

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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NINGBO LINHUA PLASTIC CO., LTD.,  
Petitioner,

v.

CONVERTER MANUFACTURING, LLC,  
Patent Owner.

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IPR2024-01435  
Patent 10,562,222 B2

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Before GRACE KARAFFA OBERMANN, JAMES A. TARTAL,  
and AVELYN ROSS, *Administrative Patent Judges*.

TARTAL, *Administrative Patent Judge*.

DECISION  
Denying Institution of *Inter Partes* Review  
35 U.S.C. § 314; 37 C.F.R. § 42.4

## I. INTRODUCTION

Ningbo Linhua Plastic Co., Ltd. (“Petitioner”)<sup>1</sup> filed a Petition pursuant to 35 U.S.C. §§ 311–319 requesting an *inter partes* review of claims 1–21 of U.S. Patent No. 10,562,222 B2 (Ex. 1001, “the ’222 patent”). Paper 2 (“Pet.”). Converter Manufacturing, LLC (“Patent Owner”)<sup>2</sup> filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). Patent Owner also filed a statutory disclaimer (Ex. 2001, the “Disclaimer”) under 35 U.S.C. § 253(a) and 37 C.F.R. § 1.321(a), dated December 13, 2024, disclaiming claims 1–5 and 11–20 of the ’222 patent.<sup>3</sup> Prelim. Resp. 1; Disclaimer, 1. Accordingly, only claims 6–10 and 21 of the ’222 patent (the “Challenged Claims”) remain at issue. *See* 37 C.F.R. § 42.107(e) (providing that “[n]o *inter partes* review will be instituted based on disclaimed claims”).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314(b) (2018); 37 C.F.R. § 42.4(a) (2023). An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). Upon consideration of the Petition, the Preliminary Response, and the evidence of record, we conclude that the information does not demonstrate a reasonable likelihood that Petitioner

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<sup>1</sup> Petitioner identifies no additional real parties-in-interest. Pet. 170.

<sup>2</sup> Patent Owner identifies no additional real parties-in-interest. Paper 6, 1.

<sup>3</sup> We understand Patent Owner’s statement in its Preliminary Response that it “filed disclaimer of Claims 1–4 and 11–20” to reflect a typographical error in that it does not identify claim 5, which was also disclaimed. *See* Disclaimer, 1. Our understanding is confirmed by Patent Owner’s statement that, in light of the Disclaimer, it has “limited the challenged claims to Claims 6–10 and 21,” which does not include claim 5. *See* Prelim. Resp. 1.

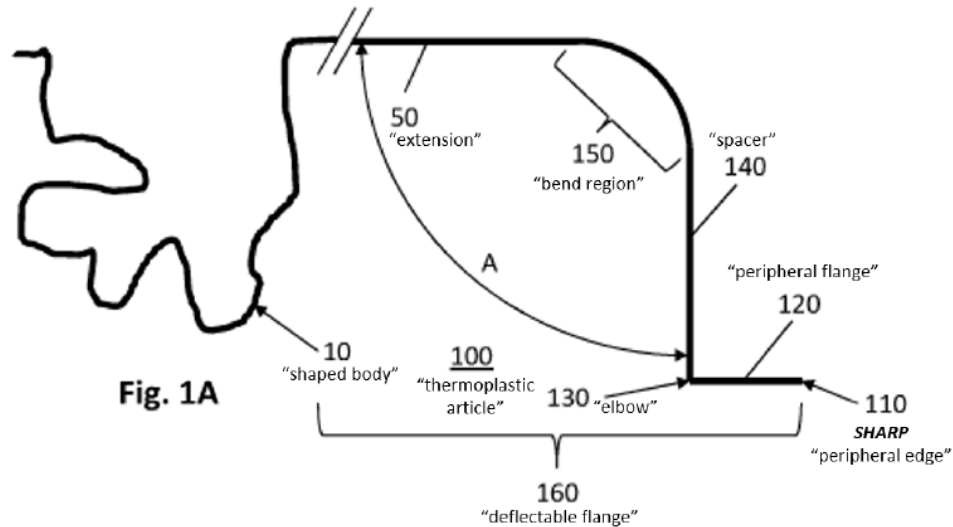
would prevail in showing the unpatentability of at least one of the Challenged Claims. Accordingly, we deny institution of *inter partes* review.

## II. BACKGROUND

### A. *The '222 patent*

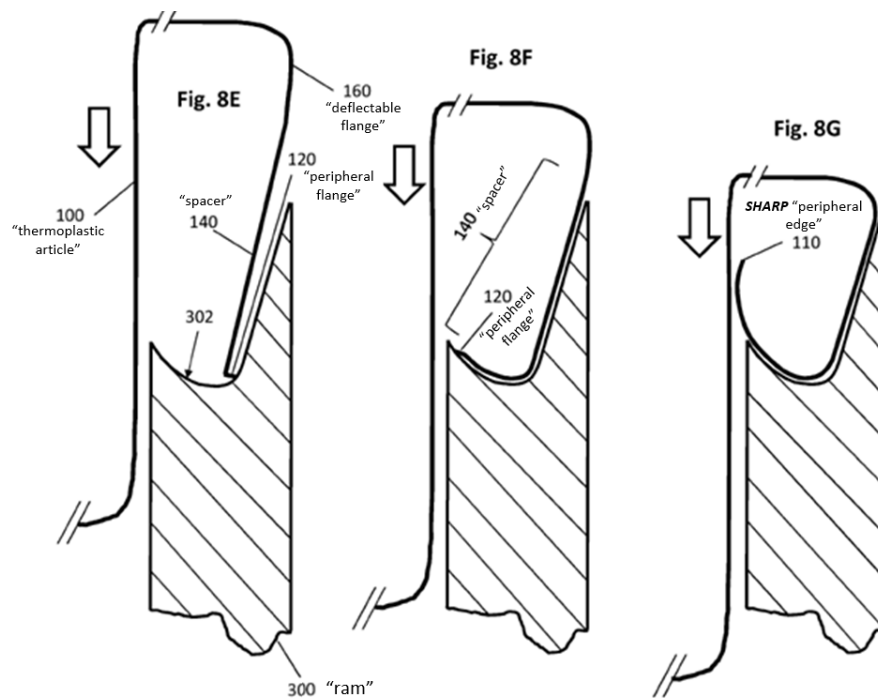
The '222 patent issued February 18, 2020, from an application filed on February 28, 2017, and is directed to articles processed according to “methods of displacing a sharp edge away from the periphery of an article made from a thermoplastic material, where the sharp edge might otherwise damage surfaces that contact the periphery of the article.” Ex. 1001, codes (21), (22), (45), 4:23–29. According to the '222 patent, “[f]ormation of shaped article from thermoplastic materials is well known,” and “[o]ne common use for shaped thermoplastics is to form containers that can be sealed with thin plastic films.” *Id.* at 1:18–19, 1:26–28. However, if the trimmed edge of the articles is sharp, “it can cut or break the film.” *Id.* at 1:32–39. Thus, the '222 patent recognizes that “[i]t would be beneficial if the sharp edges of shaped thermoplastic articles could be displaced in such a way that the risk of injury or damage to sealing films could be reduced,” and that “[i]t would be further beneficial if such individual shaped articles could be used with multiple known sealing technologies.” *Id.* at 3:30–40.

Figure 1A of the '222 patent, as annotated by Patent Owner, is reproduced below.



Prelim. Resp. 6. Figure 1A illustrates a sectional view of a thermoplastic article 100 having shaped body 10 and deflectable flange 160 formed at an edge. Ex. 1001, 6:13–15. Deflectable flange 160 includes extension 50, peripheral edge 110, peripheral flange 120, elbow 130, spacer 140, and bend region 150. *Id.* at 23:25–27. Angle “A” extends between extension 50 and spacer 140 and is preferably about ninety degrees. *Id.* at 13:4–8, 13:22–28, 23:30–36. Bend region 150 “forms an angle of less than 180 degrees between” body 10 and spacer 140. *Id.* at 23:27–30.

Reproduced below are Figures 8E, 8F, and 8G of the '222 patent, as annotated by Patent Owner.



Figures 8E, 8F, and 8G sequentially illustrate “deflection and rolling over of the deflectable flange 160, including the sharp peripheral edge 110,” using ram 300. *Id.* at 9:16–20. The '222 patent explains that “the same deflection and rolling over of the edge can be performed on multiple edges (e.g., all edges) of the article simply by using multiple rams or a ram that contacts all edges to be so treated.” *Id.* at 9:22–25. To roll and shape the edge of article 100, deflectable flange 160 is urged (in the direction indicated by the open arrows) against upper heated surface 302 of heated ram 300. *Id.* at 17:30–39. Deflectable flange 160 includes peripheral flange 120 at the peripheral end of spacer 140. *Id.* at 10:38–40. “[T]he peripheral flange 120 deflects during bending of the deflectable flange 160 to the extent that it becomes completely bent over the spacer 140, forming a ‘hook’-like structure.” *Id.* at 10:50–54.

The deflectable flange is softened when the temperature is raised above the glass transition temperature of the material of the flange but is preferably below the melting point of the material. *Id.* at 12:32–46.

According to the '222 patent, the edge and rigidity conferred to the shaped article “prevents deflection induced by tension in a film used to overwrap or seal the article (e.g., so-called ‘bow-tying’ as the phenomenon of a concave article closing upon its concavity when wrapped or sealed).” *Id.* at 22:55–59.

### *B. Illustrative Claim*

Taking into account the Disclaimer, the only claims challenged by Petitioner remaining at issue are claims 6–10 and 21 of the '222 patent. Pet. 1; Prelim. Resp. 1. Claim 21 is independent. Ex. 1001, 40:24–59. Claim 6 depends from independent claim 1 and claims 7–10 further depend from claim 6. *Id.* at 39:7–26.

Claim 6 is illustrative of the claimed subject matter at issue and is reproduced below, with bracketed labels annotated by Petitioner, along with claim 1 from which claim 6 depends.

1. [1Pre] A method of making a shaped article having a body with a smooth periphery, the method comprising
  - [1A] forming a thermoplastic into a shape comprising the body and a deflectable flange at a peripheral portion of the body,
  - [1B] the deflectable flange comprising an extension that extends peripherally away from the body and connects thereto
  - [1C] a bend region having a smooth contour and interconnecting the extension, at an approximately right angle, with a spacer that is connected with
  - [1D] a peripheral flange which bears a peripheral edge of the thermoplastic, the spacer and peripheral flange being connected, at an angle other than 180 degrees, at an elbow;

- [1E] impinging a ram against the peripheral flange to deflect the spacer toward the extension, whereby the magnitude of the angle between the spacer and the extension is decreased on account of at least one portion of the deflectable flange becoming bent, relative to its pre-impingement position,
- [1F] the bent portion being selected from the group consisting of the extension, the bend region, and the spacer;
- [1G] heating the bent portion to at least the glass transition temperature of the thermoplastic; and
- [1H] after impinging the ram against the peripheral flange and heating the bent portion to at least the glass transition temperature, further impinging the ram against the deflectable flange to further deflect the spacer toward the extension prior to
- [1I] disengaging the ram from the deflectable flange, whereby the bent portion remains deflected from its pre-impingement position even upon discontinuation of the impingement to yield the body with a smooth periphery.

*Id.* at 38:27–61; Pet. 175–179.

6. The method of claim 1, wherein the thermoplastic is formed into a shape comprising the body having a concave compartment with an opening and the deflectable flange about the entire periphery of the opening.

Ex. 1001, 39:7–10.

*C. Asserted Grounds of Unpatentability*

Petitioner asserts that the Challenged Claims are unpatentable based on the following grounds:

| Claims Challenged | 35 U.S.C. § | Reference/Basis <sup>4</sup> |
|-------------------|-------------|------------------------------|
| 6–10, 21          | 103         | Portelli <sup>5</sup>        |
| 6, 21             | 103         | Meadors <sup>6</sup>         |

Pet. 2. Petitioner relies on the supporting Declaration of Glenn May, dated September 12, 2024. Ex. 1003.

*D. Related Proceedings*

Petitioner and Patent Owner identify the following as related proceedings: (1) *Clearly Clean Products, LLC and Converter Manufacturing, LLC v. Ningbo Linhua Plastic Co., Ltd.*, Case No. 5:20-cv-01054 (C.D. Cal.); (2) *Clearly Clean Prods. LLC, et al. v. Tekni-Plex, Inc., et al.*, Case No. 2:20-cv-04723 (E.D. Pa); and (3) *In re Certain Rolled-Edge Rigid Plastic Food Trays*, No. 337-TA-1203 (I.T.C.). Pet. 170; Paper 6, 1–2. Patent Owner also identifies the following *inter partes* review proceedings as pertaining to the district court proceedings identified above: IPR2021-00916 (concerning U.S. Patent No. 9,908,281 B1), IPR2021-00918 (concerning U.S. Patent No. 10,189,624 B2), and IPR2021-00919 (concerning U.S. Patent No. 10,562,680 B2). Paper 6, 1–2.

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<sup>4</sup> In its identification of the grounds presented, Petitioner also refers to “the general knowledge of” a person of ordinary skill in the art. Pet. 2. In an obviousness analysis “the background knowledge possessed by a person having ordinary skill in the art” is always a consideration. *See, e.g., KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 401 (2007).

<sup>5</sup> International Publication No. WO 96/01179 A1, published January 18, 1996 (Ex. 1004, “Portelli”).

<sup>6</sup> U.S. Patent No. 4,228,121, issued October 14, 1980 (Ex. 1005, “Meadors”).

### III. ANALYSIS

#### A. *Legal Standards*

A patent claim is unpatentable under 35 U.S.C. § 103<sup>7</sup> if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR*, 550 U.S. at 406. In *Graham v. John Deere Co.*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness under § 103 that requires consideration of four factors: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of nonobviousness such as “commercial success, long felt but unsolved needs, failure of others, etc.” *Id.* at 17–18; *KSR*, 550 U.S. at 407. Neither party presents evidence or argument directed to secondary considerations.

#### B. *Level of Ordinary Skill in the Art*

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted).

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<sup>7</sup> The relevant sections of the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, took effect on March 16, 2013. Because the application that issued as the ’222 patent indicates that its earliest priority application was filed after March 16, 2013, we apply the AIA versions of these statutes. See 35 U.S.C. § 100(i).

Petitioner contends a person of ordinary skill in the art at the time of the invention “would have been a typical technician or engineer in the field of forming shaped thermoplastic articles [and] would be well versed with the concepts of the claims of the ‘222 Patent.” Pet. 4–5 (citing Ex. 1003 ¶ 38). Petitioner further contends as follows:

Some of those technicians and engineers would have four-year degrees, but many of them would rely primarily on the practical experience that they acquired on the job. Therefore, a POSITA would be a person with either (a) a Bachelor of Science degree in packaging science, mechanical engineering, material science, or chemistry and two years of experience designing and manufacturing thermoplastic items; or (b) three years of experience designing, using, or manufacturing thermoformed and or injection molded plastic items and tooling.

*Id.* Patent Owner does not dispute Petitioner’s proposed level of ordinary skill. *See generally* Prelim. Resp.

For purposes of this Decision, we find that the ’222 patent and the cited prior art references reflect the appropriate level of skill at the time of the claimed invention and that the level of appropriate skill reflected in these references and the ’222 patent is consistent with the definition of a person of ordinary skill in the art proposed by Petitioner. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Accordingly, we adopt Petitioner’s asserted level of ordinary skill in the art.

### C. *Claim Construction*

“In an *inter partes* review proceeding, a claim of a patent . . . shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b). That standard “includ[es] construing the claim in accordance with the ordinary and customary meaning of such claim as understood by

one of ordinary skill in the art and the prosecution history pertaining to the patent.” *Id.*; *see also Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). “When a patentee explicitly defines a claim term in the patent specification, the patentee’s definition controls.” *Martek Biosciences Corp. v. Nutrinova, Inc.*, 579 F.3d 1363, 1380 (Fed. Cir. 2009).

Petitioner argues that “the challenged claims are invalid under their plain and ordinary meaning.” Pet. 5. Petitioner further contends that “[t]he scope of the plain and ordinary meaning of certain claim terms must at least encompass the disclosure and accompanying illustrations in the ’222 patent.” *Id.* at 6 (citing no legal support for its proposition). Petitioner also refers to how Patent Owner applied certain “terms” and “other features to Petitioner’s product” in its district court complaint against Petitioner. *See id.* at 7–8 (citing Ex. 1007, 7–8; Ex. 1003, ¶¶ 53–57).

Patent Owner does not address claim construction and does not dispute the meaning of any claim term in regard to Petitioner’s contentions. *See generally* Prelim. Resp. Accordingly, in view of the issues we address below, we apply the plain and ordinary meaning of claim terms and further determine that it is not necessary to address the express interpretation of any claim term. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

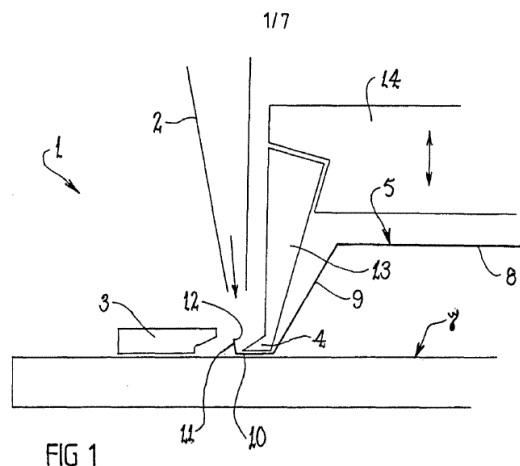
*D. Scope and Content of the Prior Art*

Petitioner relies on Portelli and Meadors, each of which we briefly summarize in relevant part below.

*1. Summary of Portelli<sup>8</sup>*

Portelli generally “relates to trays for packaging which are wrapped in plastic film or plastic wrap,” as well as methods and apparatus for producing such trays. Ex. 1004, 1:2–5. Portelli states that such plastic trays formed by a thermoforming operation “have a sharp terminal edge forming the periphery thereof with an unfortunate tendency to tear or cut through plastic film within which the trays are wrapped.” *Id.* at 1:29–2:2. Portelli states it would be advantageous to disclose “trays with a peripheral edge region which reduced the tendency of the wrap to tear.” *Id.* at 2:16–18. Portelli suggests this may be achieved by “deforming the peripheral edge region of the tray by bringing an appropriately configured deforming means into engagement with said peripheral edge region.” *Id.* at 2:22–3:5.

Figure 1 of Portelli is reproduced below.



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<sup>8</sup> Petitioner acknowledges that Portelli was identified to the Examiner during prosecution of the '222 patent on an Information Disclosure Statement. Pet. 169 (citing Ex. 1002, 3).

Figure 1 illustrates a sectional front elevation of an apparatus for carrying out the method of producing a tray “prior to the deforming operation taking place.” *Id.* at 7:13–15; *see also* Pet. 33 (discussing Figure 1 of Portelli).

The tray in Figure 1 is shaped by blasting hot air through duct 2 and deforming, via former 3 and anvil 4, terminal edge 12 of peripheral edge 11 to be “complimentary in shape to said former 3.” *Id.* at 8:21–26.

Figures 12 and 13 of Portelli are reproduced below.

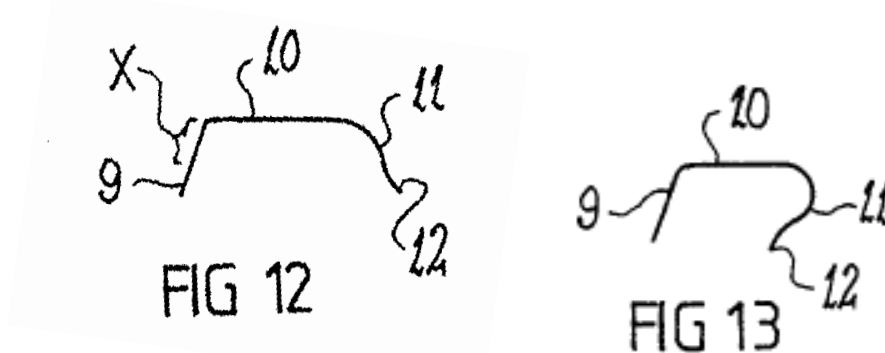
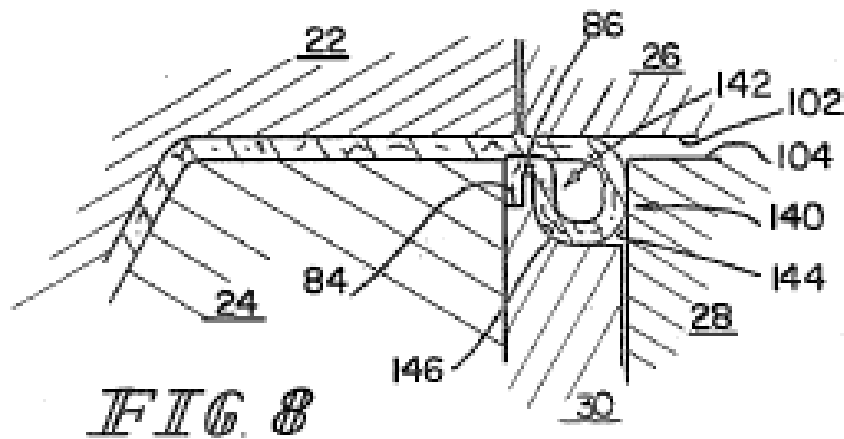


Figure 12 illustrates “a schematic sectional view of an edge of a thermoformed tray” and Figure 13 illustrates a schematic sectional view of the edge of the tray of Figure 12 “after it has been deformed out of the wrap path.” *Id.* at 8:9–13. Tray 10 in Figures 12 and 13 includes sidewall 9, rim 10, peripheral edge region 11, and terminal edge 12, such that “the finished tray product a more rounded peripheral edge region.” *Id.* at 8:28–9:1, 14:10–17.

## 2. *Summary of Meadors*

Meadors generally relates to methods and apparatus for forming “a multiple-thickness bead in a sheet or blank of a flexible material, such as thermoplastic material or paper stock,” in the process of making a container or lid. Ex. 1005, 1:5–9.

Figure 8 of Meadors is reproduced below.



In Figure 8, an apparatus with elements including vertically upper die member 22, vertically lower die member 24, vertically upper draw pad 26, vertically lower draw pad 28, and ring 30 work in conjunction to form a blank of flexible material into a desired configuration. *Id.* at 2:59–3:2, 3:57–58, 4:67–5:3. Petitioner describes the article formed in Figure 8 of Meadors as a “tray” that “intentionally uses a bent or rolled-over flange or extension resulting in a smooth periphery.” Pet. 91 (citing Ex. 1003 ¶¶ 51–52).



1. *Claim 6*

The method recited in claim 6 depends from the method recited in claim 1. Ex. 1001 39:7–10. Accordingly, we include in our discussion of claim 6 the limitations of claim 1.

Claim 6 recites a method of making a “shaped article having a body with a smooth periphery,” and, more particularly, a “body having a concave compartment with an opening” and a “deflectable flange about the entire periphery of the opening.” Ex. 1001, 38:27–61, 39:7–10. The recited method begins with “forming” the thermoplastic “into a shape comprising the body and a deflectable flange.” *Id.* In this first step, the deflectable flange must include “an extension” and “a bend region” connecting the extension “at an approximately right angle” with “a spacer.” *Id.* The spacer must be connected with a “peripheral flange” at “an angle other than 180 degrees” at “an elbow.” *Id.* Each of these features is identified in Patent Owner’s annotated version of Figure 1A of the ’222 patent, reproduced above. *See supra* Section II.A. Patent Owner refers to this initial shape of the claimed method “as a ‘pre-impingement article,’ because the deflectable flange of this article . . . will be the one subjected to the ram-based methods” of claim 6. Prelim. Resp. 6–7.

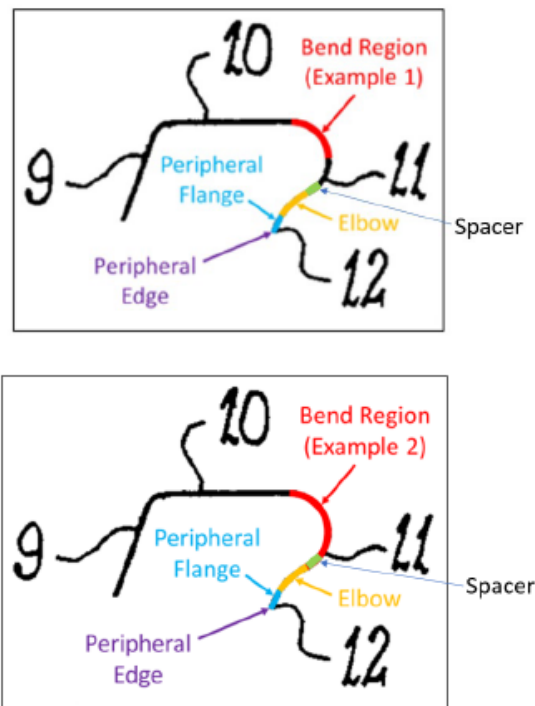
Consistent with Patent Owner’s argument, the next step of the recited method of claim 6 requires “impinging a ram against the peripheral flange to deflect the spacer toward the extension.”<sup>9</sup> Ex. 1001, 38:27–61, 39:7–10.

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<sup>9</sup> Although there is a general presumption that method steps are not limited to the order in which they are recited, it is readily apparent from claim 6 that the method requires first forming a thermoplastic “shape” (i.e., the “pre-impingement article” identified by Patent Owner) prior to the recited step of impinging that initial thermoplastic shape into bend portions of the initial shape “relative to its pre-impingement position.” *See* Ex. 1001, 38:29–49.

Accordingly, we likewise refer to the initial thermoplastic “shape,” as recited in the “forming” step of claim 6 (*id.* at 38:29–41 (i.e., the limitations Petitioner identifies as [1A] to [1D])), as the “pre-impingement article.”<sup>10</sup>

Petitioner contends that Portelli teaches a pre-impingement article, as required by claim 6, based on Figure 13 of Portelli. Pet. 14–30. In particular, Petitioner provides the following annotated versions of Figure 13:



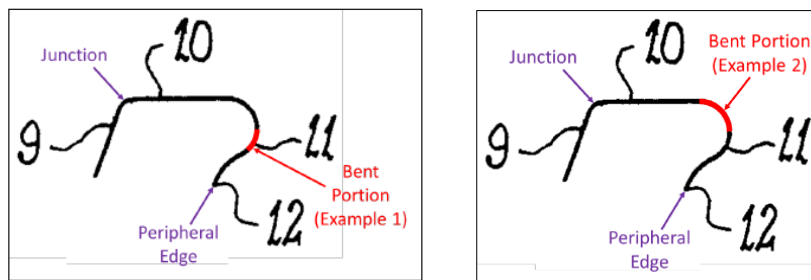
Pet. 21–22. Reproduced above are two of Petitioner’s annotated versions of Figure 13 of Portelli showing how Petitioner contends Portelli teaches the

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<sup>10</sup> The method of claim 6 does not recite a specific way of “forming” the “shape” used as the “pre-impingement article” and our use of “pre-impingement article” does not suggest that, for example, impingement could not be used to form the “shape” used as the “pre-impingement article.” We use “pre-impingement article” only to identify the “shape” of the article formed in the method prior to the subsequent recited step of “impinging a ram against the peripheral flange to deflect the spacer toward the extension,” thereby bending the article “relative to its pre-impingement position.” See Ex. 1001, 38:42–49.

features of the pre-impingement article recited in claim 6 of the '222 patent. Figure 13 of Portelli, however, does not show the profile of an article prior to a method step of impinging to further shape it, but instead shows “a schematic sectional view of the edge of the tray . . . *after it has been deformed* out of the wrap path in accordance with the invention [of Portelli].” Ex. 1004, 8:11–13 (emphasis added). Petitioner fails to show any method taught by Portelli that further alters the configuration of the profile of the tray shown in Figure 13 of Portelli by, for example, an additional method step of impingement.

The fundamental flaw in Petitioner’s contentions is further made clear in its discussion of the subsequent steps recited in claim 6. Claim 6 requires “impinging a ram against the peripheral flange [of the pre-impingement article] to deflect the spacer toward the extension,” thereby bending “at least one portion of the deflectable flange” and decreasing “the magnitude of the angle between the spacer and the extension.” Ex. 1001, 38:42–49. After this step, the “bent portion” is heated. *Id.* at 38:50–51. To show how Portelli purportedly teaches these limitations, Petitioner directs us once again to Figure 13 as allegedly showing the “bent portion,” as shown in the annotated versions of Figure 13 provided by Petitioner and reproduced below:



Pet. 35–36. Reproduced above are two versions of Portelli Figure 13 annotated by Petitioner to show the purported “bent portion” recited in

claim 6. Petitioner, however, offers no persuasive explanation as to how Figure 13 of Portelli teaches both features of the pre-impingement article of claim 6 and features of the post-impingement article of claim 6, such as the “bent portion.” Nor does Petitioner sufficiently show that Portelli teaches any method that corresponds to the method recited in claim 6 to transform a pre-impingement article into an article with the required “bent portion” recited in claim 6. *See generally* Pet.

To the extent Petitioner includes additional arguments based on Figure 8 of Portelli, similar deficiencies are raised, because Figure 8 illustrates “a schematic sectional front elevation of the apparatus of Figure 7 *after the deforming operation has taken place.*” Ex. 1004, 8:1–2; 13:21–25 (emphasis added). Indeed, by contrast, Figure 7 of Portelli illustrates the apparatus shown in Figure 8, but “prior to the deforming operation taking place.” *Id.* at 7:38–30. Petitioner, however, does not argue that what is shown in Figure 7 corresponds to the pre-impingement article with the features required by claim 6. *See* Pet. 29–30.

Petitioner also introduces to its arguments yet another embodiment of Portelli in regard to the “impinging the ram” step of the method of claim 6 (identified by Petitioner as limitation [1E]). Pet. 33–34 (discussing Figures 1 and 2 of Portelli). According to Petitioner, “Portelli Figures 1–2 show how the impinging of ram (3) against peripheral flange (11) deflects the spacer towards extension (10), bending it and decreasing the angle therebetween.” *Id.* at 33. The article shown as being impinged in Figures 1 and 2 of Portelli, however, does not correspond to the article profile Petitioner relies on from the embodiment of Portelli illustrated in Figure 13 of Portelli to show the recited features of claim 6.

Next, Petitioner introduces Figure 12 of Portelli as showing “the ‘pre-impingement position’” of the peripheral flange and argues that Portelli shows “in Figure 13 the effect of impinging a ram against the peripheral flange to deflect the spacer towards the extension.” Pet 34. As discussed above, Petitioner, however, does not rely on Figure 12 of Portelli as showing any of the features of the pre-impingement article required by claim 6, but instead relies only on the disclosure in Figure 13 of Portelli in this regard. *See* Pet. 19–30. Moreover, Petitioner directs us to no disclosure in Portelli teaching any method used to generate the profile shown in Figure 13 from the profile shown in Figure 12. *See* Prelim. Resp. (Patent Owner arguing that “[t]here is no disclosure whatsoever of the tools or methods that a [person of ordinary skill] might use to render a Figure 13 thermoformed article profile on a thermoformed article having the edge illustrated in Figure 12).” Finally, Petitioner provides no sufficient explanation why a person of ordinary skill would have had reason to combine aspects of what was taught by different embodiments of Portelli, such as the one shown in Figures 1 and 2 of Portelli with the embodiment of Portelli shown in Figure 13,

For the preceding reasons, we determine that Petitioner has not sufficiently shown how Portelli teaches at least limitations [1A] to [1E] of claim 6, which depends from claim 1. Accordingly, Petitioner has not shown a reasonable likelihood of prevailing in showing that the subject matter of claim 6 would have been obvious over Portelli.

## *2. Claims 7–10*

Claims 7–10 further depend from claim 6. For the same reasons discussed above in regard to claim 6, Petitioner has not shown a reasonable

likelihood of prevailing in showing that the subject matter of any of claims 7–10 would have been obvious over Portelli.

3. *Claim 21*

Independent claim 21 recites substantially similar limitations in all relevant regards as claim 6, discussed above. *See* Ex. 1001 40:23–58. Petitioner relies largely on the same allegations directed to claim 1, from which claim 6 depends, to show that claim 21 also would have been obvious over Portelli. Pet. 88–90 (Petitioner relying on contentions directed to limitations 1[A] to 1[E] to show limitations 21[A] to 21[E] would have been obvious over Portelli). For the same reasons discussed above in regard to claim 6, Petitioner has not shown a reasonable likelihood of prevailing in showing that the subject matter of claim 21 would have been obvious over Portelli.

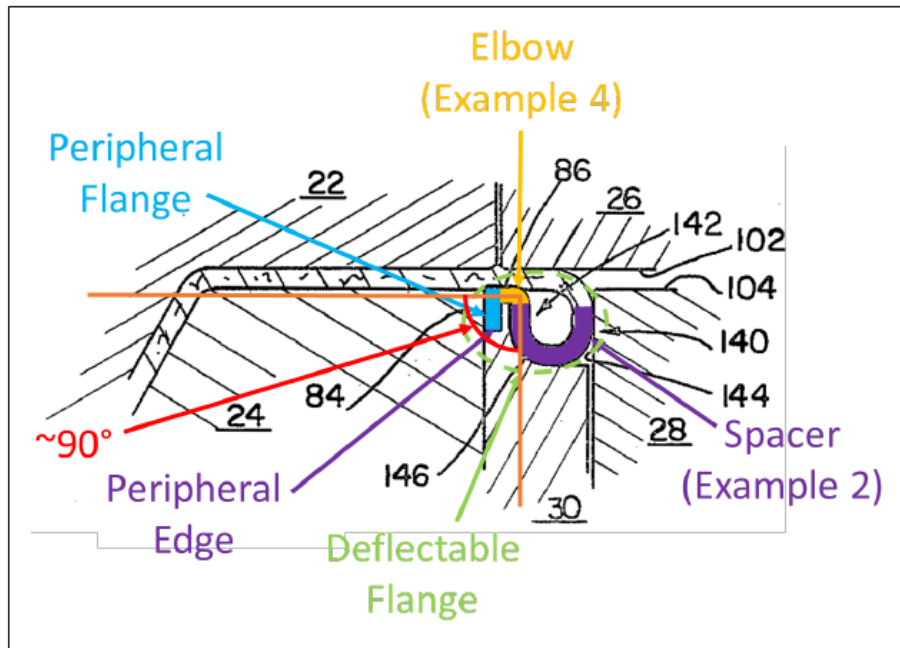
F. *Alleged Obviousness over Meadors*

Petitioner asserts that Meadors would have rendered obvious the subject matter of claims 6 and 21. Pet. 2, 91–131, 134–136, 162–165. Petitioner’s contentions are supported by Mr. May. Ex. 1003 ¶¶ 307–374, 383–389, 451–486. (citing Ex. 1003).

1. *Claim 6*

The method recited in claim 6 depends from the method recited in claim 1. Ex. 1001 39:7–10. Accordingly, we include in our discussion of claim 6 the limitations of claim 1. As discussed above, the method of claim 6 requires a pre-impingement article with the features recited in the limitations Petitioner identifies as [1A] to [1D]. Petitioner provides multiple annotated versions of Figure 8 of Meadors purporting to show “examples” of various ways elements of Figure 8 correspond to the recited features of the pre-impingement article of claim 6. Pet. 95–111.

For instance, reproduced below is one of the examples  
Petitioner provides annotating Figure 8 of Meadors.



Pet. 113. Reproduced above is one of Petitioner’s annotated versions of Figure 8 of Meadors showing how Petitioner contends Meadors teaches the features of the pre-impingement article recited in claim 6 of the ’222 patent. *Id.* Figure 8 of Meadors, however, does not show the profile of an article prior to a method step of impinging the article to further shape it, but rather illustrates the “finished” profile of bead 140. Ex. 1005, 4:51–52; *see also* 2:49–53 (stating that Figure 8 of Meadors shows an “alternative structure to the structure illustrated” in Figure 6, that Figure 6 is an enlarged view of the apparatus of Figure 5, and that Figure 5 shows the apparatus after performance of all of the steps of the method shown in Figures 1–4 of Meadors).

In short, the profile of the article illustrated in Figure 8 of Meadors is the end product of the method of Meadors, not a pre-impingement article,” as required by claim 6. Petitioner fails to show any method taught by Meadors

that further alters the shape of the profile of the tray shown in Figure 8 of Meadors by, for example, an additional method step of impingement.

The fundamental flaw in Petitioner's contentions is further made clear in its discussion of the subsequent steps recited in claim 6. Claim 6 requires "impinging a ram against the peripheral flange [of the pre-impingement article] to deflect the spacer toward the extension," thereby bending "at least one portion of the deflectable flange" and decreasing "the magnitude of the angle between the spacer and the extension." Ex. 1001, 38:42–49. After this step, the "bent portion" is heated. *Id.* at 38:50–51.

Rather than show that Meadors teaches "impinging a ram against the peripheral flange" of the article shown in Figure 8 of Meadors, Petitioner instead relies on Figures 3 and 4 of Meadors, which show steps in the method of Meadors that precede the end result shown in Figure 8. *See, e.g.*, Ex. 1005, 2:34–58 (explaining how the figures illustrated in Meadors sequentially follow the steps of the method of Meadors); *see also* Prelim. Resp. 29 (arguing that because Figure 8 of Meadors illustrates a "'finished' product, it cannot possibly show any 'deflectable flange' of an unfinished, pre-impingement article as required by the challenged claims").

Moreover, Petitioner does not argue that the article shown in either Figure 3 or Figure 4 corresponds to a pre-impingement article with the required features of claim 6. Nor does Petitioner argue that the article shown in either Figure 3 or 4 of Meadors corresponds to the features of the pre-impingement article of claim 6 recited in limitations 1[C] (a "bend region") or 1[D] (a "peripheral flange," "elbow," and "spacer"). *See* Pet. 101–113.

For the preceding reasons, we determine that Petitioner has not sufficiently shown how Meadors teaches limitations [1A] to [1E] of claim 6, which depends from claim 1. Accordingly, Petitioner has not shown a reasonable likelihood of prevailing in showing that the subject matter of claim 6 would have been obvious over Meadors.

2. *Claim 21*

Independent claim 21 recites substantially similar limitations in all relevant regards as claim 6 discussed above. *See* Ex. 1001 40:23–58. Petitioner relies largely on the same allegations directed to claim 1, from which claim 6 depends, to show that claim 21 also would have been obvious over Meadors. Pet. 162–165 (Petitioner relying on contentions directed to limitations 1[A] to 1[E] to show limitations 21[A] to 21[E] would have been obvious over Meadors). For the same reasons discussed above in regard to claim 6, Petitioner has not shown a reasonable likelihood of prevailing in showing that the subject matter of claim 21 would have been obvious over Meadors.

#### IV. CONCLUSION

For the foregoing reasons, we determine that Petitioner does not demonstrate a reasonable likelihood of prevailing with respect to at least one of the Challenged Claims in the Petition. Accordingly, *inter partes* review of the '222 patent is *denied*.

#### IV. ORDER

Upon consideration of the record before us, it is:

ORDERED that the Petition is denied and no trial is instituted in this proceeding.

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