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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SAMUEL LEWIS TANAKA

Appeal 2019-005273
Application 15/610,463
Technology Center 1700

BEFORE CATHERINE Q. TIMM, JEFFREY B. ROBERTSON, and
DONNA M. PRAISS, *Administrative Patent Judges*.

ROBERTSON, *Administrative Patent Judge*.

DECISION ON APPEAL¹

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant² appeals from the Examiner's decision to reject claims 1–20. Appeal Br. 15. We have jurisdiction under 35 U.S.C. § 6(b). We affirm in part.

¹ This Decision includes citations to the following documents: Specification filed May 31, 2017 (“Spec.”); Final Office Action mailed July 27, 2018 (“Final Act.”); Appeal Brief filed February 5, 2019 (“Appeal Br.”); Examiner's Answer mailed May 16, 2019 (“Ans.”); and Reply Brief filed June 27, 2019 (“Reply Br.”).

² 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 Seagate Technology LLC. Appeal Br. 2.

CLAIMED SUBJECT MATTER

Appellant states the invention relates to an apparatus including a cooling chamber with an inflatable seal. Spec. ¶ 2. Claim 1, reproduced below, is illustrative of the claimed subject matter (Appeal Br., Claims Appendix 16):

1. A system comprising:
 - a cooling chamber;
 - a first cooling plate within the cooling chamber;
 - a second cooling plate positioned opposite the first cooling plate within the cooling chamber;
 - a carrier configured to move a workpiece into the cooling chamber and position the workpiece between the first cooling plate and the second cooling plate; and
 - an inflatable seal surrounding a portion of the first cooling plate and the second cooling plate, wherein
 - the inflatable seal forms a gas channel between the first cooling plate and the second cooling plate when the inflatable seal is inflated, and
 - the inflatable seal removes the gas channel between the first cooling plate and the second cooling plate when the inflatable seal is deflated.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Martin et al. hereinafter "Martin"	US 5,094,013	March 10, 1992
Strasser et al. hereinafter "Strasser"	US 5,415,729	May 16, 1995
Yi et al. hereinafter "Yi"	US 2004/0250996 A1	December 16, 2004

REJECTIONS

1. The Examiner rejected claims 1–7 under 35 U.S.C. § 103 as unpatentable over Yi, Martin, and Strasser. Final Act. 2–7.
2. The Examiner rejected claims 8–11 and 13 under 35 U.S.C. § 103 as unpatentable over Martin and Strasser. Final Act. 7–10.
3. The Examiner rejected claims 12 and 14 under 35 U.S.C. § 103 as unpatentable over Martin, Strasser, and Yi. Final Act. 10.
4. The Examiner rejected claims 15–20 under 35 U.S.C. § 103 as unpatentable over Martin and Strasser. Final Act. 10–11.

OPINION

Rejection 1

In reviewing the Examiner’s rejection of claims 1–7 under 35 U.S.C. § 103 as unpatentable over Yi, Martin, and Strasser, we limit our discussion to claim 1, which is sufficient to dispose of the issues related to this rejection.

The Examiner’s Rejection

The Examiner found Yi discloses a system including a first cooling plate and a second cooling plate in a cooling chamber, and a carrier configured to move a workpiece into the cooling chamber. Final Act. 3, citing Yi ¶¶ 34–45. The Examiner found Yi does not disclose an inflatable seal surrounding a portion of the first cooling plate and the second cooling plate, which, when the seal is inflated, forms a gas channel between the first and second cooling plates, and, when the seal is deflated, removes the gas channel between the first and second cooling plates. *Id.* at 3. The Examiner

found Martin suggests placing seals between cooling plates to control pressure in the space in order to increase heat transfer. *Id.* citing Martin, col. 6, ll. 3–12, Figs. 5A and 6, seal 60. The Examiner found that the seals in Martin form a gas channel between the first and second cooling plates. *Id.* The Examiner found one of ordinary skill in the art would incorporate the seals of Martin in Yi to allow for increasing heat transfer due to pressure control. *Id.* The Examiner found Strasser discloses inflatable seals that allow insertion of a disc shaped substrate into a space that is sealable from other spaces via the inflatable seals. *Id.* at 3–4 citing Strasser, col. 7, ll. 58–68, col. 8, ll. 1–49, col. 11., ll. 61–68, col. 12, ll. 24–66; Figs. 1a–1e, 7, 8. The Examiner determined one of ordinary skill in the art would utilize the inflatable seals of Strasser in place of the seals of Martin in combination with Yi, because it would allow the insertion of the disc shaped substrate into the space. *Id.* at 4. The Examiner determined that when the inflatable seals of Strasser are utilized in the combination of Yi and Martin, the gas channel would be removed when the seal is deflated. *Id.*

Appellant's Contentions

Appellant argues incorporating Martin's seals between Yi's cooling plates would not form a gas channel as recited in the claims, but, rather, incorporating Martin's seals would enclose Yi's cooling plates and block any flow of gas. Appeal Br. 10–11. Appellant contends there is no motivation to combine Yi and Martin, and further including Strasser's inflatable seal, because the added seal and additional processing steps associated therewith would decrease throughput, which would frustrate the higher throughput needs identified by Yi. *Id.* at 11–12, citing Yi ¶ 9. In this

regard, Appellant argues Yi already teaches sealing the seal opening 22 in chamber 10 with seal 20. *Id.*; Reply Br. 2.

Issue

The dispositive issue with respect to this rejection is:

Did the Examiner err in determining that it would have been obvious to have combined Yi, Martin, and Strasser to arrive at the inflatable seal arrangement recited in claim 1?

Discussion

We are persuaded that the Examiner has not provided sufficient reasons to support the position that Yi, Martin, and Strasser may be combined in a manner that would render claim 1 obvious. Although the Examiner points to Martin in order to provide a seal for increasing heat transfer due to pressure control contributed by the seals, Yi already contains a sealing mechanism, whereby a seal 20 seals seal opening 22 when disk 16 is fully inserted. Yi ¶ 36, Figs. 1, 2. Yi expressly discloses this arrangement “seals chamber 10 and a high vacuum can be achieved by the high vacuum source 11.” *Id.* Thus, the disclosure of Yi is consistent with Martin, which discloses the seals are attached to the housing in order to permit pressure control for increased heat transfer rates. Martin, col. 6, ll. 7–12; Figs. 5A, 5C, 6. It is therefore unclear why one of ordinary skill in the art would have undertaken additional modification in Yi based on Martin’s disclosure, particularly considering the structural differences between the systems of Yi and Martin, and in view of Yi’s disclosure relating to an arrangement to provide a high throughput. Yi ¶¶ 9, 10.

The Examiner's response in the Answer relying on exhaust ports 64 and exhaust pipe 58 of Martin in order to support the position that the seals would form a gas channel (Ans. 14) further highlights the issues with the combination Yi and Martin as it is unclear how the combination would result in the system with inflatable seals as arranged in claim 1. *See Reply Br. 2.* The Examiner's reliance on the inflatable seals disclosed in Strasser does not remedy the deficiencies discussed above.

As a result, we reverse the Examiner's rejection of claim 1, and claims 2–7 dependent therefrom, as obvious over Yi, Martin, and Strasser.

Rejection 2

In reviewing the Examiner's rejection of claims 8–11 and 13 under 35 U.S.C. § 103 as unpatentable over Martin and Strasser, Appellant does not present separate arguments with respect to the claims subject to Rejection 2. *See Appeal Br. 12–13.* We select claim 8 as representative for disposition of this rejection, with the patentability of the other claims standing or falling with claim 8. 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner's Rejection

Regarding claim 8, the Examiner found Martin discloses an apparatus comprising a first seal surrounding a plurality of cooling plates and a second seal surrounding the plurality of cooling plates, wherein the first and second seals form a gas channel. Final Act. 7. The Examiner found Martin does not disclose the seals are inflatable and form a carrier channel and remove a gas channel when deflated. *Id.* The Examiner relies on similar teachings in Strasser as discussed above for the aspects of the inflatable seal not present

in Martin. *Id.* at 7–8. The Examiner determined it would have been obvious to have utilized the inflatable seals of Strasser in place of the seals in Martin because it would allow for the insertion of a disc shaped substrate into the space. *Id.* As a result of the combination, the Examiner determined that when the seal is deflated, the gas channel would be removed. *Id.* at 8.

Appellant's contentions

Appellant contends Martin does not disclose a first and a second seal form a gas channel, but, rather, Martin discloses the exhausting ports are closed to the corresponding inlet ports in order to ensure that the fluid travels only a small distance across the surface of the material in order to minimize mixing of heating fluid with inlet fluid and to control the velocity of fluid across the area to be quenched. Appeal Br. 12–13, citing Martin, col. 4, ll. 58–64, Figs. 1, 3A, 3B, 5A–5C. Appellant argues because Martin discloses the seal is used for pressurization of the device around the quenching area, Martin's inlet and exhaust ports are present with or without the seal, such that Martin does not teach that the seals form and remove a gas channel as recited in the claims. *Id.* at 13, citing Martin, col. 4, ll. 12–14.

Issue

Has Appellant demonstrated reversible error in the Examiner's position that the combination of Martin and Strasser would render the apparatus including the first and second inflatable seals recited in claim 8 obvious?

Discussion

We are not persuaded by Appellant's arguments that the seals of Martin as modified by Strasser would not result in inflatable seals that form a gas channel when inflated and remove the gas channel when deflated. In particular, we do not agree that Martin's disclosure of insuring the quenching fluid to be exhausted travels only a small distance across the surface of the material (col. 4, ll. 58–64) means that the seals in Martin as modified by Strasser would not be capable of forming and removing a gas channel as claimed in claim 8. Martin discloses ports 14 are to “minimiz[e] the mixing of heated quenching fluid with adjacent inlet quenching fluid and controlling the velocity of the fluid across the area to be quenched.” Martin, col. 4, ll. 58–64. Thus, this disclosure addresses the interaction between the quenching fluid and area to be quenched. The quenching fluid to be exhausted still flows through the exhaust plenum 56 and exhaust pipe 58. Martin, col. 6, ll. 3–5, Fig. 5A, 6.

As to the purpose of Martin's seals, Martin discloses seal 60 “seals the area to be quenched” and “enables recycling of the quenching fluid in a closed loop system.” *Id.* at col. 6, ll. 8–12. Therefore, the presence of inflated seals in the combination proposed by the Examiner would be capable of creating a gas channel as recited in claim 8 by altering the flow of quenching fluid allowing recycling thereof. Likewise, the deflation of the seals would again alter the flow of the quenching fluid and be capable of removing the gas channel.

Accordingly, we affirm the Examiner's rejection.

Rejections 3 and 4

Appellant does not present separate arguments for Rejections 3 and 4, but, rather, relies on the arguments made with respect to claim 8, subject to Rejection 2. Appeal Br. 13–14.

Accordingly, we affirm Rejections 3 and 4 for similar reasons as discussed above for Rejection 2.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–7	103	Yi, Martin, Strasser		1–7
8–11, 13	103	Martin, Strasser	8–11, 13	
12, 14	103	Martin, Strasser, Yi	12, 14	
15–20	103	Martin, Strasser	15–20	
Overall Outcome			8–20	1–7

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART