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 IPR2024-00269
Patent No. 11,331,823

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 11,331,823

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PETITIONER EXHIBIT LIST

EX	Description
1001	Patent-at-Issue: U.S. Patent No. 11,331,823
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1005	U.S. Patent Pub. No. 2019/0329438 ("GEA438")
1006	U.S. Patent Pub. No. 2009/0159631 ("DePoi")
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	Roisum, D., *The Mechanics of Web Handling* (1998) (Excerpts)
1012	U.S. Patent No. 5,979,308 ("Kagi")
1013	U.S. Patent No. 6,752,056 ("Weber 056")
1014	U.S. Patent No. 4,253,597 ("Waffner")
1015	Eggen, T., "Get a Grip on Your Web" (2009)
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I. INTRODUCTION

Petitioner respectfully requests *Inter Partes* Review of claims 1, 2, 4, 5, 7, 8, 10, 12, 17, and 18 of U.S. Patent No. 11,331,823, foreign application filed July 3, 2017 and purportedly assigned to Patent Owner Weber Maschinenbau GMBH Breidenbach.

The claimed "invention" in the challenged '823 patent is a well-known technique for applying a vacuum brake to a loop of paper in a paper feeding system.

The prosecution history of the '823 patent clearly explains that the challenged claims were allowed only because the Examiner believed that the claimed vacuum brake was not known in the art. The Examiner was mistaken. In fact, the use of such vacuum brakes was a well-established technique for decades before the '823 patent. There are also clear motivations stated in the cited prior art to employ vacuum brakes in interleaver food processing machines for better reliability, efficiency, and precision.

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

First, the claims are obvious in view of Müller and GEA438. Müller 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 an active vacuum brake, but this element was well known

and long available in the art, such as shown by the delay unit vacuum brake of GEA438. Simply put, GEA438 states "such delay units were known," with advantages like avoiding kinks and tears in the paper with "more compact, lighter, cheaper, and less maintenance intensive" machinery. (EX1005, [0002].)

Second, the claims are likewise obvious in view of Müller and DePoi. DePoi teaches "a system for applying a braking force to the sheet material web proximate to the vacuum box." It further teaches the known advantage of using an active web brakes in an interleaver to avoid breaking of the web.

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

II. BACKGROUND IN THE ART

The '823 patent relates to an "interleaver" for feeding paper to the slicing blade of a slicing machine so that paper can be placed between subsequent slices of meat or cheese, for example. This patent is an application of the "web handling" arts to the food slicing industry. However, the web handling arts were well-developed by the time of the '823 patent, around 2017.

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.) Common web materials include paper, film, foil, textiles, tissue, and laminates of those materials. (EX1003, ¶¶49-53.) Subject areas of web handling include controls for tension, guiding, rollers and nips, and winding. (EX1003, ¶ 49.)



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 using an active vacuum brake claimed in the '823 patent—were also used in "sheet material feeders," and "paper cutters." (EX1006 [0001]; EX1017 [0003].) These examples represent only some of the

many known applications of web handling techniques by the time of the invention. (EX1003, ¶¶59-67.)

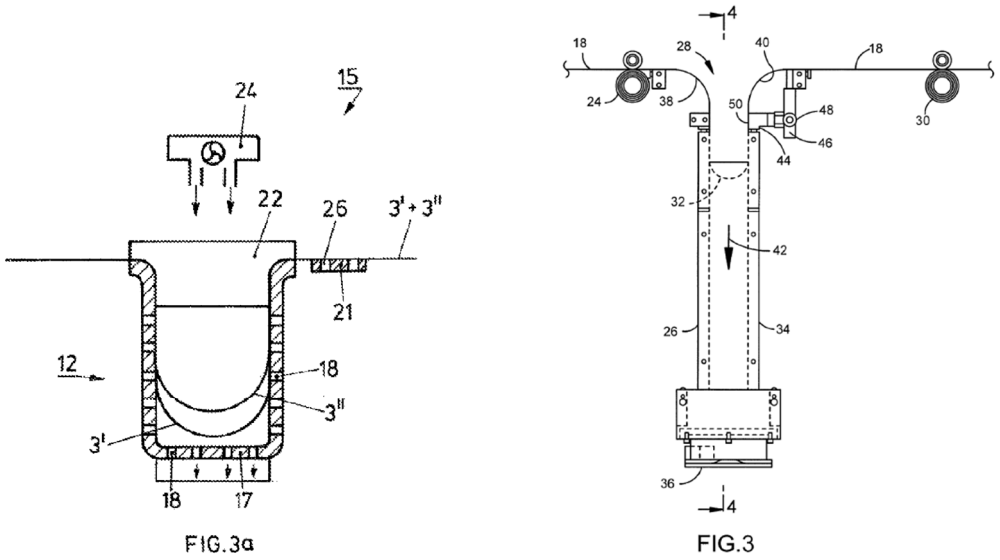
Peer reviewed scientific articles and papers in the web handling arts date back more than fifty years. (EX1003, ¶ 51.) Textbooks on the web handling art date back more than thirty years. (EX1003, ¶ 51.) At least fifteen books, most of which were in-print at the time of the '823 patent, exist dedicated to web handling. (EX1003, ¶ 51.) A freely available online "library" directs artisans to over 4,000 articles, books, columns, conference papers, and other publications on this subject. (EX1003, ¶51; EX1028.) . Versions of this library have existed for over a decade. (EX1003, ¶51.) Experts in web handling are available to consult. (EX1003, ¶51; EX1026.) Approximately 15,000 artisans have attended multi-day courses in web handling. (EX1003, ¶52.) A POSA in the food processing industry would be aware of web handling techniques by the time of invention.

B. It was well-known in the web handling arts to use an active vacuum force as a friction brake.

It was well-known in the web handling arts to use a vacuum to increase friction on the web material leaving the loop.

Generally speaking, by the time of the patent, use of a "vacuum roller" to draw web by vacuum ("pull the web into intimate contact with") a roller surface to "prevent[] web slippage" was known. (EX1003, ¶60.) Indeed, publications referred to vacuum rollers as a "gold standard" "web control device." (EX1003, ¶60.)

Specifically, it was known to use a vacuum brake to control web leaving a loop store. (EX1003, ¶60.) For example, DePoi (in 2009) and Kröhnert (in 2012) taught using a vacuum to increase friction on the web material leaving the loop. These references taught advantages of this arrangement, such as less breakage in the material web, application to a wider range of web materials, more reliable operation and greater automation. (*See e.g.* EX1006, [0003]; EX1017, [0004].) These references explained that their teaching could be used in "different compositions of the sheet material webs having different coefficients of friction." (EX1006, [1008]; EX1017, [0004-0005].) And these references explained that this was a known technique for providing paper deceleration. (EX1017, [0006-0008].)



EX1017 Fig. 3a; EX1006 Fig. 3.

GEA438 also taught advantages of a using a vacuum to increase friction on the web material leaving the loop. (EX1003, ¶63.) It sought to avoid "kinking,

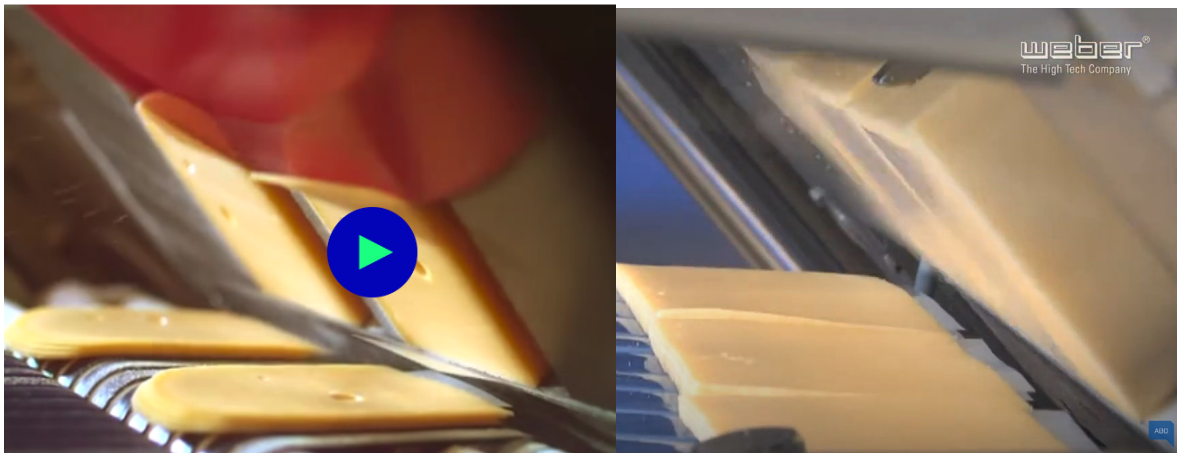
tearing, or backing up" of the paper with a "more compact, lighter, cheaper, and less maintenance intensive" design. (EX1005, [0010], [0030], [0002], [0009].) In addition to the more reliable operation, the "delay unit can be more easily replaced, for example for the purpose of maintenance or cleaning." (EX1005, [0009].) GEA438 teaches that by using a vacuum brake, "the braking effect can be adapted to different conditions and separating materials in a precise, rapid, and simple manner." (EX1005, [0010].)

And as a further example, U.S. Patent No. 5,697,573 to Fukuchi *et al*. ("Fukuchi") taught a "brake device **13** for adjusting tension of chip paper." (EX1003, ¶65; EX1007, 5:43-53.) Fukuchi's brake was located directly after a loop store. (EX1003, ¶66; EX1007, 6:18-35.) And Fukuchi's brake used "a plurality of absorbing holes" to draw paper against the brake via vacuum. (EX1003, ¶66; EX1007, 6:8-17.) Using the technique of a vacuum brake, a constant tension on the paper can be maintained. (EX1003, ¶66; EX1007, 10:15-20.)

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 '823 patent around 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 '823 patent acknowledged, slicers with interleavers were "generally known in the field of the slicing of food products." (EX1001, 1:46-48; EX1004, ¶62.)

Web-handling apparatuses that provided paper to be cut and interleaved with sliced food were known by at least the 1970s. (EX1003, ¶68.) For example, Jordan, issued in 1974, teaches such an apparatus. (EX1025; EX1003, ¶69.) Fessler, issued in 1986, likewise teaches such an apparatus.[1] (EX1003, ¶70.) As do Weber 056 (2000), Pryor 531 (2007), Pryor 872 (2012), Dreier (2015), Müller (Jan. 28, 2016), and GEA438 (Dec. 20, 2016). (EX1003, ¶¶68-80; EX1013; EX1020; EX1021; EX1004; EX1023; EX1005.) And video evidence shows that slicing-and-interleaving machines had been successfully designed and employed in the industry at the time of the patent:



[1] Fessler and Jordan have both been previously cited to the Board in relation to IPRs involving food slicing-and-interleaving machines. *See Weber, Inc. v. Provisur Technologies, Inc.*, Case No. IPR2019-01464 (Paper 38) (Feb. 18, 2021); *Weber, Inc. v. Provisur Technologies, Inc.*, Case No. IPR 2019-01465 (Paper 37) (Feb. 18, 2021).

(EX1022, "GEA DualSlicer Video"; EX1024, "Weber Slicer 604 Video"; EX1003, ¶¶74-75.)

Many of these prior-art web handling devices used techniques claimed in the '823 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, ¶¶77-80.) In other words, the '823 patent exists in a crowded field, and none of the techniques it claims were new.

III. THE '823 PATENT

A. The '823 patent describes a conventional slicer and interleaver.

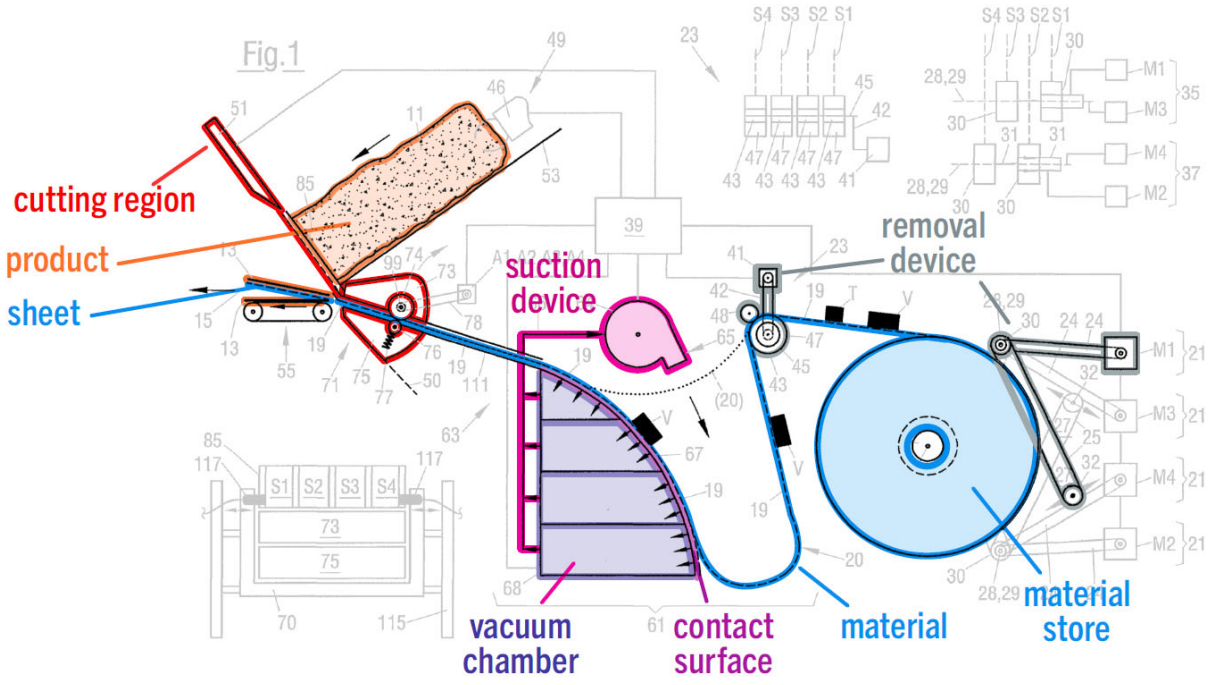
The '823 patent does not purport to disclose the invention of either slicers or interleavers. Rather, the inventors acknowledge that the "design and the mode of operation of [] slicers and also the basic principle of an interleaver are sufficiently known to the skilled person." (EX1001, 8:48-51; EX1003, ¶85.)

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, 2:49-52; EX1003, ¶¶85-92.) The inventors were mistaken—even their technique of using an active vacuum brake had been long-known.

B. The ’823 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 ’823 patent is conventional.[2] (*Cf.* EX1003, ¶76.) A “material web **19**” begins on a “material roll **17**.” (EX1001, 9:1-9:55; EX1003, ¶¶86-91.) 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**” ensures that “sufficiently large” web length is available in the loop store. (*Id.*)

[2] Petitioner, in IPR2024-00258, additionally challenges claims of U.S. Patent No. 10,647,013, of which the ’823 is a continuation of, and which shares a materially identical specification.



Annotated Picture of Web Path in '823

The specification describes the vacuum brake of the '823 patent. Within the loop store, the web passes over a "contact surface **67**," which communicates with "vacuum chambers **69**." (EX1001, 13:17-23.) As web is "sucked toward the contact surface," it experiences a braking effect and is kept under light tension. (EX1001, 13:18-31.)

C. The '823 patent claims the use of a vacuum as a friction brake for the material web.

Independent claims 1 and 17 of the '823 patent claim, among other elements, this device where "the loop store located between the material store and the cutting region, the loop store having a brake for the material web that actively increases the friction for the material web." (EX1001, Claims 1, 17.)

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." (EX1003, ¶96.) 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 1), 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. (*Cf*. EX1003, ¶76.)

D. The sole point of novelty recognized in the notice of allowance related to the "brake."

The '823 issued as a continuation from U.S. Application No. 16/025,612. (EX1001.) Prosecution did not result in a single additional office action. (*See*, EX1002.) On January 26, 2022, the PTO issued a notice of allowance. The Examiner allowed the claims under the belief that it "is apparently not well known in the art" to have "a contact surface… at the outgoing side of the loop" which "actively increases the friction" through "vacuum or pneumatic connection." (EX1003, ¶98; EX1002, p. 14.) As the references cited herein show, the Examiner was incorrect, and such brakes were well-known in the art. The claims of the '823 patent would not have issued had the Examiner been aware of the references cited in this Petition, which provide an active vacuum correction to the speed or friction of the web/sheet.

E. Independent Claims 1, 17

Independent Claim 1 is representative of the challenged claims, shown below and compared to independent claim 17. Claim 17 is identical claim 1, except for the preamble.

Claim 1	**Claim 17**
[1.Preamble] 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:	[17.Preamble] 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 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:
[1.1] a material store;	[17.1] a material store;
[1.2] a removal device for a removal of a material web from the material store;	[17.2] a removal device for a removal of a material web from the material store;
[1.3] 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, the loop store having a brake for the	[17.3] 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, the loop store having a brake for the

material web that actively increases the friction for the material web;	material web that actively increases the friction for the material web;
[1.4] wherein the loop store comprises a contact surface for at least one region of the material loop at the outgoing side of the loop, wherein the contact surface belongs to the brake for the material web.	[17.4] wherein the loop store comprises a contact surface for at least one region of the material loop at the outgoing side of the loop, wherein the contact surface belongs to the brake for the material web.

The differences in the preambles are immaterial to patentability. (EX1003, ¶95.) Thus, the evidence cited herein for claim 1 applies to the corresponding elements of claims 17.

F. Priority Date

The earliest possible priority date that the '823 patent can claim the benefit of is the date of the first German patent application from which the '823 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 including a POSA that would typically have had (1) a bachelor's degree (or equivalent) in mechanical engineering (or a similar field) and at least two years of experience working as an engineer (or similar role) on food processing and/or packaging systems (or in a similar field); or (2) at least seven years of experience working as an engineer (or similar role) on food

processing and/or packaging systems (or in a similar field). *See Weber v. Provisur*, No. IPR2022-00599, Paper 65, *10-11 (P.T.A.B. Aug. 23, 2023).

Further, the Board recognized a POSA would have had knowledge of the technical literature concerning food processing and packaging systems, including conveyor mechanisms and web handling systems; (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. *See 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 according to their plain and ordinary meanings as understood by a POSA in view of the specification. No terms require an explicit construction from the Board to resolve the unnpatentability issues between the parties in this proceeding. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that "we need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy'").

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. … But from my standpoint, I'm not going to be presenting you with a bunch of Markman terms for construction." (EX1033, *Provisur v. Weber III*, Sept. 5, 2-23 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 Proposed District Court Construction**	**Weber's Proposed District Court Construction**
A removal device for a removal of a material web from the material store (all claims)	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. In addition, this phrase may be covered by 35 U.S.C. §112(f).	Plain and ordinary meaning
Determination (claim 12)	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 patentability issues here. In any case, the cited prior art meets the claim terms under

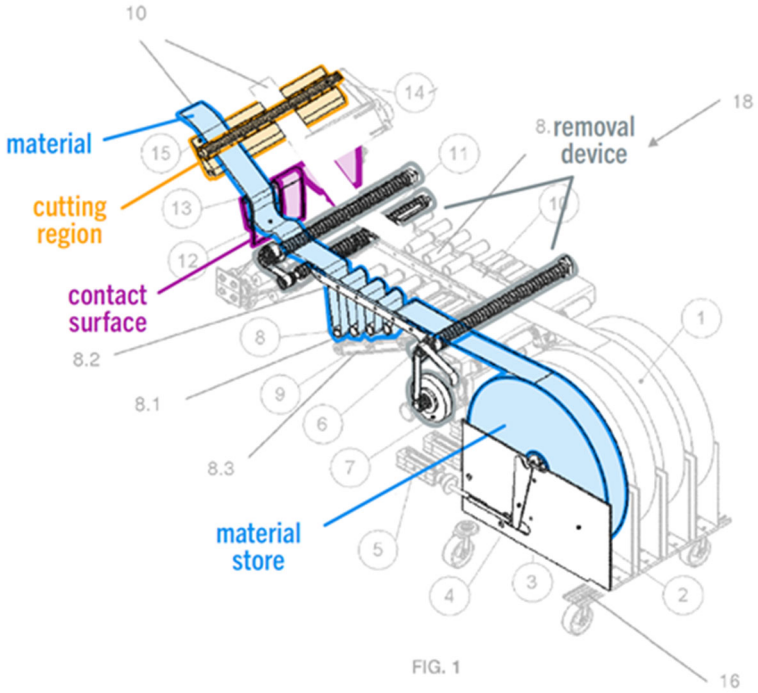
each of Provisur's and Weber's district court proposed constructions. Thus, Provisur applies the same understanding of the claims in this proceeding before the Board and the district court.

VI. IDENTIFICATION OF PRIOR ART

A. Müller (EX1004)

Müller is the obviousness base reference of both Ground 1 and Ground 2. Provisur relies on Müller to describe an interleaver with the generic claimed "material store" (reel **1**), "removal device" (device **18**), and "loop store" (buffer **12**) for each ground here. Müller's disclosure is similar in these respects to several other slicing-and-interleaving machines known to a POSA . (EX1003, ¶¶108-110.)

Müller discloses a multitrack interleaver reel system for use with high-speed slicers. (EX1003, ¶¶111-112; 123-124.) Müller teaches multiple paper buffers, including a loose loop buffer that "buffers only as much interleaver as is needed for the ejection of an interleaver" sheet. (EX1003, ¶¶142-143.) Müller uses a sensor to detect and determine the length of interleaver material in the buffer. (EX1003, ¶¶166-167.) Müller's refers to its "contacting sensor" and "control system." (EX1003, ¶¶167-173.)



EX1004, Fig. 1 (Petitioner annotations).

Müller's buffer **12** is particularly important. (EX1003, ¶179.) In order to interleave paper with slices, Müller must "insert the interleaver strip into the cutting plane with a very high acceleration." (EX1003, ¶181; 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, ¶¶ 179-181.) Müller discloses a "contact sensor." (EX1003, ¶167; EX1004, [0048].)

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

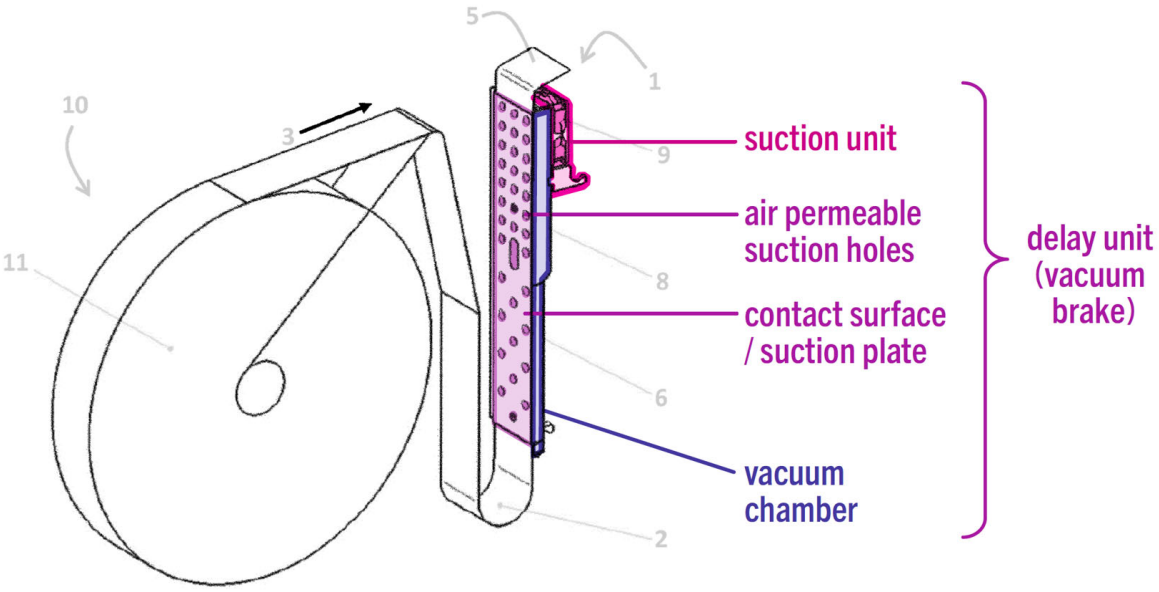
B. GEA438 (EX1005)

GEA438 is the secondary reference of Ground 1 in combination with the Müller base reference. Provisur relies on GE438 for the purposes of its obviousness

combination to teach the claimed active vacuum brake and its known advantages, which is not expressly disclosed in Müller. (EX1003, ¶¶108-110.)

In particular, GEA438 teaches "delay unit 1 according to the invention comprises a suctioning means in the form of a planar suction plate 6 which is penetrated by a multiplicity of suction openings 7." (EX1003, ¶146; EX1005, [0031].) GEA438 teaches that "the tape is suctioned onto the suction plate 6 and clings in a planar manner to the suction plate 6. The mechanical contact between the tape and the surface of the suction plate 6 **leads to a frictional contact** which increases the transporting resistance of the tape." (EX1003, ¶147; EX1005, [0032].) (emphasis added). "The separating material is thus braked." (EX1005, [0010].)

GEA438 explains that "delay units are known from the prior art and serve for keeping the separating material under tension when unrolling, said separating material typically comprising a tape of film or paper material." (EX1003, ¶64, 183; EX1005, [0032].) The stated benefit of the GEA438 delay unit is to avoid "kinking, tearing, or backing up" of the paper. (EX1003, ¶64, 183; EX1005, [0010], [0030], [0002].) In addition, GEA438 states "A further advantage is that the overall number of rollers can be significantly reduced in relation to the prior art, on account of which the delay unit according to the invention can be designed so as to be more compact, lighter, cheaper, and less maintenance intensive." (EX1003, ¶64; EX1005, [0009].)



GEA438 Fig. 1

(Petitioner annotations).

GEA438, which was published on Oct. 31, 2019, with a foreign application priority date of Dec. 20, 2016, is prior art under at least 35 U.S.C. §102(a)(2) (post-AIA).

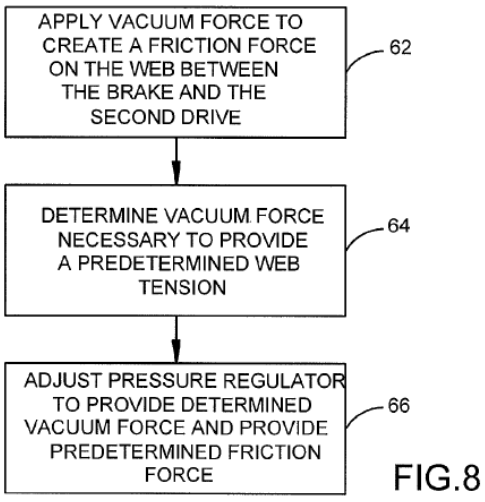
C. DePoi (EX1006)

DePoi is the secondary reference of Ground 2, similarly teaching the claimed active vacuum brake. (EX1003, ¶¶289-292.)

In 2009, a patent application by DePoi *et al*. on a "Tension Control for a Sheet Material Feeder" ("DePoi") was published. (EX1006.) This patent application teaches "a sheet material feeder is provided comprising a vacuum box adapted to apply a vacuum force to a sheet material web extending into the vacuum box; and a system for **applying a friction force** to the sheet material web proximate an exit

from the vacuum box. (EX1003, ¶61; EX1006, [0008].)The system for applying the friction force is adjustable to allow a substantially same friction force value to be applied to different compositions of the sheet material webs having different coefficients of friction." (EX1003, ¶61, 320; EX1006 [0008] (emphasis added).)

DePoi teaches that "[t]he brake 28 has been added to provide a fast responding supplement to the vacuum force 42 during rapid deceleration to maintain sufficient web tension on the web 18 between the brake 28 and the second drive 30. With the web 18 properly tensioned, this allows proper tracking off the web and provides an accurate sheet length cut with the high speed cutter 20." (EX1006 [0028].) DePoi states "[t]he friction force applied by the brake may be automatically adjusted to be a function of the sheet material coefficient of friction using a proportional air pressure regulator." (EX1006 [0045]; EX1003, ¶¶316-322.)



EX1006, Fig. 8.

DePoi, which was published on June 25, 2009, is prior art under at least 35 U.S.C. §102(a)(2).

D. Other Evidence of the State of the Art (EXS 1007–1025)

The references in EX1007–EX1025 (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, ¶¶45-84.)

VII. IDENTIFICATION OF CHALLENGE

Petitioner requests *Inter Partes* Review of claims 1, 2, 4, 5, 7, 8, 10, 12, and 17, and 18 of the ’823 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 Publication 2016/0023370 (“Müller”) (EX1004) in combination with U.S. Patent Publication 2012/0222528 (“GEA438”) (EX1005) renders obvious claims 1, 2, 4, 5, 7, 8, 10, 12, and 17, and 18 under §103 (post-AIA).

Ground 2: U.S. Patent Publication 2016/0023370 (“Müller”) (EX1004) in combination with U.S. Patent Publication 2009/0159631 (“DePoi”) (EX1006) renders obvious claims 1, 2, 4, 5, 7, 8, 10, 12, 17, and 18 under §103 (post-AIA).

Petitioner’s grounds are summarized in the chart below.

Ground	Claims Challenged	35 U.S.C. §	References
1	1, 2, 4, 5, 7, 8, 10, 12, 17, and 18	103	Müller and GEA438
2	1, 2, 4, 5, 7, 8, 10, 12, and 17, 18	103	Müller and DePoi

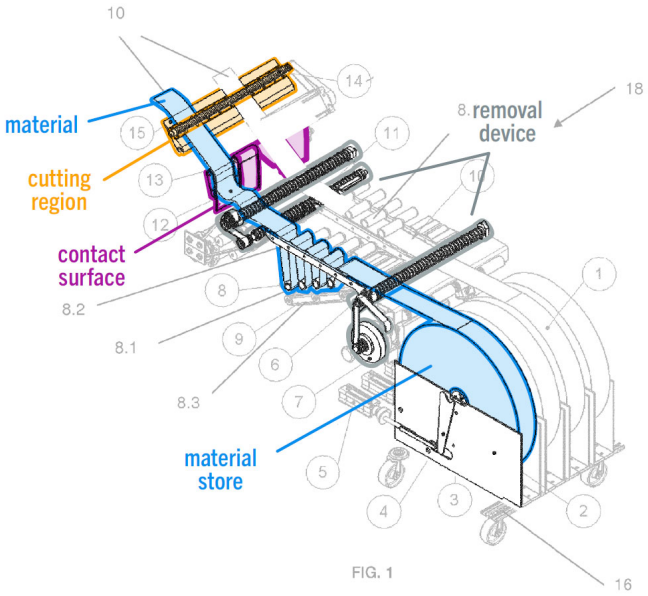
Grounds 1–2 are substantially different than the art and arguments previously considered by the Patent Office. During prosecution, neither the patentee nor the examiner cited or applied GEA438 or DePoi.

Moreover, the art and arguments presented herein are not cumulative to those considered during examination. Unlike art included in this Petition, none of the art applied during examination disclosed the use of vacuum to increase friction on a contact surface subsequent to a loop store, the basis of allowance. Thus, the same or substantially the same prior art or arguments were not previously presented to the Patent Office.

VIII. GROUND 1: CLAIMS 1, 2, 4, 5, 7, 8, 10, 12, 17, AND 18 WOULD HAVE BEEN OBVIOUS OVER MÜLLER IN VIEW OF GEA438.

Müller in combination with GEA438 disclose all elements of the challenged claims, as shown below in the following exemplary evidence chart. Using the teachings of GEA438's active vacuum brake in Müller's interleaver system would have been obvious, because of the known advantages including avoiding costly kinks, tears, and back up jams of the paper and having a more efficient design, for

example. The resulting combination would meet all elements of the challenged claims.



EX1004, Fig. 1 (Petitioner annotations).

'823 Patent Claim Language	**Exemplary Feature in Müller (EX1004)**	**Exemplary Feature in GEA438 (EX1005)**
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	
Removal Device	"Unreeling device" 18	
Loop Store	"Buffer" 12 for "loop"	
Vacuum Brake and Chamber		"Delay unit" 1 (Figure 1)
Air permeable contact surface		"Suction plate" 6 with "suction openings" 7
Suction Device		the suction unit comprises a negative-pressure-generating unit, in particular a fan, a

’823 Patent Claim Language	Exemplary Feature in Müller (EX1004)	Exemplary Feature in GEA438 (EX1005)
		Venturi nozzle, a vacuum pump, or the like

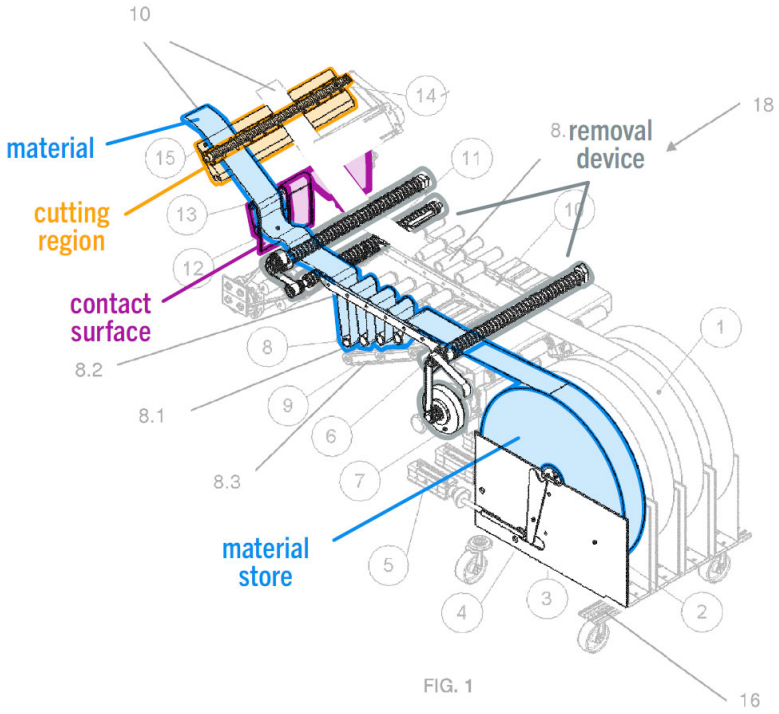
Müller and GEA438 are analogous art to the ’823 patent: they relate to the field of web handling, and they are pertinent to the problem of controlling a buffer loop of material web. (EX1003, ¶210.)

A. Independent Claim 1

1. Preamble

To the extent the preamble is considered limiting, Müller discloses it, as described below. (*See, e.g.*, EX1003, ¶¶218-221.)

For example, Müller discloses “an apparatus for a single-track or multitrack provision of web-like interleaved sheet material.” (EX1003, ¶¶111-112.) The claimed apparatus is Müller’s “system” **18**. (*Id*.) Müller’s single-track or multitrack provision is the movement of web along up to “four tracks” from “paper reels” to a “cutting device.” (EX1003, ¶¶219-221.) Müller’s interleaved sheet material is “interleaver strip” **10**. (EX1003, ¶¶113-114.)



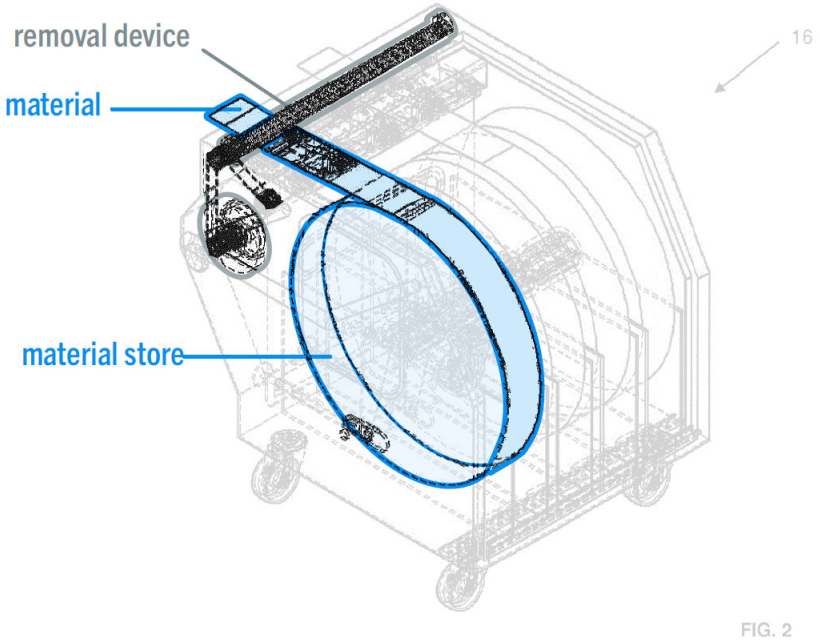
EX1004, Fig. 1 (Petitioner annotations).

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, ¶¶218-221.) Müller's cutting region is a "cutting plane." (EX1003, ¶¶118-120.) Müller's products are "product," such as "food." (EX1003, ¶¶125-126.) Müller's tracks are "tracks." (EX1003, ¶¶129-130.) A POSA would understand that, in Müller's system, the food product is cut into slices and the interleaver material is cut into sheets as interleaver material is introduced to the cutting region. (EX1003, ¶¶218-221.)

Thus, Müller, in combination with GEA438, would meet the preamble.

2. Element 1.1

Müller discloses "a material store," as claimed. (*See, e.g.*, EX1003, ¶¶222-224.)



EX1004, Fig. 2 (Petitioner annotations).

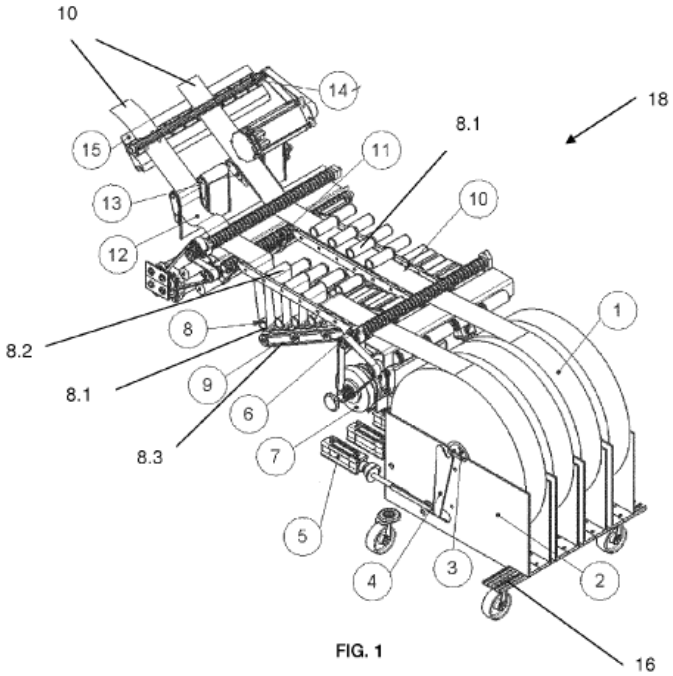
For example, Müller's material store includes paper reel **1**. (EX1003, ¶¶134-1435.) Müller's "invention relates to an unreeling device with which an interleaver strip is unreeled from an interleaver reel." (EX1003, ¶135, EX1004, [0001].)

Thus, Müller in combination with GEA438 would meet element 1.1.

3. Element 1.2

Müller discloses a removal device for a removal of a material web from the material store. (*See, e.g.*, EX1003, ¶¶225-229.)

For example, Müller's removal device includes "unreeling device" **18**. (EX1003, ¶¶138-141.) "The drive for the interleaver reels … is preferably provided by the cutting device." (EX1003, ¶140; EX1004, [0017].) A second "drive **11** can set the stationary rollers **8.1** rotating" and would feed material web into buffer **12**. (EX1003, ¶140; EX1004, [0048].)



EX1004 Fig. 1.

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, ¶¶225-229.) Thus, the removal device has two parts: (1) a roll-off drive

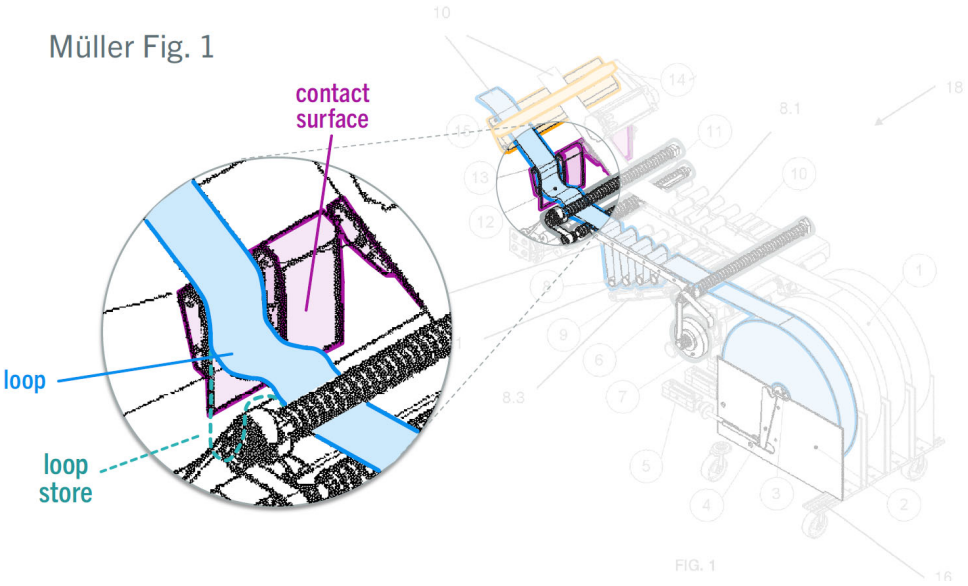
driving material off the material roll, and (2) a conveying roller providing the material to the loop store.

Thus, Müller in combination with GEA438 would meet element 1.2.

4. Element 1.3

Müller in combination with GEA438 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, the loop store having a brake for the material web that actively increases the friction for the material web." (*See, e.g.*, EX1003, ¶¶231-235.)

Müller discloses "a loop store defining a space for the removed web to form a loop, the loop store located between the material store and cutting region…" Müller's loop store is "buffer" **12**. (EX1003, ¶¶142-143.) Müller's loop is a "loop." (EX1003, ¶¶162-163.) "[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].)



(Petitioner annotations).

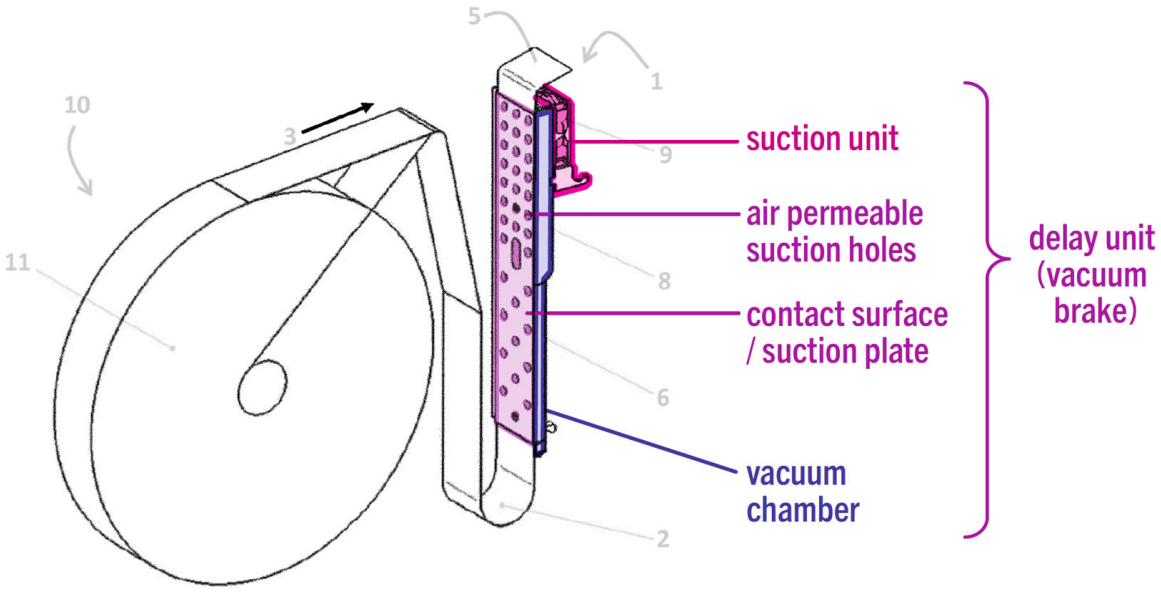
Müller's loop store is located between the material store and the cutting region. (EX1003, ¶¶142-143; EX1004, Fig. 1.) Both roller **11** and strip guide **13** are downstream of paper reels **1** and upstream of interleaver ejector unit **15**. (*Id.*)

GEA438 discloses "… a brake for the material web that actively increases the friction for the material web" in the form of "delay unit 1." (EX1003, ¶¶145-151.) "Delay unit 1 comprises a suctioning means in the form of a planar suction plate 6." (EX1005, [0031].) "As a result of the tape running in the region of the suction plate 6, the tape is suctioned onto the suction plate 6… [t]he mechanical contact between the tape and the surface of the suction plate 6 leads to a frictional contact which increases the transporting resistance of the tape." (EX1005, [0032].) "The separating material is thus braked." (EX1005, [0010].) This increase in friction is active, as it depends on the pressure differential "between the negative pressure in

the interior of the fluid line **8** and the ambient pressure." (EX1003, ¶149; EX1005, [0032].)

GEA438's brake "can advantageously be adjusted in a comparatively precise and simple matter, on account of which the desired delay effect is controllable." (EX1005, [0009].)

In addition, GEA438's brake is in between deflection roller 4 and separating material leaves 5 (before cutting machine 20 and knife 21 in the feed path), as shown in Figure 1.



GEA438 Fig. 1

(Petitioner's annotations).

Thus, Müller in combination with GEA438 would meet element 1.3.

5. Element 1.4

Müller in combination with GEA438 discloses "wherein the loop store comprises a contact surface for at least one region of the material loop at the outgoing side of the loop, wherein the contact surface belongs to the brake for the material web." (EX1003, ¶¶236-240.)

Müller teaches "the loop store comprises a contact surface for at least one region of the material loop at the outgoing side of the loop." As discussed in section VIII.A.4 above, Müller has a loop store. And 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." (EX1003, ¶142-143; EX1004, [0048].) This strip guide is a contact surface on the outgoing side of Müller's loop. (EX1003, ¶157.)

And as shown above, GEA438 teaches a brake. As discussed in more detail in section VII.6 below, a POSA combining the vacuum brake technique of GEA438 with Müller's interleaver would incorporate a vacuum brake into the contact surface on the outgoing side, such that "the contact surface belongs to the brake for the material web." (EX1003, ¶¶200-203.)

Thus, Müller in combination with GEA438 would meet element 1.4.

6. The combination of Müller and GEA438 would have been obvious.

A POSA would have been motivated to combine the Müller interleaver system with a vacuum chamber and an active vacuum brake, for example, to prevent costly "kinks, tears, or back ups" with a "more compact, lighter, cheaper, and less maintenance intensive" design, as explicitly taught by GEA438. Further, a POSA would have expected success in combining the teachings of Müller and GEA438 using industry-standard components and techniques. (EX1003, ¶¶177-178.)

a) Motivation to Combine

Müller itself reflects both the importance of its buffer feature and contact sensor 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. (EX1003, ¶¶181-185; EX1004, [0026].) 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, ¶180; EX1022; EX1024; EX1023, 8:46-56.) Further, Müller briefly states "the loop is preferably monitored, in particular by a contacting sensor." (EX1004, [0048].) Consequently, a POSA would

have sought more specific ways to improve control and contact sensing in the buffer region.

A POSA would have appreciated that GEA438's delay unit vacuum brake system was a solution to Müller's buffer problems. (EX1003, ¶179-187.) GEA438 teaches a vacuum brake to prevent "kinks, tears, or back ups" to the paper in the situation where "braking torque is not capable of being set with the desired precision, and heavy wear is created on the interleaver rollers on account of the friction that is initiated in an artificial manner," such as in Müller. (EX1005, [0030], [0006].) GEA438 "has the advantage that the transporting movement of the separating material is not delayed by mechanically braking an interleaver roller, but is delayed by exerting pressure on the separating material per se." (EX1005 [0009].) GEA438 does so in a "comparatively precise and simple manner, on account of which the desired delay effect is controllable." (EX1003, ¶151, 176; EX1005, [0009].) Indeed, GEA438 touts that with its braking, technique a practitioner can implement a brake that is "compact, lighter, cheaper, and less maintenance intensive." (EX1003, ¶184; EX1005, [0009].) These many stated advantages of GEA438 would have given a POSA compelling reason to combine with Müller.

In addition to the specific motivations taught by Müller and GEA438, a POSA generally would have been aware of advantages to adding a vacuum brake to Müller. For example, DePoi teaches that by using a vacuum brake, "the friction force is

adjustable to allow a substantially same friction force value to be applied to different compositions of the sheet material webs having different coefficients of friction." (EX1006, [0008].) Kröhnert teaches that vacuum brakes are helpful to limit "the risk of uncontrolled paper supply, and therefore jamming and crumpling." (EX1017 [0008].) A POSA would have understood that "web tension is an important process parameter, [that] must not be allowed to vary excessively." (EX1011 p. 17.) A POSA would understand that adding a vacuum brake would allow for greater control over the web tension. (EX1003, ¶¶195-203.)

A POSA at the time of the patent in 2017, would recognize that GEA438's techniques could be implemented even more reliably (and cost-efficiently) using commonly available vacuum brakes and machine controllers. (EX1003, ¶¶207-210.)

In implementing the vacuum brake technique of GEA438, a POSA would have been motivated to include the brake at a contact surface at the outgoing side of the loop. First, Müller already teaches a contact surface at that location. (EX1003, ¶¶195-203; EX1004, [0048].) Second, GEA438 discloses using a vacuum brake on a contact surface immediately upstream of where the interleaver material is cut. (EX1003, ¶¶195-203; EX1005, Fig. 1.) A POSA would understand that providing tension control at this location would be beneficial, and it would be desirable to incorporate a vacuum brake at the outgoing side of the loop. (EX1003, ¶¶204-206.)

In implementing the vacuum brake technique of GEA438, a POSA would have been motivated to make the brake controllable by Müller's control device. Müller discloses a control device responsible for many control tasks, including sensing and controlling the buffer loop. (EX1003, ¶¶207-209; EX1004, [0027]; [0048]; [0049].) And GEA438 discloses the benefits of controlling the vacuum brake in dependence on loop size. (EX1003, ¶215 EX1005, [0033]; [0036]; [0038].) A POSA would also have known that central machine controls, such as programmable logic controllers, were readily available and could control the functions of a slicing-and-interleaving machine, including setting a vacuum strength. (EX1003, ¶¶207-209.)

b) Expectation of Success

A POSA would have a reasonable expectation of success in making the combination of Müller's interleaver and GEA438's vacuum brake as discussed above. (EX1003, ¶¶211-217.)

At the time of the '823 patent, food slicing interleavers were a proven technology with commercial applications. (EX1022; EX1024; EX1003, ¶212.) A POSA would understand that incorporating a vacuum brake, would leave the general (industry-proven) operation of the slicer and interleaver unchanged. (EX1003, ¶212.) Vacuum brakes are well known within the web handling arts. (EX1003, ¶213.) Both Müller and GEA438 are GEA patents seeking to improve interleavers

in the food slicing industry. The components needed to create an active vacuum break were well-known mechanical and electronic components and would be within a POSA's skill level to use. (EX1003, ¶213.) A POSA would have reasonably expected to succeed in incorporating them into an interleaver like Müller's. (EX1003, ¶¶ 211-217.)

Additionally, GEA438 suggests elements such as the loop store and material store, such that a POSA would readily understand how to incorporate them into the teachings of Müller.

B. Dependent Claim 2

Claim 2 depends from claim 1 and further recites "the apparatus further comprising at least one vacuum chamber, the at least one vacuum chamber having at least one opening located adjacent a path of the loop." Müller in combination with GEA438 discloses the apparatus in claim 1, for the reasons discussed in Section VIII.A. Müller in combination with GEA438 discloses the additional element of claim 2. (EX1003, ¶¶241-243.)

Further, GEA438 discloses "at least one vacuum chamber, the vacuum chamber having at least one opening adjacent a path of the loop" in the form of delay unit **1**. (EX1003, ¶¶152-154.) Delay unit **1** includes "suction openings **7**" as well as "a negative pressure (also referred to as a vacuum) in relation to the ambient

pressure." (EX1003, ¶154; EX1005, [0032].) The interleaver material is "suctioned onto the suction plate." (EX1003, ¶245; EX1005, [0032].)

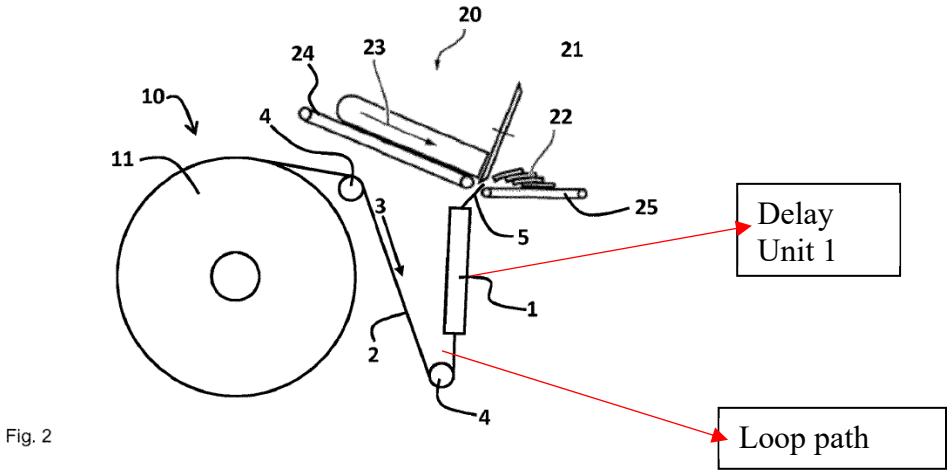
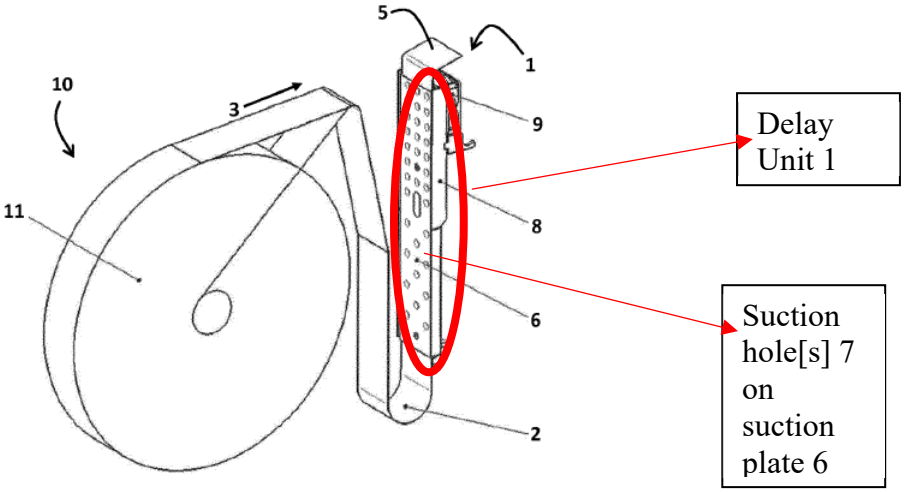


Fig. 2

EX1005, Fig. 2.



EX1005 Fig. 1.

As discussed above, a POSA combining the vacuum brake technique of GEA438 with Müller's interleaver would incorporate a vacuum brake into the contact surface on the outgoing side, such that "the contact surface belongs to the

brake for the material web. This would necessarily include an opening located adjacent to the loop path.

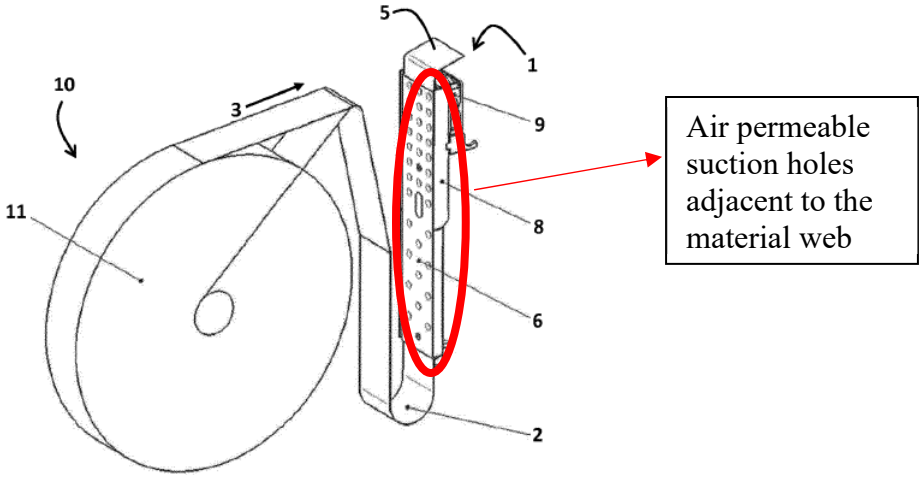
Thus, Müller in combination with GEA438 would meet claim 2. (EX1003, ¶243)

C. Dependent Claim 4

Claim 4 depends from claim 1 and further recites "wherein at least a portion of the contact surface of the brake is air permeable, and wherein the material web is drawn onto the air permeable portion so as to actively increase the friction for the material web." Müller in combination with GEA438 discloses the apparatus in claim 1, for the reasons discussed in Section VIII.A. Müller in combination with GEA438 discloses the additional element of claim 4. (EX1003, ¶¶244-246.)

Further, GEA438 discloses "at least a portion of the contact surface of the brake is air permeable, and wherein the material web is drawn onto the air permeable portion so as to actively increase the friction for the material web"… "[A]ir is suctioned through the suction openings 7 in the direction of the fan 9 in the region of the suction plate 6. As a result of the tape running in the region of the suction plate 6, the tape is suctioned onto the suction plate." (EX1005, [0032].)

As GEA438 explains, "[t]he mechanical contact between the tape and the surface of the suction plate 6 leads to a frictional contact which increases the transporting resistance of the tape." (EX1005, [0032].)



EX1005 Fig. 1.

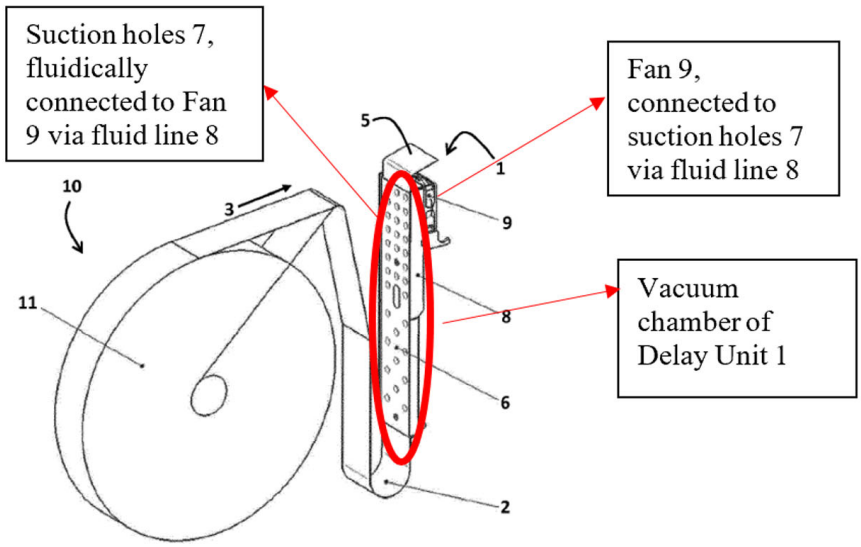
Thus, Müller in combination with GEA438 would meet claim 4.

D. Dependent Claim 5

Claim 5 depends from claim 4, and further recites "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." Müller in combination with GEA438 discloses the apparatus in claim 4, for the reasons discussed in Section VIII.C. Müller in combination with GEA438 discloses the additional element of claim 5. (EX1003, ¶¶247-252.)

Further, GEA438 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." As discussed in Section VIII.B, GEA438 discloses a vacuum chamber. (EX1003, ¶¶152-154.) Fan **9** is a "suction unit" (i.e. a suction

device). (EX1003, ¶155; EX1005, [0017].) And the air permeable portion of the contact surface bounds delay unit **1** (the vacuum chamber). (EX1003, ¶¶247-252.)



EX1005 Fig. 1.

Thus, Müller in combination with GEA438 would meet claim 5.

E. Dependent Claim 7

Claim 7 depends from claim 4, and further recites "wherein the braking effect of the air permeable portion of the contact surface for the material web is settable and/or controllable by means of a suction device, by means of a blowing device or by means of an air circuit." Müller in combination with GEA438 discloses the apparatus in claim 4, for the reasons discussed in Section VIII.C.

GEA438 discloses "wherein the braking effect of the air permeable portion of the contact surface for the material web is settable and/or controllable by means of

a suction device." (EX1003, ¶¶253-258.) The braking effect provided by fan 9 in delay unit 1 is settable and controllable, as "the delay unit has a control unit for controlling the rotating speed of the fan, said fan being configured in such a manner that the rotating speed thereof is controlled as a function of an unrolling and/or transporting speed of the separating material." (EX1005, [0032].) A POSA would understand that the rotating speed of the fan would determine the strength of the braking effect. (EX1003, ¶255.)

Thus, Müller in combination with GEA438 would meet claim 7.

F. Dependent Claim 8

Claim 8 depends from claim 1, and further recites "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 in combination with GEA438 would disclose the apparatus in claim 1 for the reasons discussed in Section VIII.A.

Müller discloses "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." (EX1003, ¶¶259-261.) Müller states that "[t]he length of the loop is preferably monitored, in particular by a contacting sensor." (EX1004, [0048].) Müller's buffer **12** "preferably buffers only as much interleaver as is needed for the ejection of an interleaver." (EX1004, [0048].) And, using "position sensing," Müller further teaches that "control [of] the unreeling of the interleaver reel." (EX1004, [0027].)

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, ¶260.)

Thus, Müller in combination with GEA438 would meet element 8.

G. Dependent Claim 10

Claim 10 depends from claim 1 and further recites "wherein the removal device is controllable such that the web length entering the loop store per time unit is continuously variable in dependence on the loop size." Müller in combination with GEA438 would disclose the apparatus in claim 1 for the reasons discussed in Section VIII.A.

Müller in combination with GEA438 discloses "the removal device is controllable such that the web length entering the loop store per time unit is continuously variable in dependence on the loop size." (EX1003, ¶¶262-273.) As shown in Section VIII.A.2, Müller teaches a removal device where "drive **11**" feeds material web into buffer **12**. (EX1003, ¶¶138-141; EX1004, [0048].) And as shown in Section VIII.F, Müller teaches "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 teaches controlling the removal device so that web length entering the loop is continuously variable. (EX1003, ¶¶138-141.) For example, Müller states that "[t]he length of the loop is preferably monitored, in particular by a contacting

sensor." (EX1004, [0048].) Likewise, GEA438 teaches a sensor of loop unroll and transport speed. (EX1005, [0012].) Such sensor configurations were well known and conventional by the time of the patent. (EX1003, ¶¶207-209; EX1023; EX1021; EX1007; EX1014; EX1025.)

Thus, Müller in combination with GEA438 would meet element 10.

H. Dependent Claim 12

Claim 12 depends from claim 1 and further recites "wherein the result of a position determination of the material loop is provided as a measure for the loop size." Müller in combination with GEA438 would disclose the apparatus in claim 1 for the reasons discussed in Section VIII.A.

Müller discloses "the result of a position determination of the material loop is provided as a measure for the loop size." (EX1003, ¶¶274-277.) Müller teaches a "contacting sensor" and "control system." (EX1004, [0048]; [0050].) A POSA would understand that the sensor makes a position determination which is provided to the control system as a measure for the loop size. (EX1003, ¶276.)

Thus, Müller in combination with GEA438 discloses the claimed element 12.

I. Independent Claim 17

Claim 17 is identical to claim 1, other than it its preamble. As discussed above, claim 1 would have been obvious. And Müller discloses claim 17's

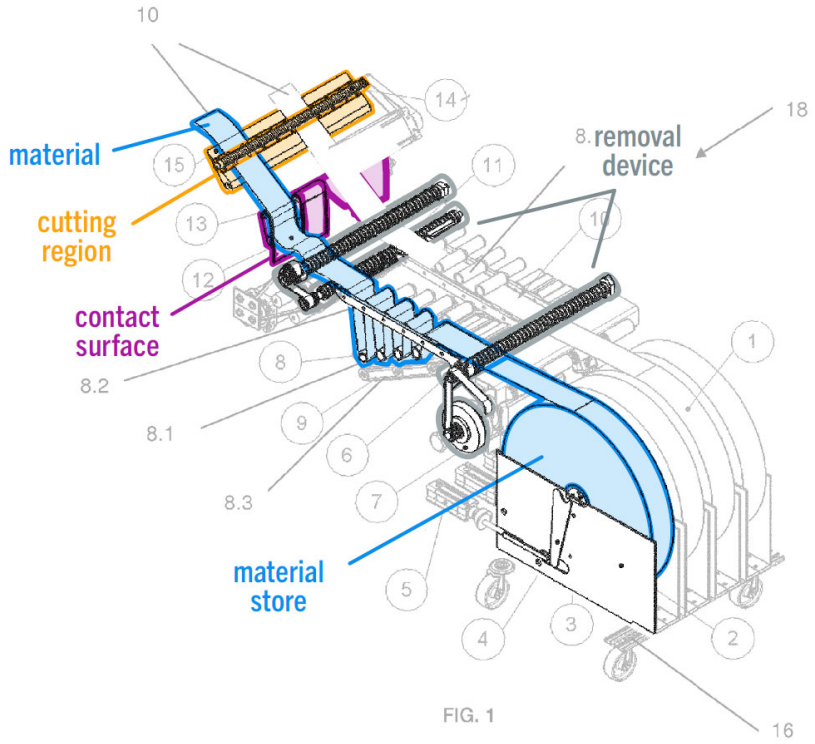
preamble. Müller, as combined with GEA438, would meet claim 17. (*See, e.g.*, EX1003, ¶¶278-285.)

To the extent the preamble is considered limiting, Müller discloses it. Müller, as combined with GEA438, would meet the preamble. (*See, e.g.*, EX1003, ¶¶278-281.)

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. (EX1003, ¶¶123-124.) Müller's apparatus for slicing is the "cutting device." (EX1003, ¶¶118-120.) Müller's products are "product" such as "food." (EX1003, ¶¶125-126.) Müller's product feed is a "drive that transports the product." (EX1003, ¶¶127-128.) Müller's tracks are "tracks." (EX1003, ¶¶129-130.) Müller's cutting region is the "cutting plane." (EX1003, ¶¶118-120.) Müller's blade is the "cutting knife." (EX1003, ¶¶121-122.) Müller's slices are "slices." (EX1003, ¶¶131-133.)

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. (EX1003, ¶¶111-112.) Müller's apparatus for provision is "system" **18**. (EX1003, ¶¶111-112.) Müller's material is "interleaver

strip" **10**. (EX1003, ¶¶113-114.) Müller's interleaved sheets are "interleaver." (EX1003, ¶¶115-117.)



EX1004, Fig. 1 (Petitioner annotations)

J. Dependent Claim 18

Claim 18 depends from claim 17, and further recites "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, ¶¶286-288.)

Müller discloses a common control device configured to coordinate the slicing of the product and the provision of the interleaved sheet material. Müller's control

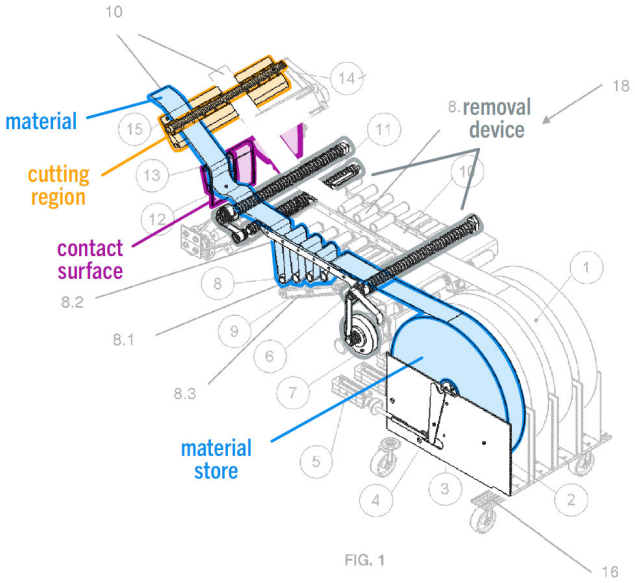
device is a "control system." (EX1003, ¶¶170-173.) For example, Müller discloses that "each reel can be driven individually, in order, for example, … to be suitable for the different cutting speed per track." (EX1003, ¶¶170-173.)

Further, a POSA would find such a control obvious based on the state of the art at the time of the invention. (EX1003, ¶¶207-209.)

Thus, Müller in combination with GEA438 would meet claim 18.

IX. GROUND 2: CLAIMS 1, 2, 4, 5, 7, 8, 10, 12, 17, AND 18 WOULD HAVE BEEN OBVIOUS OVER MÜLLER IN VIEW OF DEPOI.

Müller in combination with DePoi would disclose all elements of the challenged claims, as shown below in the following exemplary evidence chart. Using the teachings of DePoi's superior loop store and active vacuum brake in Müller's interleaver system would have been obvious in order to improve accuracy and reliability, for example as known in the art. The resulting combination would meet all elements of the challenged claims.



EX1004, Fig. 1 (Petitioner annotations).

'823 Patent Claim Language	**Exemplary Feature in Müller (EX1004)**	**Exemplary Feature in DePoi (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	
Removal Device	"Unreeling device" 18	
Loop Store	"Buffer" 12 for "loop"	"Feeder **16**"
Vacuum Brake		"Brake **28**"
Vacuum Chamber		"Vacuum box" **26**; Manifold **44**
Air permeable contact surface		"Vacuum slots **50**" in "deck section **40**"
Suction Device		"Vacuum generator **48**"
Control device	"control system"	"Controller **52**"
Device for determining a size of the loop	"control system" and "contacting sensor"	
Position Determination	"signal from contacting sensor"	

Müller and DePoi are analogous art to the ’823 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, ¶354.)

A. Claim 1

1. Preamble

To the extent the preamble is limiting, Müller discloses all the elements of the preamble for the reasons provided above in Section VIII.A.1. Müller, as combined with DePoi, would meet the preamble. (*See* EX1003, ¶361.)

2. Element 1.1

Müller, disclose a material store for the reasons provided above in Section VIII.A.2. Müller, as combined with DePoi, would meet this element. (*See* EX1003, ¶¶362-363.)

3. Element 1.2

Müller discloses the claimed “removal device for a removal of a material web from the material store” for the reasons provided above in Section VIII.A.3 Müller, as combined with DePoi, would meet this element. (*See* EX1003, ¶¶364-365.)

4. Element 1.3

Müller, as combined with DePoi, discloses the claimed “[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, the loop store having a brake for

the material web that actively increases the friction for the material web." (EX1003, ¶¶366-372.)

DePoi discloses "a loop store defining a space for the removed web to form a loop, the loop store located between the material store and the cutting region, the loop store having a brake for the material web that actively increases the friction for the material web." For example, DePoi teaches a "feeder **16**" between a "roll **14"** and "cutter **20**." (EX1003, ¶367.) The feeder 16 "generally comprises a first drive 24, a vacuum box 26, a brake 28, and a second drive 30." (EX1006, [0024].) A "loop **32**" is formed in the feeder. (EX1006, [0026], [0027].)

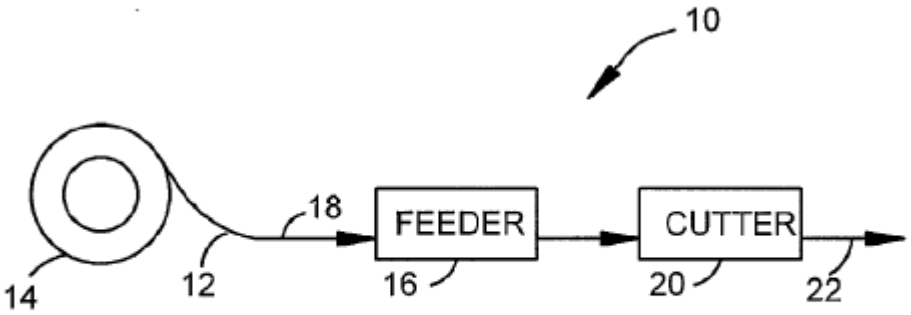


FIG.1

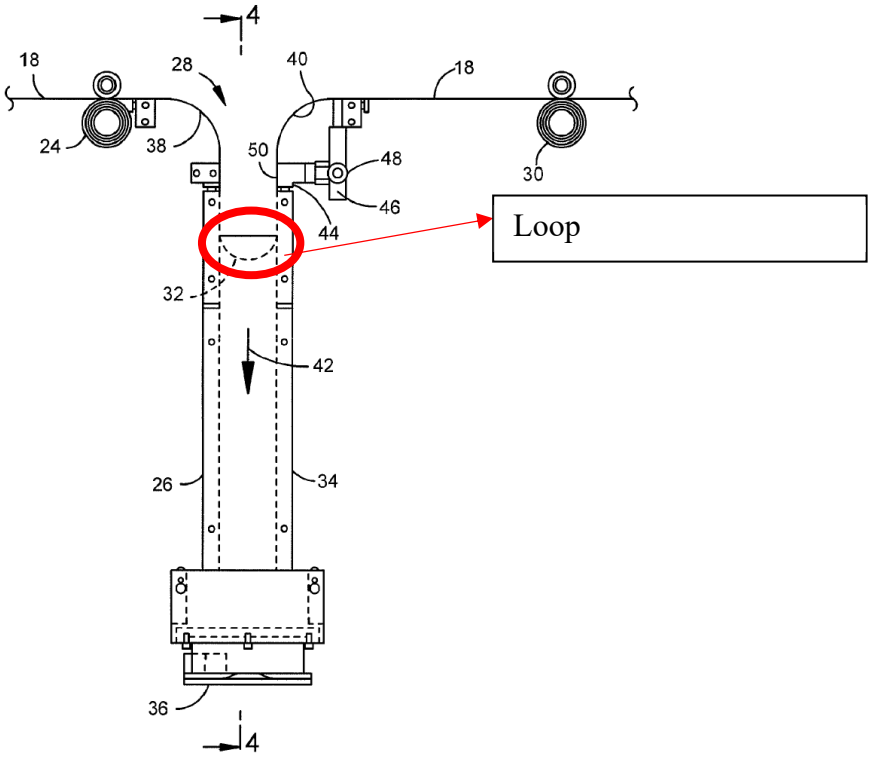


FIG.3

EX1006 Figs. 1, 3. (Fig. 3 "feeder **16**," i.e. loop store).

DePoi further discloses the loop store has an advantageous brake for the material web that actively increases the friction for the material web. (EX1003, ¶¶367-371.) The friction force generated by the vacuum brake that is within feeder 16 is applied to the moving web, as provided by brake 28. (EX1006, [0041].) As DePoi teaches: a generator "creates vacuum air flow through the slots **50**, thereby acquiring and creating a retarding friction force on the web **18**… the friction force is created between the web **18** and the deck section **40**." (EX1003, ¶369; EX1006 [0031]-[0032].)

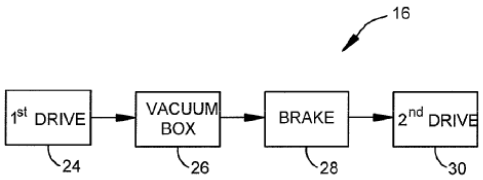


FIG.5

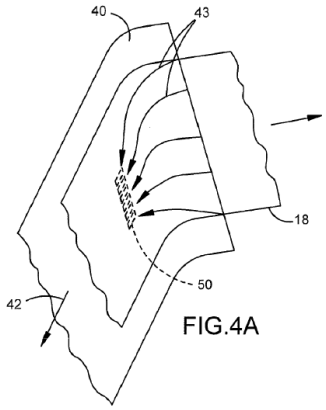
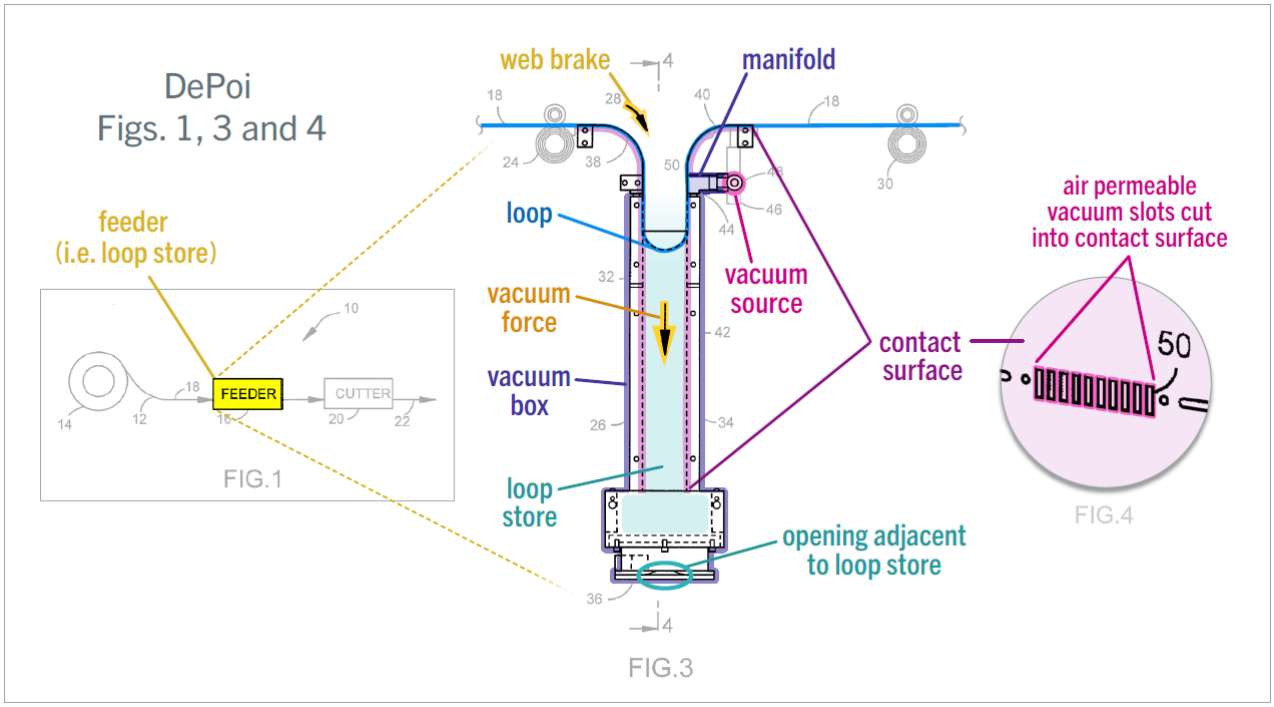


FIG.4A

EX1006 Fig. 5, 4A.

As further shown in Figure 3, the vacuum force **42** of brake **28** is within the loop store.



Likewise, as discussed in section VIII.A.4, Müller discloses aspects of this element.

Thus, Müller, as combined with DePoi, would meet this element.

5. Claim Element 1.4

Müller, as combined with DePoi, discloses the claimed element: "wherein the loop store comprises a contact surface for at least one region of the material loop at the outgoing side of the loop, wherein the contact surface belongs to the brake for the material web." (EX1003, ¶¶373-381.)

DePoi discloses "the loop store comprises a contact surface for at least one region of the material loop at the outgoing side of the loop, wherein the contact surface belongs to the brake for the material web," in the form of "deck section **40**" at the outgoing side of "feeder **16**", which contacts the web **18** on the outgoing side of the loop as shown in Fig. 3. (EX1003, ¶¶374-377.) For example, Depoi states "friction force is created between the web **18** and the deck section **40**." (EX1003, ¶377; EX1006, [0031].)

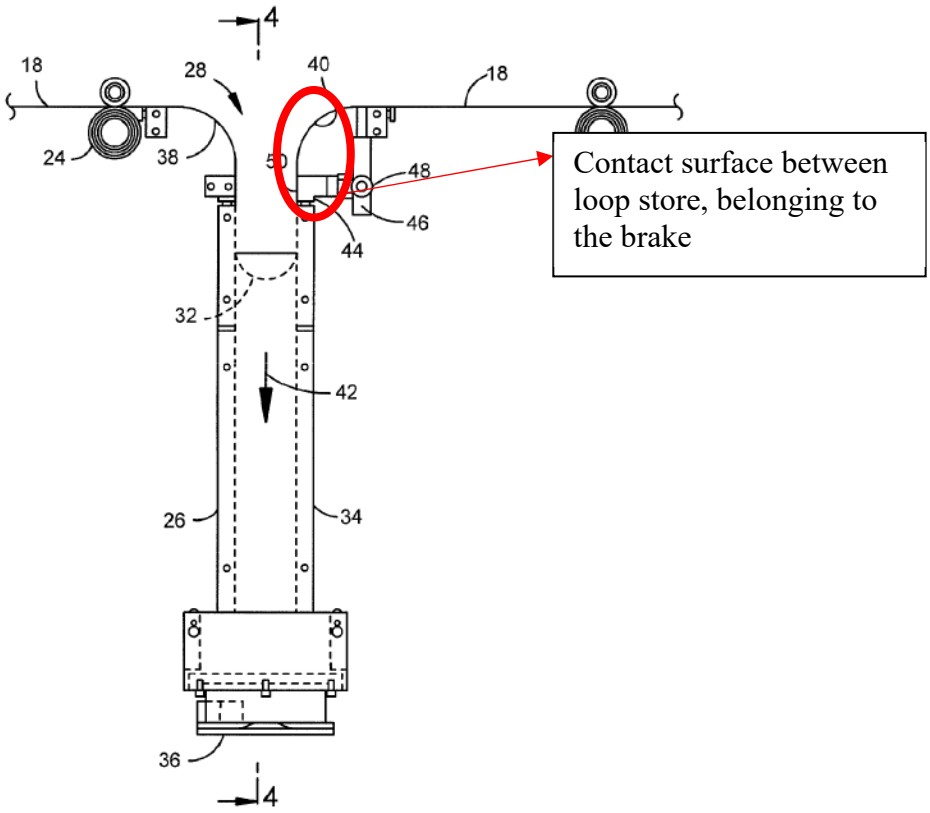


FIG.3

Ex. 1006 Fig. 3.

Thus, Müller in combination with DePoi would meet this element.

6. The combination of Müller and DePoi would have been obvious.

A POSA would have been motivated to combine the Müller interleaver system with an improved loop store, having a vacuum brake, to improve reliability, prevent web breakage, such as disclosed in DePoi. Further, a POSA would have expected success in combining the teachings of Müller and DePoi using industry-standard components and techniques. (EX1003, ¶¶323-324.)

a) Motivation to Combine

A POSA would have been motivated to improve Müller's buffer and contact sensor tension control features, for example, to prevent undesirable web breaks , as explained by DePoi. (EX1003, ¶¶325-334.)

As described above, Müller itself reflects both the importance of the buffer and the desire to improve its tension control and reliability: "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, at least somewhat." (EX1004, [0026].) Müller reflects the knowledge in the art that a POSA would want to prevent web tearing that could slow production and lead to unsightly food products, and that uneven feeding of web could lead to too-short or non-existent sheets of interleaver. (EX1003, ¶326; EX1022; EX1024; EX1023, 8:46-56.) Müller downplays its own buffer, however, and recognizes the reality that it would only help these known issues "at least somewhat." (EX1003, ¶328; EX1004, [0026].) Consequently, the POSA would have sought more specific ways to improve control and contact sensing in the buffer region.

A POSA would have appreciated that DePoi provided a superior loop store solution to Müller's stated control challenges. DePoi clearly would have motivated a POSA to use it to improve tension control because "web tension is an important factor in providing an accurate sheet length cut in a high speed web cutter."

(EX1006, [0002].) To optimally control the tension, DePoi teaches a vacuum brake "that can maintain the web tension of a sheet material web during rapid deceleration of the web without causing the web to break during web acceleration." (EX1006, [0003].) The brake "is adjustable to allow a substantially same friction force value to be applied to different compositions of the sheet material webs having different coefficients of friction." (EX1006 [0008].) In this way, the vacuum brake was "automatically adjusted to be a function of the sheet material coefficient of friction," thus preventing web breakage. (EX1003, ¶¶320-321, 398; EX1006, [0045].)

Depoi teaches that the purpose of this brake is to prevent web breaks and improve accuracy: "There is a desire to provide a sheet material feeder that can maintain the web tension of a sheet material web during rapid deceleration of the web without causing the web to break during web acceleration." (EX1006, [0045].) Depoi seeks to achieve "accurate sheet length cut." (*Id.*)

In addition to the specific motivations taught by Müller and DePoi, a POSA generally would have been aware of advantages to adding a vacuum brake to Müller. (EX1003, ¶¶335-350.) For example, a POSA would have understood that vacuum brakes are helpful to limit "the risk of uncontrolled paper supply, and therefore jamming and crumpling." (EX1017, [0008].) A POSA would have understood that "web tension is an important process parameter, [that] must not be allowed to vary

excessively." (EX1011, p. 17.) A POSA would understand that adding a vacuum brake would allow for greater control over the web tension. (EX1003, ¶¶335-350.)

In implementing the vacuum brake technique of DePoi, a POSA would have been motivated to include the brake at a contact surface at the outgoing side of the loop for several reasons. (EX1003, ¶358.) First, Müller already teaches a contact surface at that location. (EX1003, ¶358; EX1004, [0048].) Second, DePoi discloses using a vacuum brake with a contact surface immediately upstream of where the material is cut. (EX1003, ¶358; EX1006, Fig. 3.) A POSA would understand that providing tension control at this location would be beneficial, and it would be desirable to incorporate a vacuum brake at the outgoing side of the loop. (EX1003, ¶358.) DePoi explicitly teaches that "[the friction force at the contact surface] "is distributed along the length of the curved deck 40... [t]his supplemental force 43 during deceleration may eliminate wrinkling of the web 18 and mis-tracking of the web 18." (EX1006, [0031].)

In addition, a POSA would have been motivated to make the brake controllable by Müller's control device. (EX1003, ¶359.) Müller discloses a control device responsible for many control tasks, including sensing and controlling the buffer loop. (EX1003, ¶359; EX1004, [0027]; [0048]; [0049].) And DePoi discloses the benefits of controlling the vacuum brake in dependence on loop size. (EX1003, ¶359; EX1006, [0025]-[0027].) A POSA would also have known that central

machine controls, such as programmable logic controllers, were readily available and could control the functions of a slicing-and-interleaving machine, including setting a vacuum strength. (EX1003, ¶360.) Further, a POSA would have recognized that DePoi's techniques could be implemented even more reliably (and cost-efficiently) using commonly available vacuum brakes and machine controllers. (EX1003, ¶360.)

b) Expectation of Success

A POSA would have a reasonable expectation of success in making the combination of Müller's interleaver and DePoi's vacuum brake as discussed above. (EX1003, ¶¶355-360.)

At the time of the '823 patent, food slicing interleavers were a proven technology with commercial applications. (EX1022; EX1024; EX1003, ¶356.) A POSA would have understood that incorporating a vacuum brake, would leave the general (industry-proven) operation of the slicer and interleaver unchanged. (EX1003, ¶356.) Vacuum brakes were well known within the web handling arts. (EX1003, ¶357.) DePoi recognizes that maintaining web tension is especially important where a high speed apparatus is involved. (EX1006 [0002].) The components needed to create an active vacuum break were well-known mechanical and electronic components and would be within a POSA's skill level to use.

(EX1003, ¶357.) A POSA would have reasonably expected to succeed in incorporating them into an interleaver like Müller's. (*Id.*)

B. Dependent Claim 2

Claim 2 depends from claim 1 and further recites "the apparatus further comprising at least one vacuum chamber, the at least one vacuum chamber having at least one opening located adjacent a path of the loop." The combination of Müller with and DePoi would disclose this element. (EX1003, ¶¶382-387.) Müller in combination with DePoi discloses the apparatus in claim 1 for the reasons discussed in Section IX.A.

DePoi discloses "at least one vacuum chamber, the at least one vacuum chamber having at least one opening located adjacent a path of the loop," in the form of vacuum box **26**. (EX1003, ¶¶302-304.) Vacuum box **26** contains an opening for several fans **36** at its base. (EX1006 [0027].) The opening for fans 36, which is part of the vacuum chamber is located adjacent to the loop, as shown below. (EX1003, ¶¶384-387.) A second opening is located at the top of the vacuum chamber, for web to enter, and is adjacent the path of the loop.

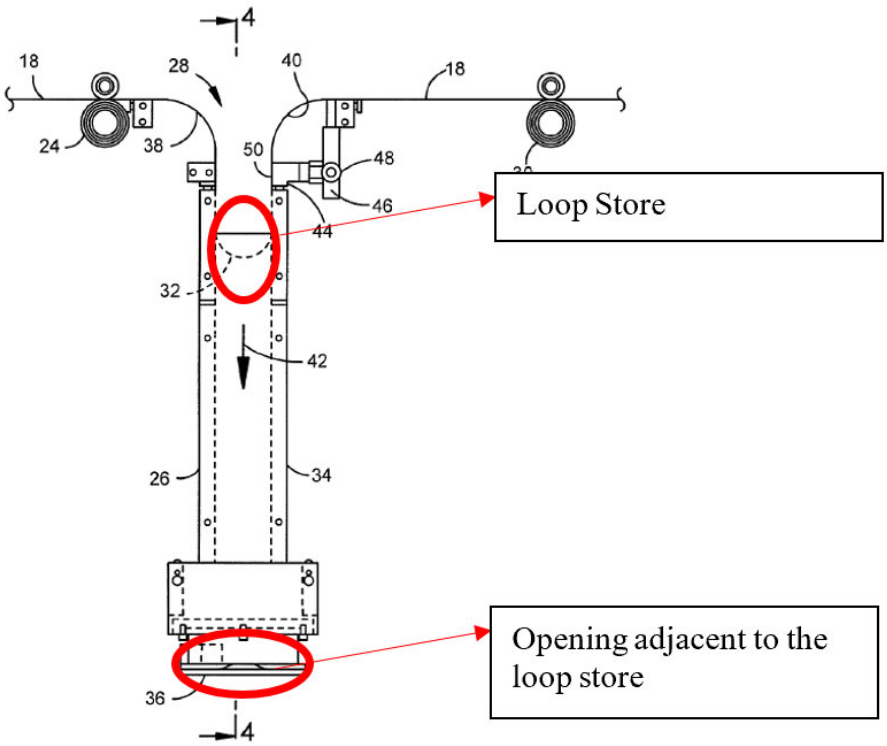


FIG.3

EX1006 Fig. 3.

In the alternative, a vacuum chamber is "brake manifold **44**" having "slots **50**" (i.e. openings adjacent the path of the loop" connected to "vacuum generator **48**." (EX1003, ¶386.)

Thus, Müller in combination with DePoi discloses the claimed element.

C. Dependent Claim 4

Claim 4 depends from claim 1 and further recites "wherein at least a portion of the contact surface of the brake is air permeable, and wherein the material web is drawn onto the air permeable portion so as to actively increase the friction for the

material web." The combination of Müller with DePoi would disclose this element. (EX1003, ¶¶388-390.) Müller in combination with DePoi discloses the apparatus in claim 1 for the reasons discussed in Section IX.A.

DePoi discloses "at least a portion of the contact surface of the brake is air permeable, and wherein the material web is drawn onto the air permeable portion so as to actively increase the friction for the web." DePoi's contact surface is "deck section **40**," and its air-permeable portion has "slots **50**." (EX1003, ¶389.) Brake **28** features the "a pneumatic manifold **44**, a pneumatic valve **46**, and a vacuum source **48**." (EX1006 [0029].)

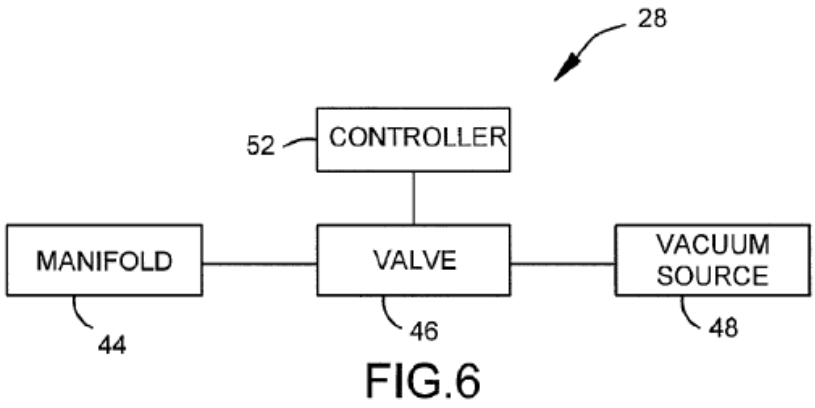
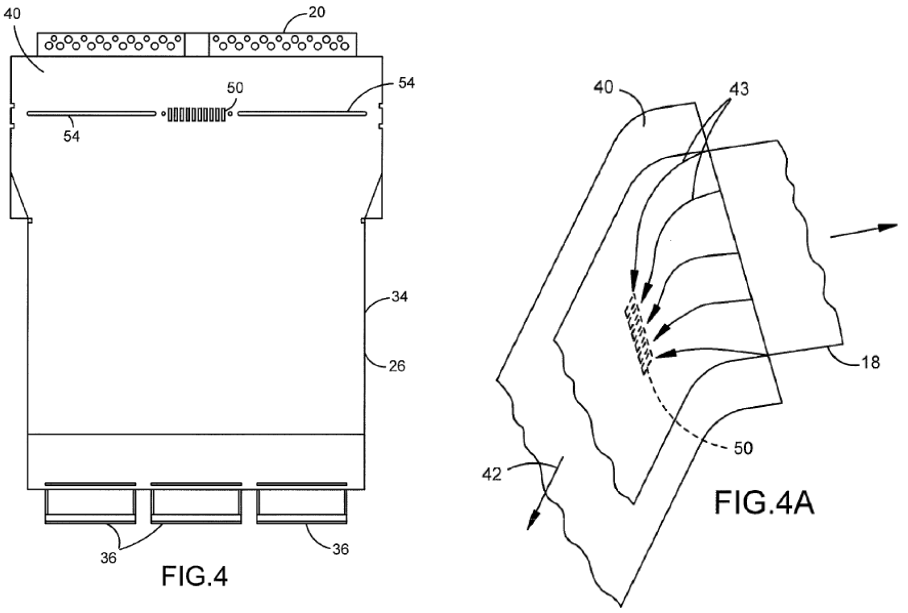


FIG.6

EX1006, Fig. 6.

Manifold **44**, which is part of brake **28**, features vacuum slots **50**, in "deck section **40**," which are air permeable in order to allow vacuum air to flow through, "thereby acquiring and creating a retarding friction force on the web **18**." (EX1003, ¶390; EX1006, [0030].) Such "retarding friction force" is an example of the material

web being drawn onto the air permeable portion of the brake, as the contact creates a "retarding" or resisting (i.e. friction) force on the web. (EX1003, ¶390.)



EX1006 Figs. 4, 4A.

Thus, Müller in combination with DePoi discloses the claimed element.

D. Dependent Claim 5

Claim 5 depends from claim 4 and further recites "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." The combination of Müller with DePoi would disclose this element. (EX1003, ¶¶391-394.) Müller in combination with DePoi discloses the apparatus in claim 4 for the reasons discussed in Section IX.C.

As discussed in Section IX.B, the combination of Müller with DePoi discloses a vacuum chamber in the form of DePoi's vacuum box **26.** (EX1003, ¶¶302-304.)

The air permeable portion of the contact surface in DePoi, deck section **40** with vacuum slots **50**, is "proximate to the exit from vacuum box 26," and bounds the box as shown below in Figure 3. (EX1006, [0029].) As discussed above, vacuum box 26 is an example of a vacuum chamber. (*See* Section IX.B; EX1003, ¶¶302-304.) Likewise, deck section **40** with vacuum slots **50** bounds manifold **44** which is connected to vacuum generator **48** and is (as discussed in Section IX.B) a second vacuum chamber.

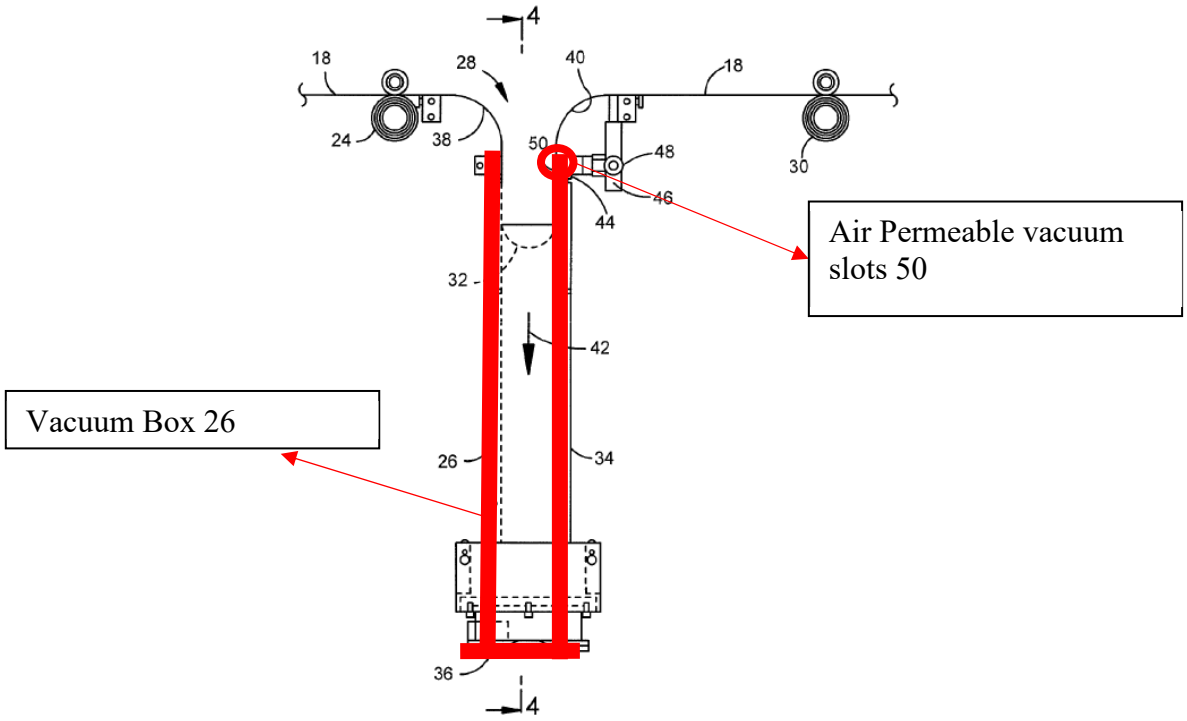


FIG.3

EX1006 Fig. 3.

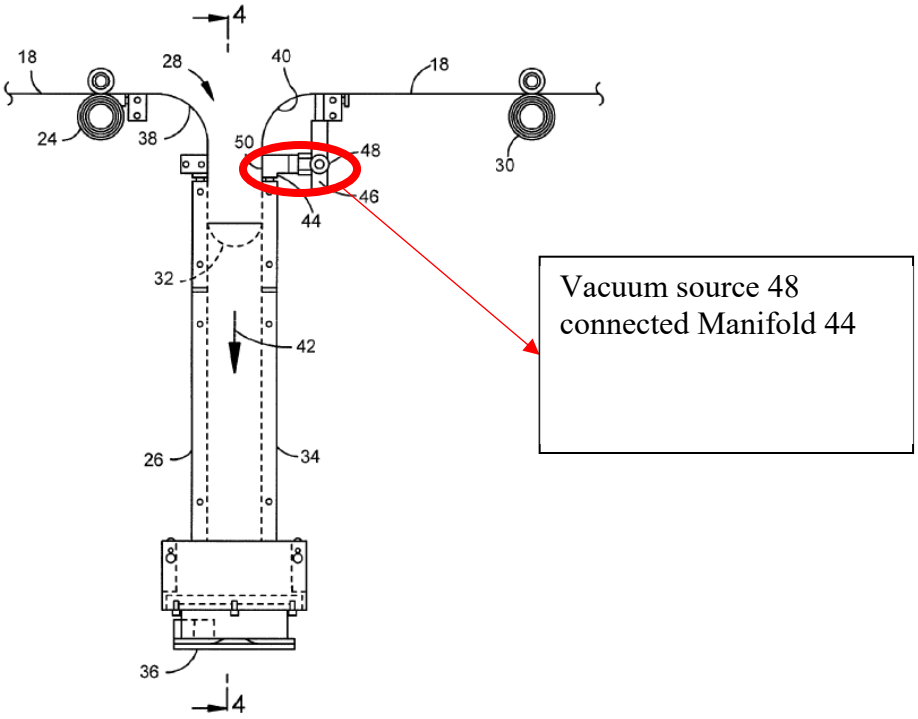


FIG.3

EX1006 Fig. 3.

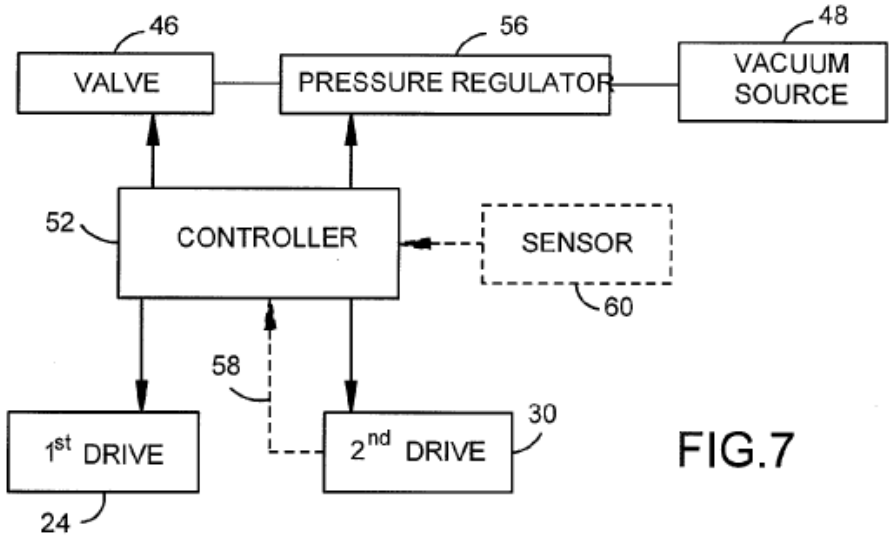
Thus, Müller in combination with DePoi discloses the claimed element.

E. Dependent Claim 7

Claim 7 depends from claim 4 and further recites "wherein the braking effect of the air permeable portion of the contact surface for the material web is settable and/or controllable by means of a suction device, by means of a blowing device or by means of an air circuit." Müller in combination with DePoi would disclose the apparatus in claim 4 for the reasons discussed in Section IX.C.

DePoi discloses " the braking effect of the air permeable portion of the contact surface for the material web is settable and/or controllable by means of a suction

device, by means of a blowing device or by means of an air circuit." (EX1003, ¶¶395-399.) DePoi's suction device is "vacuum source **48**." (EX1003, ¶306; EX1006, [0029].) DePoi teaches that in order "to provide automatic adjustment of the friction force generated by the brake in order to accommodate different webs having different frictional properties, a proportional air pressure regulator 56 may be introduced between the pressure source and the valve. In the illustrated embodiment, the pressure regulator 56 is connected to the controller 52." (EX1006 41.)



EX1006, Fig. 7.

Controller **52** is part of the brake 28, as shown in Figure 6.

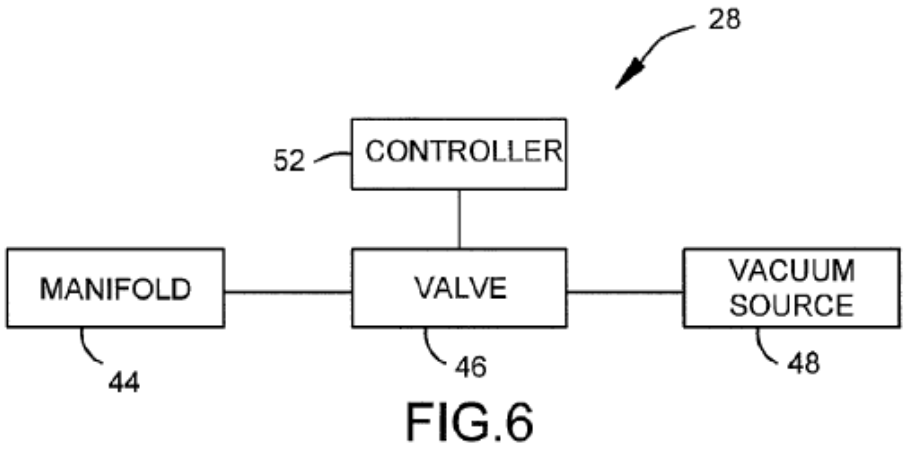


FIG.6

EX1006, Fig. 6.

Thus, Müller in combination with DePoi discloses the claimed element.

F. Dependent Claim 8

Claim 8 depends from claim 1 and further recites "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 in combination with DePoi would disclose the apparatus in claim 1 for the reasons discussed in Section IX.A.

Müller teaches "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 shown in Section VIII.F.

Further, when combining Müller with the vacuum brake technique of DePoi, a POSA would have been motivated to retain Müller's technique of sensing the loop length and controlling the feed of web entering the loop. (EX1003, ¶¶348-353.) A POSA would recognize that during the dynamic cutting and feeding process, the

loop might become too long, and could interfere with or be damaged by the bottom of the loop store. (EX1003, ¶327.) Conversely, the loop could become too short, creating an unintended high-tension zone and leading to slippage (and too-short interleaver sheets) or breakage. (EX1003, ¶326.) Significant teachings available to a POSA stress the need of loop detection and size determination in interleaving systems. (EX1003, ¶342-353.) For example, Pryor 531 teaches "a control system…wherein the braking force…is substantially continuous... within a desired range of positions." (EX1023, 10:44-51.) Jordan teaches that sensors prevent the loop from remain remaining too short or too long. (EX1025, 6:5-9.) And a POSA would expect success in making this combination, as the components needed to detect and determine loop length were simple mechanical and electronic components and would be within a POSA's skill level to use. (EX1003, ¶357.) There were many examples—including from other slicing-and-interleaving machines—that a POSA could have chosen from. (EX1003, ¶356; EX1023; EX1021; EX1007; EX1014; EX1025.) A POSA would have reasonably expected to succeed in incorporating them into an interleaver like Müller's using vacuum brake techniques like those taught in DePoi. (EX1003, ¶¶355-360.)

Thus, Müller in combination with DePoi would meet element 8.

G. Dependent Claim 10

Claim 10 depends from claim 1 and further recites "wherein the removal device is controllable such that the web length entering the loop store per time unit is continuously variable in dependence on the loop size." Müller in combination with DePoi would disclose the apparatus in claim 1 for the reasons discussed in Section IX.A.

Müller teaches "the removal device is controllable such that the web length entering the loop store per time unit is continuously variable in dependence on the loop size," as shown in section VIII.G.

Thus, Müller in combination with DePoi would meet element 10. (EX1003, ¶¶403-406.)

H. Dependent Claim 12

Claim 12 depends from claim 1 and further recites "wherein the result of a position determination of the material loop is provided as a measure for the loop size." Müller in combination with DePoi would disclose the apparatus in claim 1 for the reasons discussed in Section IX.A.

Müller teaches "the result of a position determination of the material loop is provided as a measure for the loop size," as shown in section VIII.H.

Thus, Müller in combination with DePoi discloses the claimed element. (EX1003, ¶¶407-409.)

I. Independent Claim 17

Claim 17 is identical to claim 1 other than it its preamble. As discussed above, claim 1 would have been obvious. And Müller discloses claim 17's preamble. Müller, as combined with DePoi, would meet claim 17. (*See, e.g.*, EX1003, ¶¶410-417.)

To the extent the preamble is considered limiting, Müller discloses it, as shown in section VIII.I. Müller, as combined with DePoi, would meet the preamble. (*See, e.g.*, EX1003, ¶¶410-413.)

J. Dependent Claim 18

Claim 18 depends from claim 17 and further recites "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, ¶¶418-420.)

Müller discloses a common control device 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, ¶¶170-173.) 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." (EX1003, ¶¶170-173.)

Further, a POSA would find such a control obvious based on the state of the art at the time of the invention. (EX1003, ¶¶351-353.)

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

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 '823 patent. Petitioner filed this petition within months of Patent Owner asserting the '823 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 four claims that are not asserted in the district court (in addition to six 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 (including neither the Ground 1 Müller and GEA438 combination, nor the Ground 2 Müller and DePoi combination).

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 '823 patent are obvious based on clear two-reference obviousness theories and several express reasons to combine that are taught in the prior art of each ground.

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 sole real party-in-interest.

B. Related Proceedings

The ’823 is subject to the following civil action: *Provisur Technologies, Inc. v. Weber, Inc. et al.*, Case No 5-21-cv-06113 (WDMO), where counterclaims were filed asserting the ‘823 patent on August 24, 2023. Provisur filed counterclaims on October 27, 2023, and Defendants have not yet answered Provisur’s counterclaims.

C. Grounds for Standing

Provisur certifies that the ’823 patent is eligible for IPR and that Provisur is not barred from requesting IPR of the ’823 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 claims 1, 2, 4, 5, 7, 8, 10, 12, 17 and 18 of the ’823 patent.

Respectfully submitted,

Dated: December 7, 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 12,476 words as counted by the word processing program used for its preparation (Microsoft Word 2013).

Respectfully submitted,

Dated: December 7, 2023

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

Counsel for Petitioner

CERTIFICATE OF SERVICE

I hereby certify that on December 7, 2023, I caused a true and correct copy of the foregoing materials:

- **PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 11,331,823**

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. 11,331,823

The above-captioned **PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 11,331,823** was also served via electronic mail in its entirety on:

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

Respectfully submitted,

Dated: December 7, 2023

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Counsel for Petitioner