

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NESPRESSO USA, INC.
Petitioner

v.

K-FEE SYSTEM GMBH
Patent Owner

IPR2024-00299

**CORRECTED PETITION FOR INTER PARTES REVIEW
OF U.S. PATENT NO. 11,554,910**

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PETITIONER'S EXHIBIT LIST

No.	Reference	Referred To As
1001	U.S. Patent No. 11,554,910	'910 Patent
1002	Prosecution History of U.S. Patent No. 11,554,910	'910 Patent File History
1003	Declaration of Michael Jobin	Jobin Decl.
1004	U.S. Patent Pub. US2010/0239734A1	Yoakim
1005	U.S. Patent Pub. US2013/0064937A1	Jarisch
1006	U.S. Patent Pub. US2013/0064929A1	Jarisch 929
1007	PCT Pub. WO2010/026053A1	Denisart
1008	U.S. Patent Pub. US2012/0269933A1	Rapparini
1009	U.S. Patent Pub. 2008/0105131	Castellani
1010	PCT Pub. WO2005/079638A1	Panesar
1011	U.S. Patent Pub. 2006/0233921	Mock
1012	National Coffee Association	NCA
1013	U.S. Patent Pub. 2002/0078831	Cai
1014	U.S. Patent No. 726,793	Bezzera
1015	U.S. Patent Pub. 2009/0007793	Glucksman
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1017	U.S. Patent No. 3,631,793	Bednartz
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1020	U.S. Patent No. 4,389,925	Piana

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1024	U.S. Patent Pub. 2004/0089158	Mahlich
1025	PCT Pub. WO 2010/034663	Ozanne
1026	ASM Handbook, Volume 14B: Metalworking: Sheet Forming, S.L. Semiatin, editor.	ASM Handbook
1027	https://www.italcoat.com/wp-content/uploads/2022/08/ITC-Coffee-Capusles.pdf	Italcoat
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1031	U.S. Patent No. 5,261,558	Claydon
1032	U.S. Patent No. 5,243,164	Erickson
1033	U.S. Patent No. 6,645,537	Sweeney
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1040	PCT Pub. WO2005/044067A1	Ruchonnet
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1043	U.S. Patent Pub. 2010/0078480A1	Aker
1044	U.S. Patent Pub. 2013/0099597	Perentes
1045	Official English translation of German application No. 102011010534.4	February 2011 Application
1046	Official English translation German application No. 102010031988.0	July 2010 Application
1047	Official English translation German application No. 102010044251.8	September 2010 Application
1048	<i>Nespresso USA, Inc. v. K-fee System GmbH</i> , Case No. 2:22-cv-09295; Dkt. 13.	First Amended Complaint
1049	<i>Nespresso USA, Inc. v. K-fee System GmbH</i> , Case No. 2:22-cv-09295 – Infringement Contentions (August 20, 2023)	Infringement Contentions
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1051	https://nestle-nespresso.com/our_products/product	Nespresso Vertuo System
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1053	Excerpt from Prosecution History of U.S. Appl. No. 16/438,818	'818 Appl.

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1055	Food Packaging and Shelf Life: A Practical Guide (2009), Chapter 11 – “Packaging and the Shelf Life of Coffee”	Food Packaging
1056	Illy, Andrea, and Rinantonio Viani, eds. <i>Espresso coffee: the science of quality</i> . Academic Press, 2005.	Espresso Coffee
1057	United States District Courts – National Judicial Caseload Profile (Central District of California), <i>available at</i> https://www.uscourts.gov/sites/default/files/data_tables/fcms_na_distprofile0630.2020.pdf	Central District of California Time to Trial Statistics
1058	Docket Navigator Time to Trial (Judge George H. Wu; Central District of California), <i>available at</i> https://search.docketnavigator.com/patent/binder/0/0?profileType=time_to_trial&profileId=0	Docket Navigator Time to Trial Statistics
1059	<i>Lateral</i> , Concise Oxford English Dictionary (11 th ed. Revised 2008).	Oxford Dictionary
1060	<i>Lateral</i> , Merriam-Webster’s Collegiate Dictionary (11 th ed. 2004).	Merriam-Webster Dictionary
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1063	Excerpt from Appl. No. 16/860,441: Oct. 13, 2020 Response to Office Action	'441 Appl. Response
1064	Excerpt from Appl. No. 16/538,752: Nov. 8, 2019 Office Action Rejection	752 Appl. First Rejection
1065	Excerpt from Appl. No. 16/538,752: Jan. 23, 2020 Response to Office Action	752 Appl. First Response
1066	Excerpt from Appl. No. 16/538,752: Jul. 27, 2020 Response to Office Action	752 Appl. Second Response

I. INTRODUCTION

Petitioner requests *inter partes* review and cancellation of claims 1-8 of U.S. Patent 11,554,910 (“the ’910 Patent”) (EX1001) because the claims recite nothing more than well-known coffee system features combined in ways that would have been obvious to a person of ordinary skill in the art (POSITA).

In 2013, K-fee System GmbH (“K-fee”) began filing claims in the U.S. directed to portion capsules with “identifiers” such as gearwheels and machine-readable imprints inside the capsule membrane. EX1050, 29, 173. These claims were rejected by the USPTO, and abandoned by K-fee. *Id.*, 239-250. At that time, K-fee’s applications had nothing to do with Nespresso’s coffee systems. But in 2014, Nespresso launched the Vertuo System. EX1051. Years later, K-fee began filing continuation applications attempting to reverse-engineer patent coverage over Nespresso’s machine and capsule. As a result, K-fee’s new claims are untethered from its original priority filings and unpatentable in view of the prior art, including Nespresso’s own patent publications.

To distract from the fact that its claim limitations are all found in the prior art, K-fee filed Information Disclosure Statements (“IDSs”) with hundreds of prior art references—even those with little relevance. As a result, numerous patents issued that would never have issued had the Examiners utilized the Yoakim reference and its combination with the references cited herein.

K-fee has filed continuation after continuation in an effort to fuel lawsuits against Nespresso. However, the resulting claims repeat the same limitations already being reviewed in IPR2022-01574, IPR2023-00502, and IPR2023-00485.

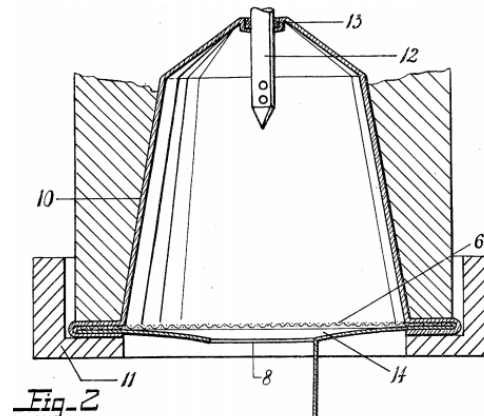
As shown in this Petition and the concurrently filed petitions on U.S. Patents 11,542,094, 11,465,829, 11,465,830, and 11,548,722, K-fee has continued its gamesmanship of seeking patents on anything it can in an attempt to cover Nespresso's products without being held to the limited disclosures of its priority applications. As with the three currently instituted IPRs, K-fee has not fixed its priority and patentability problems, and these patents should never have issued.

Accordingly, all claims are unpatentable over the prior art as presented in Ground 1.

II. TECHNOLOGY BACKGROUND

Coffee extraction has been known for centuries (EX1003, ¶¶53-54), and single-portion coffee offerings began to emerge in the 1960s. *Id.* ¶¶55-56. Single-serve beverage systems by Keurig, Nespresso, and others were widely available by 2010. *Id.* ¶57. The operation and components of these systems are well-known. *Id.* They include a brewing chamber to place the capsule, and piercing needles to allow water injection using a water pump and heater, which extracts beverage into a cup for drinking. *Id.* ¶¶58-59.

An example from 1979 is shown (right) using an aluminum capsule (10) including a bottom that is pierced by a needle (12) to inject high-pressure hot water, which exits through membrane (8). EX1018, 2:17-31, FIG2; EX1003, ¶60. By 2000, such systems



were computer controlled to manipulate sensors and water pumps to optimize the brewing process. EX1019, 2:21-3:11, FIG1, FIG4A; EX1003, ¶¶61-63.

A. Capsule Components and Manufacturing

Capsule design evolved to allow for different beverage sizes, and to withstand water pressure and temperature, with good barrier properties to protect coffee from moisture and oxygen. EX1003, ¶¶72-74; EX1018, 1:5-12; EX1015, [0014]-[0015]. Aluminum, manufactured by deep-drawing¹, has long been a common capsule material because of its exceptional barrier properties. EX1003, ¶¶75-76; EX1024, [0005]; EX1025, 1:7-23; EX1044, [0044]-[0045].

POSITAs knew to use barrier layers in coffee packaging to increase freshness and prevent moisture or aroma from escaping. EX1003, ¶83; EX1055, 205; EX1056,

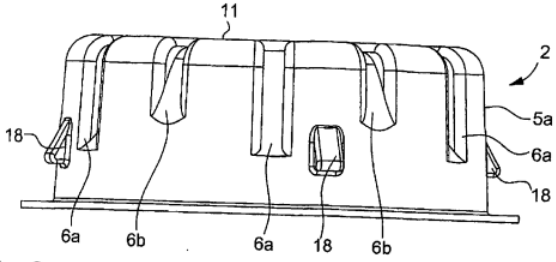
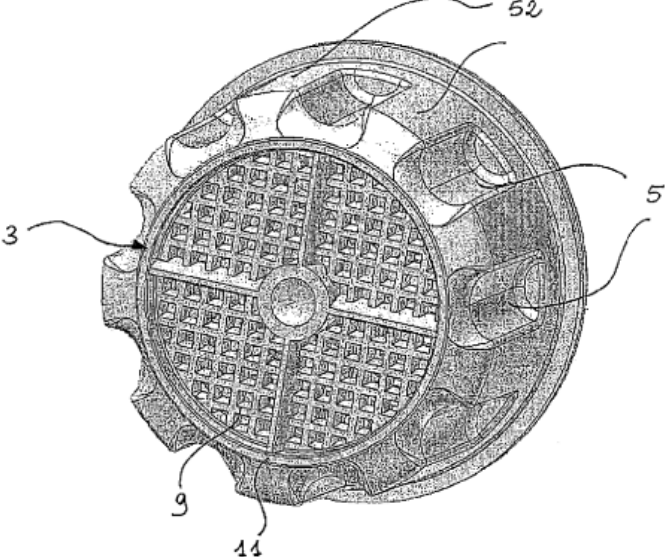
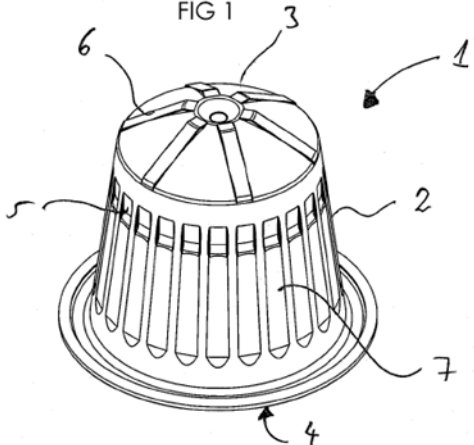
¹ Deep-drawing involves shaping sheets of aluminum with a die. EX1003, ¶¶77-79; EX1026, 323; EX1027; EX1028, [0004]. Thermoforming can be used for plastic. EX1003, ¶¶80-82; EX1029, 383-426.

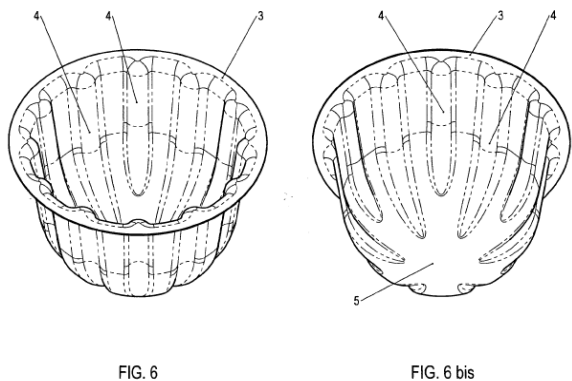
246. To extend shelf life, it was also known to package coffee using inert gasses and to pressurize the contents. EX1003, ¶84; EX1056, 248; EX1055, 208; EX1024, [0005]. Internal pressure also can occur if the coffee outgasses CO₂ over time. EX1003, ¶85; EX1056, 249-250. It is known that the capsule's membrane will bow outwardly when the internal pressure is higher than atmospheric pressure. EX1003, ¶¶85-86.

Because capsules endure physical stresses during brewing and handling, it also became common to use grooves/ribs to stiffen the capsule wall. EX1003, ¶¶87-89; EX1030, 1:14-21; EX1031, 1:27-37; EX1032, 5:10-25. Some capsule grooves have been used for purely ornamental purposes. EX1003, ¶87. The pervasiveness of such structures is shown below. EX1003, ¶¶90-94.

Date	Capsule	Description
2001		<p>“circumferentially spaced flutes which are strategically positioned to enhance resistance to buckling” EX1033, 2:20-25.²</p>

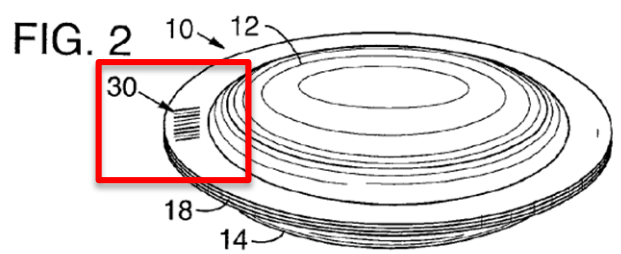
² All emphasis in this Petition is added.

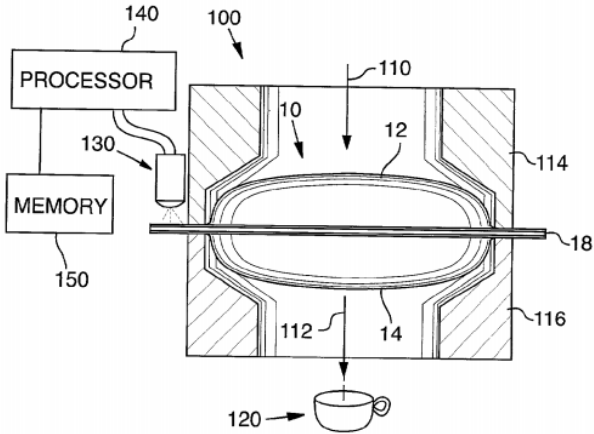
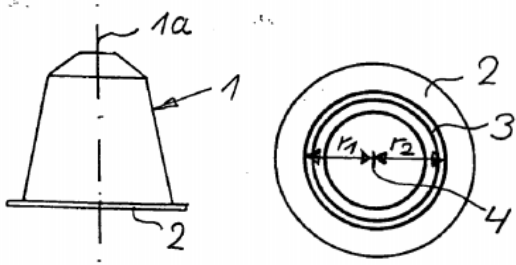
Date	Capsule	Description
2006	 <p>Fig.2</p>	<p>“A first series of ribs 6a plays a part in reinforcing the capsule 2.” EX1011, [0077].</p>
2007	 <p>FIG. 2</p>	<p>Indentations on the capsule wall and cavity. EX1034, [0009].</p>
2010	 <p>FIG 1</p>	<p>The grooves (7) are “side wall stiffening elements.” EX1035, [0027], [0037].</p>

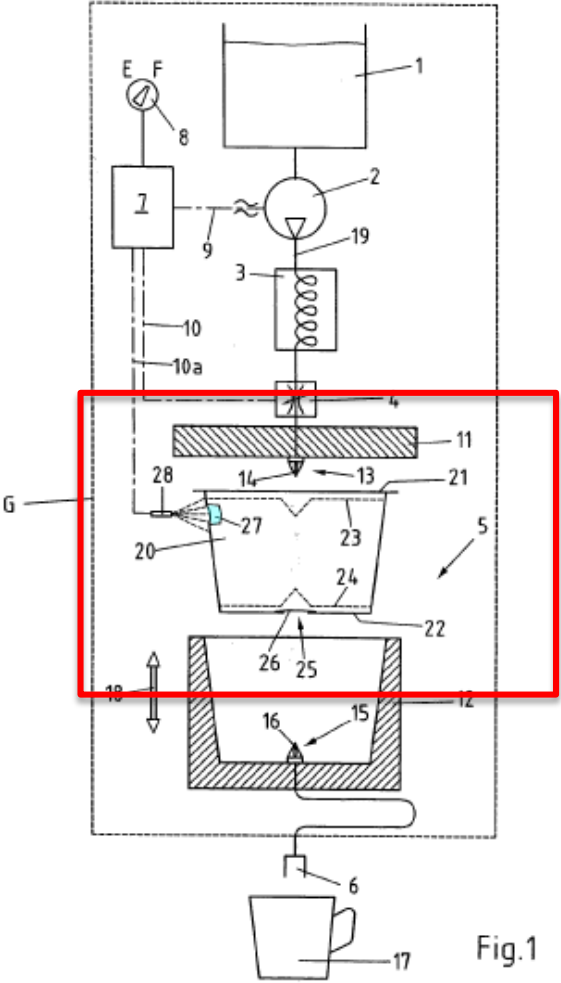
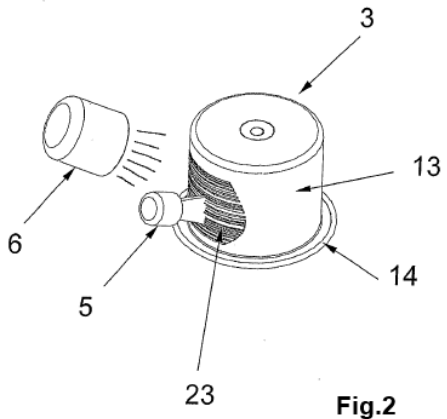
Date	Capsule	Description
2010	 <p>FIG. 6</p> <p>FIG. 6 bis</p>	<p>The capsule body has “longitudinal <i>stiffening ribs</i>” that “allow[] the <i>optimization of the stability</i> of the container.” EX1008, [0009].</p>

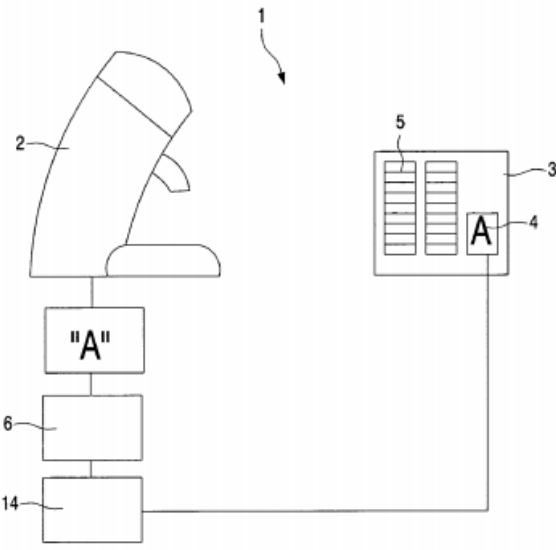
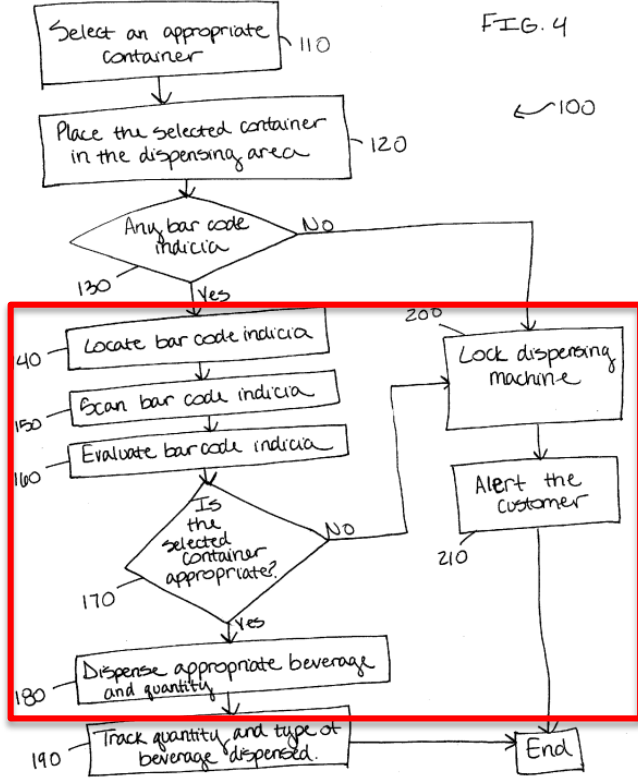
B. Single-Serve Capsule Identification

An increase in the number of capsules and brewing systems led to the development of capsule identification methods used to control brewing based on capsule type, or otherwise determine whether a capsule was suitable or safe for a given machine. EX1003, ¶96; EX1015, [0009], [0014]-[0015]. Since the early 1990s, it was known to use optical readers to read identifiers, such as a barcode, off the capsule surface and adjust brewing parameters accordingly. EX1003, ¶¶97-98; EX1036, 4:40-45, 5:1-50, 7:47-8:22. By 2010, using optical codes for capsule identification and machine control was highly developed (*id.* ¶¶99-110):

Date	Capsule/System	Description
2002	 <p>FIG. 2</p>	<p>Barcode used to identify the capsule, compare with system memory, and determine “the source of the packet <i>so as to prohibit use of counterfeit products</i>, or packets from unauthorized</p>

Date	Capsule/System	Description
	<p>FIG.3</p> 	<p>suppliers.” EX1037, [0037]; <i>see also</i> [0002], [0005], [0006], [0023]. [0028], [0032], [0033].</p>
2004	<p>Fig.1 Fig.1a</p> 	<p>Machine identifies capsule based on barcode and blocks operation if it does not match pre-programmed identifier. EX1024, [0014].</p>

Date	Capsule/System	Description
2005		<p>Coffee identification system with a barcode positioned on the capsule so the system can control extraction parameters, including the water pump. EX1039, [0019].</p>
2005		<p>System reads capsule barcode to “determine the origin of the containers used,” “encrypt/decrypt, analyze, compare, approve/reject and store information read on [the capsule]” and “<i>selectively start or not start a cycle of operations.</i>” EX1040, 2:3-19.</p>

Date	Capsule/System	Description
2007	 <p style="text-align: center;">Fig.1</p>	<p>System stores pre-programmed brewing parameters that are selected based on a capsule barcode. EX1038, [0005]-[0006], [0011]-[0012], [0025]-[0028].</p>
2009	 <p style="text-align: center;">FIG. 4</p>	<p>System checks coffee barcode and either locks machine or brews beverage based on barcode result. EX1042, [0054]-[0055].</p>

Date	Capsule/System	Description
2010	<p>FIG.1</p>	<p>System reads barcodes on the capsule and “compares the signal from the recognising means for the [barcodes] with pre-stored data in order to allow the machine to <i>proceed to activation only if it recognizes the [barcodes].</i>” EX1041, 9.</p>

POSITAs also understood how to position optical identifiers on capsules to ensure alignment with the reader and avoid code obstruction during reading. *Id.* ¶¶111-112.

POSITAs knew that repeating an optical identifier around the rim’s perimeter could increase the chances of a successful read. In 2002, Boyd disclosed using an identifier that “***may span its entire perimeter in . . . repetitive fashion.***” EX1003, ¶114; EX1037, [0029]. In 2008, Aker disclosed a capsule identifier “repetitively positioned” on the rim’s perimeter. EX1003, ¶113; EX1043, [0017], [0006].

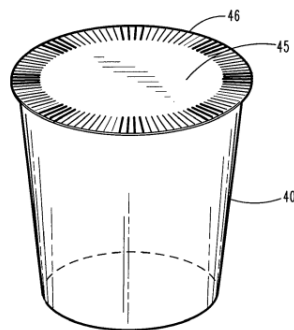


FIG. 2A

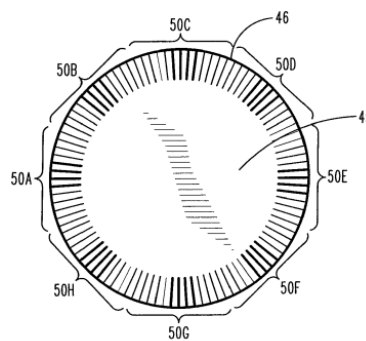


FIG. 2B

Aker identified the benefit to repetition because an optical reader “can read the information coded . . . even if the orientation of the product body is not fixed.” EX1043, [0022]. Jarisch 929 also disclosed repeating an optical code on the bottom of the flange, “in order to ensure reliable reading” because “the same sequence can be detected or read more than one time” during capsule rotation. EX1003, ¶115; EX1006, [0068].

POSITAs further understood that positioning an optical identifier away from the liquid inlet and outlet would increase readability of the code by shielding it from liquid and loose coffee grinds. EX1003, ¶116. For example, Panesar disclosed the benefits of positioning the barcode away from the liquid injection areas to avoid soiling or tearing the barcode. EX1003, ¶117; EX1010, 2:29-3:12, 19:22-20:13.

It was also known that positioning the code on the underside of the rim provided the advantage of increasing the readability of the code in the system. For example, Jarisch and Jarisch 929 disclosed a capsule with an optical code located on the underside of the flange—away from the membrane and injection site—to avoid

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soiling during the extraction process and improve the reliability of code reading.

EX1003, ¶¶118-121; EX1005, [0014], [0022]; EX1006, [0017]-[0018].

III. '910 PATENT

A. Overview

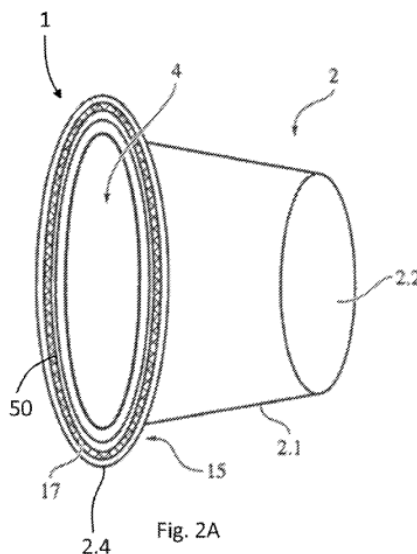
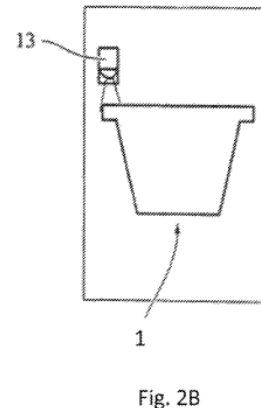
The '910 Patent is related to, and possesses highly-similar disclosure as, the '491, '430, and '923 Patents. IPR2022-01574, Paper 12, 3-5 (PTAB Apr. 14, 2023); IPR2023-00485, Paper 9, 3-6 (Sept. 13, 2023); IPR2023-00502, Paper 9, at 3-6 (PTAB Sept. 13, 2023). All disclose a single-serve beverage system that can identify capsules to determine whether they are suitable for use with the machine. EX1001, 1:6-7; 3:20-27; EX1003, ¶¶122-123. The '910 Patent notes a problem that certain capsules may end up being used in a different manufacturer's brewing system, even though such capsules are not designed for that system. EX1003, ¶123; EX1001, 1:16-21. The disclosed solution is a capsule that is only suitable for a specific coffee machine by providing an "identifier" on the capsule—allowing the system to identify whether or not a capsule is "suitable for use." EX1003, ¶124; EX 1001, 1:22-24, 1:28-34, 1:60-65.

The capsule comprises a base element with a cavity that contains raw beverage material, *e.g.*, ground coffee, and a lid that seals. EX1001, 1:11-14; EX1003, ¶122.

The specification describes sensors/detectors to (i) recognize an "identifier" (*e.g.*, a barcode, recesses and bulges, electrically conductive sections, etc.), and (ii)

impact whether and how the machine operates. EX1001, 2:8-14, 2:26-34, 2:46-49, 3:1-6, 3:7-11, 8:34-37, 8:43-45, 8:61-65, 9:16-20; EX1003, ¶¶124-125.

FIG2 discloses a capsule with a barcode (50) on the top surface of the capsule flange (17). Although it states that “the barcode alternatively can be attached to the base element’s edge region being averted from the membrane,” it does not provide reason to do so, especially in view of



the location of detection (13) in FIG2B. EX1001, 8:50-52; EX1003, ¶126.

B. Prosecution History

U.S. Patent Application No. 15/646,980 was filed on July 11, 2017. It claims priority to numerous continuations, and to PCT/EP2011/003677, filed on July 22, 2011, which improperly claims priority to three foreign applications discussed in Section VII.E. EX1001; EX1003, ¶¶129-130. However, K-fee’s prosecution of the ’980 Application claims was calculated to avoid the Office’s evaluation against the relevant Nespresso prior art.

The application was originally filed with claims directed to a capsule for making a beverage with a **barcode** on the **peripheral region** of the base element

directed away from the membrane. EX1002, 43-44; EX1003, ¶131. After a Restriction (EX1002, 103) and Response (*id.*, 111), the Examiner issued a Non-Final Rejection. *Id.*, 127.

In a February 26, 2019 Interview, the Examiner discussed the barcode location on the bottom of the flange, and mentioned that Jarisch (EX1005) teaches an identifier on the bottom of the flange, but noted that it was unclear if Jarisch was prior art based on K-fee's priority claims. EX1002, 171. Applicant filed an Office Action Response on March 27, 2019, amended the claims, and stated that Jarisch was ***not prior art.*** *Id.*, 202. In response, the Examiner issued a Notice of Allowance, claiming that the ***prior art*** does not teach "an identifier as a barcode provided on the bottom side of the flange, extending around an entire circumference of the flange opposite the top side flange to which the membrane is fastened." *Id.*, 225.

However, on July 30, 2019, the '980 Application was ***withdrawn*** from issuance based on a Suggestion for Interference filed based on Jarisch. EX1002, 320. The Examiner then rejected the claims over Jarisch and other references. *Id.*, 329. ***Instead of substantively responding to Jarisch rejection, Applicant filed a Notice of Appeal to delay, which it never ultimately pursued.*** *Id.*, 355. Then, Applicant filed numerous other applications (e.g., 16/860,432; 16/860,441) directed to similar subject matter that had been rejected.

At the end of the appeal period, Applicant instead filed a Request for

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Continued Examination (RCE) that heavily amended the claims to change their scope—removing the “barcode under the flange” language that was rejected over *Jarisch*. EX1002, 417. Rather than substantively address *Jarisch*, Applicant noted that “the alleged obviousness rejection of these claims is moot.” *Id.*, 430.

Then, after almost a year’s worth of rejections (EX1002, 460, 493, 506), Applicant filed another RCE ***that added back limitations broader than what had been rejected over Jarisch—an identifier with a plurality of reflective zones located on the bottom of the flange.*** *Id.*, 570. This resulted in a Notice of Allowance. *Id.*, 593.

On October 8, 2021, Applicant filed yet another RCE, noting that it “wishes to avoid the burden to itself ... of a potential adversarial proceeding based upon the prior request for interference filed against this application” (EX1002, 637), adding further broad claim limitations (*id.*, 639), ***and disputing that Jarisch was prior art*** (while also attempting to distinguish *Jarisch* based on limitations like a barrier sheet, cover configuration, and capsule geometrics) (*id.*, 645). This led to a Notice of Allowance on July 13, 2022, which claimed that the ***prior art*** did not teach “an individualization identifier capable of being detected by a sensor/detection system said identifier located on a bottom surface of a portion capsule flange.” *Id.*, 735.

The ’910 Patent issued on January 17, 2023. EX1002, 867. ***Critically, the Examiner never received the April 14, 2023 Institution Decisions of the ’491,***

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'430, and '923 Patent IPRs discrediting K-fee's priority arguments and crediting the references combined in this Petition.

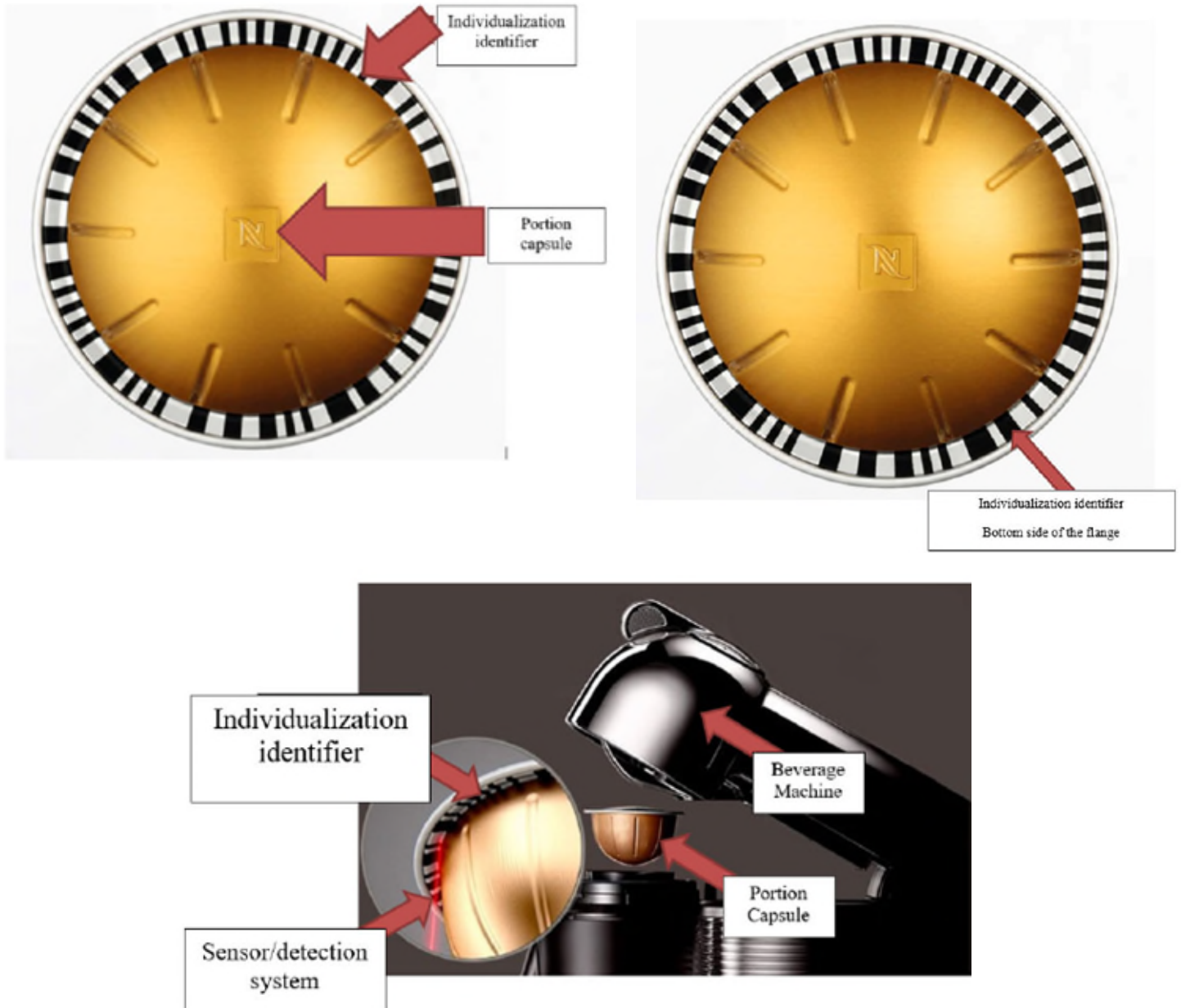
IV. POSITA

A POSITA, for purposes of this Petition only: a bachelor's degree in engineering plus five years of experience in design of mechanical beverage systems, or similar products, and experience with sensors for recognizing an identifier. EX1003, ¶40. IPR2022-01574, Paper 12, 15.

V. CLAIM CONSTRUCTION

Petitioner herein applies, for purposes of this Petition, the apparent interpretations that K-fee offered in its infringement contentions (EX1049). *Dish Network L.L.C. v. TQ Delta LLC*, IPR2016-01470, Paper 14, 6-7 (Feb. 9, 2017).

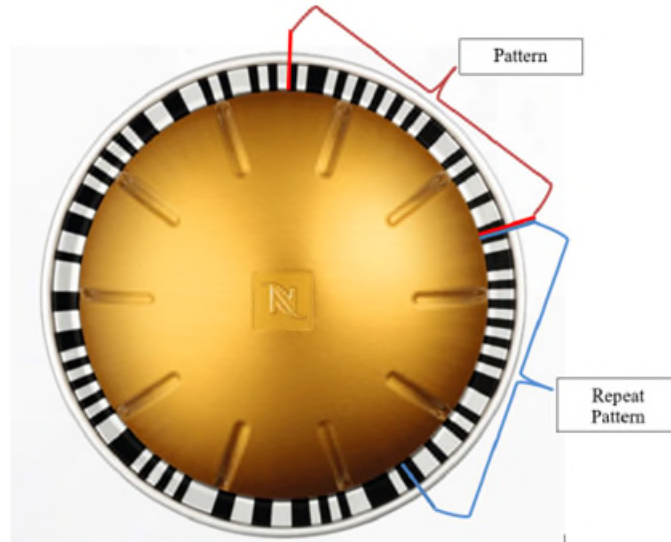
For example, K-fee asserts that the limitations “the individualization identifier is located on the bottom side of the flange,” are met by the following product:



EX1049, 428-429, 440.

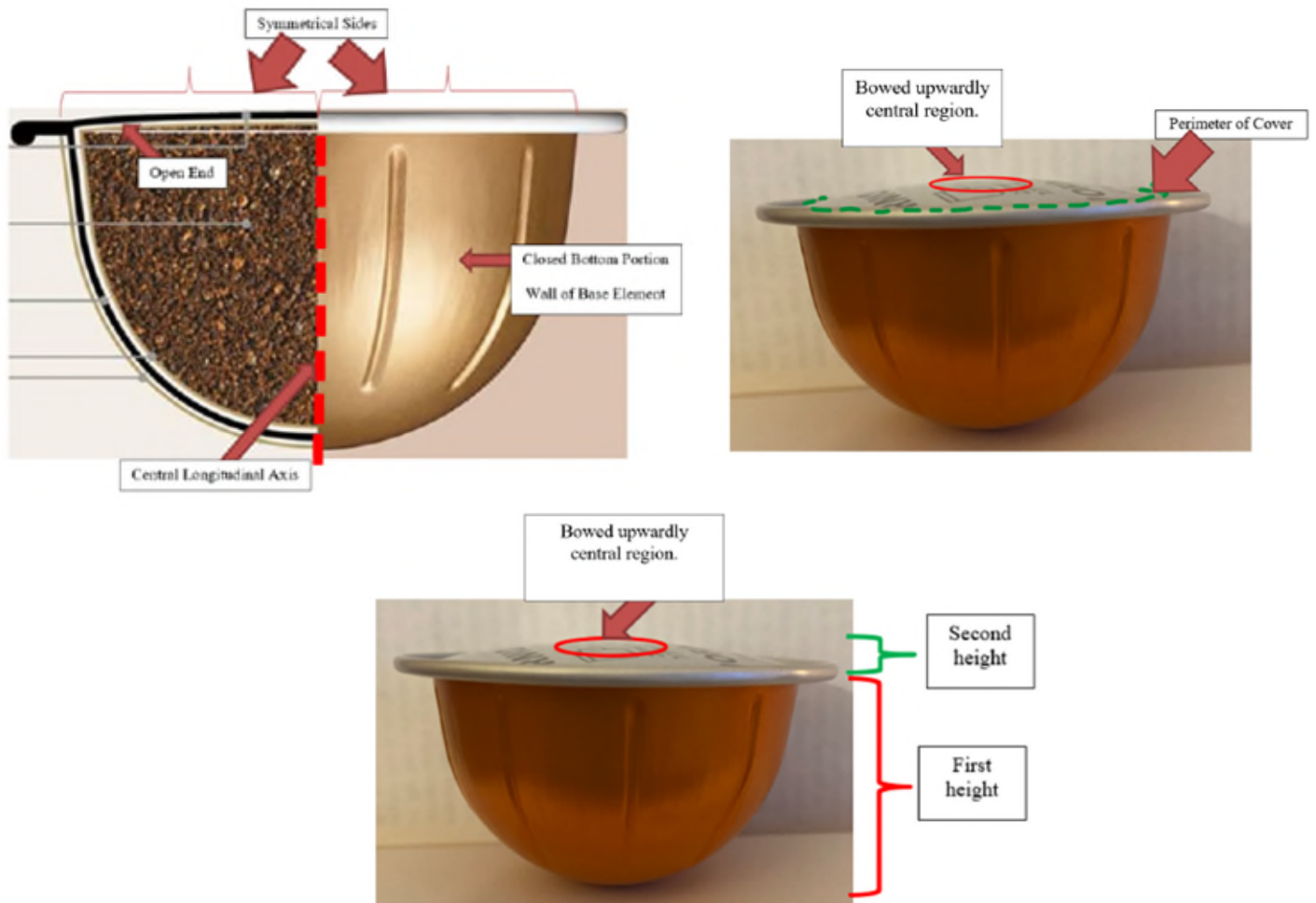
For the limitation “an optically detectable, machine readable, repeat pattern,”

K-fee asserts that the following meets the limitation:



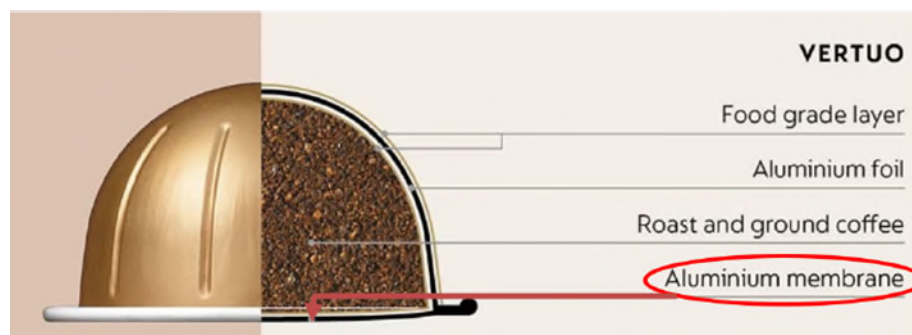
EX1049, 460.

K-fee asserts that the below product includes a “wall [that] is rotationally symmetrical” and a “cover [that] is bowed upwardly to a second height at the central region relative to the perimeter”:



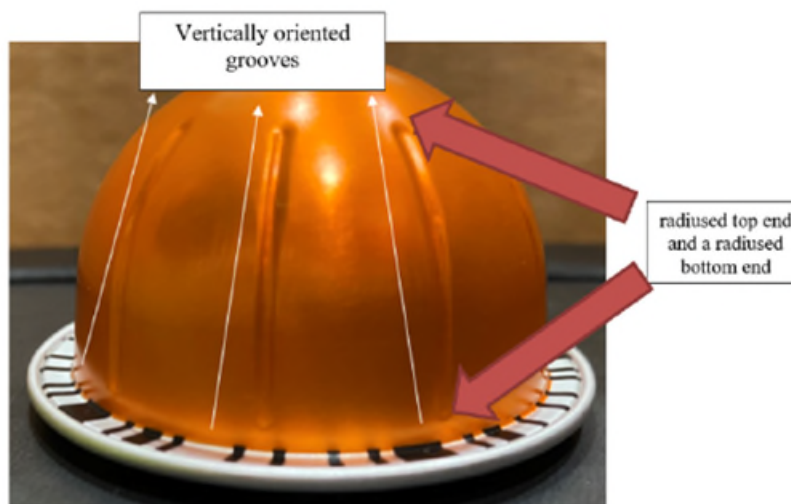
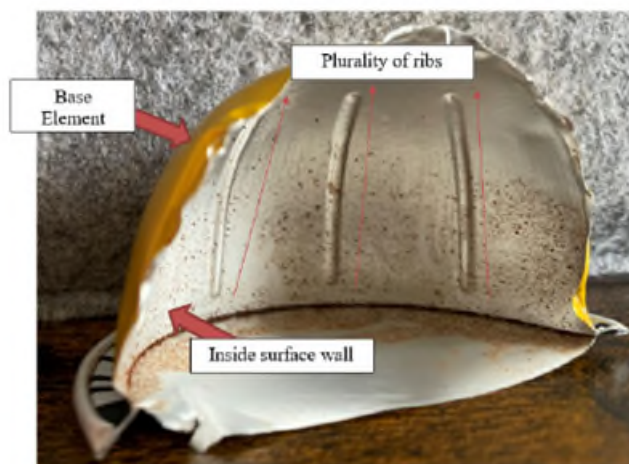
EX1049, 435, 447-448.

K-fee also asserts that an aluminum capsule constitutes an “individualization identifier [that is] electrically conductive under Judge Wu’s construction:



EX1049, 474; EX1053.

K-fee further asserts that the below product includes “a plurality of vertically oriented grooves arranged on the outside surface of the wall, the plurality of vertically oriented grooves each have a radiused top end and a radiused bottom end and are spaced a distance between the flange and the closed bottom” and having “a plurality of vertically oriented ribs arranged on the inside surface of the wall”:



EX1049, 441, 443.

In district court, Nespresso has proposed that “identifier” be construed as “a feature that individualizes the portion capsule” and “individualize” be construed as “to determine whether the portion capsule is suitable for use with the beverage machine such that the use of unsuitable capsules is prevented.” K-fee has proposed “plain and ordinary meaning.” As explained below, the prior art discloses and/or renders obvious this limitation under either construction.

Petitioner submits that, for this proceeding, no claim terms require formal construction. EX1003, ¶¶153-156. Prior claim construction of related patents does

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not impact claim construction here. EX1052.

VI. GROUNDS

Ground	Claims	Statutory Basis
1	1-8	35 U.S.C. §103 over US2010/0239734 (Yoakim) in view of US2013/0064929 (Jarisch 929) in view of US2012/0269933 (Rapparini) in further view of WO2010/099806 (Rossi).

VII. PRIOR ART

A. Yoakim

Yoakim (filed May 7, 2010) is prior art at least under pre-AIA 35 U.S.C. §102(e). EX1003, ¶201. Yoakim discloses a centrifugal beverage system with a capsule, brewing device, and method for preparing a liquid beverage, *e.g.*, coffee. EX1004, [0014]; EX1003, ¶202. The brewing device includes a water heater, pump, barcode reader, and control unit. EX1004, [0180], [0182]; EX1003, ¶¶202-203. Yoakim's capsule has a flange that is sealed with a membrane lid, and includes a barrier layer that prevents moisture or aroma from escaping the capsule. EX1004, [0014], [0121], [0128]-[0129], [0197], [0414]; EX1003, ¶204. The device pierces the membrane with needles, allowing for capsule rotation, injection of water, and a path for coffee to exit the capsule. EX1004, [0186]; EX1003, ¶203.

The object is to improve control of brewing parameters to provide a high-quality, customized beverage brewing experience. EX1004, [0010]-[0011]. Yoakim achieved this through a capsule recognition system that uses an “identification

means” to automatically adjust various brewing parameters. EX1004, [0192], [0477]. The brewing parameters are recognized through an optical code such as a barcode. EX1004, [0496], [0525], FIG61-62; EX1003, ¶205.

B. Jarisch 929

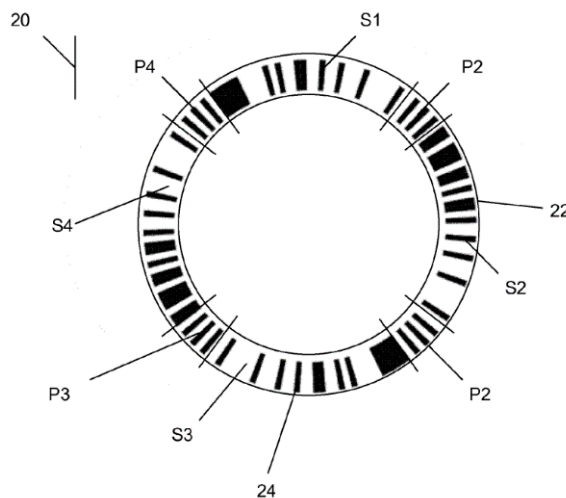
Jarisch 929 (filed May 12, 2011) is prior art under at least pre-AIA 35 U.S.C. §102(e) to Patent Owner’s PCT filing date, which is the earliest date the ’910 Patent claims are possibly entitled to (Section VII.E). EX1003, ¶206. Jarisch 929 discloses an improved way to position an optical code on a capsule, in order to improve readability and retrieval of information about the capsule. EX1006, [0001], [0003], [0012], [0068]; EX1003, ¶207.

Jarisch 929 discloses that its capsule identification may be used by a centrifugal brewing system, such as Denisart (EX1007), which includes many similar features to Yoakim, including a capsule holder, a liquid supply, a water heater and pump, and computer processor with a control unit. EX1006, [0048]; EX1003, ¶207. Like Yoakim, Denisart discloses a system controlled based on reading the capsule’s code. EX1007, 5:19-22.

Jarisch 929 discloses positioning the optical code on the bottom of the capsule flange in order to provide a location that is “particularly advantageous since they offer both a large area for the symbols to be disposed and is less prone to damages caused by the processing module and in particular by the pyramidal plate, and to

ingredients projections,” thus improving “the amount of coded information and the reliability of the readings.” EX1006, [0017], [0011], [0014], [0018]-[0019], [0069], [0090]; EX1003, ¶¶208-209.

Jarisch 929 further discloses advantages to repeating the optical code around the circumference of the bottom of the flange (FIG2, right). *Id.*, [0068]; EX1003, ¶210.



C. Rapparini

Rapparini (filed October 19, 2010) is prior art under pre-AIA 35 U.S.C. §102(e) to K-fee’s PCT filing date. Rapparini discloses a portion capsule that holds substances for preparing beverages, *e.g.*, coffee. EX1008, [0007]-[0008]; EX1003, ¶211. Rapparini’s capsule (right) comprises an annular rim (3) and a cup-shaped body with a series of longitudinal stiffening ribs (4). EX1008, [0009]-[0011]; EX1003, ¶212.

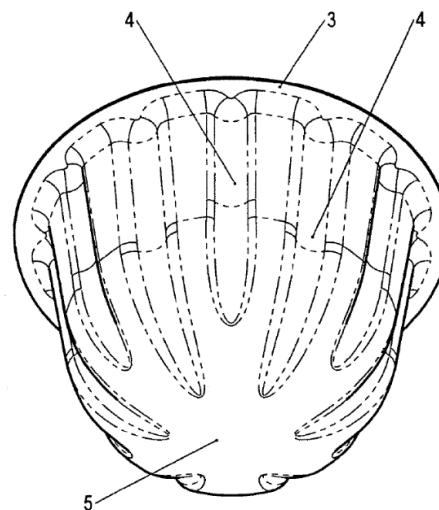


FIG. 6 bis

Rapparini improves upon existing containers by including longitudinal grooves and ribs along the inner and outer

surface of the capsule body, which allow for optimization of system stability and rigidity. EX1008, [0009]-[0011], FIG6, FIG6bis; EX1003, ¶212. Rapparini discloses that its invention is applicable to containers made of several kinds of materials, and across varying shapes. EX1008, [0067]. Rapparini further discloses that the containers can be employed in domestic automatic espresso machines. EX1003, ¶¶213-214.

D. Rossi

Rossi (filed March 6, 2009) is prior art under at least pre-AIA 35 U.S.C. § 102(e). Rossi is directed to an edible-product making machine that uses single-use load elements (or capsules) containing water-soluble substances like coffee. EX1041, 3. The capsule is placed inside the machine, pierced to allow water to enter, and the contents are brewed to create the edible product or beverage. *Id.* The brewing parameters, such as the amount of water, temperature, pressure, and time required, vary based on the desired product. *Id.*, 3-4; EX1003, ¶215.

Rossi explains that the user must know the capsule details in order to produce a quality beverage, and prevent “potentially selecting the wrong operating conditions for the desired quality of product, or even producing the wrong product.” EX1041, 4; EX1003, ¶216. Rossi acknowledges that “[u]se of an incorrect load element may cause the machine to malfunction and can prejudice the safety and integrity of the machine and [] may harm the user.” *Id.*, 5.

Rossi proposes to solve this problem by “providing a safe and simple system and process” for ensuring the capsule used is suitable for the system. *Id.*, 5; EX1003, ¶217. Rossi discloses a multi-step process that includes (i) recognizing a code on the capsule, and (ii) validating the capsule. *Id.*, 11-12. This is typically accomplished through barcodes or other optical codes on the capsule. *Id.*, 11. The machine will not begin the brewing process unless the capsule identifier is both recognized and validated. *Id.*, 6; EX1003, ¶217.

E. K-fee’s Priority Documents Do Not Support the Claims

The earliest possible priority date for the ’910 Patent is the date of its PCT application filed on July 22, 2011—not its foreign applications.³ EX1003, ¶¶157-159. The ’910 Patent incorrectly claims priority to three foreign applications:

Application	Filed	Focus
102011010534.4 (EX1045)	2/7/2011	Mechanical improvements to the capsule/cavity wall
102010031988.0 (EX1046)	7/22/2010	Identifiers/preventing unauthorized use
102010044251.8 (EX1047)	9/2/2010	Identifiers/preventing unauthorized use

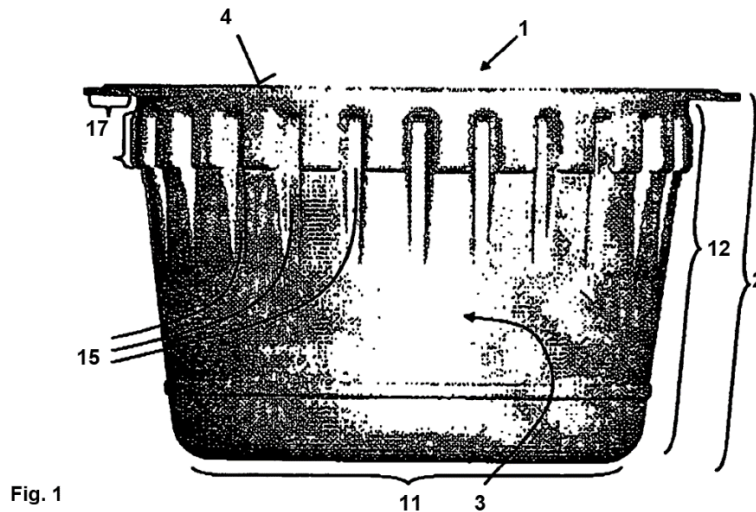
No single foreign application discloses each and every feature of the ’910

³ Petitioner does not concede that the July 22, 2011 PCT or any later continuations provide written description support for the claims, and reserves all rights to challenge such support.

Patent claims—in particular, an “individualization identifier [that] is located on the bottom side of the flange[,]” combined with “a plurality of vertically oriented grooves arranged on the outside surface of the wall,” and “a plurality of vertically oriented ribs arranged on the inside surface of the wall.” EX1003, ¶159. Because K-fee cannot combine multiple discrete applications for written description support, it cannot establish priority from any of those applications. *Studiengesellschaft Kohle MBH v. Shell Oil Co.*, 112 F.3d 1561, 1562 (Fed. Cir. 1997).

1. No Single Foreign Application Discloses the Claims

The February 2011 Application is the only priority application disclosing vertical grooves and ribs on the capsule wall, but does not disclose an optically detectable repeat pattern at all, let alone one located on the bottom side of the capsule flange. EX1003, ¶161. Nor does it disclose a barcode, or a base element that is deep drawn and made of metal. EX1045, 1:25-32, 2:6-12, 2:14-17, 2:26-3:2; EX1003, ¶¶161-162. The figure below disclosing grooves and ribs is not found in any other claimed foreign priority document:

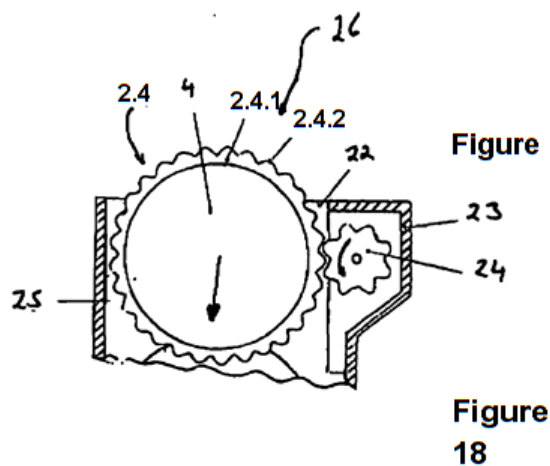


EX1045

The July Application, by contrast, only discloses a barcode located on the capsule flange, but does not disclose a capsule with (i) vertically oriented grooves on the outside surface of the wall, (ii) the grooves having a radiused top and bottom end, which are spaced a distance between the flange and bottom; or (iii) a plurality of vertically oriented ribs. EX1046, 7, ¶3; EX1003 ¶163. No disclosure satisfies the requirement of vertical grooves and ribs as claimed. EX1001, 12:2-13; EX1003, ¶¶164-168. The July Application also fails to disclose many other elements of the '910 Patent claims, such as an optically detectable, machine readable, repeat pattern located on the bottom of the flange, generation of turbulence of the hot water in the cavity by the grooves or imparting rigidity to the wall of the base element. EX1003, ¶169.

The September Application only at best discloses a barcode on the capsule flange and does not disclose (i) vertically oriented grooves, (ii) the grooves having

a radiused top and bottom end, which are spaced a distance between the flange and closed bottom; or (iii) vertically oriented ribs. EX1003, ¶¶170-171; EX1047, generally. It instead discloses gear-like capsule rims located on the flange of the capsule (2.4.2), as depicted below, which are not vertical grooves or ribs on the portion capsule's walls as claimed in the '910 Patent. EX1001, 12:2-6; EX1003, ¶¶171-174; EX1047, FIGS16-18. Nor does the September Application disclose inducing turbulent flow or imparting rigidity to the wall, a bowed cover, or an optically detectable, machine readable, repeat pattern located on the bottom of the flange. *Id.*



EX1047

K-fee cannot demonstrate that the '910 Patent has priority for claims 1-8 because all claims require: an “individualization identifier [that] is located on the bottom side of the flange[,]” combined with “a plurality of vertically oriented grooves arranged on the outside surface of the wall,” and “a plurality of vertically

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oriented ribs arranged on the inside surface of the wall.” EX1003, ¶¶175-176.

Because none of the three foreign applications disclose any embodiments satisfying each and every claim limitation of the '910 Patent, it is not entitled to any foreign priority date. *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1306 (Fed. Cir. 2008).

K-fee also cannot demonstrate priority to any earlier-filed application because all claims require a “cover [that] is bowed upwardly to a second height at the central region relative to the perimeter,” wherein “the second height of the cover is less than the first height of the base element,” and “an optically detectable, machine readable, repeat pattern, provided on the bottom side of the flange.” EX1003, ¶177. Claims 1-7 further lack priority because no application discloses an optically detectable, machine readable, repeat pattern, provided on the bottom side of the flange, which is *also* provided on the outside surface of the wall of the base element. EX1003, ¶177. Claims 3-7 additionally lack priority because no application discloses that the “plurality of vertically oriented grooves generate turbulence of [] hot water in the cavity, impart rigidity to the wall of the base element, or both.” *Id.*

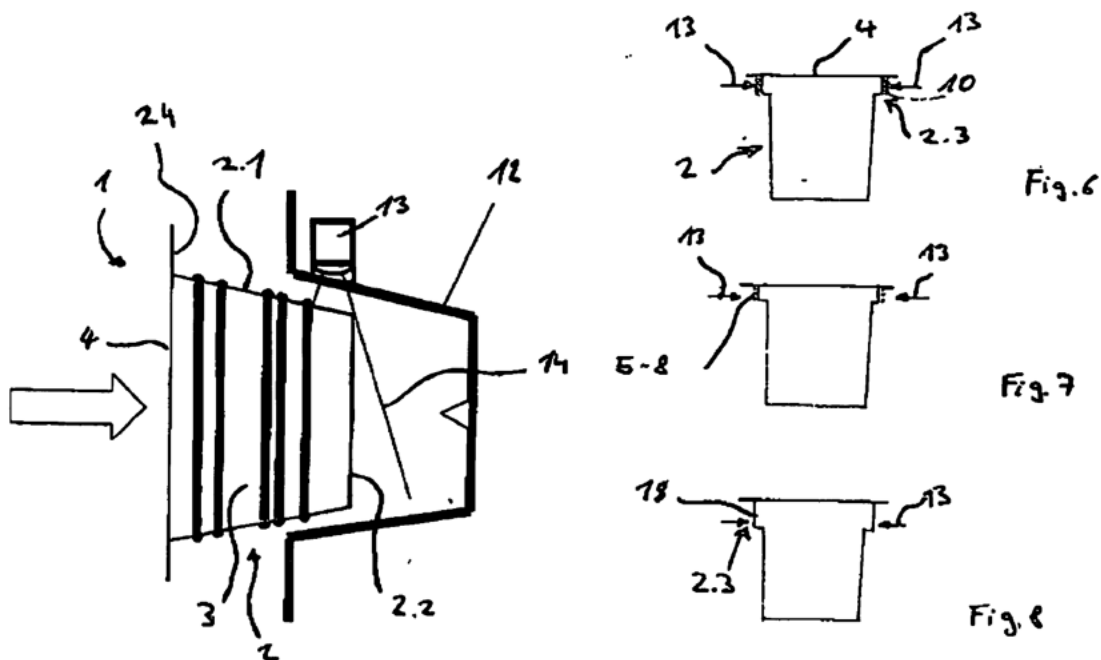
2. No Repeat Pattern

Other than a passing reference to a “repeat pattern,” the September Application never discloses any embodiment utilizing an optically detectable, machine readable, repeat pattern, let alone one on the bottom side of the flange.

EX1047, 33:6-7; EX1003, ¶178. It never discloses repeating a barcode, and refers to a “repeat pattern” as distinct from a “barcode.” EX1047, 33:6-7. FIGS16-18 also do not disclose this limitation. IPR2022-01574, Paper 12, 24-25. Element 2.4.2 of FIGS16-18 is a “toothed ring,” which is not an optically detectable, machine readable, repeat pattern. EX1047, 33:1-7; EX1003, ¶179. Element 2.4.2 is also located on the *outer circumference* of the capsule flange, *not the bottom surface*. EX1047, 41:17-27, 35:9-11; EX1003, ¶¶179-180.

3. No Bowed Cover or First/Second Height

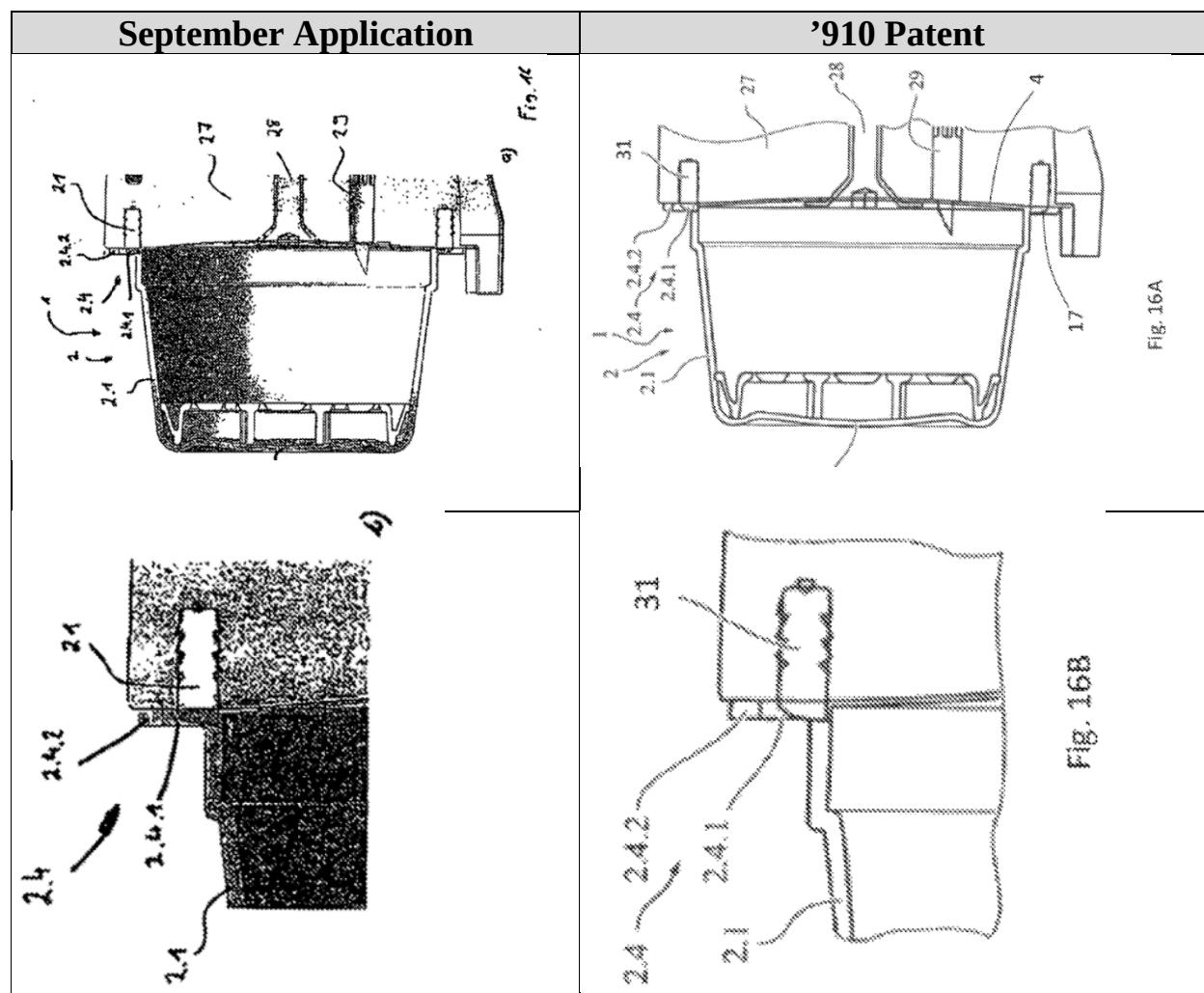
A POSITA would understand that the Figures in the September Application, taken as a whole, disclose a capsule with a flat cover. EX1003, ¶181. For example, FIG1 and FIGS6-8 are shown below:



A POSITA further would not consider FIG16 to disclose a bowed cover in the

context of the September Application, which depicts only flat covered capsules.

Consistent with this, FIG16 depicts to a POSITA, at best, the depth and inner circumference of the capsule body and rim. EX1003, ¶¶182-183. FIG16 shows the capsule membrane pierced by element 29. *Id.* FIG16 also shows the machine's brewing head (27) and water inlet (28) flush with the flat capsule membrane, and *below* the curved region, thus demonstrating it is not the cover of the capsule. *Id.*



Similarly, the September Application also fails to disclose a cover wherein

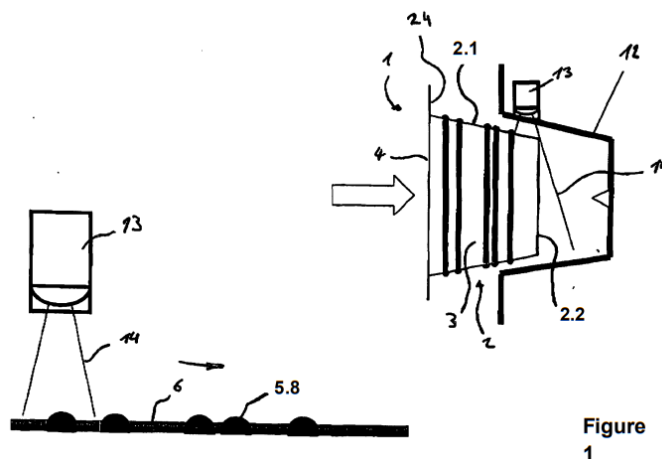
“the second height of the cover is less than the first height of the base element.” This is because a POSITA would understand the Figures in the September Application to disclose a capsule with a *flat* cover, which fails to have a “second height”—it has no height at all. EX1003, ¶¶184-185.

4. No Disclosure of the Claimed Invention

Moreover, the September Application fails to disclose the invention as claimed in the '910 Patent. *Hyatt v. Dudas*, 492 F.3d 1365, 1371 (Fed. Cir. 2007) (“[I]t is not enough that applicant show where each claimed element resides in the earliest filed application but [he] must also provide support for the *linkage of the claimed elements creating the embodiment*”). “The written description requirement is not met when, as here, the specification provides at best disparate disclosures that a skilled artisan might have been able to combine in order to make the claimed invention.” *Flash-Control LLC v. Intel Corp.*, 2021 WL 2944592, at *4 (Fed. Cir. 2021).

The September Application discloses several distinct embodiments of an identifier, yet fails to disclose the '910 claimed invention. EX1003, ¶186. For example, FIG1 discloses a capsule with an identifier made of several raised areas 8, with which it can be determined if the capsule is suitable for use with the machine. EX1047, 37:27-30, 37:14-19. However, this embodiment (shown below), does not disclose at least the claimed an identifier which includes an individualization

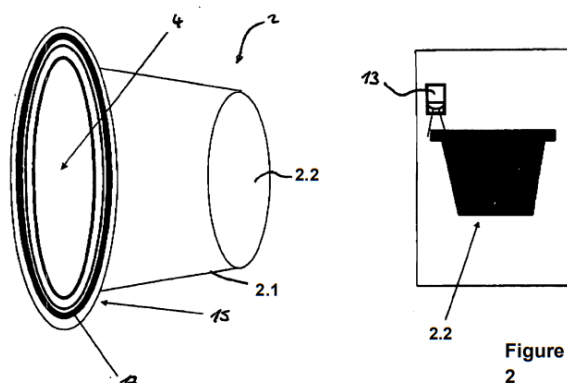
identifier located on the bottom side of the flange, a cover bowed upwardly to a second height at the central region relative to the perimeter, a plurality of vertically oriented grooves and ribs on the outside and inside wall of the portion capsule, or the claimed sealing configuration. EX1003, ¶187.



The text describing FIG1 further explains how the identifier would be used to influence the machine's operation, and states this “applies to all other examples,” but does not indicate to a POSITA that multiple distinct identifier embodiments would be combined with one another (let alone in any specific combinations). EX1047, 37:37-38:10; EX1003, ¶188.

FIG2 discloses an alternative embodiment of a capsule with a *barcode* that is read from above, or alternatively, “on the edge area of the base element facing away from the membrane.” EX1047, 38:11-27. However, this embodiment also fails to

disclose the limitations identified above.⁴ EX1003, ¶189.



FIGS16-17 and the text describe another distinct embodiment of a capsule that is designed with a “toothed ring” around the “outer region” of the flange. EX1047, 41:22-31; EX1003, ¶¶191-192; EX1047, 41:17-27, 35:8-11, FIG18 (flange’s outer edge interacts with pinion 24). In only this embodiment, the specification explains “[i]nside this gear rim, a sealing surface 2.4.1 is preferably provided in the edge region 2.4, which cooperates sealingly with a seal 21.” *Id.* The specification further explains that if this feature was not present the capsule could not be inserted into the brewing chamber but “would drop through into a waste container.” EX1047, 41:36-42:15. The “toothed ring” element 2.4.2 is a “form-fitting and/or friction-fitting

⁴ The same is true for FIGS3-15, which disclose additional distinct embodiments lacking the same claim limitations identified above. EX1047, 38:29-41:11; EX1003, ¶190.

means and/or a detection means 2.4.2.” EX1047, 41:25-28. It is not a generic identifier (or a repeat pattern), nor is it located on the bottom side of the flange. EX1003, ¶193. There is also no language that ties the disclosure referencing FIG16-18 to any other Figure or embodiment, EX1047’s specification uses different numbers to indicate different identifiers (*see* p. 44), and EX1047 never explains how a barcode, repeat pattern, or optical identifier could replace means 2.4.2 and still retain the capsule within the device or allow the capsule to enter the insertion shaft. EX1003, ¶194; IPR2023-00485, Paper 9, 13 (PTAB Sept. 13, 2023).

Accordingly, the specification lacks any disclosure linking together the disparate features across these embodiments, particularly (i) an individualization identifier on the bottom of the flange (and also on the side wall of the capsule); (ii) such individualization identifier including an optically detectable, machine readable, repeat pattern; (iii) vertically oriented grooves and ribs on the outside and inside of the portion capsule’s wall; (iv) the claimed sealing configuration; and (v) a cover bowed upwardly. EX1003, ¶¶194-195. Accordingly, “[t]aking each claim—as we must—as an integrated whole rather than as a collection of independent limitations, one searches the [September Application] in vain for the disclosure of even a single species that falls within the claims or for any “blaze marks” that would lead an ordinarily skilled investigator toward such a species among a slew of competing possibilities.” *Novozymes A/S v. DuPont Nutrition Biosciences APS*, 723 F.3d 1336,

Nor do the boilerplate statements in the September 2010 Application demonstrate to a POSITA that the Applicant had possession of the '910 claimed invention, as it fails to link any of the claimed features together. EX1003, ¶196. *D-Three Enterprises, LLC v. SunModo Corp.*, 890 F.3d 1042, 1051 (Fed. Cir. 2018).

Nor do the multiple-dependent claims at the end of September Application provide written description support, or any “blaze marks” such that a POSITA would arrive at the '910 claims. These claims fail to disclose any identifier comprising an optically detectable, machine readable, repeat pattern, let alone one on the bottom of the flange. EX1003, ¶197. The Federal Circuit rejects such attempts at using multiple-dependent claims to satisfy the written description requirement, particularly where, as here, they result in “bizarrely complex chains of cross-reference claims.” *FWP IP ApS v. Biogen MA, Inc.*, 749 Fed.Appx. 969, 977 (Fed. Cir. 2018).

“To the extent that [K-fee] contends that a person of skill in the art would isolate and combine aspects from various embodiments in the specifications . . . to obtain the claimed invention, [K-fee] relies upon the wrong test. ‘[A] description that merely renders the invention obvious does not satisfy the [written description] requirement.’” *Purdue Pharma LP v. Recro Tech. LLC*, 694 Fed.Appx. 794, 797-98 (Fed. Cir. 2017).

Accordingly, the '910 claims do not receive priority to their foreign filings.

EX1003, ¶198.

VIII. CLAIMS 1-8 ARE UNPATENTABLE UNDER §103

A. Ground 1: Obviousness Over Yoakim in view of Jarisch 929, Rapparini, and Rossi

1. Motivation to Combine Yoakim, Jarisch 929, Rapparini and Rossi

Yoakim discloses nearly all claim elements. EX1003, ¶219. A POSITA would have been motivated to combine the single-serve brewing system, capsule, and concepts of Yoakim, with Jarisch 929, Rapparini and Rossi to predictably arrive at the '910 claims. *Id.* In IPR2022-01574, K-fee did not dispute that Yoakim, Jarisch 929 and Rossi taught the majority of claim limitations, except the pump, groove and seal, and ledge limitations. Paper 17, 46-58.

Yoakim, Jarisch 929, Rapparini and Rossi are all analogous art in the field of portion capsule beverage extraction, each disclosing an invention that may be applied in automatic coffee/espresso machines. EX1003, ¶220; EX1004, [0002]-[0003]; EX1006, [0001]-[0002]; EX1008, [0001]; EX1041, 3. Yoakim, Jarisch 929 and Rossi are all designed to use capsule identification to optimize beverage machine operation and can use optical codes to achieve this. EX1003, ¶220; EX1004, [0010]-[0011], [0025], [0494]-[0496]; EX1006, [0004], [0016]; EX1041, 3, 5-6.

Yoakim and Jarisch 929 share a common applicant—Nestec SA—and a common inventor. EX1003, ¶221. Jarisch 929 expressly discloses it is intended to

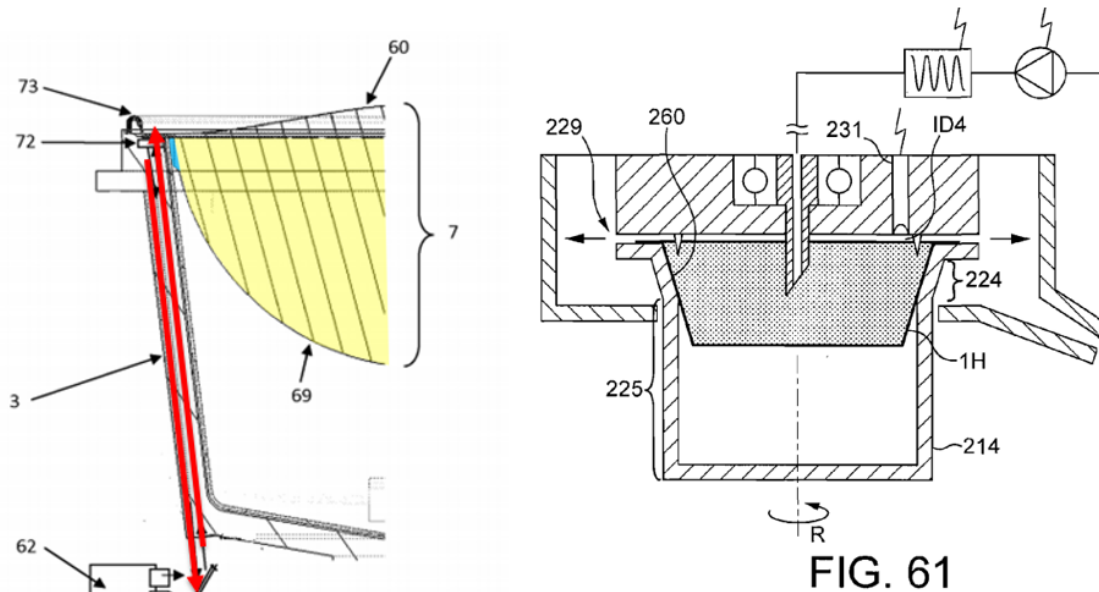
be used with a centrifugal-style brewing system like the one in Denisart (EX1007), which shares two common inventors with Yoakim. *Id.*; EX1006, [0048].

Denisart (another Nestec patent) is expressly disclosed as part of the Jarisch 929 system and is similar to the Yoakim system, both including (1) support for the capsule body; (2) elements to pierce the capsule in its center to inject fluids; (3) elements to pierce the capsule along the periphery to allow liquid to exit under centrifugal forces; and (4) compatibility with code readers to identify the capsule and adjust brewing parameters. EX1007, FIG1; EX1003, ¶¶222-223. Jarisch 929 is explicitly intended to be used with centrifugal brewing systems like Yoakim. *Id.*

Jarisch 929 also discloses motivations for a POSITA to combine the brewing and capsule identification system of Yoakim with the repeat pattern of Jarisch 929 located on the bottom flange of the capsule. EX1003, ¶224. Jarisch 929 explicitly teaches positioning an optical code “on the rim of the capsule, in particular, on the bottom of the rim of the capsule which is opposed to the lid or foil of the capsule.” EX1006, [0037]. Jarisch 929 explains that its proposed code positioning is desirable because it “is less prone to damages caused by the processing module and in particular by the pyramidal plate, and to ingredients projections.” *Id.*, [0017], [0063]-[0064]. “As a consequence, the amount of coded information and the reliability of the readings are both improved.” *Id.* Jarisch 929 further explains that repeating the code is desirable because “upon a 360-degree rotation of the capsule,

the same sequence can be detected or read more than one time,” which improves reliability of reading of the code. *Id.*, [0068]; EX1003, ¶225. Accordingly, a POSITA would be motivated to use Jarisch 929’s repeated optical code, and its positioning of the code on the bottom of the flange. EX1003, ¶226.

A POSITA would also have an expectation of success when combining Yoakim and Jarisch 929, as Jarisch 929 expressly discloses how to modify a brewing chamber like Yoakim’s to position an optical reader to read a code positioned on the bottom of the capsule flange. EX1003, ¶227. Specifically, Jarisch 929 discloses placing the light source at the bottom of the capsule support chamber, *i.e.*, the centrifugal cell 3, and configuring the capsule support chamber to be a light conductive material such that a light source will reach the bottom of the capsule flange. EX1006, [0106]; EX1003, ¶227. Jarisch 929 further discloses mirrors to better position the optical light source and sensor. Thus, Jarisch 929 teaches how to position the Yoakim sensor/detector below and **away** from the flow path. EX1006, [106] (“the light source is placed at the bottom of the centrifugal cell 3. **This cell is light conductive allowing the beam to reach the bottom side** 72 or its rim 73.”). The Jarisch 929 optical reader configuration is depicted below left in order to read the code on the capsule (yellow) with the light path (red) shown from detector (62) to capsule rim (73), and Yoakim is shown right. EX1006, FIG. 5; EX1004, FIG61.



Jarisch 929 further discloses how to structure the code as a repeat pattern (according to K-fee’s interpretation) on the bottom of the flange. EX1006, FIG2, [0051], [0057]-[0060], [0090]-[0106]; EX1003, ¶228. A POSITA would therefore find it obvious to combine Yoakim and Jarisch 929 to achieve the express benefits of the repeated code and code location. *Id.*

Rossi: A POSITA would further find it obvious to combine the systems of Yoakim and Jarisch 929 with the capsule recognition process of Rossi for the predictable benefit of “providing a safe and simple system and process for ensuring that an appropriate [capsule] is used” in the system. EX1041, 3; EX1003, ¶229. Yoakim discloses using a piston pump to deliver higher pressure water, if desired. EX1004, [0428]. Yoakim also discloses that its centrifugal brewing generates pressure within the system, including high pressure for espresso. EX1004, [0188]

(“The higher the rotational speed, the more radial pressure is exerted. . . .”); [0191]

(“The rotational speed ranges differ as a function of the coffee type to be delivered.

. . .” including “espresso.”); [0369] (“maintain a pressure of several bars”). Yoakim

also uses hot water. EX1004, [0506]. Thus, a POSITA would look to Rossi to

address “the use of high pressure, high temperature water, which poses a potential

health hazard if the machine is not used correctly or malfunctions.” EX1041, 3;

EX1003, ¶230.

A POSITA would have further been motivated to combine the capsule and brewing systems of Yoakim and Jarisch 929 with the capsule recognition process of Rossi for the predictable benefit of greater specificity and accuracy of brewing conditions, and increased safety in the machine from preventing operation with unsuitable capsules. EX1003, ¶231. Rossi explains that “use of an incorrect [capsule] may cause the machine to malfunction and can prejudice the safety and integrity of the machine and [] may harm the user.” EX1041, 3. Rossi explains that “allowing the machine to take further steps only if it also recognizes on the [capsule] the validation element” results in “avoiding the production of an edible product of inferior quality and ensuring the proper functioning of the machine.” EX1041, 5. Accordingly, a POSITA would understand that Rossi provides motivation for using an optical code to ensure the capsule is suitable for use with the machine, and only initiate the brewing process upon such a determination. EX1003, ¶¶230-231.

A POSITA would also have an expectation of success when combining Rossi's recognition system with the brewing machine and capsules disclosed in Yoakim and Jarisch 929. EX1003, ¶232. Rossi expressly discloses that its invention is intended to improve systems relating to "edible-product making machines . . . such as coffee machines fed with capsules containing coffee powder." EX1041, 3. Rossi further explains that its system identifies the capsule using "barcodes, antennae, or paints having optically measurable properties" that can be read by a "barcode reader, radio frequency wave transmitter and receiver, or optical sensor." EX1041, 9. Accordingly, Rossi uses technology already disclosed in Yoakim and Jarisch 929 to recognize the capsule. *Id.* Rossi also explains how to recognize a capsule, by comparing the read code "with pre-stored data in order to allow the machine to proceed to activation only if it" recognizes the capsule. *Id.* Furthermore, Yoakim and Jarisch 929 possess capsule identification capabilities that a POSITA would expect to work with Rossi's invention. EX1004, [0477]; EX1006, [0051]-[0055]; EX1003, ¶232.

Rossi teaches safety features—such as identification and validation elements—to determine whether to brew a suitable beverage, and offers additional advantages beyond Yoakim. Rossi includes information about the proper capsule and operating conditions that "helps to prevent [] safety hazard[s]," and prevents "re-use" of capsules that can cause "incorrect functioning of the machine and the

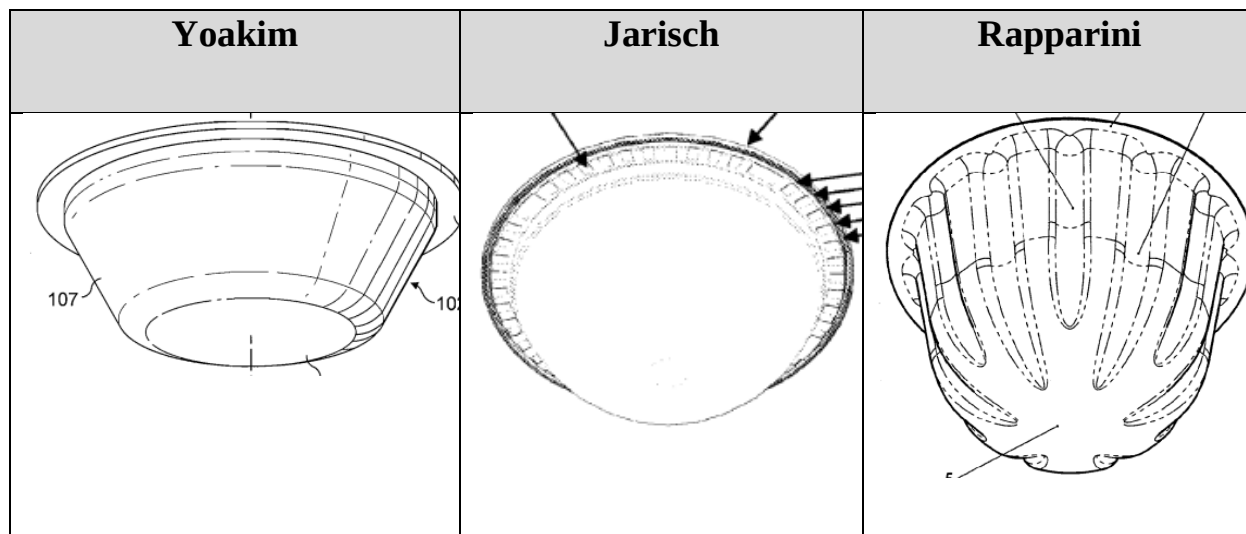
Patent No. 11,554,910
Corrected Petition for *Inter Partes* Review
associated health hazard.” EX1041, 5.

Yoakim would allow unsafe brewing of compatibly-*shaped* capsules that otherwise are not designed for the system, or have been improperly re-used because Yoakim’s “gripping structure” only checks for a complementary shape. Thus, a POSITA would have been motivated to use Rossi’s safety features with Yoakim to improve safety, ensure proper functioning of the machine, and avoid inferior quality beverage. EX1003, ¶233.

Rapparini: Rapparini discloses longitudinal grooves in the body of the capsule wall and corresponding ribs in the inner cavity, thus increasing stability of the capsule. EX1008, [0009]; FIG6bis. This was a widely known technique in the art by 2010, and a POSITA would have recognized that using longitudinal grooves and ribs to stiffen a thin-walled capsule would lead to greater stability. EX1003, ¶¶234-235.

Rapparini further states its invention can be applied to other capsule materials (which includes metal), in addition to other dimensions, and can be employed for use in automated espresso machines (like Yoakim and Jarisch 929). EX1008, [0067]. A POSITA would have been motivated to use Rapparini’s configuration because Rapparini “guarantees stability of the structure of filtering and permeable containers,” and a POSITA would find it obvious to apply this to impermeable structures as well. EX1008, [0007]; EX1003, ¶236.

A POSITA would also have an expectation of success when combining Rapparini's grooves and ribs and the capsules disclosed in Yoakim and Jarisch 929. As depicted below, all systems disclose similarly-shaped capsules. EX1003, ¶237.



Furthermore, Yoakim already contemplates a capsule using a textured body, such that Rapparini's grooves could easily be incorporated, as Yoakim explains that they can be used to engage the capsule in the centrifugal brewing system. EX1004, [0215]; EX1003, ¶236.

Finally, a POSITA would expect success because Rapparini's capsule is manufactured using a thermoforming process similar to Yoakim's deep-drawing process. EX1004, [0215]; EX1003, ¶238. It would therefore be obvious to a POSITA to combine the brewing/capsule system of Yoakim, the optically detectable identifier located on the bottom side of the flange in Jarisch 929, the machine operation and activation control as disclosed in Rossi, and the ribs and grooves of Rapparini. EX1003, ¶239.

2. Claims 1 and 8⁵

a) Preamble

To the extent the preamble is deemed limiting, Yoakim discloses a portion capsule for making a beverage as shown in element [1.a]/[8.a]. The capsule has an individualization identifier as shown in Yoakim, Jarisch 929 and/or Rossi as set forth in element [1.d]/[8.d]. EX1003, ¶¶241-242.

The identifier is capable of being detected by a sensor/detection system. Yoakim's beverage machine (FIG4, FIG61) includes a sensor/detection system (231) (right) enabled to identify and read a code (ID4) on a capsule. EX1004, [0025] ("The device . . . comprises identification means for identifying the different capsules . . ."), [0525], [0192], [0477], [0494]-[0496]; EX1003, ¶¶243-244.

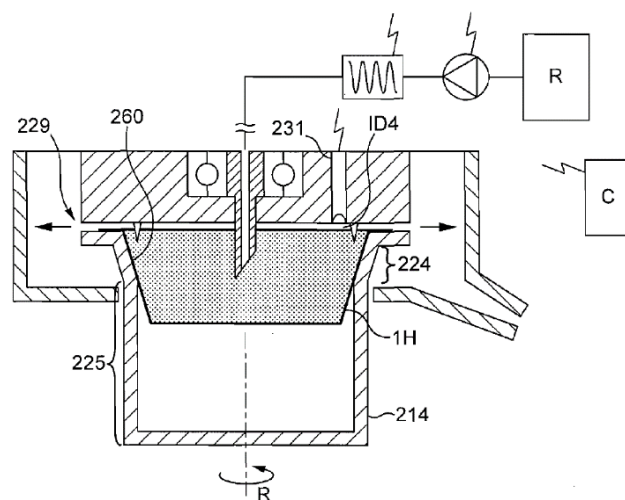


FIG. 61

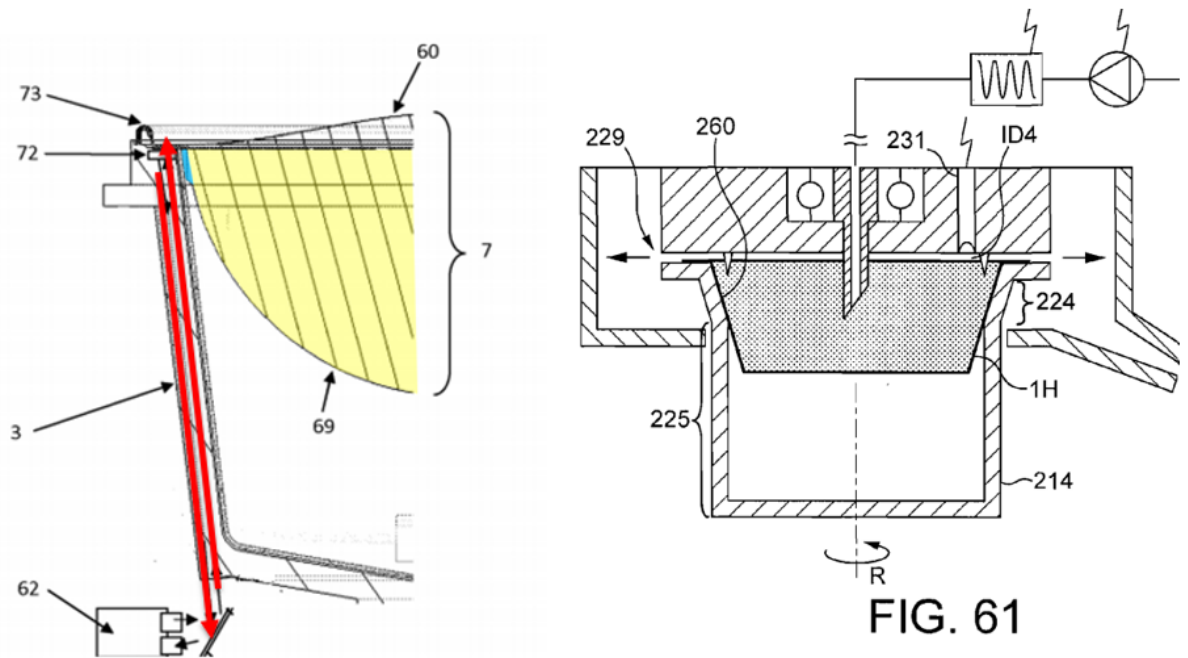
Rossi also discloses that its system identifies the capsule using “barcodes,

⁵ See Claims Appendix for claim language. Due to the repetition of claim language in the independent claims (in particular claims 1 and 8), the claim elements for later-addressed claims are only identified once herein.

antennae, or paints having optically measurable properties” that can be read by a “barcode reader, radio frequency wave transmitter and receiver, or ***optical sensor.***”

EX1041, 4, 5, 9; EX1003, ¶245.

Jarisch 929 discloses an optical code detector (62), designed to read the code. EX1006, [0106], [0051]-[0055]; EX1003, ¶¶246-247. The Jarisch 929 optical reader configuration is depicted below left in order to read the code on the capsule (yellow) with the light path (red) shown from detector (62) to capsule rim (73), and an example of such a modification to Yoakim is shown right. EX1006, FIG5; EX1004, FIG61.

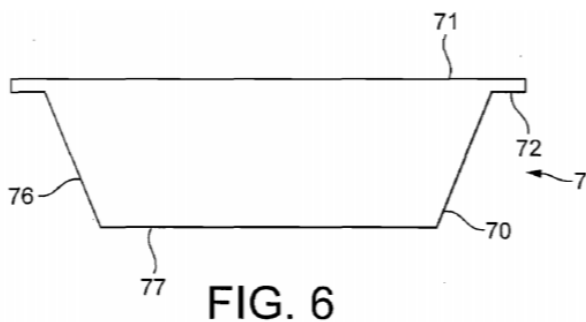
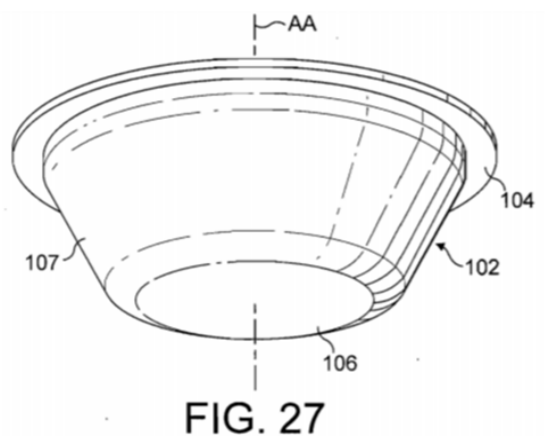


The detector determines whether the capsule is suitable for the specific coffee machine is discussed in Section VIII.A.2.p.

It therefore would have been obvious for a POSITA to Yoakim, Jarisch 929 and Rossi to arrive at the claimed invention. Section VIII.A.1. EX1003, ¶¶248-249.

b) [1.a]/[8.a]

Yoakim discloses a portion capsule with a base element (70, 102) having a cavity filled with raw beverage materials such as “ground coffee powder [and] soluble coffee.” EX1004, [0125], [0180], [0197]-[0198], [0414], FIGS6-7, 26-27; EX1003, ¶¶250-251.



Yoakim further discloses “the body and/or lid can be deep drawn from thin metal such as aluminium alloy or a complex of plastic and aluminium alloy” EX1004, [0355], [0215], [0180], [0461], [0197], [0414], [0461]; EX1003, ¶252. Furthermore, it would have been obvious to a POSITA to manufacture a capsule by deep drawing, as this is a fast and cost effective form of manufacturing thin-walled products like coffee capsules. EX1003, ¶253; EX1024-1029. It would also have been obvious to a POSITA to use metal, as aluminum was a known capsule material. EX1003, ¶254.

c) [1.b]/[8.b]

Yoakim discloses a capsule having **an open upper end portion, a closed bottom, and a wall that extends from the open upper end portion to the closed bottom**. Yoakim discloses a capsule with a “bottom wall” (106) and an open upper end portion, which is then covered by sealing foil 103. EX1004, [0129], [0197], [0308], [0414], [0473], FIGS6-7, 26-27; EX1003, ¶¶256-257. The open upper end (left), closed bottom portion (right), and wall extension (107) is further depicted as annotated below:⁶

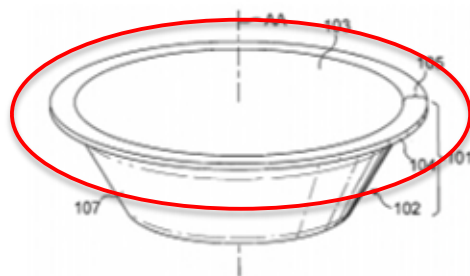


FIG. 26

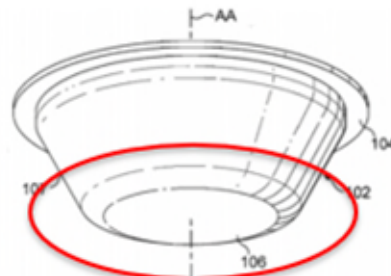
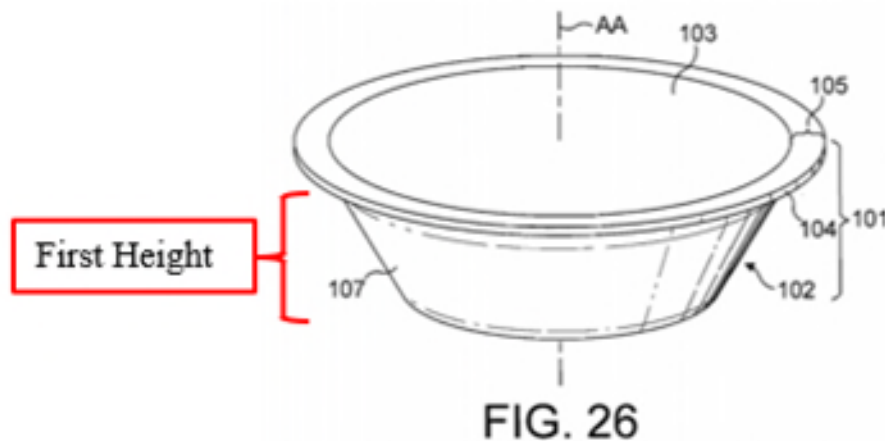


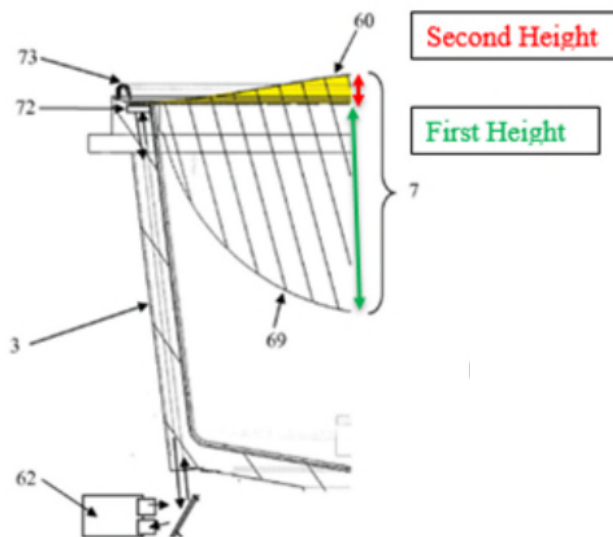
FIG. 27

⁶ Additional examples of capsules with these features include FIG56-60, [0510]-[0511]. EX1003, ¶258.

Yoakim's capsules also have a base element with **a first height that is defined between the open upper end portion and the closed bottom** (EX1004, FIG6-7, 26-27, 56-60, [0197], [0414]-[0415], [0510]-[0511]); EX1003, ¶¶260-261.



Jarisch 929 also discloses a capsule with a base element having **a first height that is defined between the open upper end portion and the closed bottom**. EX1006, FIG5; EX1003 ¶¶262-263.



Yoakim's capsules include **a wall with an outside surface and an inside**

surface that faces the raw beverage material. EX1004, [0197], [0414], FIGS6-7, 26-27; EX1003, ¶264. Yoakim discloses the cavity may be filled with raw beverage materials such as “ground coffee powder [and] soluble coffee.” EX1004, [0125], [0180], [0197]-[0198]; EX1003, ¶¶265-266. FIG28 depicts an example of the capsule’s internal enclosure 114 where the inside surface faces the food substance 122. EX1004, [0415], FIG28:

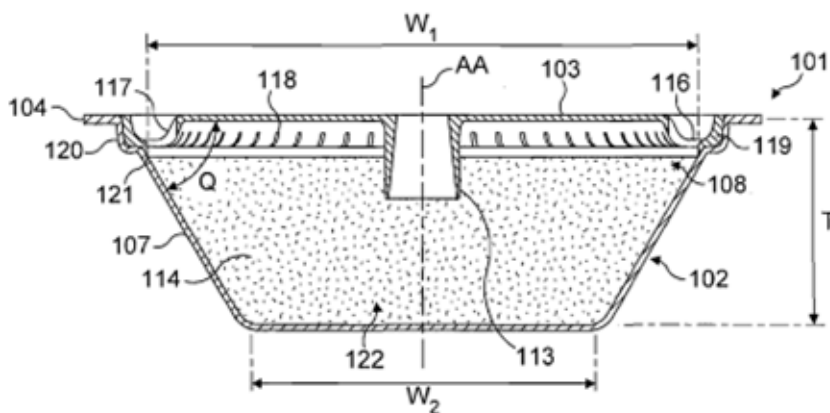


FIG. 28

Yoakim also discloses that the wall (76, 107) is **rotationally symmetrical about a central longitudinal axis** (centerline AA). EX1004, [0014], [0308], [0414]-[0415], FIG6-7, 26-27, 56-60; EX1003, ¶¶268-269.

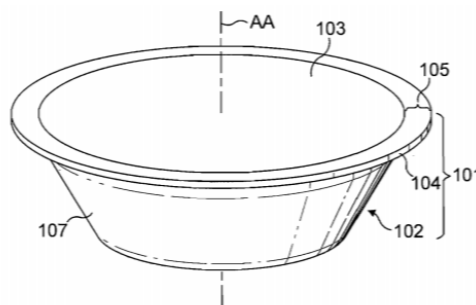
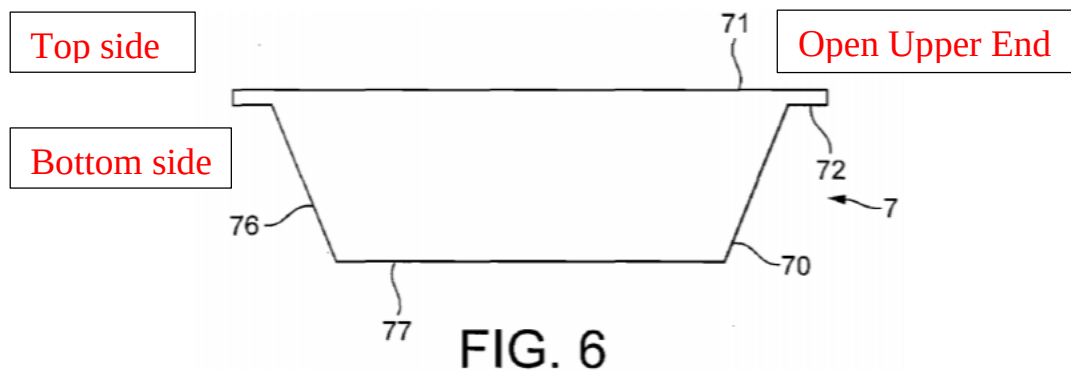


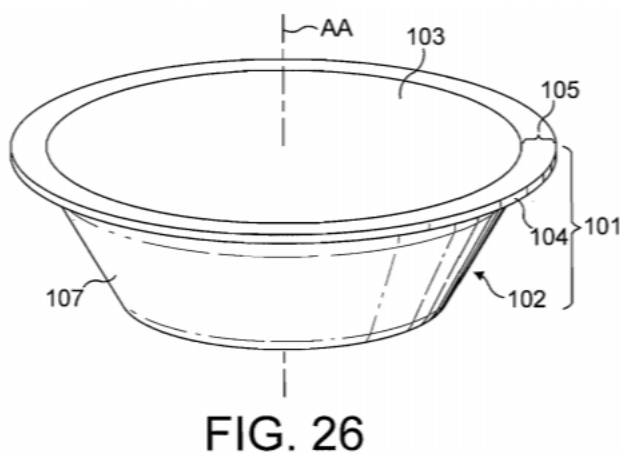
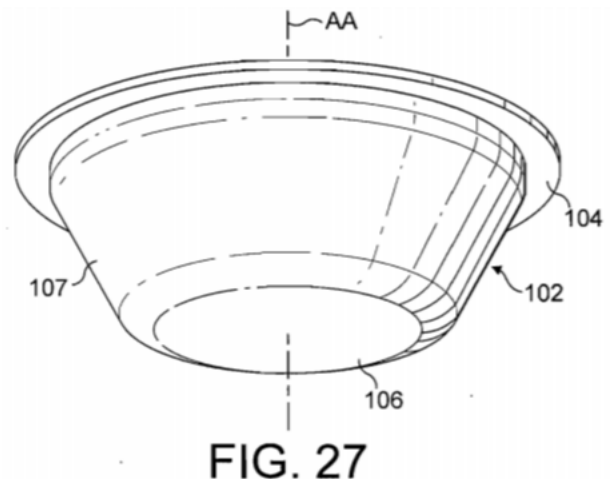
FIG. 26

d) [1.c]/[8.c]

Yoakim discloses a circumferential flange (72) extending outwardly from the wall at the open upper end portion of the base element (70). EX1004, [0197], FIG6-7; EX1003, ¶272.



FIGS26-27 also show a flange at the open upper end portion of the base element with a top and bottom side. Yoakim explains the body (102) has a peripheral rim 104 that extends outwardly forming an annular portion. EX1004, [0414]; EX1003, ¶¶273-274.

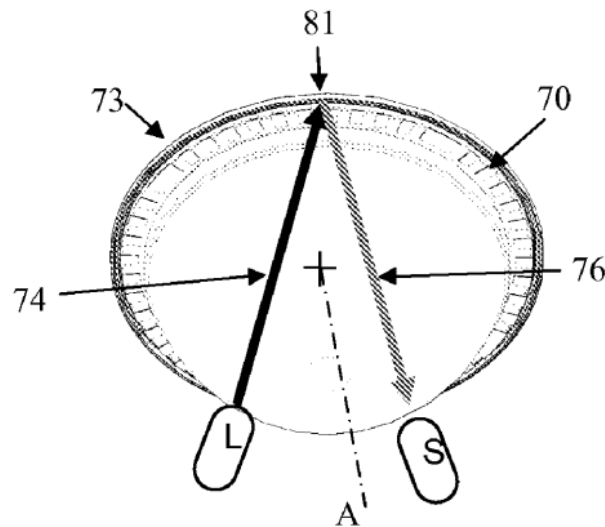


e) [1.d]/[8.d]

Yoakim discloses using an identification system to identify each capsule and adjust the brewing parameters, according to K-fee's Contentions. EX1004, [0477]. Yoakim discloses that this helps deliver a wider range of beverages having differentiated characteristics. *Id.*, [0477], [0526]; EX1003, ¶¶277-278. Yoakim further discloses that the identifier used on the capsule can be an optically detectable code, such as a barcode. *Id.*, [0496], [0525]; EX1003, ¶279.

Jarisch 929 discloses a near-identical centrifuge-style brewing system that includes an optical reader (62) to identify the capsule. EX1006, [0047]-[0048], [0106]. This identifier, according to K-fee's Contentions, is used to recognize "a type associated to the capsule," brewing parameters, capsule manufacturing information. *Id.*, [0020]-[0024], [0051]-[0055]; EX1003, ¶280.

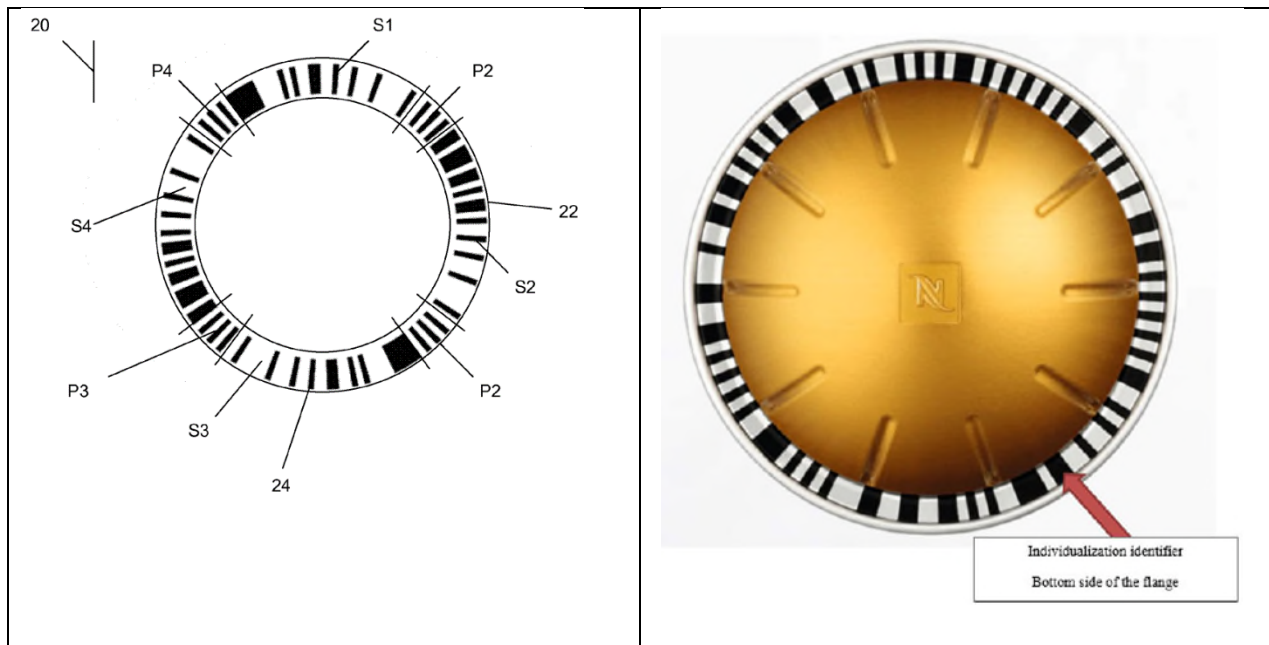
Jarisch 929 provides that the code can be "present on the rim of the capsule, in particular, ***on the bottom of the rim of the capsule which is opposed to the lid or foil of the capsule.***" EX1006, [0037], [0063]-[0064]; EX1003, ¶¶281-282. This code location is depicted in FIG4 (below):



A POSITA would be motivated to utilize Jarisch 929 to place the identifier on the bottom of the flange to improve reliability of reading. *Id.*; EX1003, ¶284; Section VIII.A.1.

Jarisch 929 further discloses that the identifier is provided on the bottom side of the flange as depicted in FIG2, according to K-fee's Contentions, EX1003, ¶283.

Jarisch 929, FIG2	K-fee Contentions (EX1049, 440)
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To the extent “identifier” is construed as a “feature that individualizes the portion capsule” and “individualization” is construed as “to determine whether the portion capsule is suitable for use with the beverage machine such that the use of unsuitable capsules is prevented,” Rossi explicitly discloses utilizing a capsule identifier for this purpose. For example, Rossi discloses determining whether the capsule is suitable for use with the beverage machine. Rossi explains that prior art machines “are usually designed so as to operate with a certain design or type of load element” and “[u]se of an incorrect load element may cause the machine to malfunction and can prejudice the safety and integrity of the machine and may harm the user.” EX1041, 3. Rossi seeks to solve this problem by “providing a safe and simple system and process for **ensuring that an appropriate load element is used.**” EX1003, ¶285.

For example, Rossi determines **whether it recognizes** the identification element, and a failed recognition would indicate to a POSITA that the capsule is not proper for use with the machine. EX1041, 5 (“The use of an identification element and recognition means helps to prevent the safety hazard associated with inappropriate operating conditions.”); EX1003, ¶286. Rossi additionally discloses this feature through the identification of a “validation element” that ensures only capsules proper for use activate the machine. EX1041, 5; EX1003, ¶286. A POSITA would understand that already-used capsules would constitute a group of capsules that are not suitable for use with the machine. *Id.* Rossi also discloses that the identification and verification elements can be optical codes located on the capsule, and can both be the same element. EX1041, 9, 7, 11; EX1003, ¶287.

Rossi further discloses preventing use of a capsule that is not “suitable for use.” EX1041, 7 (“Thus, the production process cannot be activated unless the first step has been completed.”). Rossi further explains that production of a beverage will only occur after the identifying element is recognized. EX1041, 6, 10; EX1003, ¶287.

It would have been obvious for a POSITA to combine the process of Rossi with Yoakim and Jarisch 929 to arrive at the claimed invention. Section VIII.A.1; EX1003, ¶288.

f) [1.e]-[1.g]/[8.e]-[8.g]

Yoakim discloses a capsule with a deep-drawn toothed structure (right). EX1004, [215]; EX1003, ¶¶290-292.

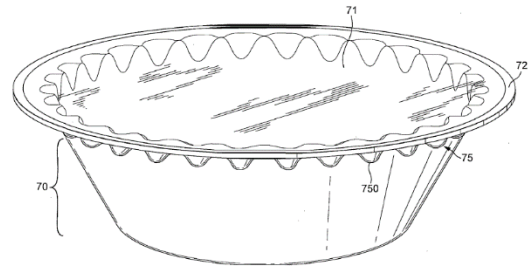


FIG. 23

Rapparini discloses a **plurality of vertically oriented grooves arranged on the outside surface of the wall**. Rapparini explains these grooves provide an optimized capsule structure that is stiffer and more stable. EX1008, [0007]-[0009], [0053]-[0054]; EX1003, ¶¶293-296. Rapparini's grooves (4) are shown below. EX1008, FIG6bis, FIG6.

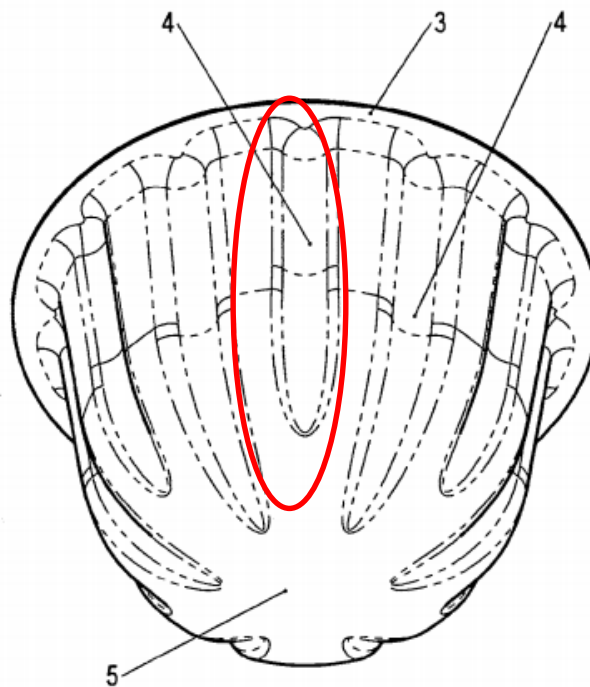
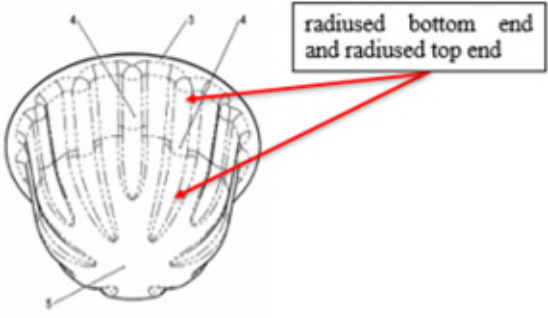
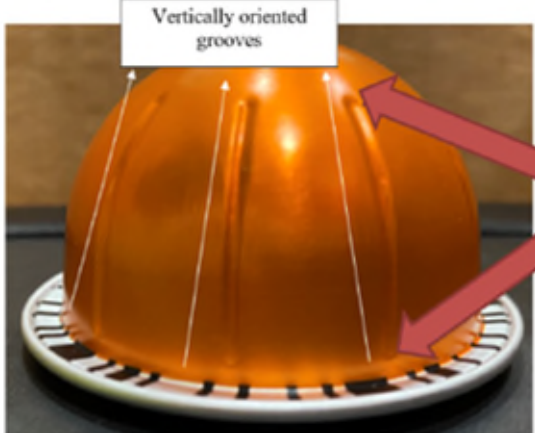


FIG. 6 bis

Rapparini's grooves **each have a radiused top end and a radiused bottom end** (FIG6bis), according to K-fee's Contentions. EX1003, ¶¶298-299.

Rapparini FIG. 6bis	K-fee Contentions (EX1049, 441)
 <p>FIG. 6 bis</p>	

The grooves **are spaced a distance between the flange and the closed bottom.**

EX1008, [0011] (“extending only along the side region of the container”), FIG6, 6bis; EX1003, ¶¶300-301.

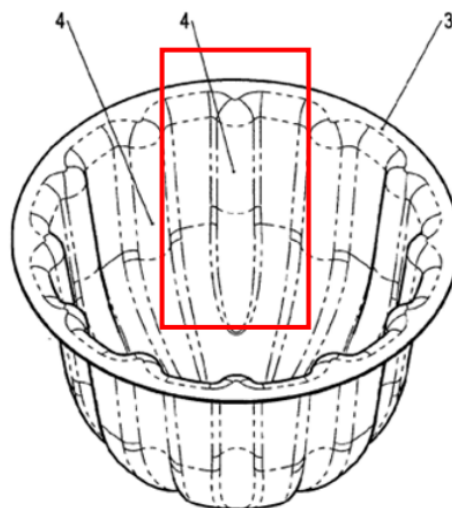


FIG. 6

Rapparini's grooves also cover 20-80% of the wall between the flange and closed bottom. EX1008, [0009]-[0011]; EX1003, ¶¶301-302. As shown below, the annotated FIG6bis shows 20-80% of the wall (green) covered by grooves (white):

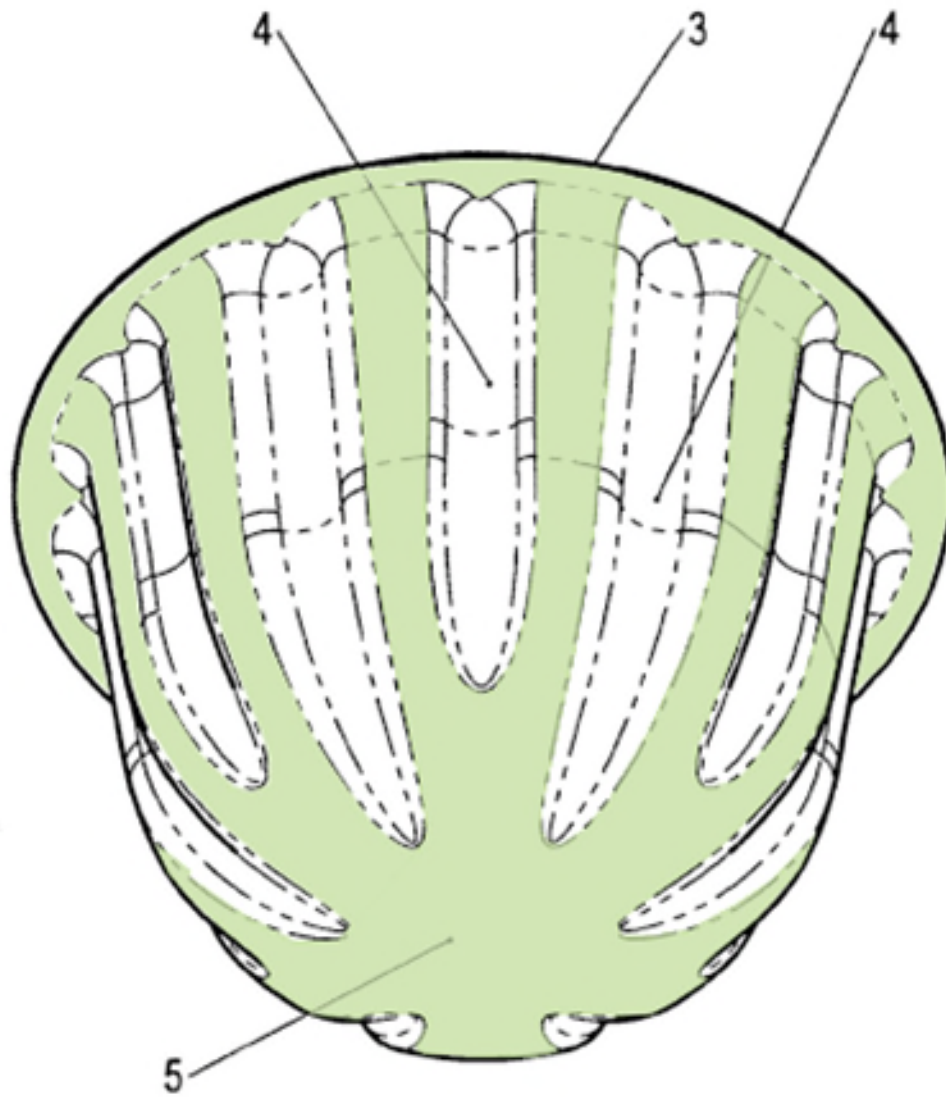


FIG. 6 bis

Additionally, it would have been obvious to a POSITA to utilize vertical grooves that are spaced between a flange and bottom that cover between 20-80% of the wall in order to increase structural stability of the capsule wall, or as a design choice in a limited number of options of vertical groove length and location. EX1003, ¶¶296, 303-304.

g) [1.h]/[8.h]

As discussed above in element [1.e]/[8.e], Rapparini discloses a capsule with a plurality of vertically oriented grooves arranged on the outside surface of the wall. These grooves form a plurality of vertically oriented ribs arranged on the inside surface of the wall. EX1008, [0007]-[0009], [0053]-[0054]; EX1003, ¶306. These ribs are visible on the inside surface of the cavity's wall at (4) in FIG6.

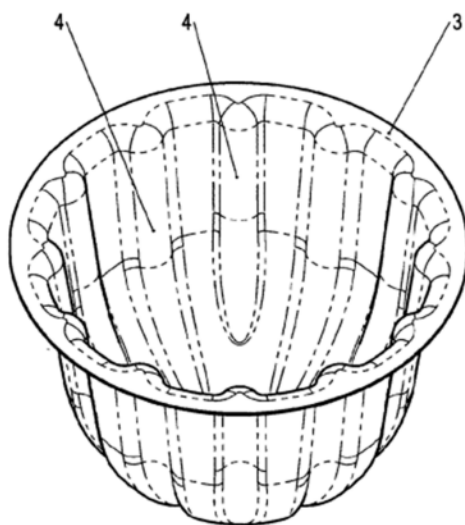


FIG. 6

A POSITA would further understand that Rapparini discloses this feature because, on a thin-walled structure, the grooves on the outside wall of the capsule would form ribs within the inner surface of that body. EX1003, ¶¶307-308.

h) [1.i]/[8.i]

Yoakim discloses that both the sealing lid and body can include gas barrier

sheets made of polymers, aluminium and/or alloys. EX1004, [0128]-[0129], [0197], [0121]; EX1003, ¶309. Yoakim further explains that the capsule has “gas barrier properties and is sealed in a fluid tight manner so that ingress of air in the capsule is prevented.” *Id.* [0096]. Yoakim explains that gastight packaging with at least one barrier layer is used “for maintaining the freshness of the substance in the capsule as long as possible” *Id.* [0355], [0350]. A POSITA would have understood that using a barrier sheet to prevent the ingress of air and maintain freshness will also prevent moisture or aroma from escaping out of the capsule, and additionally it would have been obvious to do so. EX1003, ¶¶310-311.

i) [1.j]/[8.j]

Yoakim’s capsules include a cover comprising a metal foil that is sealed to the top side of the flange. EX1004, [0128]-[0129] (“The capsule can also comprise a cup-shaped body onto which the sealing lid is sealed.”), [0197]; FIGS6-7, 26-27. Yoakim further discloses that “sealing foil 103 is sealed onto a peripheral rim 104 of the body.” EX1004, [0414]; EX1003, ¶¶313-314. This lid is made out of foil comprising **aluminum** and/or polymers. EX1004, [0197], [0244]; EX1003, ¶¶313-314.

Yoakim’s capsules have a cover with a central region (around element 73) and perimeter (around elements 74). EX1004; FIG6-7; FIG26-27; EX1003, ¶¶315-316.

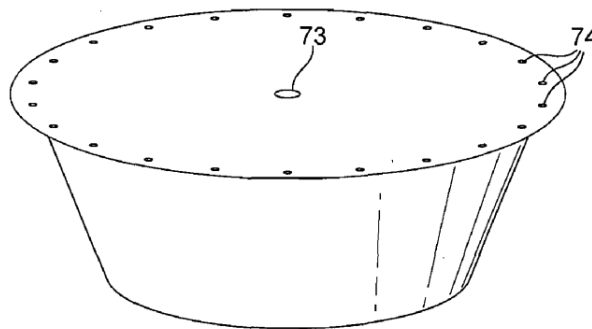


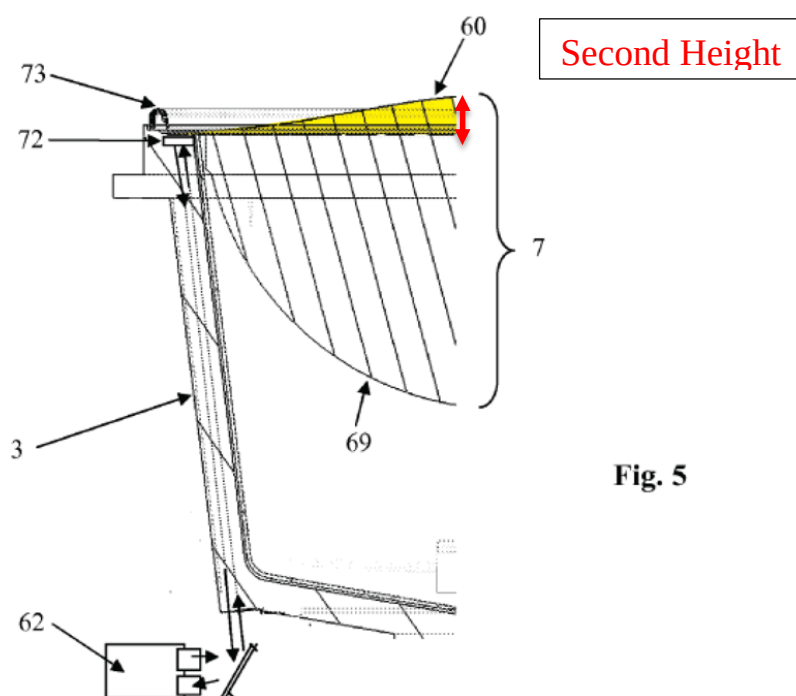
FIG. 7

j) [1.k]/[8.k]

Yoakim renders obvious a cover that is bowed upwardly to a second height at the central region relative to the perimeter. Yoakim discloses that “[t]he sealed capsule is made of materials having gas barrier properties and is ***sealed in a fluid tight manner so that ingress of air in the capsule is prevented.*** Furthermore, the capsule ***preferably contains an inert gas that improves the freshness of substance in the capsule.***” EX1004, [0121], [0128]-[0129]; EX1003, ¶¶317-318. Yoakim further explains that CO₂ from the ground coffee can fill free volume inside the sealed capsule. EX1004, [0270]; EX1003, ¶319. A POSITA would have understood that a capsule with a foil membrane cover that is sealed fluid tight and filled with an inert gas would obviously bow upwardly under the pressure of the gas or CO₂ emitted from the ground coffee. EX1003, ¶¶320-321, *supra*, 3-4.

Additionally, Jarisch 929 discloses a cover that is bowed upwardly to a second height at the central region relative to the perimeter. EX1006, FIG5 (annotated

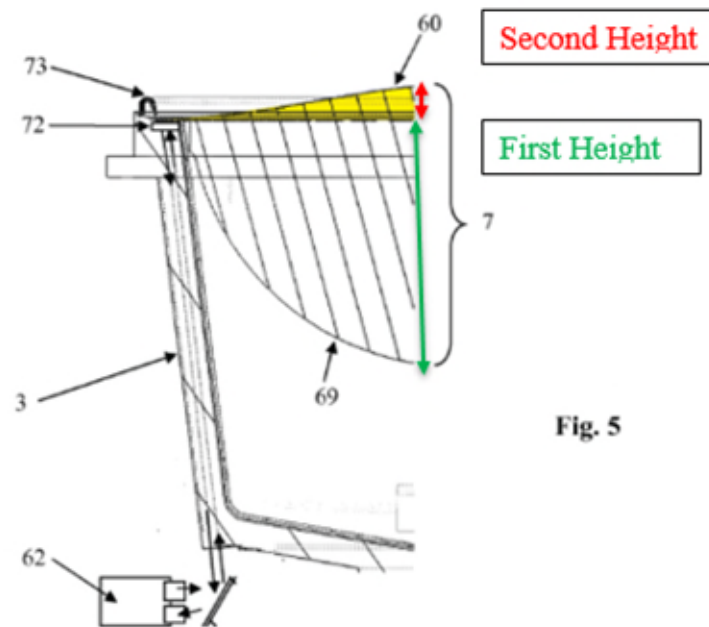
below); EX1003, ¶322. Jarisch 929 identifies item 60 as the membrane or foil, and depicts it bowed upwardly. EX1006, [070]; FIG5 (bowed cover highlighted). It would have been obvious to utilize a capsule shown in Jarisch 929 with a cover bowed upwardly to a second height because such a cover can be the result of known techniques, such as inert gas and pressurization, which preserve the quality of the ingredients over time. EX1003, ¶¶323-324.



k) [1.I]/[8.I]

Jarisch 929 discloses that the second height of the cover is less than the first height of the base element. EX1006, FIG. 5. Jarisch 929 discloses a cover that is bowed upwardly to a second height at the central region relative to the perimeter. Section VIII.A.2.j; EX1006, FIG5 (highlighted below); EX1003, ¶¶325-326. FIG5 of Jarisch 929 discloses that the the second height of the cover (60) (red arrow) is

less than the first height of the base element (69) (green arrow).



Yoakim also renders obvious that the second height of the cover is less than the first height of the base element because, as discussed in Section VIII.A.2.j, Yoakim renders obvious a cover that is bowed outwardly due to pressurization inside of the capsule. EX1003, ¶327. Moreover, it would have been obvious to a POSITA for a capsule to have a first height of the base element that is greater than the second height of the cover so that the base element has increased space to contain ground coffee to enhance flavor and improve the beverage. *Id.*, ¶¶328-329.

l) [1.m]/[8.m]

Yoakim discloses a cover being dimensioned and configured to provide a sealing area that is configured to bear against a seal of the specific coffee machine.

Yoakim discloses a seal limitation in the form of a “flow restriction means which is arranged after the outlet(s) of the capsule” EX1004, [0370]-[0380], [0382], [0396]-[0398]; EX1003, ¶¶330-331. Specifically, Yoakim discloses the brewing machine further comprising a sealing valve system 156, which is referred to as an annular engaging portion 157, and can be in the form of a cone or V “for increasing sealing pressure.” EX1004, [0388], [0436], [0446]; EX1003, ¶¶332-333. This seal is designed to “control[] the flow of liquid that is discharged from the device. EX1004, [0436], [0384]-[0385]; EX1003, ¶334.

To the extent K-fee repeats its argument from IPR2022-01574, Paper 17, 52, Yoakim discloses a seal under K-fee’s interpretation at least because its “flow restriction means” is designed “to exert a sufficient **sealing pressure** on the capsule.” EX1004, [0388]; EX1003, ¶335. This sealing pressure **restricts the flow of liquid** and blocks liquid exit “until a certain pressure” is reached. *Id.*, [0385]; [0436]; EX1003, ¶335. This “**improve[s] the interaction between water and the substance contained in the capsule,**” *i.e.*, ensures that water flows through the portion capsule instead of around it. *Id.*, [0251]; EX1003, ¶335.

The seal is dimensioned and configured to bear against a sealing area of the cover. EX1004, [0436] (“The annular engaging portion [seal] includes a pressing peripheral surface 159 which applies a closing force on the peripheral rim 104 of the capsule to be able to restrict the flow of liquid under the force of the elastic loading

means.”); EX1003, ¶336. This is also shown in FIG35, 37-38, which depicts sealing edge 159 on the surface of the capsule:

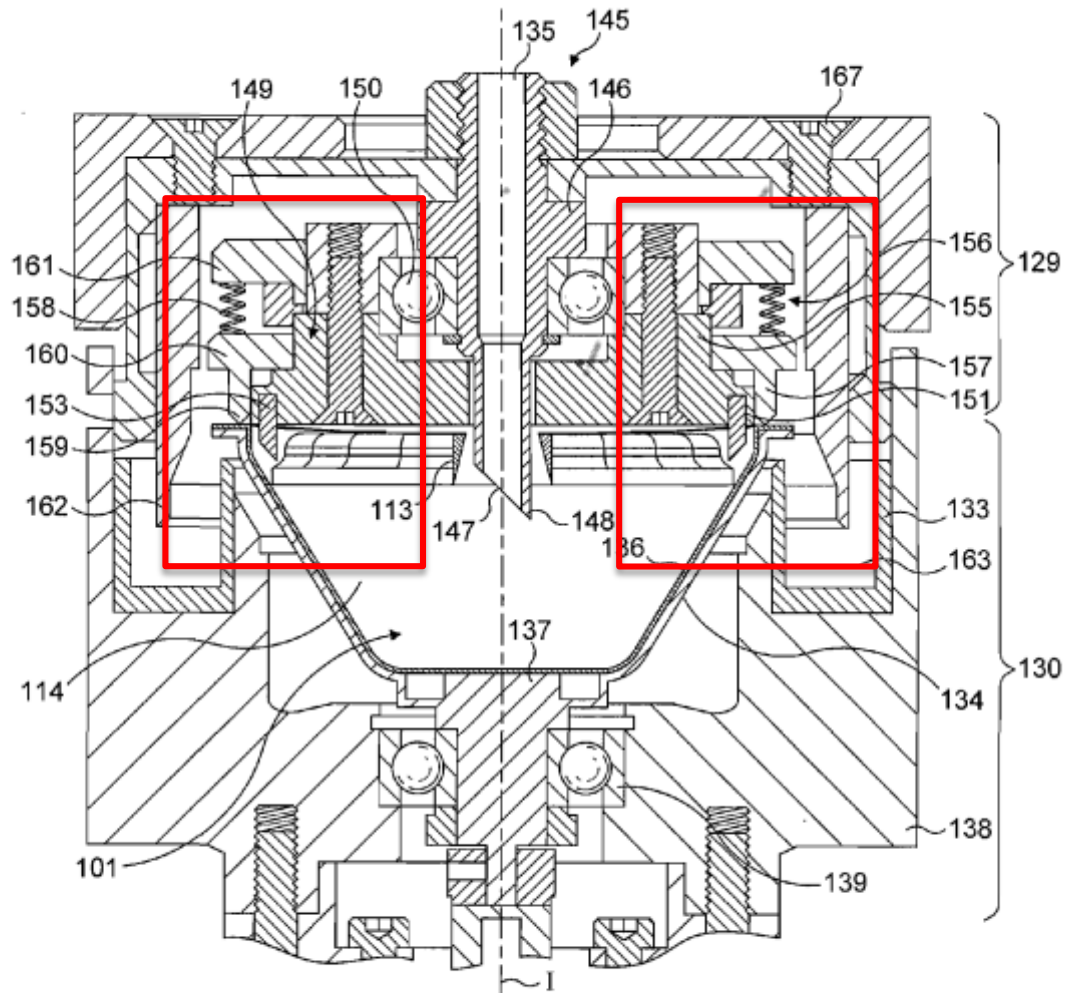


FIG. 35

Yoakim further discloses the cover configured to provide a piercing area that is configured to be pierced by a mandrel of the coffee machine, where the piercing area is laterally offset from the central axis of the base element. EX1004, [0382], [0446], EX1003, ¶339. Yoakim discloses piercing the foil lid of the capsule with a

series of needles 51 positioned in the brewing machine lid (40), which creates space for the brewed beverage to exit the capsule during the centrifugation brewing process. EX1004, FIG4, [0186]-[0187]; EX1003, ¶340. FIG7 depicts the capsule **after** being pierced by needles (51), showing piercing locations (74) offset from the central axis (73). EX1004, [0199]; EX1003, ¶341.

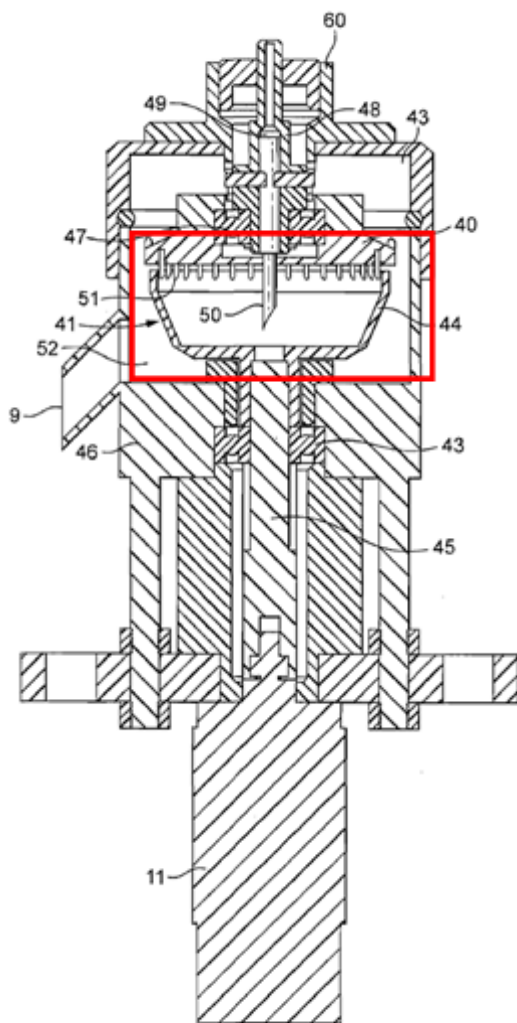


FIG. 4

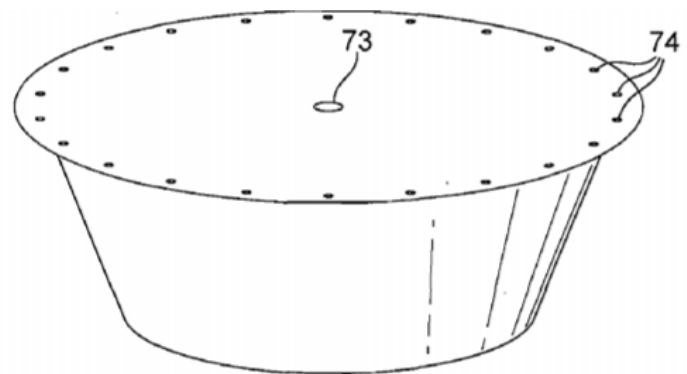


FIG. 7

It would also have been obvious to a POSITA to utilize the claimed seal configuration in the brewing head of the centrifugal brewing unit in order to achieve “the advantage of a control of the pressure of liquid exerted in the capsule at the level of the device,” as well as “optimize interaction of water and the ground coffee particles to obtain a good extraction of the coffee and aroma compounds,” and “improve the creation of foam or coffee crema.” EX1004, [0384]-[0385]; EX1003, ¶342.

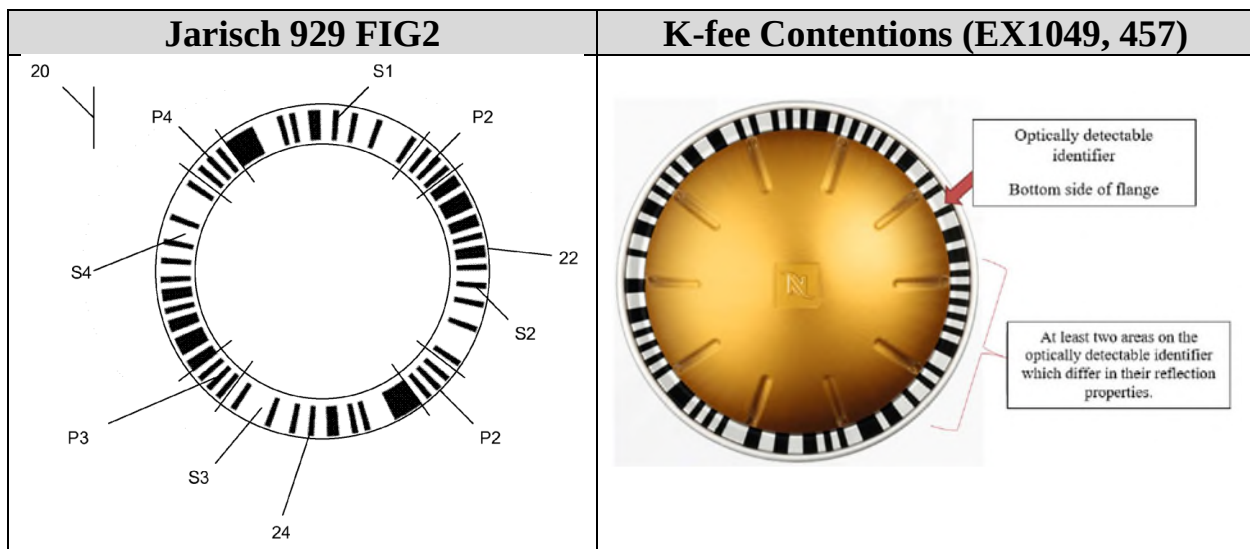
m) [1.n]/[8.n]

Yoakim discloses a capsule that does not include a filter and expressly confirms that a filter is optional. EX1004, [0171] (“An additional filtering layer can be used to filter the liquid depending on the size of the outlets.”), [0343] (disclosing optional filter embodiment); [0255], [0288], [0300], [0461]; EX1003, ¶¶344-345. As depicted in FIGS6-7, 54-60 and described in [0197]-[0199], Yoakim discloses embodiments using capsules that do not have a filter. EX1003, ¶346-347. It would also have been an obvious design choice to a POSITA to not use a filter in a centrifuge based brewing system in order to simplify the capsule design. *Id.*

n) [1.o]/[8.o]

Jarisch 929 discloses an individualization identifier that comprises at least two areas which differ in their optically detectable reflection properties. EX1006, [0026], [0027] (“The symbols [on the identifier] may be printed or embossed by a pattern

which possesses **surfaces** having **different reflective** and/or absorbing properties to light. The pattern may possess **first surfaces** having inclined **mirroring** or **absorbing properties to light or flat reflective properties to light**. Other variable physical characteristics may be chosen to distinguish each symbol, for example the color, **the reflectivity**, the opacity, the light absorption level, the magnetic field, the induced magnetic field, the resistivity, the capacity, etc.”), [0058], [0073], [0090], [0092]-[0094], [0102]-[0105], [0111]; EX1003, ¶¶348-350. This is consistent with K-fee’s Contentions:

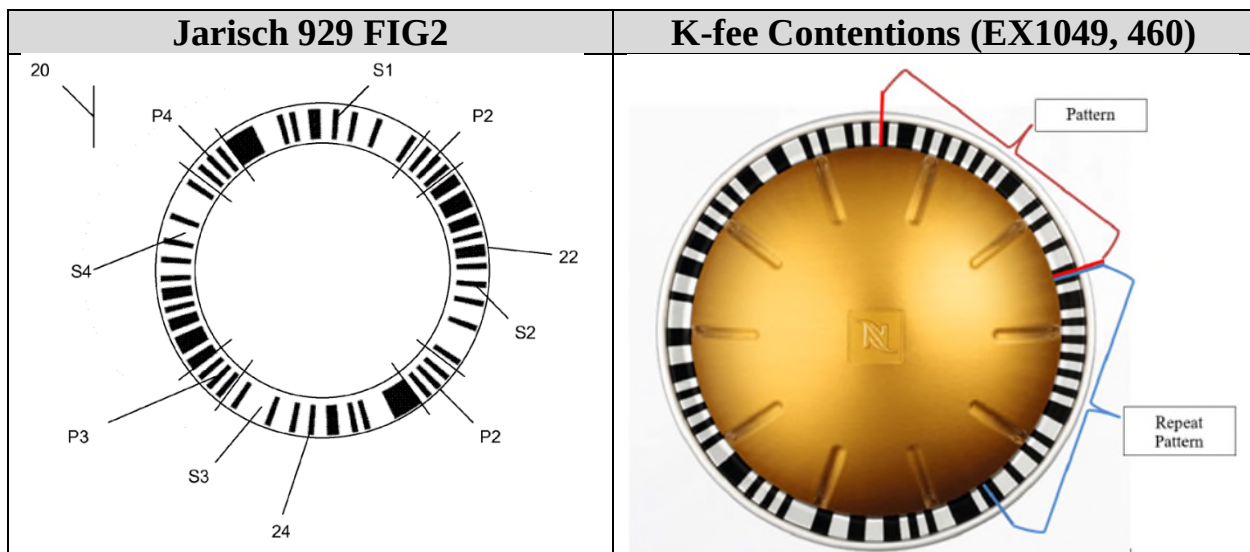


Rossi also discloses that its system identifies the capsule using “barcodes, antennae, **or paints having optically** measurable properties” that can be read by a “barcode reader, radio frequency wave transmitter and receiver, or **optical sensor**.” EX1041, 11. Additionally, a POSITA would be motivated to utilize codes having at least two areas which differ in their reflection properties in order for a sensor to

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read the optical code. EX1003, ¶¶351-353.

o) [1.p]/[8.p]

Jarisch 929 discloses that the individualization identifier includes an optically detectable, machine readable, repeat pattern, according to K-fee's Contentions. It discloses using "redundant information" such as "repetition codes." EX1006, [0025]-[0027]. Jarisch 929 explains that "[r]epetition of the sequence means that the same sequence is duplicated and the successive sequences are positioned in series along the circumference so that upon a 360-degree rotation of the capsule, the same sequence can be detected or read more than one time," which ensures a higher probability that at least one code is readable and may potentially reduce reading time. EX1006, [0068], [0056], [0110], [0033]; EX1003, ¶¶354-356. Thus, according to K-fee's Contentions, Jarisch 929 discloses an individualization identifier, which includes an optically detectable, machine readable, repeat pattern:



It would have been obvious for a POSITA to utilize the repeated code of Jarisch 929 to increase reliability of reading the code during rotation. EX1003, ¶357; Section VIII.A.1.

Jarisch 929 also discloses that the “optically detectable” “repeat pattern” is machine readable. EX1006, [0012] (“An object of the invention is to provide means for storing, **reading** and processing information related to a capsule, more particularly information for identifying said capsule **within a production machine** and for **retrieving or reading information**. . . .”), [0058] (“The symbols may be readable by an optical sensor included in the reading arrangement, the color and/or the shape of each symbol being chosen according to the value of said symbol.”). EX1003, ¶358.

p) [1.q]-[1.s] and [1.u]; [8.q]-[8.t]

Yoakim discloses that its system reads an “identification means” off of the capsule in order to determine whether the capsule belongs to a group associated with the machine. EX1004, [0006], [0468]-[0478], [0485]-[0492], [0503]-[0504]. Yoakim further explains “for larger capsules in the set, the identification means can set larger liquid volumes than for smaller capsules.” *Id.*, [0523]. The “identification means” on the capsule can be a type that encodes information such as a barcode or RFID “capable of delivering information to the brewing device, via a sensing device.” *Id.*, [0525], [04494]-[0496]. The encoded information is used to activate a

pump. *Id.*, [0477], [0521]-[0523], [0025], [0028], [0192], [0218]. It is also used to control a beverage making process such as water quantity, pressure or temperature. *Id.*, [0477], [0521]-[0523]. EX1003, ¶¶360-361.

It would have been obvious to a POSITA utilizing Yoakim's "identification means" to further encode the capsule for the machine to determine whether to permit the capsule to be used with the machine, or compare to a stored reference to determine whether the capsule is suitable for use in order for the machine to prevent unsafe brewing conditions with an improper capsule or poor beverage quality for suboptimal parameters, and comparing to a stored reference is an obvious method of evaluating the coded information because otherwise the brewing device would have no information as to how to control the pump to brew the beverage, and no basis of comparison for the identifier readout. EX1003, ¶362.

Jarisch 929 discloses that its capsule is encoded with information (EX1006, [0058]-[0061]) to determine the **type** of capsule associated to the system (*id.*, [0012], [0020]-[0022], [0051]-[0053]), as well as information used by the machine to control the beverage making process such as quantity, pressure and temperature (*id.*, [0021]-[0022], [0052]-[0053]). EX1003, ¶363.

It would have been obvious to a POSITA utilizing Jarisch 929's coding to further encode the capsule for the machine to determine whether to permit the capsule to be used with the machine, or compare to a stored reference to determine

whether the capsule is suitable for use in order for the machine, or activate the pump, in order to prevent unsafe brewing conditions with an improper capsule or poor beverage quality for suboptimal parameters, and comparing to a stored reference is an obvious method of evaluating the coded information because otherwise the brewing device would have no information as to how to control the pump to brew the beverage, and no basis of comparison for the identifier readout. EX1003, ¶364.

Rossi discloses using optical, infra-red, or RFID identifiers on the capsule to encode information (EX1041, 6, 9) to determine the brewing parameters, such as volume, pressure and temperature (EX1041, 1-2, 5). Rossi also discloses individualizing the portion capsule so it is permitted to be used with the machine, and determines whether the capsule is suitable for use. Rossi explains that prior art machines “are usually designed so as to operate with a certain design or type of load element” and “[u]se of an incorrect load element may cause the machine to malfunction and can prejudice the safety and integrity of the machine and may harm the user.” EX1041, 3. Rossi seeks to solve this problem by “providing a safe and simple system and process for **ensuring that an appropriate load element is used.**” *Id.* EX1003, ¶365.

Rossi determines **whether it recognizes** the identification element, and a failed recognition would indicate to a POSITA that the capsule is not permitted or suitable for use with the machine. EX1041, 5 (“The use of an identification element

and recognition means . . . helps to prevent the safety hazard associated with inappropriate operating conditions.”), 6 (preventing different capsules from original set); EX1003, ¶366. Rossi additionally discloses this feature through the identification of a “validation element” that ensures only capsules permitted or suitable for use activate the machine. EX1041, 5; EX1003, ¶366. A POSITA would understand that already-used capsules would constitute a group of capsules that are not suitable for use with the machine. *Id.* Rossi also discloses that the identification and verification elements can be optical codes located on the capsule, and can both be the same element. EX1041, 9, 7, 11; EX1003, ¶366. Rossi discloses using the encoded information to activate a pump because Rossi is designed so that the beverage production process only activates after identification and validation elements are properly recognized. EX1041, 7, 9-11. Rossi further discloses comparing the encoded information to a stored reference to make its determinations. *Id.*, 9 (“checking means [that] **compares the signal** from the recognizing means for the identifying element and the validation element **with pre-stored data** in order to allow the machine to proceed to activation only if it recognizes the identifying element and the unvalidated validation element”).

In addition, it would have been obvious to a POSITA combine Yoakim, Jarisch 929 and Rossi to arrive at the claimed limitations. EX1003, ¶367; *supra* Section VIII.A.1.

q) [1.t]

Yoakim in view of Jarisch 929 discloses and/or renders obvious an individualization identifier that is located both under the flange, and also located on the outside surface of the wall of the base element, according to K-fee's Contentions. Jarisch 929 discloses that the individualization identifier can be included on the outside surface of the wall of the base element, in addition to on the periphery of the flange. EX1006, [0063]-[0064] ("The support can be part of, or be formed directly on, ***the body of the capsule***. The support ***can also*** be disposed on the bottom side of the rim of the capsule."), [0090]-[0092]; EX1003, ¶¶369-370.

Furthermore, it would have been obvious to a POSITA to utilize an individualization identifier both on the bottom of the flange and on the outside surface of the wall of the base element to provide an alternative location to read the code in order to increase the chances of the code being read. EX1003, ¶¶371-372.

3. Claim 2

Yoakim discloses that the base element has an exterior wall region that may be comprised of an electrically conductive metal such as aluminum, which forms an electrically conductive section under K-fee's apparent construction. EX1004, [0128]-[0129], [0496]; EX1003, ¶¶373-374. Aluminum is known to be an excellent electrical conductor, and it has been acknowledged that an aluminum capsule is electrically conductive. EX1044, [0044]-[0045]. Yoakim discloses that the entire

capsule may be made of aluminum. EX1004, [0128]-[0129], [0215]; EX1003, ¶374.

Jarisch 929 discloses that the identifier “may be printed or embossed” on the capsule rim and may vary by “magnetic field, induced magnetic field, resistivity, [or] capacity.” EX1006, [0027], [0102]-[0104], [0113]-[0115]. A POSITA would understand Jarisch 929’s code provided on Yoakim’s aluminum capsule would therefore be electrically conductive. It would also be obvious to a POSITA for a code placed on an aluminum capsule to maintain the electrical conductivity of the capsule surface to serve as a means for recognition. EX1003, ¶¶375-376.

4. Claim 3

As discussed in *supra* Section VIII.A.2.(f), Rapparini discloses a plurality of “vertically oriented” grooves on the outside surface of the wall, which also forms corresponding “vertically oriented” ribs on the inside surface of the wall. Rapparini further discloses and/or renders obvious that a plurality of vertically oriented grooves/ribs can generate turbulence of hot water in the cavity and/or impart rigidity to the wall of the base element. EX1003, ¶¶377-378.

A POSITA would have understood that Rapparini’s vertically oriented grooves in the cavity would induce a turbulent flow of the water through the portion capsule. EX1003, ¶379. For example, Yoakim explains that, while spinning, the fluid is guided and distributed into separate grooves which promotes flow. EX1004, [0218] (“The upper surface of the lid 400 may comprise a water distribution structure

such as radial grooves or recesses to promote the flow of water toward the surface of the collecting assembly . . .”). A POSITA would understand this to mean that the grooves in Rapparini would generate turbulence of the water because under pressure and velocity, grooves or recesses can cause abrupt changes in direction, thus resulting in turbulence and mixing within the capsule. EX1003, ¶380. This concept would also be obvious, as it was well-known in the art to utilize grooves and ribs in the capsule cavity to achieve the predictable result of influencing water flow. EX1003, ¶381; EX1033, 2:30-35; EX1034, [0009], [0019]-[0020].

Rapparini also discloses that its grooves impart rigidity by “stiffening” the wall of the base element. EX1008, [0007]-[0009], [0011], [0052]-[0054]; EX1003, ¶¶382-383.

5. Claim 4

For the same reasons as discussed in Section VIII.A.2.(f), Rapparini discloses grooves covering 40% to 60% of the wall between the flange and the closed bottom. EX1003, ¶¶384-385.

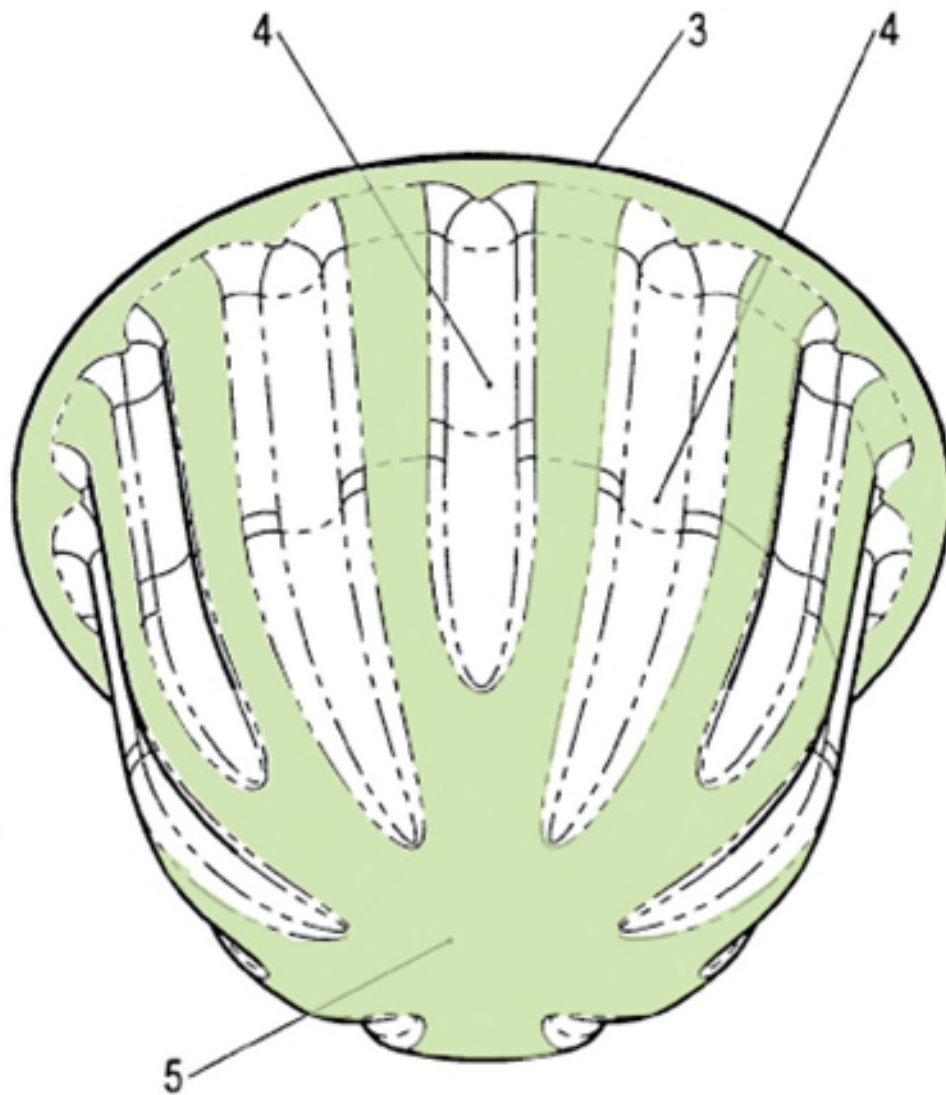


FIG. 6 bis

In addition, it would be obvious to a POSITA to provide grooves on a capsule overing 40% to 60% of the wall between the flange and the closed bottom in order to increase structural stability of the capsule wall, or as a design choice in a limited

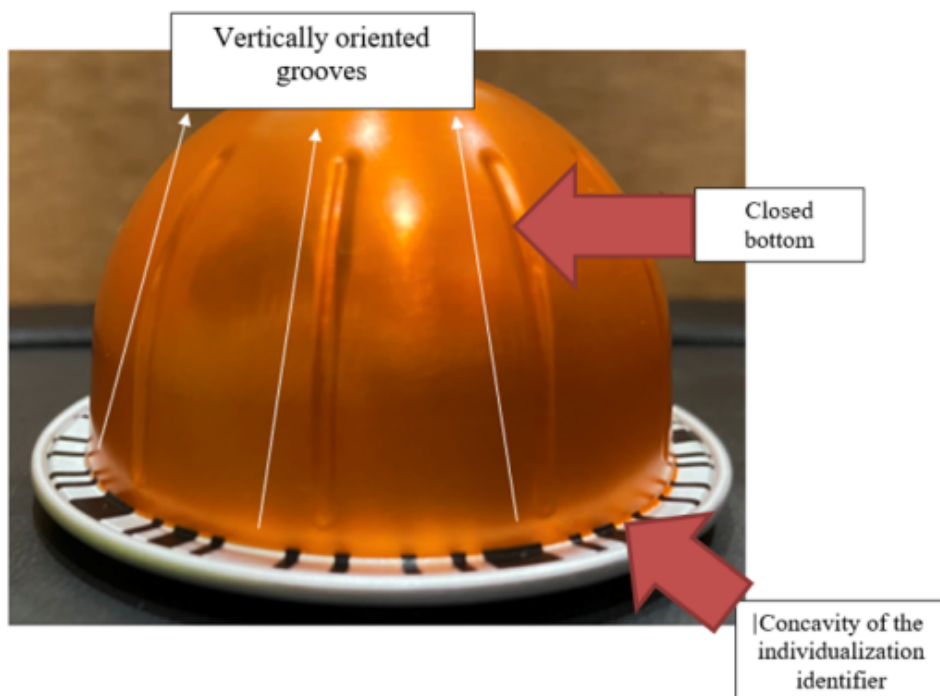
number of options of vertical groove length and location. EX1003, ¶¶386-388.

6. Claim 5

Yoakim and Rossi explicitly disclose that the individualization identifier may be a barcode. EX1004, [0494]-[0496], [0525]; EX1041, 9 (“These are preferably in the form of barcodes...”); EX1003, ¶¶390-393.

7. Claim 6

Jarisch 929 discloses and/or renders obvious an identifier that exhibits a convexity or concavity, according to K-free’s Contentions. EX1003, ¶¶394-395. K-free interprets this limitation such that the transition of the code from the rim to the body of the capsule constitutes a ‘concavity.’ EX1049, 479-480.

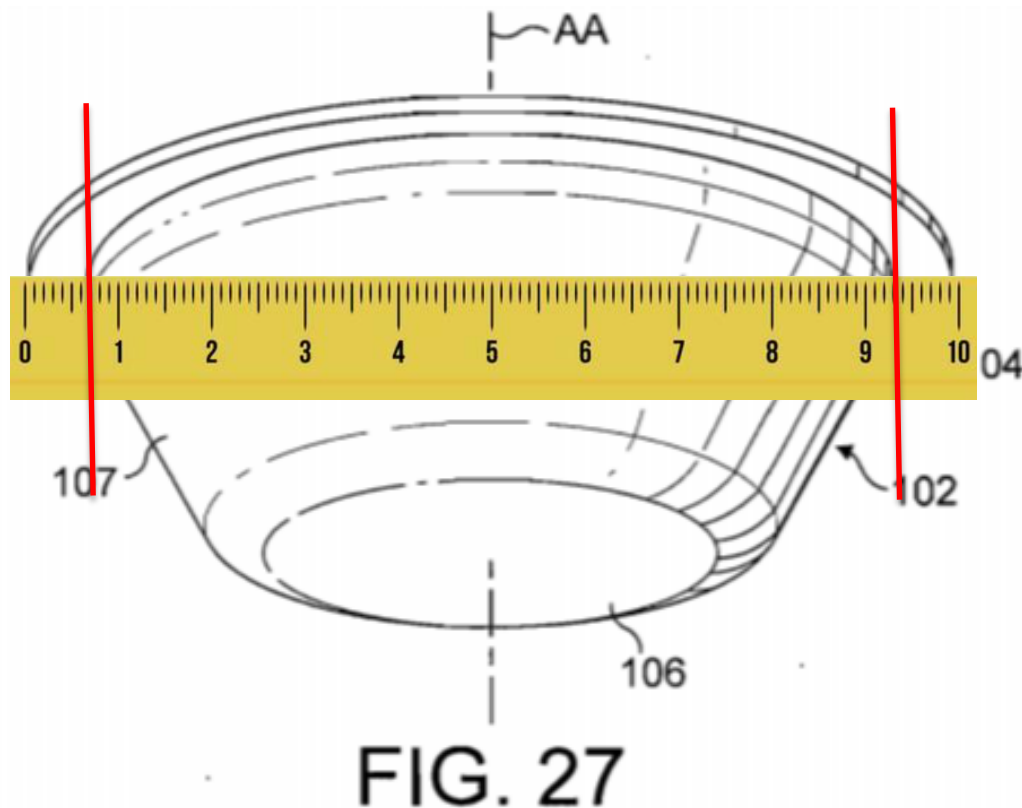


As set forth in element [1.t] (Section VIII.A.2.q), Jarisch 929 discloses locating the code on both the bottom of the flange and the capsule body wall.

Accordingly, it would have been obvious to a POSITA based on Jarisch 929 to arrive at this limitation, and it also would have been an obvious design choice. EX1003, ¶¶396-397.

8. Claim 7

Yoakim discloses a portion capsule where a ratio of the diameter of the wall of the base element which adjoins the flange to a diameter of the flange is between 0.85-0.89. As shown below, the diameter of the wall of the base element in FIG27 is approximately 0.86 of the total diameter of the flange. EX1003, ¶¶398-399.



A POSITA viewing FIGS. 26-27 of Yoakim would have understood that they

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disclose and/or render obvious a ratio of a diameter of the wall of the base element which adjoins the flange to a diameter of the flange between 0.85 and 0.89. EX1003, ¶¶400-401.

9. Claim 8

Yoakim, Jarisch 929, Rapparini and Rossi disclose and/or render obvious all elements of claim 8. Elements [8.a]-[8.t] are discussed above in connection with claim 1 in Sections VIII.A.2. EX1003, ¶¶402.

IX. DENIAL UNDER §325(d) IS INAPPROPRIATE

The Board employs a two-part test for §325(d). *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 (Feb. 13, 2020) (precedential).

A. Part 1

The prior art was all cited, directly or indirectly, in a series of IDSs containing over 700 references. However, analysis under Part 1 is not necessary because, as detailed below, Part 2 does not support §325(d) denial because the Examiner materially erred in allowing the '910 Patent claims just as the Board found in related patents—IPR2022-01574, IPR2023-00502, and IPR2023-00485. Indeed, the Examiner materially erred as he never saw the Institution Decisions from these proceedings that rejected K-fee's arguments and credited Petitioner's combinations.

B. Part 2

The Examiner committed material errors by “misapprehending or overlooking specific teachings in the relevant prior art” that, had they been properly considered, would have led the Examiner to conclude that the challenged claims are unpatentable. *Advanced Bionics*, 8 n.9, 10.

Factor (c) weighs against discretionary denial because none of the Petition art was the basis of any rejection. *Trend Micro Inc. v. Cupp Comput. AS*, IPR2021-00813, Paper 7, 23 (Oct. 25, 2021) (factor (c) “strongly favors not exercising . . . discretion” where IDS reference does not form basis for rejection). None of Yoakim, Jarisch 929, Rossi or Rapparini were used by the Examiner against any of the present claim limitations. In fact, as detailed in Section III.B, K-fee actively tried to avoid addressing the substance of the Jarisch disclosure during prosecution. After Jarisch was discussed by the Examiner during an interview as a potential prior art reference (EX1002, 171), K-fee responded by disputing that it was prior art (*id.*, 202), which led the Examiner to allow the claims (*id.*, 225). After receiving a Suggestion for Interference against Jarisch, the Examiner withdrew the allowance and rejected the claims over Jarisch (*id.*, 328-338). ***Instead of substantively responding to Jarisch***, K-fee filed a Notice of Appeal that it never pursued (*id.*, 355), filed other applications with similar subject matter, and then filed a RCE to remove the “code under the flange” language altogether to “moot” the prosecution’s focus on Jarisch (*id.*, 417,

430). Then, after almost one year passing, K-fee filed an RCE that ***added limitations directed to an identifier on the bottom of the flange***, just as had been at issue in Jarisch (*id.*, 569), added further limitations to further distinguish from Jarisch and disputed that Jarisch was prior art (*id.*, 637-645).

Critically, the Examiner never evaluated Jarisch 929 (which has additional disclosures relevant to the claims beyond Jarisch), or other critical references that teach K-fee's claims such as Yoakim, Rossi⁷ and Rapparini.⁸ As such, to the extent

⁷ Rossi was used in Appl. 16/538,752, but for claims that did ***not*** include limitations any of the encoding limitations found in the '910 (e.g., [1.q]-[1.u]). In response, Applicant twice added claim limitations (EX1065, 2-3; EX1066; 2-3) and never disputed the Examiner's use of Rossi, instead arguing that other limitations provided reasons for allowance.

⁸ Jarisch 929 (EX1006) was used in Appl. No. 15/211,823 relating to an identifier "included in the membrane as a partial layer of the membrane," but there are no "partial layer" limitations in the '910 Patent claims. In other examinations, such as Appl. No. 16,860,441 ("the '441 Application"), the Examiner reiterated that Jarisch discloses that it was "well established" to place optical codes "on the bottom side of the flange of a portion capsule" EX1062, 15. During examination of 16/538,752, K-fee did not dispute the Examiner's reliance on Jarisch (EX1064, 8)

the asserted *combination* of prior art references was evaluated during prosecution of the application that matured into the '910 Patent (it was not), such evaluation was *minimal* at best. Thus, this factor weighs against exercising discretion to deny institution.

Prior Panels have found such practices indicative of Examiner error under *Advanced Bionics. Sharkninja Operating LLC v. iRobot Corp.*, IPR2020-00733, Paper 11, 42-43 (PTAB Oct. 6, 2020) (“We discern that the likeliest explanation, on this record, for the Examiner’s failure to discuss Kim is that the Examiner simply overlooked Kim’s pertinence to the claims, perhaps because it was one reference among 1577 included in an IDS. Accordingly, we determine that “the Examiner erred in the evaluation of the prior art . . . [and] overlooked specific teachings in the relevant prior art. . . .”).

Factor (e) weighs against discretionary denial. The Examiner materially erred by overlooking the specific prior art disclosures in Yoakim, Jarisch 929, Rossi and Rapparini, and explicitly negate the Examiner’s Reasons for Allowance. This

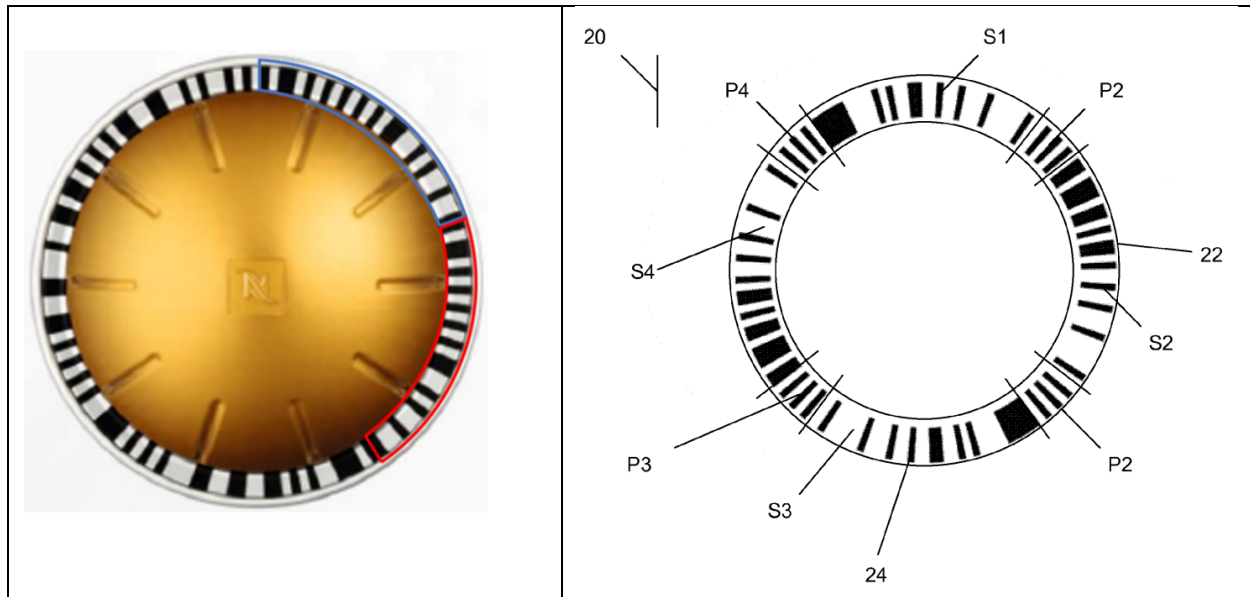
and instead amended its claims to recite additional limitations. EX1065, 2-3. Neither K-fee nor the Office have never disagreed on record with the relevance of Jarisch’s disclosure K-fee’s claim limitation of a code on the bottom side of the capsule flange.

Petition cures all of the Examiner’s errors and demonstrates why the challenged claims are unpatentable.

This Petition cures all of the Examiner’s errors and demonstrates why the challenged claims are unpatentable. As explained above (Section VIII.A.2-9), the Petition identifies where the prior art teaches or suggests every limitation of the challenged claims. Petitioner also explains why a POSITA would have combined the various disclosures of the cited references to arrive at the subject matter of the challenged claims (Section VIII.A.1), and why K-fee’s representations about its priority dates to the USPTO were wrong (Section VII.E).

The Examiner erred because Jarisch 929 teaches “an optically detectable, machine readable, repeat pattern” and “[an] individualization identifier [] located on the bottom side of the flange” similar to K-fee’s own Contentions:

K-fee’s Infringement Contentions	Jarisch 929 Disclosure
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EX1003, ¶147; compare EX1049, 439-440, with EX1006, FIG2 [0017], [0022], [0063]-[0064]. Jarisch 929 further discloses that the identifier can be “present on the rim of the capsule, in particular, ***on the bottom of the rim of the capsule which is opposed to the lid or foil of the capsule.***” EX1006, [0037].

The Examiner further erred because Yoakim teaches a majority of limitations regarding the capsule ([1.a]/[8.a]-[1.c]/[8.c], [1.i]/[8.i]-[1.j]/[8.j], [1.m]/[8.m]-[1.n]/[8.n]), Yoakim, Jarisch 929 and Rossi teaches the encoding and machine operation ([1.q]/[8.q]-[1.s]/[8.s]/[1.u]/[8.q]-[8.t], and Rapparini teaches the specific groove and rib configuration ([1.e]-[1.h]). Accordingly, the combination of Yoakim, Jarisch 929, Rapparini and Rossi teach each and every limitation of the claims. Sections VIII.A.2-9; EX1003, ¶¶146-150.

Thus, based on these references, supported by the testimony of Michael Jobin, “reasonable minds cannot disagree that the Office erred in a manner material to

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patentability in its treatment of the art by failing to reject the claims ... over the references cited in Petition’s challenges.” *Apple, Inc. v. Omni MedSci, Inc.*, IPR2020-00029, Paper 7, 55 (PTAB Apr. 22, 2020). None of the Petition references should form the basis for discretionary denial because they unequivocally teach the limitations in question and demonstrate material error. *Apple v. Koss Corp.*, IPR2021-00381, Paper 15, 29 (PTAB Jul. 2, 2021).

Because the prior art combinations in the Petition explicitly negate the Examiner’s Reasons for Allowance, the Examiner materially erred by misapprehending or overlooking their respective disclosures. *3Shape A/S and 3Shape Inc., v. Align Tech., Inc.*, IPR2021-01323, Paper 16, 12 (PTAB Jan. 31, 2022); *Viken Detection Corp. v. Am. Sci. and Eng. Inc.*, IPR2021-01585, Paper 11, 13-14 (PTAB May 5, 2022). Thus, Factor (e) weighs against discretionary denial.

Factor (f) weighs against discretionary denial. This Petition is supported by the Jobin declarations (EX1003), which provides new analysis as to K-fee is not entitled to foreign priority (*Id.*, ¶¶157-198). Thus, Factor (f) weighs against discretionary denial.

The prior art renders the Challenged Claims unpatentable as obvious, and the strength of the Petition alone supports the Board not exercising its discretion under § 325(d). *Apple, Inc. v. Omni MedSci, Inc.*, IPR2020-00029, Paper 7, 55 (PTAB Apr. 22, 2020).

X. DENIAL UNDER *NHK/FINTIV* IS ALSO INAPPROPRIATE

Factor 1 weighs against denial or is at least neutral: The co-pending litigation is in its early stages. And while a stay has not yet been granted, Petitioner intends to move the district court for a stay pre-institution, and if denied, will renew its motion if the IPRs are instituted. Here, IPRs are being filed on all asserted patents and Judge Wu has granted stays pending IPR even where a claim construction order has already been issued. *Vivint, Inc. v. SkyBell Technologies, Inc.*, 2022 WL 18587113, at *4 (C.D. Cal. Nov. 10, 2022).

Factor Two weighs against denial: Trial will likely occur “after the projected statutory deadline for the PTAB’s final written decision.” Interim Procedure, 9. The current case schedule concludes with the *Markman* hearing and thus ***no trial date has been set***. The median time to trial in this district is approximately 28 months. *See* EX1057, 68. For Judge Wu and patent cases in this district, average approximately 33 months to trial (roughly September 2025). *See* EX1058. Thus, it is more likely that the trial will occur long after conclusion of this IPR.⁹

⁹ Interim Fintiv Guidance also notes that “when analyzing the proximity of the court’s trial date under factor two of Fintiv, when other relevant factors weigh against exercising discretion to deny institution or are neutral, the proximity to trial

Factor Three weighs against denial: Investment in the case has not been significant. Motion practice has been minimal and discovery is in its early stages. The parties are engaged in claim construction with the *Markman* hearing scheduled in January 2024. Petitioner was also diligent to file these IPRs within approximately two months of the PTAB instituting IPRs addressing similar issues, including on § 325(d) issues. IPR2023-00502; IPR2023-00485.

Factor Four is neutral: There may be little to no substantive overlap with the district court case if a stayed is granted.

Factor Five is neutral: The parties in the litigation and this IPR are the same.

Factor Six strongly weighs against denial: Finally, as evidenced by related IPR institutions (IPR2022-01574, IPR2023-00502, IPR2023-00485) the merits of the Petition are compelling and strongly weigh against denial by clearly showing the unpatentability of the claims, including the limitations the Examiner cited as lacking in the prior art.

Thus, §314(a) denial under *Fintiv* is inappropriate.

should not alone outweigh all of those other factors.” See USPTO Memorandum, Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation, 8 (June 21, 2022).

XI. MANDATORY NOTICES PURSUANT TO 37 C.F.R. §42.8

A. Real Parties-In-Interest under 37 C.F.R. §42.8(b)(1).

Nestlé USA, Inc., Nestlé Nespresso SA, and Société Des Produits Nestlé SA are real parties-in-interest with Petitioner.

B. Related Matters Under 37 C.F.R. §42.8(b)(2).

Nespresso USA, Inc. is seeking declaratory judgment that it does not infringe the '910 Patent in *Nespresso USA, Inc. v. K-Fee System GmbH*, Case No. 2:22-cv-09295-GW.

C. Lead and Back-up Counsel under 37 C.F.R. §42.8(b)(3).

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D. Service Information under 37 C.F.R. §42.8(b)(4).

Please direct all correspondence to lead counsel at the address identified above. Petitioner consents to electronic service on counsel of record.

XII. GROUNDS FOR STANDING

Petitioner certifies that the '910 Patent is available for *inter partes* review and that Petitioner is not barred or estopped from requesting an *inter partes* review of the '910 Patent. 37 C.F.R. §42.104(a).

XIII. PAYMENT OF FEES

A fee of \$41,500 charged to Deposit Account 130019 was paid with the filing this petition. 37 C.F.R. §§42.15(a), 42.103. Should any further fees be required by the present Petition, the Board is hereby authorized to charge the above-referenced Deposit Account.

XIV. STATEMENT OF PRECISE RELIEF REQUESTED

Petitioner requests IPR and cancellation of claims 1-8 because they are unpatentable under 35 U.S.C. §103 based on the foregoing grounds.

Date: February 12, 2024

Respectfully submitted,

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Counsel for Petitioner

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§42.6 and 42.105, I hereby certify that on February 12, 2024, a copy of the attached CORRECTED PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 11,554,910, together with all exhibits, and all other papers filed therewith, including a Power of Attorney on behalf of Petitioners, was served via Priority Mail Express on the attorneys of record for the patent owner at the following address:

Attorney of Record for Patent Owner

The Dobrusin Law Firm P.C. (Customer No 25215)
29 W. Lawrence Street
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Pontiac MI 48342

Date: February 12, 2024

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Patent No. 11,554,910
Corrected Petition for *Inter Partes* Review

Counsel for Petitioner

CERTIFICATION PURSUANT TO 37 C.F.R. § 42.11

Pursuant 37 C.F.R. § 42.11, the undersigned certifies that this CORRECTED PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 11,554,910, and accompanying evidence are not being presented for an improper purpose and that all legal contentions, allegations, and denials are warranted and have evidentiary support.

Date: February 12, 2024

Respectfully submitted,

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Counsel for Petitioner

CERTIFICATION PURSUANT TO 37 C.F.R. § 42.24(d)

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that this CORRECTED PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 11,554,910, complies with the type-volume limitation of 37 C.F.R. § 42.24(a). The word count application of the word processing program used to prepare this paper states that the paper contains 13,985/14,000 words, excluding the parts of the paper exempted by 37 C.F.R. §§ 42.24(a)(1).

Date: February 12, 2024

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Counsel for Petitioner

CLAIM LISTING APPENDIX

1.	A portion capsule for making a beverage and having an individualization identifier capable of being detected by a sensor/detection system for determining whether the portion capsule is suitable for a specific coffee machine, the portion capsule comprises:
[1.a]	a base element with a cavity, in which a raw beverage material is provided, the base element is deep drawn, made of metal, and
[1.b]	has an open upper end portion, a closed bottom, and a wall that extends from the open upper end portion to the closed bottom, the wall is rotationally symmetrical about a central longitudinal axis of the base element, the wall includes an outside surface and an inside surface that faces the raw beverage material, the base element has a first height that is defined between the open upper end portion and the closed bottom;
[1.c]	a flange extending outwardly from the wall at the open upper end portion of the base element, the flange having a top side and an opposing bottom side,
[1.d]	the individualization identifier is located on the bottom side of the flange;
[1.e]	a plurality of vertically oriented grooves arranged on the outside surface of the wall,
[1.f]	the plurality of vertically oriented grooves each have a radiused top end and a radiused bottom end and are spaced a distance between the flange and the closed bottom,
[1.g]	the plurality vertically oriented grooves cover 20% to 80% of the wall between the flange and the closed bottom;
[1.h]	a plurality of vertically oriented ribs arranged on the inside surface of the wall;
[1.i]	a barrier sheet to prevent moisture or aroma from escaping out of the portion capsule;
[1.j]	a cover comprising a metal foil that is sealed to the top side of the flange, the cover having a central region and a perimeter,
[1.k]	the cover is bowed upwardly to a second height at the central region relative to the perimeter,
[1.l]	the second height of the cover is less than the first height of the base element,
[1.m]	the cover being dimensioned and configured to provide a sealing area that is configured to bear against a seal of the specific coffee machine, the cover being dimensioned and configured to provide a piercing area

	that is configured to be pierced by a mandrel of the specific coffee machine, the piercing area being laterally offset from the central longitudinal axis of the base element;
[1.n]	wherein the portion capsule is free of a filter inside of the cavity; and
[1.o]	wherein the individualization identifier: i) comprises at least two areas which differ in their optically detectable reflection properties;
[1.p]	ii) includes an optically detectable, machine readable, repeat pattern;
[1.q]	iii) encodes information used by the specific coffee machine to individualize the portion capsule so the portion capsule is permitted to be used with the specific coffee machine;
[1.r]	iv) encodes information used by the specific coffee machine to activate a pump of the specific coffee machine;
[1.s]	v) encodes information used by the specific coffee machine to control a beverage-making process, which includes setting a quantity of hot water, pressure of the hot water, and/or a temperature of the hot water;
[1.t]	vi) is further provided on the outside surface of the wall of the base element; and
[1.u]	vii) is compared to a stored reference to determine if the portion capsule is suitable for the specific coffee machine.
2.	The portion capsule according to claim 1, wherein the individualization identifier is electrically conductive.
3.	The portion capsule according to claim 2, wherein the plurality of vertically oriented grooves generate turbulence of the hot water in the cavity, impart rigidity to the wall of the base element, or both.
4.	The portion capsule according to claim 3, wherein the vertically-oriented grooves cover 40% to 60% of the wall between the flange and the closed bottom.
5.	The portion capsule according to claim 3, wherein the individualization identifier is a barcode.
6.	The portion capsule according to claim 3 wherein the individualization identifier exhibits a concavity and/or a convexity.
7.	The portion capsule according to claim 6, wherein a ratio of a diameter of the wall of the the [sic] base element which adjoins the flange to a diameter of the flange is between 0.85 and 0.89.
8.	A portion capsule for making a beverage and having an individualization identifier capable of being detected by a sensor/detection system for determining whether the portion capsule is suitable for a specific coffee machine, the portion capsule comprises:

[8a.]	a base element with a cavity, in which a raw beverage material is provided, the base element is deep drawn, made of metal, and
[8b.]	has an open upper end portion, a closed bottom, and a wall that extends from the open upper end portion to the closed bottom, the wall is rotationally symmetrical about a central longitudinal axis of the base element, the wall includes an outside surface and an inside surface that faces the raw beverage material, the base element has a first height that is defined between the open upper end portion and the closed bottom;
[8c.]	a flange extending outwardly from the wall at the open upper end portion of the base element, the flange having a top side and an opposing bottom side,
[8d.]	the individualization identifier is located on the bottom side of the flange;
[8e.]	a plurality of vertically-oriented grooves arranged on the outside surface of the wall,
[8f.]	the plurality of vertically-oriented grooves each have a radiused top end and a radiused bottom end and are spaced a distance between the flange and the closed bottom,
[8g.]	the plurality of vertically-oriented grooves cover 20% to 80% of the wall between the flange and the closed bottom;
[8h.]	a plurality of vertically oriented ribs arranged on the inside surface of the wall;
[8i.]	a barrier sheet to prevent moisture or aroma from escaping out of the portion capsule;
[8j.]	a cover comprising a metal foil that is sealed to the top side of the flange, the cover having a central region and a perimeter,
[8k.]	the cover is bowed upwardly to a second height at the central region relative to the perimeter,
[8l.]	the second height of the cover is less than the first height of the base element,
[8m.]	the cover being dimensioned and configured to provide a sealing area that is configured to bear against a seal of the specific coffee machine, the cover being dimensioned and configured to provide a piercing area that is configured to be pierced by a mandrel of the specific coffee machine, the piercing area being laterally offset from the central longitudinal axis of the base element;
[8n.]	wherein the portion capsule is free of a filter inside of the cavity; and

[8o.]	wherein the individualization identifier: i) comprises at least two areas which differ in their optically detectable reflection properties;
[8p.]	ii) includes an optically detectable, machine readable, repeat pattern;
[8q.]	iii) encodes information used by the specific coffee machine to individualize the portion capsule so the portion capsule is permitted to be used with the specific coffee machine;
[8r.]	iv) encodes information used by the specific coffee machine to activate a pump of the specific coffee machine;
[8s.]	v) encodes information used by the specific coffee machine to control a beverage-making process, which includes setting a quantity of hot water, pressure of the hot water, and/or a temperature of the hot water;
[8t.]	vi) is compared to a stored reference to determine if the portion capsule is suitable for the specific coffee machine.