a loop. Müller’s loop store is “buffer” **12**. (EX1003, ¶¶252-254.) Müller’s loop is a “loop.” (EX1003, ¶167-168.) “[A] further buffer **12**, a loop here ... preferably buffers only as much interleaver material as is needed for the ejection of an interleaver.” (EX1004, [0048].) Müller’s “buffer **12** preferably has an interleaver strip guide **13**, which is provided so as to be movable and which is able to enlarge or reduce the path of the interleaver strip.” (EX1004, [0048].)



(EX1004, Fig. 1 (Petitioner annotations).)

Müller’s loop store is located between the material store and the cutting region. (EX1003, ¶¶252-254; EX1004, Fig. 1) Both roller **11** and strip guide **13** are downstream of paper reels **1** and upstream of interleaver ejector unit **15**. (*Id.*)

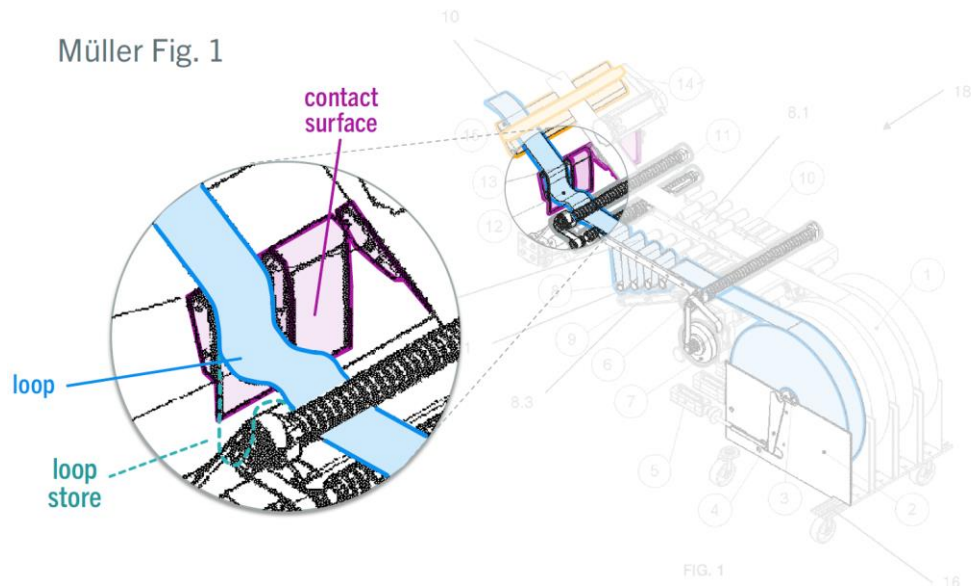
Thus, Müller in combination with Waffner would meet element 2.3.

5. Element 2.4

Müller discloses “a contact surface ... the contact surface at least partially bounding the loop store and at least partially covered by the loop that contacts the contact surface.” (See, e.g., EX1003, ¶¶158-159, 149-150, 167-168, 255-258, 199-238.)

Müller’s contact surface is “strip guide **13**.” (EX1003, ¶¶255-258.) “As a rule, the system, in particular the cutting device, has a guide for the interleaver strip,

along which said strip is guided on its path from the interleaver reel as far as the insertion area.” (EX1004, [0031].)

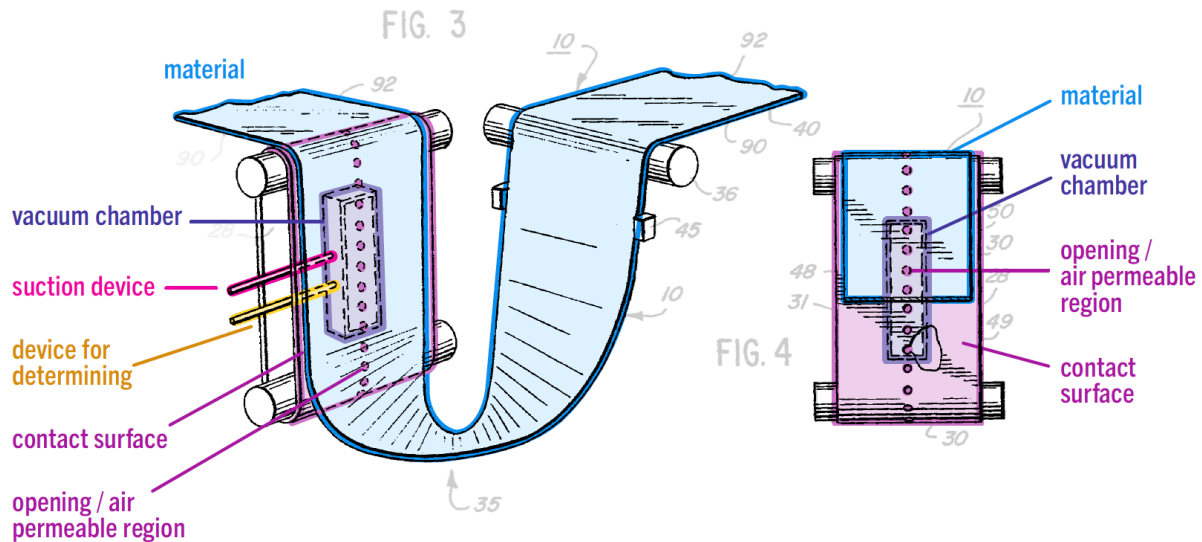


(EX1004, Fig. 1 (Petitioner annotations).)

Waffner teaches “a contact surface having at least a portion thereof that is air permeable, the contact surface at least partially bounding [a] loop store and at least partially covered by the loop that contacts the contact surface.” (EX1003, ¶¶160-161, 164-166, 169-170, 151-152, 255-258.)

Waffner’s contact surface is “belt **28**.” (EX1003, ¶¶255-258.) Waffner’s air permeable portion are the “apertures **30**.” (EX1003, ¶¶164-166.) Waffner’s web **10** “passes ... over an endless belt **28**.” (EX1006, 3:58-61.) In Waffner, the “belt **28** includes a plurality of evenly spaced, uniform diameter apertures **30** disposed along

its longitudinal center-line.” (EX1006, 3:61-63.) The effect of these apertures is to make Waffner’s belt air permeable. (EX1003, ¶¶255-258.)



(EX1006, Figs. 3-4 (Petitioner annotations).)

For the reasons explained in section VIII.7, it would have been obvious to combine Waffner’s technique with Müller’s apparatus.

Thus, Müller in combination with Waffner would meet element 2.4.

6. Element 2.5

Waffner discloses “a device for determining a size of the loop formed in the loop store, the device detecting changes in at least one of a pressure differential and a flow condition, the pressure differential being a difference in pressure between a first side of the contact surface and a second side of the contact surface, the flow condition being a change of the flow of air through the air permeable portion of the

contact surface, wherein the changes in the pressure differential and/or the flow condition represent a varying influence of the material loop on the air permeable portion of the contact surface that is provided as a measure for the loop size.” (See, e.g., EX1003, ¶¶177-181, 184-189, 160-161, 164-166, 169-170, 259-264.)

Waffner’s device is a device that uses a “vacuum signal” to “change... the speed of rotation of... roll **14**.” (EX1003, ¶¶259-264.)

a) A device for determining a size of the loop formed in the loop store...

Waffner teaches that the object of the invention is “to provide an improved loose loop feed control apparatus wherein ... [a device] automatically change[s] the web’s infeed speed to match the web’s outfeed speed.” (EX1006, 2:63-3:4.) Waffner controls the length of the loop by using the vacuum signal to “change... the speed of rotation of the pulley **16**, which drives the roll **14**.” (EX1003, ¶179; EX1006, 5:2-5.) This allows for a “loop **35** of a predetermined length” to be maintained in the loop store. (EX1003, ¶179; EX1006, 5:55-60.)

b) The device detecting changes in at least one of a pressure differential and a flow condition.

Waffner’s changes in a pressure differential are “change[s] in the vacuum chamber.” (EX1003, ¶¶259-264.) Waffner detects the strength of vacuum as compared to atmospheric air. (EX1003, ¶261.) This is a pressure differential, and the changes in the vacuum chamber are a change in this pressure differential.

(EX1003, ¶261.) And this pressure differential changes as a result of the material loop, making those change represent the varying influence of the material loop on the air permeable portion of the contact surface. (EX1003, ¶261.) Specifically, the changes occur in dependence on loop size, meaning that the detection is provided as a measure for the loop size. (EX1003, ¶261.) In Waffner:

When all of the apertures **30** are covered by the portion **33** of the loop **35** of the web **10**, such as, for example, shown in FIG. 3, the vacuum in the chamber **50** will be relatively high because there is very little leakage of atmospheric air into the chamber **50**. However, if the outspeed of the outgoing portion **40** of the web **10** becomes greater than the inspeed of the portions **12** of the web, the loop **35** will shorten. Consequently and as shown in FIG. 4, some of the apertures **30** in the belt **28** will become uncovered to the atmosphere. This permits more air, at atmospheric pressure, to enter the chamber **50**, and thus decreases the vacuum in the chamber **50**. When all of the apertures **30** are uncovered by the web loop **35**, the vacuum in the chamber **50** will be relatively low because there is the maximum leakage of atmospheric air into the chamber **50**.

(EX1006, 5:20-35.) Waffner teaches a pressure sensor, called a manometer, connected to a control device. (EX1003, ¶261.) Waffner teaches actually determining and detecting, rather than merely being capable of determining or detecting. (EX1003, ¶261.)

Similarly, Waffner's changes in a flow condition are changes in this "leakage of atmospheric air into the chamber 50." (EX1003, ¶261, EX1006, 5:20-35.)

Müller teaches a "device for determining a size of the loop formed in the loop store" based on the detection of a property that varies in dependence on loop size. (EX1003, ¶¶259-264.) Müller's device is a "contacting sensor" and "control system." (EX1003, ¶176.) However, Müller does not explicitly teach the form of that "sensor" or what property the sensor detects. (EX1003, ¶177.) Waffner's device uses a contacting sensor. Waffner's technique could be used in the device for determining a size of the loop taught by Müller. (EX1003, ¶¶233-238.) Such a combination would be obvious, as shown in section VIII.A.7.

Thus, Müller in combination with Waffner would meet element 2.5.

7. The combination of Müller and Waffner would have been obvious.

A POSA would have been motivated to combine the Müller interleaver system with Waffner's technique to more precisely detect, determine, and control loop length. Further, a POSA would have expected success in combining the teachings of Müller and Waffner using industry-standard components and techniques. (EX1003, ¶¶199-200.)

a) Motivation to Combine

A POSA would have been motivated to improve Müller’s buffer and contact sensor features to prevent undesirable damage and/or mis-cuts to the web. (See EX1003, ¶¶201-232.)

For example, Müller itself reflects both the importance of the buffer and the desire to improve it: “By means of the buffers, damage, in particular tearing of the interleaver strip, is prevented and/or the unreeling of the interleaver reels can be evened out.” (EX1004, [0026].) But Müller goes on to clarify that the solution it teaches only “somewhat” addresses these problems—Müller’s buffer has room for improvement. (*Id.* EX1003, ¶204.) A POSA would want to more fully prevent web tearing (that could slow production and lead to unsightly food products) and uneven feeding of web (that could lead to too-short or non-existent sheets of interleaver). (EX1003, ¶¶201-203; EX1011, p. 14; EX1022; EX1024; EX1023, 8:46-56.) (EX1003, ¶204; EX1004, [0026].) Further, Müller briefly states “the loop is preferably monitored, in particular by a contacting sensor,” but is silent as to what form that contacting sensor could take. (EX1003, ¶207; EX1004, [0048].) Consequently, the POSA would have sought specific ways to improve control and contact sensing in the buffer region.

A POSA would have appreciated that Waffner provided a solution to Müller's problems. Waffner teaches an improved interleaver buffer and contact sensor technique used for maintaining "a loop [] of predetermined length." (EX1003, ¶¶205, 208; EX1006, 5:55-60.) And a POSA would recognize advantages to Waffner's technique. (EX1003, ¶¶206, 210.) Waffner's improved contacting sensor can be used when it is "critical" for "the tension of the web [to] be kept uniform." (EX1003, ¶222; EX1006, 1:18-22.) Waffner touts that with its system, a practitioner can "substantially eliminate damage to the web." (EX1003, ¶205; EX1006, 2:57-62.) And, Waffner explains that its system is "relatively simple in construction and inexpensive to manufacture." (EX1003, ¶209; EX1006, 6:50-56.) A POSA at the time of the patent in 2017 would have recognized that Waffner's techniques could be implemented even more reliably (and cost-efficiently) using commonly available electronic pressure sensors and machine controllers. (EX1003, ¶¶83, 238.)

A POSA would also realize that Waffner's contacting sensor could add other valuable features to Müller's apparatus. (EX1003, ¶¶213-14.) For example, the vacuum chamber and belt used in Waffner's sensor could improve threading and speed up the re-load time of Müller's apparatus. (EX1003, ¶¶215-217.) And Waffner's vacuum chamber could be used to set an adjustable tension on web material leaving the loop, improving the feed of interleaved sheets into the cutting

region of the slicer. (EX1003, ¶¶218-226.) Similarly, Waffner's vacuum chamber could stabilize web leaving the loop. (EX1003, ¶¶227-228). These additional advantages would further motivate POSA to incorporate the vacuum chamber, belt, and sensor taught in Waffner.

b) Expectation of Success

A POSA would have a reasonable expectation of success in making the combination of Müller's interleaver and Waffner's vacuum chamber and contact sensor discussed above. (EX1003, ¶¶233-238.)

At the time of the '013 patent, food slicing interleavers were a proven technology with commercial applications. (EX1022; EX1024; EX1003, ¶234.) A POSA would understand that changing the type of sensor used to determine the size of the buffer loop would leave the general (industry-proven) operation of the slicer and interleaver unchanged. (*Id.*) Particularly since it was known that "[a]ny other method of sensing the slackness of the web accumulation loop" could be used in slicing-and-interleaving machines. (EX1021, 9:48-49; EX1003, ¶234.)

The components needed to generate a vacuum and detect the strength of that vacuum were well-known mechanical and electronic components and would be within a POSA's skill level to use. (EX1003, ¶235; EX1015; EX1018; EX1019.) And using a pressure sensor to determine loop length had been repeatedly taught in

web-handling applications. (EX1003, ¶¶236, 53-59.) A POSA would have reasonably expected to succeed in incorporating them into an interleaver like Müller's. (EX1003, ¶234.)

It would be within a POSA's skill to determine parameters, such as the size and shape of the contacting surface of the vacuum chamber and the strength of the suction, and the type of pressure sensor. (EX1003, ¶237.) A POSA would expect to be able to pick suitable parameters without undue experimentation, such as by using algebraic equations published in references on web handling. (*Id.*)

B. Dependent Claim 3

Claim 3 depends from claim 2 and further requires "wherein the loop store comprises a suction device for the material loop which acts on the material loop at least in a region at the outgoing side." As discussed above, claim 2 would have been obvious. And Müller and Waffner disclose claim 3's additional limitations. *See, e.g.*, EX1003, ¶¶149-152, 155-157, 167-170, 265-268.)

Waffner discloses "the loop store comprising a suction device for the material loop which acts on the material loop." (EX1003, ¶¶265-268.) Waffner's suction device is its "source of vacuum." (*Id.*) Waffner's "source of vacuum" is "preferably of the conventional blower type and is connected... to [the] vacuum chamber." (EX1006, 4:10-15.)

Müller discloses its contact surface “at least in a region at the outgoing” side of the loop. (EX1003, ¶¶265-268.)

Thus, Müller in combination with Waffner would meet element 3.

C. Dependent Claim 9

Claim 9 depends from claim 2 and further requires “wherein the air permeable portion of the contact surface bounds at least one vacuum chamber to which a suction device is connected or which belongs to a suction device.” As discussed above, claim 2 would have been obvious. And Waffner discloses claim 9’s additional limitation. (See, e.g., EX1003, ¶¶164-166, 158-161, 153-154, 155-157, 269-271.)

Waffner discloses “the air permeable portion of the contact surface bounds at least one vacuum chamber to which a suction device is connected or which belongs to a suction device.” (EX1003, ¶¶269-271.) As explained at sections VIII.B and VIII.H.5, Waffner teaches a vacuum chamber and a suction device.

Thus, Müller in combination with Waffner would meet claim 9.

D. Dependent Claim 10

Claim 10 depends from claim 2 and further requires “wherein the air permeable portion of the contact surface is convexly curved or has an arcuate contour.” As discussed above, claim 2 would have been obvious. And Müller and Waffner disclose claim 10’s additional limitations. (See, e.g., EX1003, ¶¶164-166, 272-274, 199-238.)

Waffner discloses “an air permeable portion of the contact surface,” as shown in section VIII.A.5. Müller discloses a contact surface, strip guide **13** that is convexly curved and has an arcuate contour. (EX1003, ¶273.)

A POSA would have had motivation to extend the air permeable region of the contact surface to this convex curve, for example to improve the tension control benefits of using a vacuum chamber in a loop store. (EX1003, ¶226.) And a POSA would have expected success, as having a stationary curved contact surface would be comparable to—but simpler than—well known “vacuum rollers” used in web handling. (*Id.*) Further, advantages to a curved contact surface—and equations needed to implement such a curve—were well known. (EX1003, ¶226; EX1014, ¶¶[0032-41].)

Thus, Müller in combination with Waffner would meet claim 10.

E. Dependent Claim 12

Claim 12 depends from claim 2 and further requires “wherein the web length entering the loop store per time unit is controllable by an internal or external control device in dependence on the loop size.” As discussed above, claim 2 would have been obvious. And Müller discloses claim 12’s additional limitation. Müller, as combined with Waffner, would meet claim 12’s additional limitation. *See, e.g.*, EX1003, ¶¶149-152, 175-181, 193-238, 275-277.)

Müller discloses “wherein the web length entering the loop store per time unit is controllable by an internal or external control device in dependence on the loop size.” Müller’s control device is its “control system.” (EX1003, ¶¶275-277.) Müller “monitor[s], in particular by a contact sensor,” the “length of the loop,” and Müller uses its control system to “control the unreeling of the interleaver” and “preferably buffer[] only as much interleaver as is needed.” (EX1004, [0048].) A POSA would understand that Müller maintains this buffer by having the web length entering the loop store per time unit be controllable by an internal or external control device in dependence on the loop size. (EX1003, ¶276.)

Thus, Müller in combination with Waffner would meet claim 12.

F. Dependent Claim 13

Claim 13 depends from claim 12 and further requires “wherein the removal device is controllable by the control device in dependence on the loop size.” As discussed above, claim 12 would have been obvious. And Müller discloses claim 13’s additional limitation. Müller, as combined with Waffner, would meet claim 13’s additional limitation. (EX1003, ¶¶143-148, 167-170, 175-181, 193-238, 278-280.)

Müller discloses “the removal device is controllable by the control device in dependence on the loop size.” Müller has a removal device, including “drive **11**”

which drives interleaver material into buffer **12**. (EX1003, ¶279.) A POSA would understand that drive **11** is controllable by the control device in dependence on the loop size. (*Id.*)

Thus, Müller in combination with Waffner would meet claim 12.

G. Dependent Claim 16

Claim 16 depends from claim 2 and further requires “wherein the result of a position determination of the material loop is provided as a measure for the loop size.” As discussed above, claim 2 would have been obvious. And Müller discloses claim 16’s additional limitation. Müller, as combined with Waffner, would meet claim 16’s additional limitation. (*See, e.g.*, EX1003, ¶¶167-170, 175-181, 193-238, 281-283.)

Waffner discloses “the result of a position determination of the material loop is provided as a measure for the loop size.” Waffner’s position determination is a “vacuum signal.” (EX1003, ¶282.) Specifically, the pressure changed detected by the pressure sensor and transmitted as a vacuum signal occur in dependence on loop position and size, meaning that the signal is the result of a position determination of the material loop and is provided as a measure for the loop size. (*Id.*)

Thus, Müller in combination with Waffner would meet claim 16.

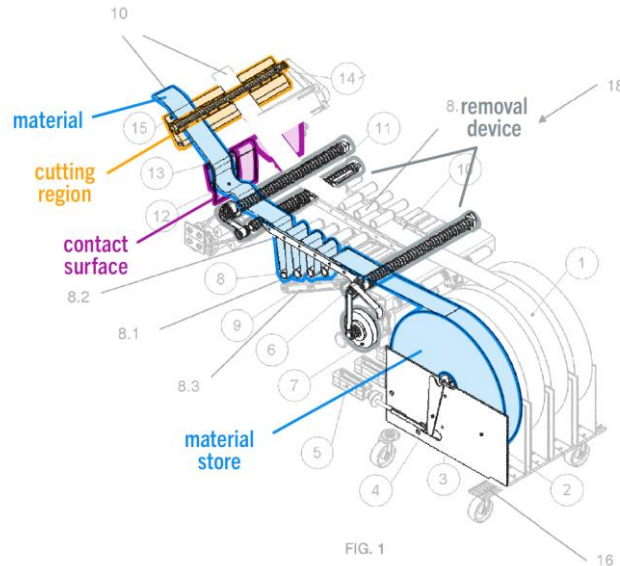
H. Independent Claim 17

1. Preamble

To the extent the preamble is considered limiting, Müller discloses it. Müller, as combined with Waffner, would meet the preamble. *See, e.g.*, EX1003, ¶¶112-264, 284-287.)

Müller discloses “an apparatus for a single-track or multitrack slicing of food products having a product feed which supplies products to be sliced on one track or on multiple tracks to a cutting region in which a cutting blade moves in a rotating and/or revolving manner to cut the supplied products into slices.” Müller’s apparatus for slicing is the “cutting device.” (EX1003, ¶285.) Müller’s products are “product” such as “food.” (*Id.*) Müller’s product feed is a “drive that transports the product.” (*Id.*) Müller’s tracks are “tracks.” (*Id.*) Müller’s cutting region is the “cutting plane.” (*Id.*) Müller’s blade is the “cutting knife.” (*Id.*) Müller’s slices are “slices.” (*Id.*)

Müller discloses “an apparatus for the provision of web-like interleaved sheet material at the cutting region in which the products supplied are cut into said slices and interleaved sheets are introduced which are cut off from the provided interleaved sheet material in the cutting region.” Müller’s apparatus for provision is “system” 18. (EX1003, ¶286.) Müller’s material is “interleaver strip” 10. (*Id.*) Müller’s interleaved sheets are “interleaver.” (*Id.*)



(EX1004, Fig. 1 (Petitioner annotations).)

2. Element 17.1

Müller discloses “a material store,” for the same reasons as discussed in Section VIII.A.2. Müller, as combined with Waffner, would meet this element.

3. Element 17.2

Müller discloses “a removal device for a removal of a material web from the material store,” for the same reasons as discussed in Section VIII.A.3. Müller, as combined with Waffner, would meet this element.

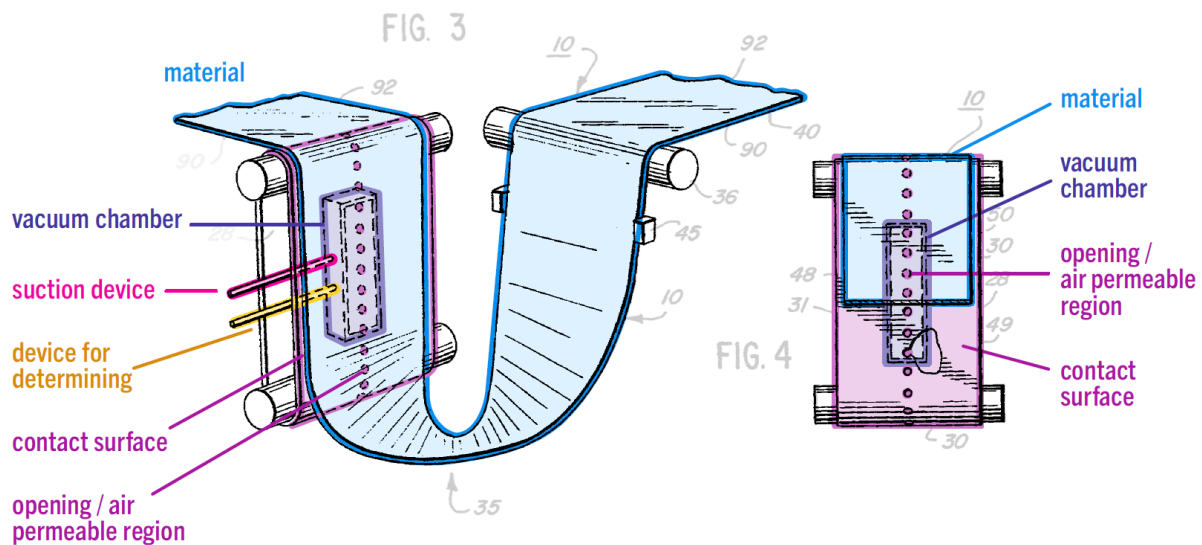
4. Element 17.3

Müller discloses “a loop store defining a space for the removed material web to form a loop, the loop store located between the material store and the cutting region,” for the same reasons as discussed in Section VIII.A.4. Müller, as combined with Waffner, would meet this element.

5. Element 17.4

Waffner discloses “at least one vacuum chamber, the at least one vacuum chamber having at least one opening located adjacent a path of the loop.” (See, e.g., EX1003, ¶¶153-154, 167-174, 199-238, 291-293.)

Waffner discloses at least one vacuum chamber. (EX1003, ¶¶291-293.) Waffner’s vacuum chamber is “vacuum chamber 50.” (EX1003, ¶292.) In Waffner, “[a] source of vacuum, diagrammatically shown at 42 in FIG. 1, is preferably of the conventional blower type and is connected, through a vacuum line 44 to a vacuum chamber 50 disposed adjacent to a portion 95 of the belt 28 and the pulleys 32 and 34.” (EX1006, 4:10-21.)



(EX1006, Figs. 3-4 (Petitioner annotations).)

Waffner discloses its vacuum chamber having at least one opening located adjacent a path of the loop. (EX1003, ¶292.) Waffner's openings are "apertures **30**" which are disposed along [a] longitudinal center line" of belt **28**. (EX1003, ¶292.) In Waffner, the "belt **28** includes a plurality of evenly spaced, uniform diameter apertures **30** disposed along its longitudinal center-line." (EX1006, 3:61-63.) The apertures are "covered by the downwardly descending portion **33** of the loop **35** of the web **10**." (EX1006, 5:13-17.)

For the reasons explained in section VIII.7, it would have been obvious to combine Waffner's technique with Müller's apparatus.

Thus, Müller in combination with Waffner would meet element 17.4.

6. Element 17.5

Waffner discloses "a device for determining a size of the loop formed in the loop store based on the detection of a pressure drop within the at least one vacuum chamber when the opening is at least partially covered by the loop." (*See, e.g.*, EX1003, ¶¶149-152, 167-170, 175-183, 199-238, 294-300.)

For example, Waffner's device uses a "vacuum signal" to "change... the speed of rotation of... roll **14**," as further described below. (EX1003, ¶¶294-300.) A POSA would have recognized that Waffner discloses a pressure sensor in the form of the device using a "vacuum signal" to "change... the speed of rotation of... roll

14” and it was connected to a control device (Müller’s “control system”). (EX1003, ¶¶297-298.)

a) A device for determining a size of the loop formed in the loop store...

Waffner teaches that the object of his invention is “to provide an improved loose loop feed control apparatus wherein ... [a device] automatically change[s] the web’s infeed speed to match the web’s outfeed speed.” (EX1006, 2:63-3:4.) Waffner controls the length of the loop by using the vacuum signal to “change... the speed of rotation of the pulley **16**, which drives the roll **14**.” (EX1003, ¶297; EX1006, 6:23-26.) This allows for a “loop **35** of a predetermined length” to be maintained in the loop store. (EX1003, ¶297; EX1006, 5:55-60.)

b) Based on the detection of a pressure drop within the at least one vacuum chamber when the opening is at least partially covered by the loop.

In Waffner, the pressure drop is an increase in the “degree of vacuum.” (EX1003, ¶297.) Waffner explains that “because the belt **28** passes over the opening **49** in the vacuum chamber **50** and is maintained in a tight, sealing relationship with the edges **48** of the vacuum chamber **50**, the degree of vacuum in the chamber **50** will depend upon the number of apertures **30** in the belt **28** which are covered by the downwardly descending portion **33** of the loop **35** of the web **10**.” (EX1006, 5:10-17). “[A] vacuum line **52** connects the vacuum chamber **50** with a transducer-

amplifier 54. The amount of vacuum existing in line 52 will be determined by the vacuum present in the vacuum chamber 50.” (EX1006, 4:22-26.) This “vacuum signal” is used to determine the size of the loop. (EX1003, ¶297.) Waffner teaches a pressure sensor, called a manometer, connected to a control device. (*Id.*) Waffner teaches actually determining and detecting, rather than merely being capable of determining or detecting. (*Id.*)

For the reasons explained in section VIII.7, it would have been obvious to combine Waffner’s technique with Müller’s apparatus.

Thus, Müller in combination with Waffner would meet element 17.5.

I. Dependent Claim 18

Claim 18 depends from claim 17 and further requires “wherein a common control device is provided which is configured to coordinate the slicing of the products and the provision of the interleaved sheet material.” As discussed above, claim 17 would have been obvious. And Müller discloses claim 18’s additional limitation. (*See, e.g.*, EX1003, ¶¶114-115, 128-129, 195-238, 301-303.)

Müller discloses “a common control device [that is] provided which is configured to coordinate the slicing of the product and the provision of the interleaved sheet material.” Müller’s control device is a “control system.” (EX1003, ¶¶301-303.) For example, Müller discloses that “each reel can be driven

individually, in order, for example, ... to be suitable for the different cutting speed per track.” (EX1004, [0040].)

Further, a POSA would find such a control obvious based on the state of the art at the time of the invention. (EX1003, ¶¶80-83, 229-231.)

Thus, Müller in combination with Waffner would meet claim 18.

J. Independent Claim 19

Claim 19 is identical to claim 2, other than its preamble. As discussed above, claim 2 would have been obvious. The preamble of claim 19 is identical to the preamble of claim 17. As discussed above, claim 17 would have been obvious. Müller, as combined with Waffner, would meet claim 19.

K. Dependent Claim 20

Claim 20 depends from claim 19 and further requires “wherein a common control device is provided which is configured to coordinate the slicing of the products and the provision of the interleaved sheet material.” As discussed above, claim 19 would have been obvious. And as discussed with respect to claim 18, above, the additional elements of claim 20 would have been obvious as well. Müller, as combined with Waffner, would meet claim 20’s limitations.

IX. GROUND 2: CLAIMS 2, 3, 9, 12, 13, AND 16–20 WOULD HAVE BEEN OBVIOUS OVER JORDAN IN VIEW OF FUKUCHI.

As detailed below, Jordan and Fukuchi disclosed every limitations of claims 2, 3, 9, 12, 13, and 16–20, and these claims would have been obvious over the combination of Jordan and Fukuchi, notwithstanding any objective indicia of nonobviousness.

'013 Patent Claim Element	Exemplary Feature in Jordan (EX1005)	Exemplary Feature in Fukuchi (EX1007)
Apparatus for ... provision	“Paper feed arrangement”	
Apparatus for... slicing	“Cutting machine”	
Material store	“Magazine roll 23”	“Delivery bobbin”
Removal device		“Delivery roller 11” and “feed roller 31”
Loop store	“shaft 27,” “loop”	“reserving chamber 40a,” “amount of absorbing and feeding the chip paper”
Contact surface	Back wall of “shaft 27”	back wall of “reserving chamber 40a
Vacuum chamber		“Pressure detecting chamber 40b”
Device for determining a size of the loop		“Pressure detector 60” and “control system”

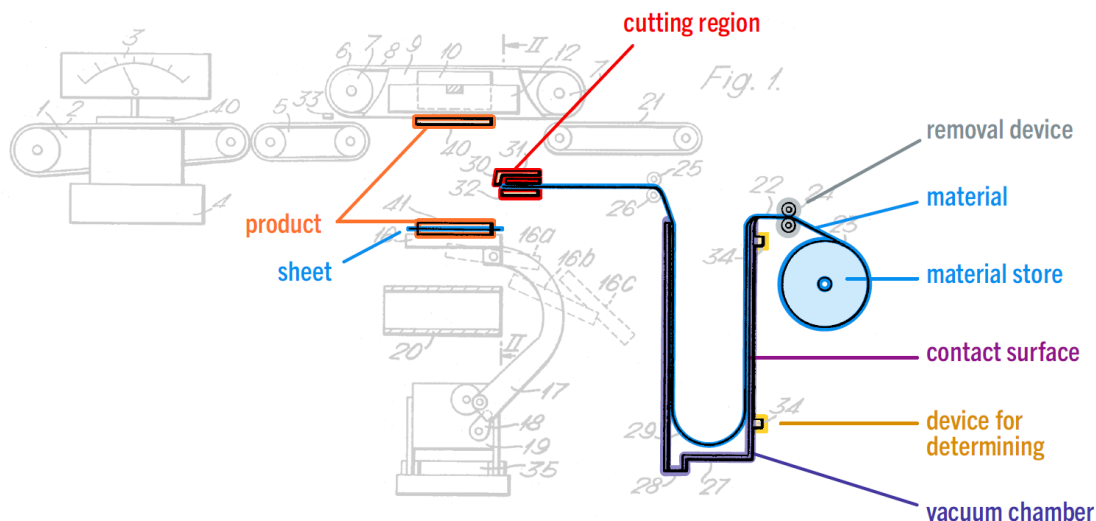
Jordan and Fukuchi are analogous art to the '013 patent: they relate to the field of web handling, and they are pertinent to the problem of controlling a buffer loop of material web. (EX1003, ¶413.)

A. Independent Claim 2

1. Preamble:

To the extent the preamble is limiting, Jordan, as combined with Fukuchi, would meet the preamble. (See, e.g., EX1003, ¶¶74-75, 306-339, 398-421, 422-426.)

For example, Jordan discloses a “paper feed arrangement.” (EX1003, ¶423; EX1005, 5:29-6:9.) Jordan’s interleaved sheet material is “web 22 of paper.” Jordan refers to “sheets of paper” “to be placed between slices.” (*Id.*) Jordan’s products are “foods,” such as “cheese, sausage, ham, rock salmon.” (*Id.*) Jordan’s slices are “slices 40.” (*Id.*) Jordan’s sheets are “sheets of paper.” (*Id.*)



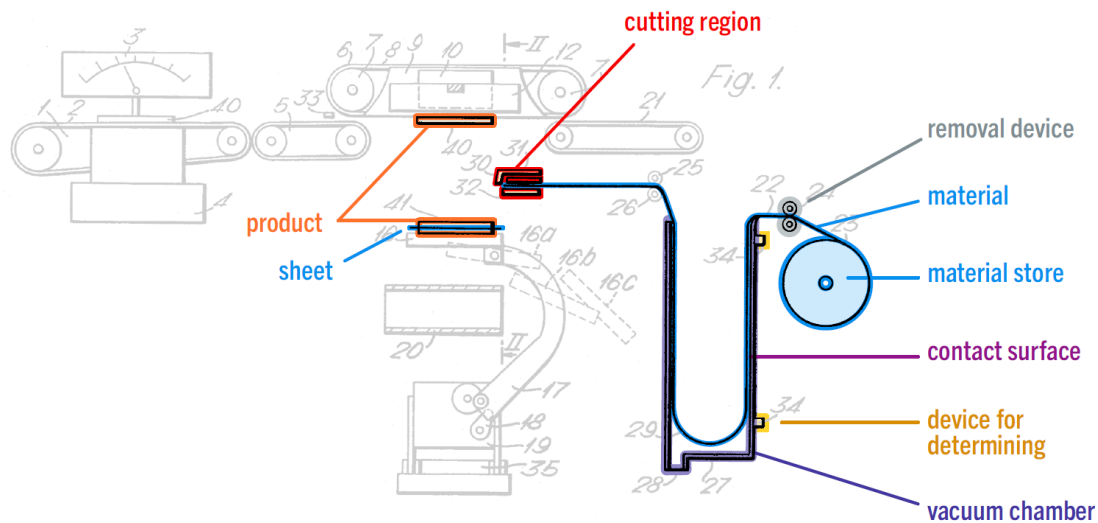
(EX1005, Fig. 1 (Petitioner annotations).)

Because a POSA would read Jordan’s disclosures in view of the state-of-the-art at the time of the patent, the POSA would understand that Jordan teaches the cutting region and tracks of the preamble as well. (EX1003, ¶¶424-425.) The basic principle of an interleaver included tracks to drive product into a cutting region where product and interleaver material were cut together by a single rotating blade. (EX1003, ¶75.)

Thus, Jordan, in combination with Fukuchi, would meet the preamble.

2. Element 2.1

Jordan discloses “a material store,” as claimed. (See, e.g., EX1003, ¶¶340-343, 398-421, 427-428.)



(EX1005, Fig. 1 (Petitioner annotations).)

For example, Jordan's material store is "magazine roll 23." (EX1003, ¶428.)

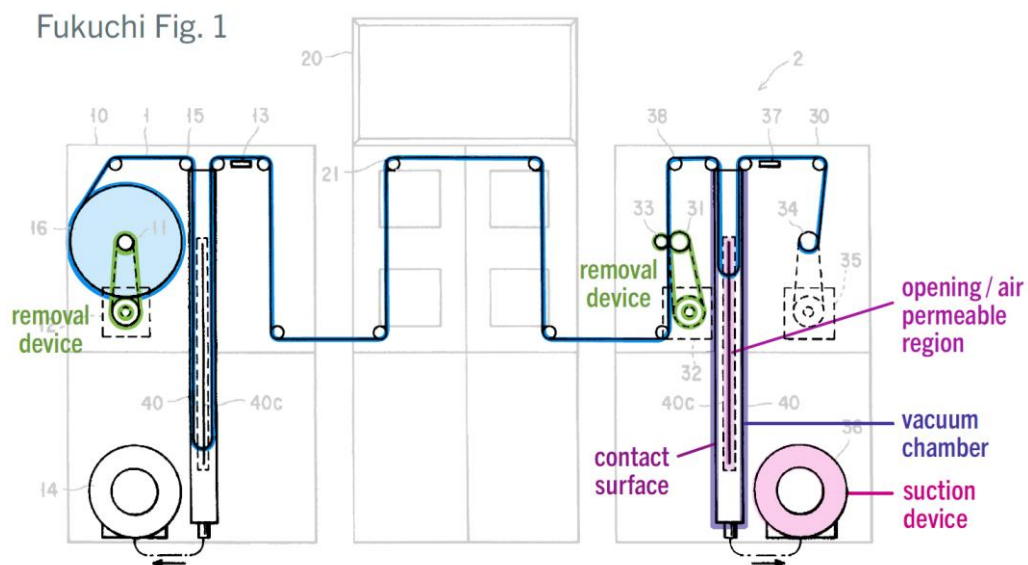
In Jordan, interleaver material is stored on, and then "drawn ... from," the magazine roll. (*Id.*)

Thus, Jordan in combination with Fukuchi would meet element 2.1.

3. Element 2.2

Fukuchi discloses a removal device for a removal of a material web from the material store. (*See, e.g.,* EX1003, ¶¶344-347, 398-421, 430-435.)

For example, Fukuchi's removal device is "delivery roller 11" and "feed roller 31." (EX1003, ¶432.) "By rotation of the delivery roller 11, the [] paper 1 is continuously delivered from the rolled chip paper ... By rotation of the feed roller 31 ... paper 1 is continuously delivered ... close to the upper portion" of the loop store. (*Id.*)



(EX1007, Fig. 1 (Petitioner annotations).)

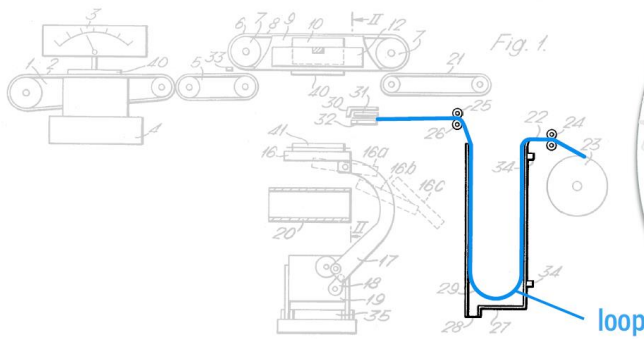
To the extent the claimed “removal device” requires two parts, (1) a roll-off drive driving material off the material roll, and (2) a conveying roller providing the material to the loop store, Jordan has (1) “roller **11**” for removing material web from the material store, and (2) “roller **31**” for inserting material into the buffer loop. (EX1003, ¶¶433-434.) Thus, the removal device has two parts: (1) a roll-off drive driving material off the material roll, and (2) a conveying roller providing the material to the loop store.

Thus, Jordan in combination with Fukuchi would meet element 2.2.

4. Element 2.3

Jordan discloses “a loop store defining a space for the removed material web to form a loop, the loop store located between the material store and the cutting region.” (*See, e.g.*, EX1003, ¶¶318-333, 340-343, 348-350, 370-373, 398-421, 436-438.)

Jordan discloses a loop store defining a space for the removed web to form a loop. Jordan’s loop store includes “shaft **27**.” (EX1003, ¶436-438.) Jordan’s loop is called a “loop.” (EX1003, ¶437.) In Jordan, “loop **29**” is “drawn by vacuum into a shaft **27**.” (EX1003, ¶437.)



(EX1005, Fig. 1 (Petitioner annotations).)

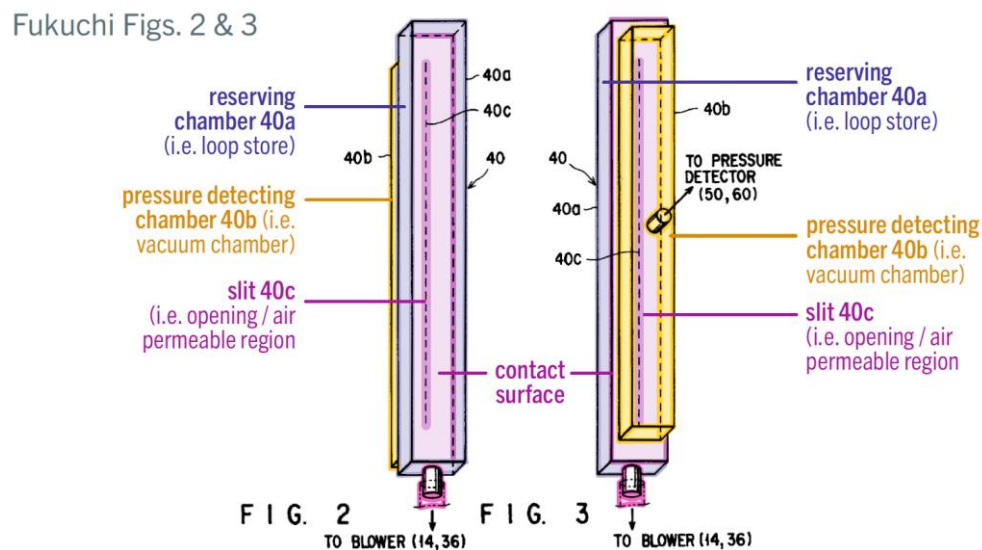
Jordan's loop store is located between the material store and the cutting region. (EX1003, ¶437.) "The different speeds of the ... take-up rollers **24** [i.e. rollers near the material store] and the feed rollers **25** and **26** [i.e. rollers near the cutting region] is evened out by a loop 29." (EX1005, 5:47-6:9.)

Thus, Jordan in combination with Fukuchi would meet element 2.3.

5. Element 2.4

Fukuchi teaches “a contact surface having at least a portion thereof that is air permeable, the contact surface at least partially bounding the loop store and at least partially covered by the loop that contacts the contact surface” (*See, e.g.,* EX1003, ¶¶348-350, 370-373, 360-365, 368-373, 398-421, 439-442.)

Fukuchi's contact surface is the back wall of the "reserving chamber." (EX1003, ¶¶439-442.) Fukuchi's air permeable portion is the portion of "reserving chamber **40a**" which "can be ventilated." (EX1003, ¶441.) Fukuchi's web material contacts the walls of the reserving chamber and "divide[s] the reserving chamber to first and second spaces." (EX1007, 4:9-12; EX1003, ¶441.) The back wall has a "slit **40c**" through which air can "be ventilated." (EX1003, ¶441.)



(EX1007, Figs. 2, 3 (Petitioner annotations).)

For the reasons explained in section IX.7, it would have been obvious to combine Fukuchi's technique with Jordan's apparatus.

Thus, Jordan in combination with Fukuchi would meet element 2.5.

6. Element 2.5

Fukuchi discloses “a device for determining a size of the loop formed in the loop store, the device detecting changes in at least one of a pressure differential and a flow condition, the pressure differential being a difference in pressure between a first side of the contact surface and a second side of the contact surface, the flow condition being a change of the flow of air through the air permeable portion of the contact surface, wherein the changes in the pressure differential and/or the flow condition represent a varying influence of the material loop on the air permeable portion of the contact surface that is provided as a measure for the loop size.” (See, e.g., EX1003, ¶¶348-350, 360-365, 368-373, 377-380, 383-386, 398-421, 443-446.)

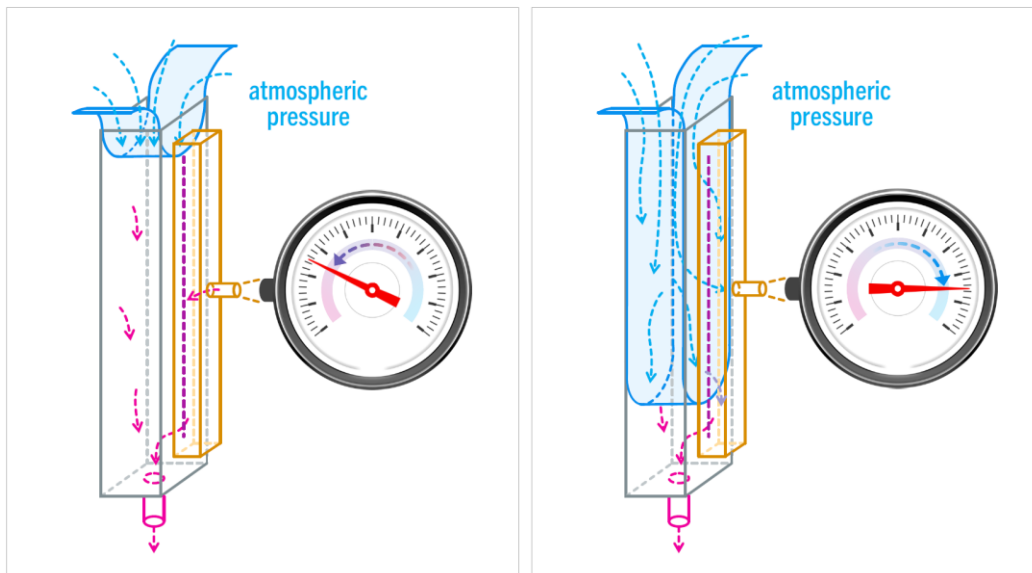
Fukuchi’s device is a “pressure sensor **60**” and a “control system.” (EX1003, ¶445.)

a) A device for determining a size of the loop formed in the loop store...

In Fukuchi, “the amount of absorbing and feeding the chip paper is set [i.e. determined] to be small” and Fukuchi uses its “control system” to control the “rotating speed of the winding roller **34** in accordance with the amount of absorbing and feeding chip paper **1** in the reserving chamber.” (EX1007, 2:42-67, 9:56-65; EX1003, ¶445.)

b) The device detecting changes in at least one of a pressure differential and a flow condition.

Fukuchi's changing "differences between" the "internal pressure of the pressure detecting chamber" and "atmospheric pressure" are changes in a pressure differential. (EX1003, ¶45.) In Fukuchi, "the internal pressure of the pressure detecting chamber **40b** ... is changed in accordance with the slit position" (i.e. as the material loop changes "slit position" it has a varying influence on how much air is drawn out of the detecting chamber, through the air permeable portion (slit) by the blower, and how much air is drawn into the detecting chamber through the slit from atmosphere. (EX1007, 12:31-38; EX1003, ¶45.) Fukuchi teaches a pressure sensor, called a manometer, connected to a control device. (EX1003, ¶445.) Fukuchi teaches actually determining and detecting, rather than merely being capable of determining or detecting. (EX1003, ¶445.)



Demonstrative diagram.

Jordan teaches a device for determining a size of the loop formed in the loop store based on two photocells. (EX1003, ¶¶400, 444.) However, Jordan's device only detects the loop at two extreme positions, and could be obviously improved by incorporating a sensor to detect the loop continuously. (EX1003, ¶¶401-403.) Fukuchi's pressure sensor allow continual detection and determination of the loop length. (EX1003, ¶406.) Fukuchi's technique could be used in the device for determining a size of the loop taught by Jordan. (EX1003, ¶¶414-421.) Such a combination would be obvious, as shown in section IX.7.

Thus, Jordan in combination with Fukuchi would meet element 2.5.

7. The combination of Jordan and Fukuchi would have been obvious.

Fukuchi teaches a technique for continuously determining the size of a loop of web material using a pressure sensor. Fukuchi touts its technique as allowing paper to be stopped and started “instantaneously” without “applying high load” and without paper “being broken.” (EX1007, 7:29-32, 9:6-17; EX1003, ¶407.) These advantages are particularly beneficial to a slicing-and-interleaving machine like Jordan's, where paper is accelerated at high speeds. (EX1003, ¶¶400-401.) A POSA

would have found it obvious to incorporate the teachings of Fukuchi into the interleaver taught by Jordan.

Further, a POSA would have expected success in combining the teachings of Jordan and Fukuchi.

a) Motivation to Combine

At the time of the invention, a POSA would have been motivated to combine the disclosures of Jordan and Fukuchi. That combination would render obvious each element of Claims 2, 3 9, 12, 13, and 16–20.

A POSA would recognize that Jordan could be improved by continuously determining the length of its loose loop. Jordan teaches an interleaver with a web “loop [that] is drawn into [a] shaft by vacuum.” (EX1005, 3:31-57.) Jordan teaches that “the size of the loop **29** is controlled by, for instance, two photocells **34**. If the loop becomes too large the take-up rollers 24 are stopped. If the loop becomes too small t[he] take-up rollers **24** are speeded up until the loop is sufficiently big again.” (EX1005, 5:47-6:9.) Determining loop length in a system like Jordan’s is particularly important. (EX1003, ¶402; EX1011, p. 14). But a POSA would recognize problems in Jordan’s control scheme. For example, waiting until the loop had already become “too large” and then fully stopping the take-up rollers would be inefficient. (EX1003, ¶403.) Similarly, speeding up the rollers only until the loop

first became “sufficiently big” would not be ideal. (*Id.*) A POSA would have been motivated to improve Jordan’s system by continuously sensing and controlling the loop length. (EX1003, ¶406.)

A POSA would recognize that Fukuchi teaches a sensor and control system for continuously controlling loop length. (EX1003, ¶406.) An object of Fukuchi’s invention was to allow “a stable transfer” of web material. (EX1003, ¶404.) As Fukuchi summarized, the invention is to provide “an apparatus for stably transferring belt-like material” by providing “a detector for ensuring a stable transfer.” (EX1007, 2:23-27.) Fukuchi, discloses a number of benefits to using its sensor, such as preventing “high load” on the paper and “broken” paper. (EX1003, ¶407.)

A POSA would recognize those advantages to Fukuchi’s technique of detecting pressure in accordance with the amount of paper in the loose loop, and using that information to control the infeed of paper. (EX1003, ¶¶405, 407.) In addition to minimizing load and breakage, a POSA would recognize that Fukuchi’s sensor efficiently gives a second purpose to the suction device already present in Jordan. (EX1003, ¶408.)

b) Expectation of Success

A POSA would have a reasonable expectation of success in making the combination of Jordan's interleaver and Fukuchi's pressure sensor and control system discussed above. (EX1003, ¶¶414-421.)

At the time of the '013 patent, food slicing interleavers were a proven technology with commercial applications. (EX1022; EX1024; EX1003, ¶415.) A POSA would understand that changing the type of sensor used to determine the size of the buffer loop would leave the general (industry-proven) operation of the slicer and interleaver unchanged. (EX1003, ¶415.) This is particularly true where the food slicing-and-interleaving arts specifically taught that "[a]ny other method of sensing the slackness of the web accumulation loop" could work. (EX1021, 9:48-49; EX1003, ¶415.)

The components needed to detect the strength of a vacuum were well-known electronic components and would be within a POSA's skill level to use by the time of the '013 patent. (EX1003, ¶416; EX1015; EX1018; EX1019.) And using a pressure sensor to determine loop length had been repeatedly taught in web-handling applications. (EX1003, ¶417.) A POSA would have reasonably expected to succeed in incorporating them into an interleaver like Jordan's. (EX1003, ¶420.)

It would be within a POSA's skill to determine parameters, such as the size and shape of the pressure sensing chamber. (EX1003, ¶¶418-419.) A POSA would expect to be able to pick suitable parameters without undue experimentation, such as by quickly machining a few different sizes within known limits and finding one that worked. (*Id.*)

B. Dependent Claim 3

Claim 3 depends from claim 2 and further requires "wherein the loop store comprises a suction device for the material loop which acts on the material loop at least in a region at the outgoing side." As discussed above, claim 2 would have been obvious. And Jordan and Fukuchi disclose claim 3's additional limitations. (See, *e.g.*, EX1003, ¶¶348-350, 356-359, 370-373, 398-421, 447-450.)

Jordan discloses "the loop store comprises a suction device for the material loop which acts on the material loop at least in a region at the outgoing side." (EX1003, ¶¶447-450.) Jordan's suction device is connected to a "vacuum connection." (EX1003, ¶448.) The suction from this device "draws the loop into a shaft" and "holds the loop taut." (*Id.*) The suction acts on the outgoing side of the loop. (*Id.*)

Thus, Jordan in combination with Fukuchi would meet element 3.

C. Dependent Claim 9

Claim 9 depends from claim 2 and further requires “wherein the air permeable portion of the contact surface bounds at least one vacuum chamber to which a suction device is connected or which belongs to a suction device.” As discussed above, claim 2 would have been obvious. And Fukuchi discloses claim 9’s additional limitation. (*See, e.g.*, EX1003, ¶¶351-369, 398-421, 451-453.)

Fukuchi discloses “the air permeable portion of the contact surface bounds at least one vacuum chamber to which a suction device is connected or which belongs to a suction device.” (EX1003, ¶¶451-453.) As explained at sections IX.B and IX.G.5, Fukuchi teaches a vacuum chamber and a suction device. And the suction device is connected to the vacuum chamber. (EX1003, ¶452.)

Thus, Jordan in combination with Fukuchi would meet claim 9.

D. Dependent Claim 12

Claim 12 depends from claim 2 and further requires “wherein the web length entering the loop store per time unit is controllable by an internal or external control device in dependence on the loop size.” As discussed above, claim 2 would have been obvious. And Jordan discloses claim 12’s additional limitation. Jordan, as combined with Fukuchi, would meet claim 12’s additional limitation. (*See, e.g.*, EX1003, ¶¶348-350, 370-373, 377-421, 454-456.)

Jordan discloses a control device. Jordan's control device is its "electronic computer." (EX1003, ¶455.) Jordan "speed[s] up" its "rollers 24" "[i]f the loop becomes to[o] small," and Jordan uses its control system to control rollers 24. (EX1003, ¶¶82, 455.) A POSA would understand that Jordan maintains this loop by having the web length entering the loop store per time unit be controllable by an internal or external control device in dependence on the loop size. (EX1003, ¶455.)

Thus, Jordan in combination with Fukuchi would meet claim 12.

E. Dependent Claim 13

Claim 13 depends from claim 12 and further requires "wherein the removal device is controllable by the control device in dependence on the loop size." As discussed above, claim 12 would have been obvious. And Jordan and Fukuchi disclose claim 13's additional limitation. Jordan, as combined with Fukuchi, would meet claim 13's additional limitation. (*See, e.g.*, EX1003, ¶¶344-350, 370-373, 377-421, 457-459.)

Fukuchi discloses a removal device, including "feed roller 31" which drives interleaver material to the loop store. (EX1003, ¶458.) And, as discussed in section IX.D, Jordan has a control device for maintaining the amount of loop in the loop store. A POSA would understand that, in the combination, the removal device is controllable by the control device in dependence on the loop size. (EX1003, ¶458.)

Thus, Jordan in combination with Fukuchi would meet claim 12.

F. Dependent Claim 16

Claim 16 depends from claim 2 and further requires “wherein the result of a position determination of the material loop is provided as a measure for the loop size.” As discussed above, claim 2 would have been obvious. And Fukuchi discloses claim 16’s additional limitation. Jordan, as combined with Fukuchi, would meet claim 16’s additional limitation. (*See, e.g.*, EX1003, ¶¶344-350, 370-373, 377-421, 460-462.)

Fukuchi discloses the “result of a position determination of the material loop is provided as a measure for the loop size.” (EX1003, ¶¶460-462.) Fukuchi’s position determination is a “slit position.” (EX1003, ¶461.) The slit position is a “length” (i.e. position) which is “convert[ed]” (i.e. it is a determination) using an “analog card” into a linear output (i.e. the determination is provided) voltage. (*Id.*) The slit position is a measure of the loop size, because it changes depending on the size of the loop. (*Id.*)

Thus, Jordan in combination with Fukuchi would meet claim 16.

G. Independent Claim 17

Claim 17 is identical to claim 1, other than its preamble. As discussed above, claim 1 would have been obvious. And Jordan, as combined with Fukuchi, would meet claim 17.

1. Preamble

To the extent the preamble is considered limiting, Jordan discloses it. Jordan, as combined with Fukuchi, would meet the preamble. *See, e.g.*, EX1003, ¶¶74-75, 306-447, 463-466.).

For example, Jordan’s apparatus for slicing is its “cutting machine.” (EX1003, ¶464.) Jordan teaches products and slices, as shown in section IX.A.1. Because a POSA would read Jordan’s disclosures in view of the state-of-the-art at the time of the patent, the POSA would understand that Jordan teaches the product feed, tracks, cutting region, and cutting blade of the preamble as well. (EX1003, ¶¶424-425.) The basic principle of an interleaver included tracks to drive product into a cutting region where product and interleaver material were cut together by a single rotating blade. (EX1003, ¶75.)

Jordan’s apparatus for provision is its “paper feed arrangement.” (EX1003, ¶465.) Jordan teaches web-like interleaved sheet material and interleaved sheets, as shown in section IX.A.1.

Thus, Jordan, in combination with Fukuchi, would meet the preamble.

2. Element 17.1

Jordan discloses this element, for the same reasons as discussed in Section IX.A.2. Jordan, as combined with Fukuchi, would meet this element.

3. Element 17.2

Jordan and Fukuchi disclose this element, for the same reasons as discussed in Section IX.A.3. Jordan, as combined with Fukuchi, would meet this element.

4. Element 17.3

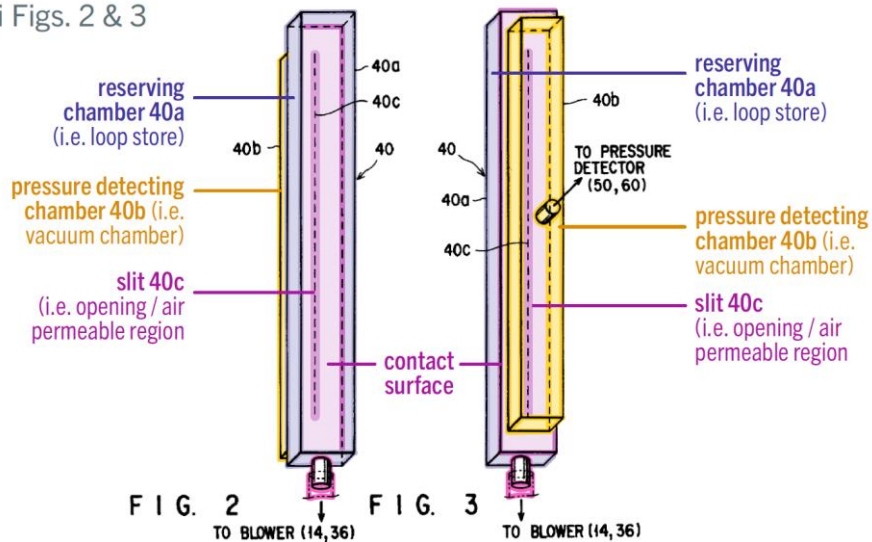
Jordan discloses this element, for the same reasons as discussed in Section IX.A.4. Jordan, as combined with Fukuchi, would meet this element.

5. Element 17.4

Fukuchi discloses “at least one vacuum chamber, the at least one vacuum chamber having at least one opening located adjacent a path of the loop.” (*See, e.g.*, EX1003, ¶¶351-355, 366-369, 370-376, 398-421, 470-474.)

Fukuchi’s vacuum chamber is “pressure detecting chamber **40b**.” (EX1003, ¶472.) In Fukuchi’s pressure detecting chamber, “surfaces other than the surface having the slit **40c** are closed” (i.e., it is a chamber), and a “blower” “appl[ies] negative pressure” (i.e. a vacuum) and “the internal pressure of the pressure detecting chamber ... is changed.” (*Id.*)

Fukuchi Figs. 2 & 3



(EX1007, Figs. 2, 3 (Petitioner annotations).)

Fukuchi discloses its vacuum chamber having at least one opening located adjacent a path of the loop. (EX1003, ¶472.) Fukuchi’s opening is “slit **40c**.” (*Id.*) In Fukuchi, the slit allows “the pressure detecting chamber **40b** [to] be ventilated.” (*Id.*) The slit connects the loop store to the pressure detecting chamber, meaning the loop store (and loop) must be adjacent to the slit. (*Id.*)

For the reasons explained in section IX.7, it would have been obvious to combine Fukuchi’s technique with Jordan’s apparatus.

Thus, Jordan in combination with Fukuchi would meet element 17.4.

6. Element 17.5

Fukuchi discloses “a device for determining a size of the loop formed in the loop store based on the detection of a pressure drop within the at least one vacuum

chamber when the opening is at least partially covered by the loop.” (See, e.g., EX1003, ¶¶348-350, 370-421, 475-478.)

For example, Fukuchi’s device is a “pressure detector **60**” and “control system,” which is a pressure sensor (also called a manometer) connected to a control device. (EX1003, ¶475-478.)

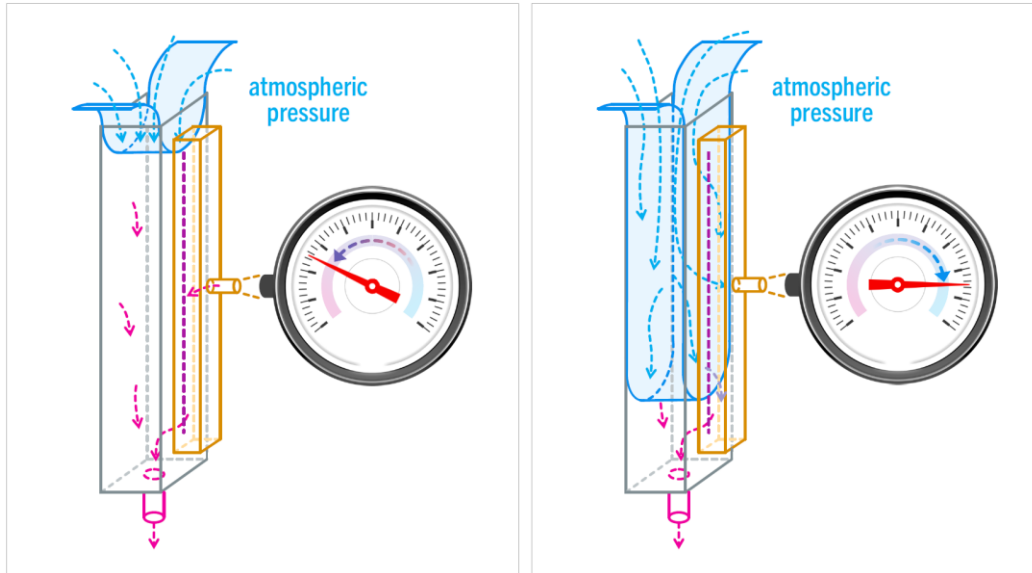
a) A device for determining a size of the loop formed in the loop store...

In Fukuchi, “the amount of absorbing and feeding the chip paper is set [i.e. determined] to be small” and Fukuchi uses its “control system” to control the “rotating speed of the winding roller **34** in accordance with the amount of absorbing and feeding chip paper **1** in the reserving chamber.” (EX1007, 9:56-65, 13:52-59; EX1003, ¶477.)

b) Based on the detection of a pressure drop within the at least one vacuum chamber when the opening is at least partially covered by the loop.

In Fukuchi, the pressure drop is a “change in pressure.” (EX1003, ¶477.) In Fukuchi, pressure is changed “in accordance with the amount of absorbing and feeding the chip paper **1**” as the “slit position” of the paper changes, covering more or less of the slit. (EX1003, ¶477; EX1006, 5:10-17). Fukuchi teaches a pressure sensor, called a manometer, connected to a control device. (EX1003, ¶477.)

Fukuchi teaches actually determining and detecting, rather than merely being capable of determining or detecting. (EX1003, ¶477.)



Demonstrative diagram.

For the reasons explained in section VIII.7, it would have been obvious to combine Fukuchi's technique with Jordan's apparatus.

Thus, Jordan in combination with Fukuchi would meet element 17.5.

H. Dependent Claim 18

Claim 18 depends from claim 17 and further requires "wherein a common control device is provided which is configured to coordinate the slicing of the products and the provision of the interleaved sheet material." As discussed above, claim 17 would have been obvious. Jordan, as combined with Fukuchi, would meet

claim 18's additional limitation. (*See, e.g.*, EX1003, ¶¶309-310, 327-329, 391-397, 398-421, 479-481.)

Jordan teaches “a common control device is provided which is configured to coordinate the slicing of the products and the provision of the interleaved sheet material.” Jordan's control device is its “electronic computer” which controls (and is common to) the “paper infeed” and the “cutting apparatus.” (EX1003, ¶480.) Moreover, a POSA would read Jordan in light of the state-of-the-art at the time of the patent, and understand that Jordan taught a common control device. (*Id.*)

Thus, Jordan in combination with Fukuchi would meet claim 18.

I. Independent Claim 19

Claim 19 is identical to claim 2, other than its preamble. As discussed above, claim 2 would have been obvious. The preamble of claim 19 is identical to the preamble of claim 17. As discussed above, claim 17 would have been obvious. Jordan, as combined with Fukuchi, would meet claim 19.

J. Dependent Claim 20

Claim 20 depends from claim 19 and further requires “wherein a common control device is provided which is configured to coordinate the slicing of the products and the provision of the interleaved sheet material.” As discussed above, claim 19 would have been obvious. And as discussed with respect to claim 18,

above, the additional elements of claim 20 would have been obvious as well. Jordan, as combined with Fukuchi, would meet claim 20's limitations.

X. DISCRETIONARY DENIAL WOULD BE INAPPROPRIATE.

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

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

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

This is Petitioner's first and only petition against the '013 patent. Petitioner filed this petition within months of Patent Owner asserting the '013 patent (and three other patents) against Petitioner on August 24, 2023. The median time from filing to trial for civil cases in the W.D.Mo., the location of the parallel litigation, is 25.5 months, which would be around September 2025. Thus, a hearing in this proceeding would occur before the median time from filing to trial. *See USPTO Director's Memorandum: Interim Procedure For Discretionary Denials In AIA Post-Grant Proceedings With Parallel District Court Litigation*, 3, 7 (June 21, 2022) ("Additionally, when considering the proximity of the district court's trial date to the date when the PTAB final written decision will be due, the PTAB will consider the median time from filing to disposition of the civil trial for the district in which the parallel litigation resides.").

Petitioner just recently answered the August 24, 2023 allegations on October 30, 2023, there has been no claim construction hearing or decision, fact and expert discovery is ongoing, and there have not been any depositions yet. The most recent supplemental scheduling order in the case sets the current close of fact discovery for

March 6, 2024, close of expert discovery for May 29, 2024, dispositive motions due, June 14, 2024, pre-trial order due October 23, 2024, and trial November 18, 2024. *Provisur v. Weber*, No. 21-cv-06113, Doc. #214 (W.D. Mo. Sept. 5, 2023).

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

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

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

Finally, *Fintiv* factor six (other circumstances) weighs strongly against denying institution. *See Netflix, Inc. v. GOTV Streaming, LLC*, IPR2023-00757, Paper 11, *25-27 (P.T.A.B. Nov. 7, 2023) (granting institution and declining

discretionary denial in light of compelling merits, even though *Fintiv* factors (1) through (5) favored discretionary denial); *USPTO Director's Memorandum: Interim Procedure For Discretionary Denials In AIA Post-Grant Proceedings With Parallel District Court Litigation*, 3, 7 (June 21, 2022) (stating the Board “will not rely on the *Fintiv* factors to discretionarily deny institution in view of parallel district court litigation where a petition presents compelling evidence of unpatentability.”). In the ongoing district court litigation between the parties, Patent Owner’s related company, Weber, has petitioned for IPR of Provisur’s asserted patents more than ten times. Weber was never discretionarily denied—only denied on the merits—and was given the opportunity to have the Board review each of the patents that went to trial in the district court. Fairness dictates that Provisur be afforded the same opportunity.

This Petition has compelling merits and demonstrates that the claims of the ’013 patent are obvious based on clear unpatentability theories and several express teachings in the prior art.

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

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

A. Real Parties in Interest

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

B. Related Proceedings

The '013 is subject to the following civil action: *Provisur Technologies, Inc. v. Weber, Inc. et al.*, Case No 5-21-cv-06113 (WDMO), where it was asserted in counterclaim filed August 24, 2023.

C. Grounds for Standing

Provisur certifies that the '013 patent is eligible for IPR and that Provisur is not barred from requesting IPR of the '013 patent on the grounds in this Petition.

D. Counsel & Service Information

Pursuant to 37 C.F.R. 42.10(a), Petitioner appoints **Michael G. Babbitt** (Reg. No. 59,288) as its lead counsel and **Sara T. Horton** (Reg. No. 61,449), **Ren-How H. Harn** (Reg. No. 73,620), and **Mitchell M. Feldhake** (Reg. No. 79,905) as its backup counsel, all at the address: Willkie Farr & Gallagher LLP, 300 N LaSalle Dr., Chicago, IL 60654.

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

XII. CONCLUSION

Provisur requests cancellation of the above claims of the '013 patent.

Respectfully submitted,

Dated: December 6, 2023

/Michael G. Babbitt/

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Counsel for Petitioner

CERTIFICATE OF COMPLIANCE

The undersigned certifies that this brief complies with the applicable type-volume limitations of 37 C.F.R. § 42.24. Exclusive of the portions exempted by 37 C.F.R. § 42.24(a), this brief contains 13,950 words as counted by the word processing program used for its preparation (Microsoft Word 2013).

Respectfully submitted,

Dated: December 6, 2023

/Michael G. Babbitt/

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

Counsel for Petitioner

CERTIFICATE OF SERVICE

I hereby certify that on December 6, 2023, I caused a true and correct copy of the foregoing materials:

- **PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,647,013**

To be served via FedEx Express on December 7, 2023, in its entirety on the following:

DICKINSON WRIGHT PLLC-TROY
2600 West Big Beaver Rd.
Suite 300
Troy, MI 48084
Patent Center Correspondence Address for U.S. Patent No. 10,647,013

The above-captioned **PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,647,013** was also served via electronic mail in its entirety on:

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jleiker@levycraig.com

Petitioner knows this to be an additional address likely to effect service under 37 C.F.R. § 42.105.

IPR2024-00258

U.S. Patent No. 10,647,013

Respectfully submitted,

Dated: December 6, 2023

/Michael G. Babbitt/

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

Counsel for Petitioner