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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/178,643	02/12/2014	Allison H. SAMPSON	P66732US4	4262

136 7590 06/23/2020

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ART UNIT	PAPER NUMBER
1734	

NOTIFICATION DATE	DELIVERY MODE
06/23/2020	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ALLISON H. SAMPSON and RICHARD L. SAMPSON

Appeal 2020-002810
Application 14/178,643
Technology Center 1700

Before BEVERLY A. FRANKLIN, JAMES C. HOUSEL, and MONTÉ T. SQUIRE, *Administrative Patent Judges.*

HOUSEL, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 57–61, 63, 65, and 68. We have jurisdiction under 35 U.S.C. § 6(b). An oral hearing was held on June 11, 2020.[2]

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[1] We use the word Appellant to refer to "applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as the Inventors, Allison Sampson and Richard Sampson. Appeal Brief ("Appeal Br.") filed November 4, 2019, 4.

[2] A written transcript of the oral hearing has been entered into the record.

We REVERSE.[3]

CLAIMED SUBJECT MATTER

The invention relates to a method for generating chlorine dioxide by catalysis of chlorous acid. Spec. 1:8–9. Appellant discloses that chlorous acid can be generated in a controlled manner from an aqueous chlorite or chlorate salt solution by ion exchange or conventional acidification, and that chlorine dioxide can be generated from chlorous acid by use of at least one catalytic material. *Id.* at 5:14–17. Appellant further discloses that the chlorous acid may be generated continuously in a first step and subsequently catalyzed to form chlorine dioxide continuously in a second step, and that this process must be carried out in an aqueous environment. *Id.* at 6:1–8.

Claim 65, reproduced below from the Claims Appendix to the Appeal Brief, is illustrative of the claimed subject matter:

> 65. A process for producing chlorine dioxide comprising the steps of:
>
> – obtaining a container having an inlet and an outlet and packed full with a catalytic material selected from the group consisting of platinum, palladium, manganese dioxide, carbon, ion exchange material, and combinations thereof,
>
> – continuously feeding a stream of chlorous acid through the container inlet into contact with the catalytic material in a moist environment to produce a chlorine dioxide solution and, simultaneously,
>
> – continuously removing a stream of the thus produced chlorine dioxide solution from contact with the catalytic material through the container outlet.

[3] This Decision also cites to the Specification ("Spec.") filed February 12, 2014, the Examiner's Answer ("Ans.") dated December 31, 2019, and the Reply Brief ("Reply Br.") filed March 2, 2020.

REFERENCES

The Examiner relies on the following prior art:

Name	Reference	Date
Barber	US 3,936,502	Feb. 03, 1976
Ringo	US 5,008,096	Apr. 16, 1991
Kross et al. ("Kross")	US 5,100,652	Mar. 31, 1992
Schroeder et al. ("Schroeder")	US 5,324,477	June 28, 2994
Appellant's Admitted Prior Art ("AAPA")	Spec. 12:1–9	Feb. 12, 2014

REJECTIONS

The Examiner maintains, and Appellant requests our review of, the following rejections under 35 U.S.C. § 103(a):

1. Claims 57–61, 63, 65, and 68 as unpatentable over Kross in view of AAPA and Schroeder, and optionally further in view of Barber; and

2. Claims 57, 65, and 68 as unpatentable over Ringo in view of Kross, and optionally further in view of Schroeder and Barber.

OPINION

We review the appealed rejections for error based upon the issues Appellant identifies, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential) (cited with approval in *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) ("[I]t has long been the Board's practice to require an applicant to identify the alleged error in the examiner's rejections."). After considering the argued claims and each of Appellant's arguments, we are persuaded of reversible error in the appealed rejections. Accordingly, we reverse the

rejections for the reasons set forth in the Appeal and Reply Briefs. We add the following primarily for emphasis.

We limit our discussion to independent claim 65 which is dispositive of the issues on appeal. A complete statement of the Examiner's obviousness rejections can be found in the Examiner's Answer. Ans. 3–11.

Appellant argues, *inter alia*, that neither the Examiner's combination of Kross, Schroeder, AAPA, and Barber, nor the Examiner's combination of Ringo, Kross, Schroeder, and Barber teaches or suggests continuously feeding a stream of chlorous acid through the inlet of a container packed full with a catalytic material selected from the group consisting of platinum, palladium, manganese dioxide, carbon, ion exchange material, and combinations thereof to produce a chlorine dioxide solution. Appeal Br. 18–26, 46–49, 54–62; Reply Br. 6–7, 9–10. We agree. In each combination, the Examiner relies on Kross for teaching that the acidification of chlorite to produce chlorine dioxide produces chlorous acid as an intermediate compound. Ans. 3–5. The Examiner finds that Kross teaches or suggests that chlorous acid can be converted to chlorine dioxide in the presence of a catalyst.[4] *Id.* However, the Examiner fails to direct us to any

[4] Appellant argues that the Examiner has mischaracterized Specification page 12, lines 1–9, as admitted prior art. Appeal Br. 31–37. We agree. Admissions of prior art, similar to disclaimers, by patent applicants must be clear and unmistakable. *See In re Fout*, 675 F.2d 297, 301 (CCPA 1982); *cf. Omega Engineering, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1326 (Fed. Cir. 2003) ("the alleged disavowing actions or statements made during prosecution [must] be both clear and unmistakable"). Here, we find that the only clear and unmistakable admission of prior art is that the identified catalysts are commercially available and that they could be deposited on various substrates to increase their surface area. Spec. 12:1–9. The Examiner erred in finding that this admission extended to identifying these listed

prior art teaching or suggestion to separately produce chlorous acid apart from the catalyst, nor do we find any. Kross' teaching merely indicates that when chlorite, acid, and catalyst are mixed together, metastable chlorous acid is generated as an intermediate that decomposes to form chlorine dioxide. Kross 3:10–17, 45–14. Likewise, Ringo teaches mixing chlorite, acid, and catalyst together to obtain chlorine dioxide, but fails to mention a chlorous acid intermediate. Ringo 2:25–59.

The Examiner determines that claim 65 does not exclude a single step in which chlorous acid is formed simultaneously with the catalyst contact because Appellant discloses that the catalyst contact may occur either subsequent to or simultaneously with the formation of chlorous acid. Ans. 25. However, claim 65 is clearly drafted to cover only contacting chlorous acid with the catalyst subsequent to the formation of this chlorous acid. As such, the Examiner erroneously interprets claim 65 to encompass a single step of simultaneously mixing chlorite, acid, and catalyst together.

Alternatively, the Examiner relies on Barber to suggest the conversion of Kross' or Ringo's processes from batch to continuous, and then further concludes that it would have been obvious to produce the chlorous acid before catalyst contact because the selection of any order of mixing ingredients and performing process steps is prima facie obvious. Ans. 9, 25 (citing *In re Burhans*, 154 F.2d 690 (CCPA 1946); *In re Gibson*, 39 F.2d 975 (CCPA 1930). Moreover, the Examiner finds that there are six possible orders in which the three reactants can be added to the reactor which "is a sufficient[ly] small number[]" such that it would have been obvious to have

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catalysts as known in the prior art to catalyze the reaction of chlorous acid to generate chlorine dioxide.

selected the best order among these six possible combinations, absent unexpected results, especially given that Barber suggests that the catalyst be placed in the container for a continuous process. Ans. 28.

The Examiner's position appears to be directed both to the principle that selecting a known option from a finite number of identified, predictable solutions would have been prima facie obvious and that one such combination inherently results in chlorous acid being produced prior to being fed to the catalyst container. *See In re Kubin*, 561 F.3d 1351, 1359 (Fed. Cir. 2009) ("[W]here a skilled artisan merely pursues 'known options' from a 'finite number of identified, predictable solutions,' obviousness under § 103 arises." (quoting *KSR Int'l. Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007)). However, the Examiner does not identify the six possible combinations nor direct us to any evidence that each of these six combinations were predictable solutions. Indeed, given the Examiner's position regarding Barber's teaching that the catalyst be placed in the container as a fixed bed reactor, the other two reactants (chlorite and acid) may either be added together or separately to this reactor. Yet, even if there are just two possible ways to add chlorite and acid to the catalyst containing reactor, as Appellant argues, neither includes continuously feeding a stream of chlorous acid to the reactor. There is insufficient evidence to reasonably expect, from Kross' teaching, that mixing chlorite and acid into a single feed stream prior to being fed to the reactor will produce a stream of chlorous acid as required by claim 65. In general, a limitation is inherent "if it is the 'natural result flowing from' the explicit disclosure of the prior art." *Schering Corp. v. Geneva Pharms*., 339 F.3d 1373, 1379 (Fed. Cir. 2003) (quoting *Eli Lilly & Co. v. Barr Labs., Inc.*, 251 F.3d 955, 970 (Fed. Cir.

2001)). "Inherency . . . may not be established by probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient." *MEHL/Biophile Int'l Corp. v. Milgraum*, 192 F.3d 1362, 1365 (Fed. Cir. 1999) (quoting *In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981)). In this regard, although the Examiner finds Kross teaches that chlorous acid is produced by the acidification of chlorite, the Examiner has not established that chlorous acid necessarily would be produced if both chlorite and acid are added just prior to feeding to the reactor. Kross teaches that chlorous acid is generated in a batch process comprising mixing chlorite, acid, and catalyst, but does not provide any information on reaction or residence times. As such, the Examiner has neither identified a finite number of predictable solutions nor that the step of continuously feeding a stream of chlorous acid to a catalyst-containing container would necessarily result from one of these solutions.

Appellant, therefore, has identified reversible error in the appealed rejections. Accordingly, we do not sustain the Examiner's obviousness rejections based on the combination of Kross, AAPA, Schroeder, and Barber or the combination of Ringo, Kross, Schroeder, and Barber.

CONCLUSION

Upon consideration of the record and for the reasons set forth above and in the Appeal and Reply Briefs, the Examiner's decision to reject, under 35 U.S.C. § 103(a), claims 57–61, 63, 65, and 68 as unpatentable over Kross in view of AAPA and Schroeder, and optionally further in view of Barber, and claims 57, 65, and 68 as unpatentable over Ringo in view of Kross, and optionally further in view of Schroeder and Barber, is *reversed*.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
57–61, 63, 65, 68	103(a)	Kross, AAPA, Schroeder, Barber		57–61, 63, 65, 68
57, 65, 68	103(a)	Ringo, Kross, Schroder, Barber		57, 65, 68
Overall Outcome				**57–61, 63, 65, 68**

REVERSED