Federal Court Cour fédérale

Date: 20230328

Docket: T-1752-21

Citation: 2023 FC 424

Toronto, Ontario, March 28, 2023

PRESENT: The Honourable Madam Justice Furlanetto

BETWEEN:

THE COCA-COLA COMPANY

Appellant

and

THE ATTORNEY GENERAL OF CANADA

Respondent

JUDGMENT AND REASONS

[1] The Appellant, The Coca-Cola Company [TCCC], appeals a May 13, 2021 decision [Decision] of the Commissioner of Patents [Commissioner] in which the Commissioner adopted the recommendations of the Patent Appeal Board [PAB], and refused to grant a patent on Canadian Patent Application No. 2,718,279 [Application] on the basis that the claims of the Application were obvious and did not satisfy section 28.3 of the *Patent Act*, RSC 1985, c P-4 [Patent Act].

[2] For the reasons set out further below, I find that the Commissioner erred in law in its assessment of the inventive concept of the newly proposed method claims. As such, the Application shall be referred back to the Commissioner for redetermination of the method claims of the proposed claim set under section 28.3 of the Patent Act. In my view, the remainder of the Appellant's arguments do not raise a reviewable error.

I. Background

[3] TCCC is the owner of the Application, entitled "Bio-based Polyethylene Terephthalate Polymer and Method of Making the Same", which was filed on March 3, 2009, claiming priority from two US patent applications. The Application relates to plastic beverage and food containers and methods for making beverage and food containers from polyethylene terephthalate [PET] polymers, where the PET polymer comprises a terephthalate component and/or diol component derived at least in part from bio-based materials.

[4] The background to the Application explains that PET is a widely used raw material for making packaging articles, such as beverage and food containers. However, it asserts that most commercial methods produce PET with petrochemically-derived raw materials that are costly and non-renewable, and contribute to greenhouse gas emissions from high petroleum-derived carbon content.

[5] The Application refers to prior approaches to substitute petrochemically-derived PET with polylactic acid [PLA] bioplastics made from bio-based materials such as corn, rice, or other sugar and starch-producing plants. However, it explains that it is difficult to integrate PLA into

current PET production lines and recycling systems because of significantly different properties between PLA and PET. The Application proposes that it is desirable for PET to be derived from renewable resources that share similar properties to petroleum derived PET so that it can be processed through existing PET manufacturing facilities and/or can be readily recycled through systems designed for recycling petroleum derived PET.

[6] The Application describes embodiments of the invention, which provide for a beverage or food container that comprises PET polymer, including a terephthalate component and/or diol component derived at least partially from at least one bio-based material (defined as organic material in which the carbon comes from non-fossil biological sources), and for a method for producing the bio-based PET polymer.

[7] To date, the Application has had a lengthy prosecution, including a third party prior art submission, and five office actions.

[8] In the fourth office action, the Examiner raised objections, including on the basis of novelty and obviousness, citing US Patent No 6,500,890 [D5] as a relevant reference and asserting that the claims would have been obvious having regard to D5 in view of the common general knowledge [CGK].

[9] In response to the fourth office action, TCCC amended its claims, leaving 22 claims on file, which were the claims on file [Claims on File] for the Decision. With the exception of claim 22, each of the Claims on File are directed to a beverage or food container that requires

that the PET polymer comprise a terephthalate component derived from petrochemicals and a diol component derived at least partially from at least one bio-based material. Claim 22 is directed to a "bio-based container" of bio-based PET polymer and is the only claim where either the terephthalate component and/or the diol component is at least partially derived from at least one bio-based material.

[10] In response to the fourth office action, TCCC also submitted three declarations.

A. The declaration of Robert J. Schiavone, dated September 16, 2016 [Schiavone Declaration], Vice President at PolyTech Resources, who is asserted to be an expert in PET Packaging Plastics. Dr. Schiavone comments on methods for making PET beverage bottles, the motivations of someone looking to convert plastics into bottles at the relevant date, and the cost and availability of biomass raw materials at that time;

B. The declaration of Andrew Rodbell, dated March 26, 2015 [Rodbell Declaration], who is the Director, Marketing & Business Development of PlantBottle®, the commercial embodiment of the purported invention of the Application, at TCCC. Mr. Rodbell discusses the marketing and sales of PlantBottle®; and

C. The declaration of Geoffrey L. Henry, dated August 21, 2012 [Henry Declaration], who is the Director of DASANI® at TCCC. Mr. Henry discusses the purported commercial success of PlantBottle® and its industry recognition.

[11] On October 23, 2017, a final action was issued [FA] in respect of the Application in which the Examiner maintained objections to all Claims on File based on a lack of novelty and obviousness, and asserted indefiniteness in respect of a number of the claims.

[12] On April 20, 2018, TCCC provided its response to the Final Action [RFA] with a proposed set of 41 new claims and arguments in support of their patentability.

[13] Between April and June 2018, two interviews were held with the Examiner through which the Examiner advised TCCC that the claims were considered novel, but that the obviousness objection would be maintained.

[14] On September 13, 2018, TCCC was notified that the Application was being forwarded to the PAB for review by the Commissioner. The obviousness objection to the Claims on File was maintained in light of two references, D5 and US Application No 20080103340 [First D6]. Particular claims were also rejected for indefiniteness. The new claim set was also considered obvious and further deficiencies were identified in respect of particular claims.

[15] On February 12, 2021, the PAB provided its preliminary review [PR], stating that the Claims on File were not indefinite, but maintained the obviousness objection. The PAB also maintained its obviousness objection to the new claim set. However, unlike the Examiner, the PAB did not use D5 as its primary reference and no longer referred to First D6. Instead, the PAB referred to a new reference - Japanese Patent Application No 2007-176873 [D6], which the PAB stated reflected the “state of the art”. The PAB considered the claims to be obvious having regard to D6 when combined with D5 and the CGK.

II. Decision under Review

[16] On March 15, 2021, TCCC provided its response to the PR [RPR] wherein it proposed an amended set of 18 claims [Proposed Claims] and provided written submissions in support of their patentability. In addition to claims to a beverage container and PET polymer bottle, the

Proposed Claims included claims to a method of producing a bio-based PET polymer for a beverage container that were not part of the Claims on File.

[17] On March 30, 2021, a hearing was held.

[18] On May 13, 2021, the Commissioner released the Decision, which considered both the Claims on File and the Proposed Claims and adopted the recommendations of the PAB.

[19] In doing so, the Commissioner described the teachings of the D5 and D6 references and adopted the differences between the inventive concept of the Claims on File and this prior art as recited in the PR, as follows:

> [38] D5 discloses the production of improved polyethylene terephthalate resins for use in rigid packaging, such as two-liter soft drink containers (column 1). In particular, the quality of the bottle resin is improved by the addition of small amounts of an inert particulate additive, which allows for resins that can be formed into high-clarity bottles possessing reduced coefficient of friction.
>
> [39] D6 discloses the production of resins using raw materials derived from biomass, a carbon neutral and renewable resource, as an alternative to petroleum derived raw materials. ...Methods for the conversion of biomass into various biomass derived organic compounds are disclosed, including ethylene glycol and terephthalic acid (para [0019]) ... at para [0083], the use of conventional methods for the synthesis of polyethylene terephthalate using biomass derived raw materials (i.e. bio-based PET). D6 concludes that resins obtained by the present invention can simultaneously solve the problems of suppression of global warming due to carbon dioxide circulation, resource exhaustion, and the like without impairing the mechanical characteristics, heat resistance, and the like of known resins, and are useful for resin molded products, fibers, and film applications.

> [40] The PR letter, on page 9, identified the differences between the cited prior art and the inventive concept of the claims:
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> [...]
>
> - D6 does not specifically disclose that beverage or food containers can be made from the bio-based PET
> - D5 does not disclose the use of bio-based components in the preparation of PET beverage containers.
> - Neither D6 or D5 disclose bio-based containers comprising the recited source and amounts of the terephthalate component or diol component.

[20] The Commissioner determined that the person of ordinary skill in the art [POSITA] would have been motivated to "combine the use of biomass-derived raw materials in conventional methods of producing PET products, such as the polyester bottle resins disclosed in D5" and "would have expected that biomass-derived raw materials could be used interchangeably with petroleum-derived materials in any method of producing PET based on modern atomic theory".

[21] The Commissioner concluded that the Claims on File and the Proposed Claims were obvious and affirmed that both sets of claims were definite.

III. Issues and Standard of Review

[22] The requirement for a patent to be unobvious is set out in section 28.3 of the Patent Act. Subsection 28.3(b), which is applicable to the Application in this case, states:

28.3 The subject-matter defined by a claim in an	28.3 L'objet que définit la revendication d'une demande

application for a patent in Canada must be subject-matter that would not have been obvious on the claim date to a person skilled in the art or science to which it pertains, having regard to [...] (b) information disclosed before the claim date by a person not mentioned in paragraph (a) in such a manner that the information became available to the public in Canada or elsewhere.	de brevet ne doit pas, à la date de la revendication, être évident pour une personne versée dans l'art ou la science dont relève l'objet, eu égard à toute communication : […] b) qui a été faite par toute autre personne avant la date de la revendication de manière telle qu'elle est devenue accessible au public au Canada ou ailleurs.

[23] The four-part test for obviousness was set out by the Supreme Court of Canada in *Apotex Inc v Sanofi-Synthelabo Canada Inc*, 2008 SCC 61 [*Plavix*] at paragraph 67:

> (1) (a) Identify the notional "person skilled in the art";
>
> (b) Identify the relevant common general knowledge of that person;
>
> (2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;
>
> (3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;
>
> (4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

[24] An obvious to try analysis may be taken into account as part of the fourth step of the obviousness inquiry, including whether there was motivation to find the solution claimed: *Plavix* at paras 69-71.

[25] TCCC does not dispute that the Commissioner cited the correct legal test in the Decision by referring to the four-part test from *Plavix*, but asserts that the Commissioner made several errors of law and mixed fact and law in carrying out its analysis.

[26] The following issues are raised by this appeal:

A. Did the Commissioner err by failing to properly construe the inventive concept of each of the claims?

B. Did the Commissioner err by failing to consider secondary indicia of non-obviousness?

C. Did the Commissioner err by improperly introducing evidence of CGK without providing TCCC an opportunity to respond?

D. Did the Commissioner err by improperly narrowing the gap between the state of the art and the inventive concept of the claims?

E. Did the Commissioner err by failing to establish the findability of the new reference, D6, and in failing to explain how the POSITA would combine the art cited?

[27] It is undisputed that the appellate standards of review apply to this appeal: *Choueifaty v Canada (Attorney General)*, 2020 FC 837 at paras 21–22; *Canada (Minister of Citizenship and Immigration) v Vavilov*, 2019 SCC 65 at paras 36-37. Questions of law are to be assessed on a standard of correctness, while questions of fact and questions of mixed fact and law, where the legal principle or question of law is not extricable, are to be assessed on the standard of "palpable and overriding error": *Housen v Nikolaisen,* 2002 SCC 33 at paras 36-37. "Palpable" means an obvious error, while "overriding" means an error that affects the decision-maker's conclusion or goes to the very core of the outcome of the case: *Canada v South Yukon Forest Corporation*, 2012 FCA 165 at para 46.

[28] TCCC asserts, and I agree, that the first two issues are questions of law (*Bayer Inc v Cobalt Pharmaceuticals Co*, 2016 FC 1013 at para 111), which are subject to correctness review, while the remainder are questions of mixed fact and law and are subject to review on the standard of palpable and overriding error.

IV. Analysis

A. *Did the Commissioner err by failing to properly construe the inventive concept of each of the claims?*

[29] TCCC argues that the Commissioner erred in its approach to the inventive concept. First, it asserts that the Commissioner erred by failing to construe the inventive concept on a claim-by-claim basis. It relies on *Zero Spill Systems (Int'l) Inc v Heide*, 2015 FCA 115 [*Zero Spill*], which states that obviousness and the determination of the inventive concept is to be considered on a claim-by-claim basis; otherwise, a dependent claim that may be sufficiently narrow to escape the prior art may not be identified. As stated at paragraphs 83, 87-88, 94 and 104 of *Zero Spill*:

> [83] Together, sections 28.2 and 28.3 and 58 of the Patent Act establish that invalidity for anticipation or obviousness must be assessed claim-by-claim.
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> [...]
>
> [87] On obviousness, *Sanofi Synthelabo* prescribes a four-step test, step two of which is to "[i]dentify the inventive concept <u>of the claim in question</u> or if that cannot readily be done, construe it" [emphasis added]: at paragraph 67.
>
> [88] Apparent in both of these passages, binding on the Federal Courts, is that each allegedly anticipated or obvious claim must be considered individually.
>
> [...]

> [94] The Federal Court was obliged to consider the validity of the '064 Patent claim-by-claim. Not doing so was a legal error. Notwithstanding that Claim 13 is actually an independent claim, the nature of dependent cascading claims is to narrow the claims upon which they depend: *Purdue Pharma v Pharmascience Inc*., 2009 FC 726, 77 C.P.R. (4th) 262 at paragraph 10. The practical effect of this on anticipation or obviousness is that eventually a claim may be sufficiently narrow to escape these prior art-based attacks, even though the broader claims may be invalid.
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> [...]
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> [104] In my view, the Federal Court adopted the same approach as it did concerning the '064 Patent, an approach that I have found to be in error. Whether or not the claim language was disputed, the Federal Court was required to construe or determine the inventive concept of each of the nine claims at issue and thereafter to assess the combinations of the various elements claimed to determine whether they were inventive: *Bridgeview Manufacturing*, above.

[30] Second, and related to the first alleged error, TCCC argues that the Commissioner erred by excluding the recyclability of the bio-based PET polymer through recycling systems designed for petroleum derived PET from the inventive concept of at least claim 18 of the Proposed Claims.

[31] The Respondent argues that the Appellant cannot take issue with the Commissioner's focus on the independent claims, as it did not do so earlier in the prosecution and in fact adopted the same approach in its own response to the PAB. Consistent with this approach, the Respondent asserts that TCCC similarly chose to argue a single inventive concept that was derived from the independent claims of the Claims on File, and in its RPR, the independent claims of the Proposed Claims.

[32] The Respondent argues that the Commissioner considered and rejected recyclability as part of the inventive concept because it was not a benefit of bio-based components as compared to petrochemically-derived PET. It asserts that TCCC is merely disagreeing with the findings of the Commissioner.

[33] It is undisputed that the Commissioner focussed its analysis on the independent Claims on File. As noted in the Decision, in the PR letter, the PAB expressed its preliminary view that independent claims 1, 8, 9 and 22 were representative of the Claims on File for the purpose of its analysis.

[34] However, in my view, it is not correct to say that the Commissioner did not have regard to the dependent claims of the Claims on File in its analysis. To the contrary, the PAB considered the dependent claims of the Claims on File in the PR, but found that they did not add any specific limitations with additional ingenuity:

> [51] In the PR letter, we expressed our preliminary view that none of the additional features recited in claims 2-7 and 10-21 would have required any degree of invention from the POSITA in view of their CGK. In the RPR, on pages 18-19, the Applicant argued that the teachings of D5 and D6 and the CGK do not teach or suggest the subject-matter of the dependent claims but did not identify or associate any specific limitations in the dependent claims with additional ingenuity.
>
> [52] As indicated in the PR letter, dependent claims 2-7 and 10-21 define further limitations with regard to: the terephthalate component, the type of bio-based material, the proportion of terephthalate component and ethylene glycol comprising the PET polymer, the source of the terephthalate component and/or ethylene glycol, the type of container and the intrinsic viscosity of the container, which are CGK design options based on the intended application of the PET resins. In our view, none of these features would have required any degree of invention from the POSITA in

> a manner separate from the subject-matter defined in the independent claims.

[35] As indicated in the Decision, the Commissioner considered all elements of the claims to be essential and considered the essential elements of the Claims on File in the assessment of obviousness.

[36] The Decision references and adopts the inventive concept identified in the FA as being consistent with the essential elements of the independent Claims on File and adds to the inventive concept the inherent features of the bio-based components – *i.e.,* that they are derived from renewable resources and can be distinguished from petroleum derived components based on levels of Carbon-14 [C-14]. As referenced from the PR:

> The FA, on page 3, identifies the inventive concept as follows:
>
> > The inventive concept of the present claims pertains to containers wherein petroleum-derived monomers are replaced with bio-based monomers. Thus the claimed bio-based PET containers comprise (i) a terephthalate component which, in some embodiments, is at least partially obtained from bio-based materials, and (ii) a diol component which, in some embodiments, is at least partially obtained from bio-based materials. It is noted that in independent claims 1, 8 and 9, at least 70 weight percent of the EG derives from bio-based material, while claim 22 only requires that "at least one weight percent of the terephthalate component and/or the diol component is derived from at least one bio-based material.
>
> [...]
>
> In our preliminary view, the inventive concept identified in the FA is consistent with the essential elements of the claims. Further, to the extent that the RFA has identified characteristics that are inherent in the definition of bio-based components, in our preliminary view, the inventive concept includes these features.

> Specifically consistent with the background of the description, bio-based components are derived from renewable resources and can be distinguished from petroleum-derived components based on levels of C-14. Therefore, in our preliminary view, the POSITA would consider these inherent features of bio-based materials to be part of the inventive concept of the claims.

[37] The Commissioner also found that the specification supported an inventive concept of beverage containers that contributed less greenhouse gas emissions and conserved petroleum resources. However, while it considered the fact that bio-based PET can be recycled in current recycling systems, it did not consider this to be a benefit of bio-based components over petrochemically-derived PET so as to comprise part of the inventive concept of the Claims on File. Referring to the PR, the Commissioner noted the comments of the PAB, where it stated that: "any purported benefits must be directly attributable to the claimed subject-matter. In the present case, the claims do not define any aspects associated with the life cycle of the container. Therefore, in our preliminary view, they are not considered to form part of the inventive concept." As further stated in the Decision:

> [36] Having considered the Applicant's arguments, we note that the specification discloses that petrochemically-derived PET contributes to greenhouse gas emissions, petrochemicals cannot be regenerated at a rate comparative to their consumption and that there exists a need for a PET derived from renewable resources that shares similar properties as petroleum-derived PET. Therefore, we agree that in addition to the inherent properties of bio-based components i.e. they are derived from renewable resources and can be distinguished from petroleum-derived components based on levels of C-14, the specification also supports an inventive concept of beverage containers comprising bio-based PET that contribute to less greenhouse gas emissions and conserve petroleum resources. However, the fact that bio-based PET can be recycled in current recycling systems is not, in our opinion, a benefit of bio-based components as compared to petrochemically-derived PET. Therefore, this property is not a feature particular to bio-based PET and as such should not form part of the inventive concept.

[38] TCCC argues that the fact that bio-based PET can be recycled in current recycling systems was not previously considered to be a benefit of bio-based PET because it was not claimed as such in the Claims on File or in any of the prior claim sets. The rationale given by the PAB was made without the benefit of the Proposed Claims, which expressly claim the recyclability of the bio-based PET polymer as a feature of the method for producing the polymer.

[39] TCCC asserts that recyclability must at least be part of the inventive concept of Claim 18 of the Proposed Claims, which states:

> 18. The method of any one of claims 14 to 17, further comprising recycling the bio-based PET polymer beverage container through recycling systems designed for petroleum-derived PET products.

[40] It further argues that the Application makes clear that one of the benefits of the claimed invention is its recyclability over other bio-based materials (Application at paragraphs [0005] and [0006]):

> [0005] One approach to substituting petrochemically-derived PET has been the production of polylactic acid (PLA) bioplastics from bio-based materials such as corn, rice, or other sugar and starch-producing plants ...attempts have been made to use PLA resins in injection stretch molding processes for producing containers. However, it is often difficult to adapt PLA into current PET production lines or to satisfactorily substitute PET with PLA in many applications due to the significantly different properties between PLA and PET. ...Furthermore, most recycling systems currently in use are designed for PET, which would be contaminated if PLA was introduced. This problem could be overcome by costly solutions such as using distinctive bottle types between PLA and PET or by investing in suitable sorting technology or new recycling streams.
>
> [0006] Thus, there exists a need for a PET derived from renewable resources that shares similar properties as petroleum-derived PET. It would be also desirable in some applications if the PET derived from renewable resources can be processed through existing PET

> manufacturing facilities and/or can be readily recycled through the systems designed for recycling petroleum-derived PET.

[41] As noted by TCCC, an invention need not be advantageous over existing prior art to be patentable; rather, it may be sufficient to avoid disadvantages (*Bauer Hockey Ltd v Sport Maska Inc (CCM Hockey)*, 2021 FCA 166; *Wyerst-Ayerst Canada Inc v Faulding Canada Inc*, 2002 FCT 969 at para 38) — in this case, the disadvantage being that other biomass derived polymers (such as PLA) are not readily recyclable. In the Decision, the benefits of the bio-based PET are only considered by comparing the bio-based PET to petrochemically-derived PET, not to other biomass derived polymers.

[42] Further, in the Decision, the Commissioner refers only broadly to the proposed method claims, stating that "the POSITA would have expected that bio-based ethylene glycol and petrochemical-derived terephthalic acid could be used in any known method for producing PET products, including a beverage container" (paragraph 58 of the Decision). The Commissioner does not consider that recycling through recycling systems designed for petroleum derived PET products is now claimed as a benefit of the method for producing the bio-based PET polymer products in the Proposed Claims.

[43] While the Commissioner suggests that all elements of the dependent claims of the Proposed Claims were addressed in prior claim sets, recyclability was not claimed in any of the earlier claim sets. The first time this aspect appears as an element of the claims is in the Proposed Claims.

[44] As noted by TCCC, the failure of the Commissioner to identify the ability to recycle in existing PET recycling systems to be an essential element of at least Claim 18 of the Proposed Claims contradicts the Commissioner's recognition that all essential elements of the claims ought to be considered as part of the obviousness analysis.

[45] While the PAB considered recyclability from the perspective of the properties of the biomass derived PET polymer as compared to petroleum-derived PET (paragraph 49 of the Decision), it did not consider this from the perspective of it being a benefit of the claimed method of production of the biomass derived PET polymer. Nor did it consider this feature as compared to other biomass derived polymers.

[46] Further, I do not accept that TCCC cannot argue against the approach taken by the Commissioner. While I agree with the Respondent that TCCC did not address the inventive concept of the Proposed Claims on a claim-by-claim basis in its RPR; instead, stating only a single inventive concept for the independent claims, it did make submissions on the dependent claims as part of its obviousness analysis, arguing that "the teachings of D5 and D6 and their CGK" did not teach or suggest the subject matter of *inter alia* claim 18 – *i.e.*, that the bio-based PET polymer beverage container is recyclable in systems designed for petroleum-derived PET products.

[47] I agree with TCCC that it was an error of law for the Commissioner to not consider all essential elements of the Proposed Claims in the same manner as was considered for the Claims on File.

[48] As the obviousness framework requires consideration of the gap between the inventive concept and the state of the art, an error in construing the inventive concept renders the remainder of the obviousness analysis fundamentally defective (*Zero Spill* at para 94), and requires the matter to be referred back to the Commissioner for redetermination of at least the method claims of the Proposed Claims. I will thus restrict the remainder of my analysis, where necessary, to the Claims on File.

B. *Did the Commissioner err by failing to consider secondary indicia of non-obviousness?*

[49] TCCC notes that the test for obviousness is a flexible test in which secondary considerations may prove instructive: *Plavix* at para 63. It argues that the Commissioner erred in providing an incomplete statement of the test for obviousness by failing to recognize that commercial success and industry awards are secondary indicia of non-obviousness, and that such factors should have been included as part of the obviousness analysis.

[50] The Respondent does not dispute that commercial success and industry awards are secondary indicia of non-obviousness, nor that the Commissioner did not reference these indicia in the Decision. However, it asserts, and I agree, that the failure to expressly mention commercial success and industry awards was not a legal error.

[51] In *Novopharm Limited v Janssen-Ortho Inc*, 2007 FCA 217 at paragraph 25, the Federal Court of Appeal commented on factors to be considered in an obviousness assessment, including secondary factors of commercial success and meritorious awards that “may be relevant but generally bear less weight” (see also *Wenzel Downhole Tools Ltd v National-Oilwell Canada*

Ltd, 2012 FCA 333 at para 104). However, while commercial success has been considered to be a mark of inventiveness, the Court has recognized that there are many other factors that may contribute to commercial success, including the marketing efforts associated with the product at issue: *Bauer Hockey Ltd v Sport Maska Inc (CCM Hockey)*, 2020 FC 624 [*Bauer*] at para 149; aff'd 2021 FCA 166. As such, such secondary factors are not conclusive in and of themselves and are not sufficient to save an obvious finding: *Bauer* at para 150.

[52] In this case, the Appellant has not established how commercial success or industry awards would factor into the PAB's analysis or how it would be sufficient to establish the non-obviousness of the claims. As noted by the Respondent, there was no specific evidence indicating that the purported invention is what drove PlantBottle®'s sales. Indeed, the Appellant's own evidence speaks to marketing and advertising initiatives directed at consumer awareness (Rodbell Declaration, paragraph 8). Further, TCCC has provided no independent documentation to support the assertions of commercial success that are made in the Rodbell Declaration and Henry Declaration.

[53] While the Appellant speculates that the Commissioner did not consider commercial success because it is not a requirement under the Manual of Patent Office Practice [MOPOP], such proposition is of no moment. The Appellant has provided no authority to support its assertion that commercial success or industry awards must be expressly referenced as part of the Commissioner's *Plavix* analysis.

[54] In my view, the Appellant has not shown that the Commissioner erred by failing to expressly mention the Appellant's allegations of commercial success and industry recognition in its analysis.

C. *Did the Commissioner err by improperly introducing evidence of CGK without providing TCCC an opportunity to respond?*

[55] TCCC asserts that the Commissioner committed a palpable and overriding error by improperly introducing purported evidence of CGK without providing TCCC the ability to respond. It asserts that such action is contrary to the principles of natural justice.

[56] Throughout the examination process, the Examiner and then the PAB disagreed with TCCC as to the CGK of whether the origin or source of PET precursors changed the properties of the resulting PET product. TCCC asserted that biomass derived PET was different due to the presence of C-14 from its organic precursor.

[57] In the Decision, the Commissioner notes that in the PR, the PAB agreed with the CGK set out in the FA as including that PET resin was prepared from polymerization of a terephthalate acid [TA] and ethylene glycol [EG], that the POSITA knew that TA and EG were typically derived from petroleum, but that the origin or source of the TA and EG components would not change the resulting PET product. After further reviewing the RFA, specification and references cited therein, the PAB reiterated its view in the PR that the POSITA would not expect source or origin to affect the chemical properties of the PET precursors or the resultant PET products:

> With regard to whether the CGK of the POSITA would include knowledge that the origin or source of the PET precursors does not change the resulting PET product, our preliminary view is that this

> information was generally known and accepted without question by the bulk of those who are engaged in the particular art of polymer chemistry and more specifically the production of PET polymers. In this regard, the description makes no distinction regarding the preparation of PET using bio-based components or petroleum-derived components. Likewise, statements in the description support the use of conventional processes, that are within the grasp of the POSITA, for the conversion of bio-based materials into the precursor components: [Emphasis added]
>
> [...]
>
> Although the presence of C-14 can be used to physically differentiate bio-based PET from petroleum-derived PET, there is no evidence suggesting that the polymers can be chemically differentiated. Indeed, the description is clear that bio-based PET can comprise as little as one weight percent of the diol and/or the terephthalate component derived from a bio-based material. In view of the foregoing, it is our preliminary view that the POSITA would not expect the source or origin to affect the chemical properties of PET precursors terephthalic acid and ethylene glycol and therefore any resultant PET products would be indistinguishable in terms of appearance, function and recyclability.

[58] The Commissioner notes that in the RPR, the Appellant "continued to dispute that the CGK of the POSITA would include knowledge that "the origin or source of the PET precursors does not change the resulting PET product" arguing that there was no evidence to support this aspect of the CGK." It refers to an excerpt from Chemistry: The Study of Matter and Its Changes, Brady and Holum, 1993, John Wiley & Sons, Inc [Brady], which it states sets out "modern atomic theory" consistent with its views:

> [27] In the RPR on pages 6-7, and at the oral hearing, the Applicant continued to dispute that the CGK of the POSITA would include knowledge that "the origin or source of the PET precursors does not change the resulting PET product" arguing that there was no evidence to support this aspect of the CGK. In this regard it is noted that our views are consistent with modern atomic theory: "all the isotopes of a given element have virtually identical chemical properties – all give the same kinds of chemical reactions" (Chemistry: The Study of Matter and Its Changes, Brady and

> Holum, 1993, John Wiley & Sons, Inc., pages 44-45). Dating back to work done in the early nineteenth century, these concepts are taught in general chemistry textbooks and are expected to form part of the CGK of the POSITA.

[59] TCCC contends that the first time it was introduced to Brady was at the oral hearing and that it was not given an opportunity to respond to Brady in any meaningful way. It also asserts that Brady only provides a general statement on isotopes and does not address PET in particular.

[60] The Respondent argues, and I agree, that the reference to Brady is merely an example of the Commissioner's position on the CGK, rather than the basis for that position. It asserts that TCCC had knowledge of the Commissioner's view on the CGK well in advance of the Decision and already had an opportunity to respond to it.

[61] It is settled law that CGK is a subset of the prior art. Prior art is a broad category encompassing all previously publically available information in the field, however obscure or not generally accepted: *Mylan Pharmaceuticals ULC v Eli Lilly Canada Inc*, 2016 FCA 119 [*Mylan*] at paras 23-24. However, CGK is limited to the knowledge generally known, and accepted, by the POSITA at the relevant time (*Mylan* at para 24) or that they would reasonably have been expected to know (*Whirlpool Corp v Camco Inc*, 2000 SCC 67 at para 74). A piece of information only migrates into the CGK if the POSITA would become aware of it and accept it as a good basis for further action: *Mylan* at para 24. As such, CGK must be proven with fact evidence on a balance of probabilities: *Uponor AB v Heatlink Group Inc*, 2016 FC 320 at para 47.

[62] Section 12.02.02c of the MOPOP notes that "[w]here it is appropriate to establish the common general knowledge in a field (for example where the examiner and applicant disagree as to the common general knowledge), this can be done by citing established reference works (such as textbooks, review articles, handbooks, etc.) or by demonstrating commonality of certain knowledge in a number of disclosures in the field."

[63] Sections 26.07.02, 26.07.03 and 26.07.03a of MOPOP outline the importance of communications between the PAB and the applicant where new issues or defects arise and of providing the applicant with an opportunity to respond. While these sections do not relate to communications involving ongoing issues such as the one in this case, in my view the same principles would apply and it is reasonable to assume that the opportunity to respond would also extend to new evidence or references cited by the PAB where such evidence is material to the PAB's findings.

[64] In this case, however, I do not view the reference to Brady to be material or necessary to the Commissioner's overall findings, or the source of the issue in dispute.

[65] As noted in the passages above, in the PR the PAB concluded that while the presence of C-14 could be used to physically differentiate bio-based PET from petroleum-based PET, "there [was] no evidence suggesting that the polymers [could] be chemically differentiated". The use of Brady merely supported this earlier finding. There was no evidence from TCCC to contradict this finding even before Brady was presented.

[66] The PAB further noted that under the description, as little as 1% weight of the PET components could be derived from bio-based material. Again, TCCC presented no evidence to demonstrate that such quantities of bio-based materials would be expected to affect the chemical properties of the polymer.

[67] In my view, the failure to provide TCCC with an opportunity to respond to Brady cannot be characterized as a palpable and overriding error.

D. *Did the Commissioner err by improperly narrowing the gap between the state of the art and the inventive concept of the claims?*

[68] TCCC raises two arguments regarding the third part of the *Plavix* test and the gap between the state of the art and the inventive concept.

[69] First, it argues that the Commissioner failed to include the recyclability of the bio-based PET beverage containers as part of the inventive concept and therefore failed to recognize that D6 does not address whether the resins disclosed therein could be recycled at conventional PET recycling facilities. The determination of this argument will flow from the redetermination of the first issue.

[70] Second, it asserts that it has identified additional differences between D6 and the inventive concept of the Claims on File that were not identified in the Decision. It contends that the Commissioner mischaracterizes its acceptance of the differences identified in the Decision when no such concession was made. In my view, the identification of additional differences focusses on a mischaracterization of D6 and the teachings of the Application. The assertion that

the only type of bio-based PET included in the Claims on File is comprised of a diol component derived from a biomass is not supported by the express wording of claim 22 of the Claims on File and the description of the Application (at para [0006d]). Further, while D6 does not provide an example of a process for making PET from a diol component derived from a biomass, as aptly described by the Commissioner, it discloses the use of conventional methods for the synthesis of PET from biomass derived raw materials (at para [0083]) and discloses methods of extracting various organic raw materials from biomass including ethylene glycol (at paras [0062]-[0064]).

[71] The primary differences between the cited art and inventive concept of the Claims on File are reflected in the Decision. I am not satisfied that a palpable and overriding error has been made.

E. *Did the Commissioner err by failing to establish the findability of the new reference, D6, cited by the PAB, and in failing to explain how the POSITA would combine the art cited?*

[72] TCCC argues that the Commissioner erred in mosaicking D6 with D5 and the CGK to arrive at the inventive concept of the claims without explanation as to how a POSITA would select and mosaic this art. TCCC notes that D6 was only identified by the PAB during the PR.

[73] In *Hospira Healthcare Corporation v Kennedy Trust for Rheumatology Research*, 2020 FCA 30 [*Hospira*], the Federal Court of Appeal explained that a prior art reference should not be excluded from the obviousness analysis simply because it is difficult to find, although it remains open to the Court to consider its impact at step 4 of the analysis and whether the POSITA would have been motivated to combine the reference with other prior art. As stated at paragraph 86 of *Hospira*:

> [86] In light of section 28.3 of the Patent Act and the applicable jurisprudence and commentaries, I conclude that it is an error to exclude from consideration prior art that was available to the public at the relevant date simply because it would not have been located in a reasonably diligent search. The likelihood that a prior art reference would not have been located by a PSA may be relevant to consideration of step 4 of the obviousness analysis (whether differences between the state of the art and the inventive concept constitute steps which would have been obvious to the PSA) in that the uninventive PSA might not have thought to combine that prior art reference with other prior art to make the claimed invention. However, excluding prior art simply because it is difficult to find is problematic because it would result in the possibility of a valid patent on an invention that had, but for some non-inventive tweak, already been disclosed to the public. In my view, that is not what Canada's patent regime is intended to permit.

[74] This same approach was also recently discussed in *Google v Sonos*, 2022 FC 1116 at paragraphs 96-98:

> [96] I am of the view that Google goes too far when it says that the 871 Patent is not eligible prior art because it would not have been located in a reasonably diligent search. Indeed in *Hospira Healthcare Corporation v Kennedy Trust for Rheumatology Research*, 2020 FCA 30 [*Hospira*], Justice Locke held at paragraph 86: "I conclude that it is an error to exclude from consideration prior art that was available to the public at the relevant date simply because it would not have been located in a reasonably diligent search."
>
> [97] Justice Locke also authored the reasons of the Federal Court of Appeal that affirmed Justice Kane's reasoning in *Teva*. In so doing, he did not reverse what he said in *Hospira*. In my view, what both Justice Kane and Justice Locke were saying was that the obscure prior art reference is eligible prior art at step three of the Sanofi analysis. However, the difficulty of locating a document is a matter that may be considered at the final step. [...]
>
> [98] The question thus becomes whether, given the obscure nature of the 871 Patent, the uninventive POSITA might have thought to combine the 871 Patent with other prior art to make the claimed invention.

[75] Thus, *Hospira* leaves open the possibility that in some circumstances the inability to locate prior art may impact the fourth step of the obviousness analysis. However, TCCC has not provided a reason why that would be the case in the present matter. Unlike in *Pharmascience Inc v Teva Canada Innovation*, 2022 FCA 2, there was no evidence before the Commissioner that D6 would not have been found by the POSITA. The fact that D6 was not cited earlier during prosecution, in my view, is insufficient to draw any definitive conclusions as to the ability of the POSITA to find the reference.

[76] Further, I do not agree that because of the passage of time, the PAB was obligated to explain how they found D6. TCCC has conceded that it was not improper for the PAB to introduce D6 during its PR. Indeed, it did not make any argument when the PAB did so. Nor did it argue in its RPR that the findability of this reference would impact the motivation of the POSITA.

[77] In the Decision, the Commissioner considered the Appellant's arguments that the POSITA would not be motivated to combine D6 with D5, but disagreed with these submissions.

[78] The Commissioner found that the motivation to produce bio-based PET food and beverage containers, and to combine the prior art references, came from D6 itself and was acknowledged in the background of the Application:

> [45] ... the prior art already disclosed a motive to produce bio-based PET food and beverage containers. As indicated above, the state of the art represented D6 which establishes a motivation in the art to provide biomass-use resins that replace resins using conventional petroleum resources as raw materials – to solve

> problems of suppression of global warming and exhaustion of resources (see para [007]).
>
> [46] ... In addition to the motivation provided by D6, the "BACKGROUND" of the application specifically acknowledges that there was a general desire to move away from petrochemically-derived PET and to find a substitute. In our view, at the claim date, the POSITA was aware that there was a need for a bio-based version of PET: "there exists a need for a PET derived from renewable resources that shares similar properties as petroleum-derived PET" (see para [0006]).
>
> [47] Furthermore, it is our view, that the POSITA would have been led to combine the cited prior art to accomplish this end. D6 provides not only the motivation for the POSITA to find the solution the instant application addresses, but also provides methods of extracting various organic raw materials from biomass including ethylene glycol (para [0062]-[0064]) and terephthalic acid (Example 1). Additionally, D6 confirms that polyethylene terephthalate resin which is synthesized from biomass-derived raw materials using conventional methods, has the same characteristics as petroleum-derived polymer.

[79] As referenced by the Commissioner, and similar to the background of the Application, paragraph [0007] of D6 speaks of the desire to replace petroleum based raw materials with plant resources, and of challenges with using PLA as a replacement:

> [0007] On the other hand, while conventional resins mostly use petroleum resources as raw materials, recently, attention has been paid to resins using plant resources as raw materials, i.e., biomass-use resins. Currently, polylactic acid is most attracting attention. Polylactic acid is a resin using lactic acid obtained by fermenting starch extracted from plants as a raw material. However, since biodegradable resins using biomass such as polylactic acid generally have low mechanical properties and low heat resistance and are limited in use, they have not yet been able to replace resins using conventional petroleum resources as raw materials, and have not solved the problems of suppression of global warming and exhaustion of resources.

[80] TCCC argues that the Commissioner erred by failing to consider the fourth step in the obviousness analysis from the viewpoint of the POSITA as defined by the Commissioner earlier

in the Decision. However, I do not read the Decision as defining the POSITA in the manner proposed by TCCC. In the Decision, the Commissioner adopts the characterization of the POSITA from the FA, which indicates an express intention to include someone involved in the preparation of the PET polymer and not to limit the POSITA to a "converter" – *i.e.*, a person engaged in the conversion of plastic resins into finished products:

> [24] In the PR letter, on pages 5-6, we adopted the characterization of the POSITA used in the FA, which had not been disputed by the Applicant in the RFA. The POSITA was characterized as:
>
> > The person skilled in the art (or *person of ordinary skill in the art*, POSITA) is considered to be a producer of PET containers for food or beverages. In the correspondence of 12 February 2016, the applicant refers to the POSITA as a "converter", *i.e.*, a person "engaged in the conversion of plastic resins into finished products, *e.g.* food and beverage containers", but "not a person of skill in the preparation of polymers". In the examiner's view, it is clear that the POSITA is involved in the preparation of the PET polymer, in particular in selecting appropriate monomers for the polymerization. In any case, both views are taken into account in the analysis that follows.

[81] Consistent with this definition, the Commissioner indicates that it did not limit its analysis to conversion, but also considered the motivations of the polymer chemist who would be part of the "team" of skilled persons and who would be considering the selection of appropriate precursors for the polymerization. As stated in the Decision:

> [46] With regard to motivation of the POSITA, it is noted that the Applicant points out that the cost and availability of bio-based components would have de-motivated the POSITA from substituting petroleum-derived monomers in PET with bio-derived monomers. Notwithstanding that the Applicant has focused solely on the converter as the POSITA for the purposes of motivation, when the "team" that comprises the POSITA in this case also includes a polymer chemist, we are of the opinion that these

> concerns would not deter the POSITA from producing a bio-based version of PET. [...]

[82] In my view, it was not unreasonable to assume that such a skilled person would be looking at art relating to bio-based materials and precursors.

[83] As set out above and discussed by the Commissioner in the Decision, D6 discloses the use of conventional methods for the synthesis of PET using biomass derived raw materials that are equivalent to PET obtained from petroleum derived raw material (para [0083] and [0084]).

[84] Such resins are used to make molded products (D6 at para [0069]), which could include the molded products comprised of PET described by the teachings of D5.

[85] While the Decision does not specifically reference the Schiavone Declaration, it indicates that the Commissioner considered the Appellant's points on the cost and availability of bio-based components; however, it was not persuaded that these aspects would demotivate the POSITA from substituting petroleum derived monomers in PET with bio-derived monomers.

[86] I agree with the Respondent, the argument of TCCC amounts to nothing more than a disagreement with the findings of the Commissioner, which is insufficient to constitute a palpable and overriding error.

[87] As stated earlier, I agree that the Commissioner provided insufficient analysis of the method claims of the Proposed Claims, and in particular claim 18. However, I do not consider there to be any reviewable error of the Claims on File, or in the Commissioner's approach to D6.

V. Conclusion

[88] For the above reasons, I will allow the appeal in part and refer the matter back to the Commissioner for redetermination of the method claims of the Proposed Claims, in accordance with these reasons.

[89] In view of the divided success on the issues before the Court and bearing in mind section 25 of the Patent Act, there shall be no order as to costs.

JUDGMENT IN T-1752-21

THIS COURT'S JUDGMENT is that:

1. The Appeal is granted in part and the application is referred back to the Commissioner for redetermination of the method claims of the Proposed Claims under section 28.3 of the Patent Act.

2. No costs are awarded.

"Angela Furlanetto"
Judge

FEDERAL COURT

SOLICITORS OF RECORD

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