UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/546,078	11/18/2014	Joseph Yudovsky	021263USA	1019

67251 7590 01/31/2020

SERVILLA WHITNEY LLC/AMT
33 WOOD AVE SOUTH
SUITE 830
ISELIN, NJ 08830

EXAMINER	
MOORE, KARLA A	

ART UNIT	PAPER NUMBER
1716	

NOTIFICATION DATE	DELIVERY MODE
01/31/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@dsiplaw.com
hservilla@dsiplaw.com
lmurphy@dsiplaw.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JOSEPH YUDOVSKY and KEVIN GRIFFIN

Appeal 2019-002366
Application 14/546,078
Technology Center 1700

Before JAMES C. HOUSEL, MICHELLE N. ANKENBRAND, and BRIAN D. RANGE, *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 1–10 and 14–16.[2] We have jurisdiction under 35 U.S.C. § 6(b).

---

[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 Applied Materials, Inc. Appeal Br. 3.

[2] Pending claims 11 and 17–20 have been withdrawn from consideration and are not before us on appeal.

We AFFIRM.[3]

CLAIMED SUBJECT MATTER

The invention relates to a batch processing platform for performing atomic layer deposition ("ALD") and chemical vapor deposition ("CVD") on substrates. Spec. ¶ 2. The claims are directed to a processing chamber comprising a gas distribution assembly, a susceptor assembly, and a diverter, wherein the diverter is positioned to change the flow of reactive gas so as to contact a surface of a substrate on the susceptor assembly at an angle of less than about 90˚ relative to the substrate surface. *Id.* ¶ 7.

Claim 1, reproduced below from the Claims Appendix to the Appeal Brief, is illustrative of the claimed subject matter:

1. A processing chamber comprising:
    a circular gas distribution assembly positioned within the processing chamber, the gas distribution assembly comprising a plurality of elongate pie-shaped gas ports in a front face of the gas distribution assembly, the plurality of elongate pie-shaped gas ports extending from an inner diameter region to an outer diameter region of the gas distribution assembly so that a width of the elongate gas ports at the outer diameter region is greater than a width of the elongate gas ports at the inner diameter region, the plurality of gas ports comprising a reactive gas port to deliver a reactive gas to the processing chamber, a purge gas port to deliver a purge gas to the processing chamber and a vacuum port to evacuate gases from the processing chamber;
    a susceptor assembly within the processing chamber to rotate at least one substrate in a substantially circular path about a rotational axis, the susceptor assembly having a top surface

[3] Our Decision refers to the Specification ("Spec.") filed November 18, 2014, the Examiner's Answer ("Ans.") dated December 3, 2018, and Appellant's Reply Brief ("Reply Br.") filed January 28, 2019.

> defined by an inner peripheral edge and an outer peripheral edge, the susceptor assembly positioned below the gas distribution assembly so that the top surface of the susceptor assembly faces the front face of the gas distribution assembly, the susceptor assembly spaced from the gas distribution assembly such that flows of gases from the reactive gas port and the purge gas port exit the gas port, flow around a partition formed by the gas distribution assembly and into the vacuum ports;
>
> a diverter positioned approximately coplanar with the front face of the gas distribution assembly, the diverter having a plurality of angled apertures therethrough to change a direction of a flow of gas passing through the diverter so that when a substrate is on the susceptor assembly, the gas exiting the diverter is directed toward the top surface of the susceptor assembly at an angle of less than 90° relative to the top surface of the susceptor assembly; and
>
> a plurality of actuators around an outer periphery of the susceptor assembly, the actuators configured to apply pressure to the susceptor assembly to level the susceptor assembly so that the susceptor assembly is substantially parallel to the gas distribution assembly.

Independent claim 16 recites a processing chamber similar to that of claim 1, wherein the reactive gas contacts the substrate surface at an angle in the range of about 70˚ to about 89˚ relative to the substrate surface in a direction opposite of rotation of the susceptor assembly and toward an inner peripheral edge of the susceptor assembly, and further including a diverter controller to control one or more of the direction and the angle of the reactive gas flow.

REFERENCES

The Examiner relies on the following prior art:

Name	Reference	Date
Kurita et al. ("Kurita")	US 2006/0054090 A1	Mar. 16, 2006
Kato et al. ("Kato1")	US 2010/0132614 A1	June 3, 2010
Park et al. ("Park")	US 2010/0190341 A1	July 29, 2010
Kato et al. ("Kato2")	US 2011/0139074 A1	June 16, 2011
Yudovsky ("Yudovsky1")	US 2012/0225195 A1	Sept. 6, 2012
Yudovsky ("Yudovsky2")	US 2013/0210238 A1	Aug. 15, 2013

REJECTIONS

The Examiner maintains, and Appellant requests our review of, the following grounds of rejection under 35 U.S.C. § 103:

1. Claims 1, 4, 5, 10, 14, and 15 as unpatentable over Park in view of Kato1, Yudovsky1, Kurita, and Yudovsky2;

2. Claims 2, 3, and 6–9 as unpatentable over Park in view of Kato1, Yudovsky1, Kurita, and Yudovsky2, and further in view of Kato2; and

3. Claim 16 as unpatentable over Park in view of Kato1, Yudovsky1, Kato2, Kurita, and Yudovsky2.

OPINION

After review of the Examiner's and Appellant's opposing positions and the appeal record before us, we determine that Appellant's arguments are insufficient to identify reversible error in the Examiner's obviousness rejections. *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011). Accordingly, we affirm the stated rejections for substantially the fact findings and the

reasons the Examiner sets forth in the Examiner's Answer. We provide the following for emphasis only.

Rejections 1 and 3

The Examiner rejects claims 1, 4, 5, 10, and 14–16 under 35 U.S.C. § 103 as unpatentable over Park in view of Kato1, Yudovsky1, Kurita, and Yudovsky2. Ans. 3–7, 8–13. Although Appellant separately argues independent claims 1 and 16, these arguments are substantively the same. *Compare* Appeal Br. 12–19, *with id.* at 23–31. Appellant also asserts that neither Park nor any of the secondary references teaches or suggests the features recited in claims 4, 5, 10, 14, and 15. *Id.* at 19–20. However, these "separate" arguments amount to no more than a recitation of the additional limitations of the dependent claims and a generic denial that the applied references teach or suggest the additional limitations. We, and our reviewing court, have long held that such argument does not merit separate consideration. *See*, *In re Lovin*, 652 F.3d 1349, 1357 (Fed. Cir. 2011) ("[W]e hold that the Board reasonably interpreted Rule 41.37 to require more substantive arguments in an appeal brief than a mere recitation of the claim elements and a naked assertion that the corresponding elements were not found in the prior art."). In accordance with 37 C.F.R. § 41.37(c)(1)(iv), claims 4, 5, 10, 14–16 stand or fall with claim 1, which we select as representative.

The Examiner finds that Park discloses processing chamber 140 substantially as claimed, including circular gas distribution assembly 130 positioned within the processing chamber, susceptor assembly 120 within the processing chamber positioned below the gas distribution assembly to rotate at least one substrate in a substantially circular path, and diverter 220

positioned approximately coplanar with a front face of the gas distribution assembly. Ans. 3. The Examiner further finds that the gas distribution assembly comprises a plurality of elongate gas ports 210, 150a–d in a front face thereof extending from an inner diameter region to an outer diameter region of the assembly, the plurality of gas ports including reactive gas port 150a to deliver reactive gas to the processing chamber and purge gas port 150d to deliver purge gas to the processing chamber. *Id.* In addition, the Examiner finds that Park's diverter has a plurality of angled apertures therethrough to allow a flow of gas to pass through the diverter, wherein the diverter is positioned at the front face of the gas distribution assembly to change a direction of flow of the reactive gas so as to contact a surface of the substrate at an angle of approximately 90˚. *Id.* at 3–4. The Examiner acknowledges that Park fails to disclose that the gas exiting the diverter is directed toward the top surface of the susceptor assembly at an angle of less than 90˚ relative to the top surface of the susceptor assembly. Ans. 4. For this feature, the Examiner finds that Kato1 discloses diverter 531 and diverter controller 525 to adjust the inclination of the diverter relative to a horizontal axis, so that the amount of reactant gas supplied from the diverter and adsorbed by a substrate may be adjusted. *Id.* Therefore, the Examiner concludes that it would have been obvious to provide Park with a diverter controller to adjust the inclination of the diverter in order to adjust the amount of reactant gas supplied from the diverter and adsorbed by the substrate as Kato1 teaches. *Id.* Further, the Examiner finds that while Kato1 does not disclose a specific angle of inclination for the diverter or a corresponding contact angle of the gas flow, Kato1's adjustment necessarily permits the contact angle to be adjusted to less than 90˚. *Id.*

The Examiner further acknowledges that Park fails to teach that the plurality of gas ports include vacuum ports to evacuate gases from the processing chamber, but finds, without dispute, that Yudovsky1 teaches a gas distribution assembly in a processing chamber including vacuum ports intermingled with reactive and purge gas ports for the purpose of transmitting gases delivered by the reactive and purge gas ports out of the processing chamber, wherein flows of gas from the reactive and purge gas ports exit from the gas distribution assembly and flow around a partition into the vacuum ports. Ans. 4–5. Therefore, the Examiner concludes, without dispute, that it would have been obvious to provide vacuum ports intermingled with the reactive and purge gas ports of Park's gas distribution assembly such that gas flows from the reactive and purge gas ports, around a partition and into the vacuum ports as Yudovsky1 teaches. *Id.* at 5.

The Examiner also acknowledges that Park fails to disclose a plurality of actuators around an outer periphery of the susceptor assembly so as to level the susceptor assembly to be substantially parallel to the gas distribution assembly. Ans. 5. The Examiner finds Kurita discloses a plurality of actuators around an outer periphery of a susceptor assembly and configured to level the susceptor assembly to be substantially parallel to the gas distribution assembly for promoting even and uniform processing. *Id.* Therefore, the Examiner concludes that it would have been obvious to provide a plurality of actuators around the outer periphery of Park's susceptor assembly configured to level the susceptor assembly so that it is substantially parallel to the gas distribution assembly in order to promote even and uniform processing as Kurita teaches. *Id.* at 6.

Finally, the Examiner acknowledges that Park fails to teach that the plurality of elongate gas ports are pie-shaped, i.e., the width of the gas ports at the outer diameter region is greater than the width of the gas ports at the inner diameter region, but finds, without dispute, that Yudovsky2 teaches the use of elongate pie-shaped gas ports for ensuring that each point of a wafer passing across the port has the same residence time under the gas port. Ans. 6. Therefore, the Examiner concludes, without dispute, that it would have been obvious to modify Park's gas ports to be pie-shaped in order to ensure that each point of a wafer passing across the port has the same residence time under the port. *Id.*

As discussed above, Appellant does not dispute either the Examiner's findings with regard to Yudovsky1 and Yudovsky2, or the obviousness conclusions based on these references. Accordingly, we need not further discuss these references. Instead, Appellant directs its arguments against the Examiner's findings and obviousness conclusions regarding the Park, Kato1, and Kurita references.

Appellant first argues that a spatial ALD chamber functions by maintaining a separation of reactive gases using one or more gas curtains formed by combinations of purge gas and vacuum streams. Appeal Br. 13. Appellant asserts that the gases flow normal to the susceptor surface, split to flow across the surface, and then flow normal to the surface again to leave the process region. *Id.* According to Appellant, "[c]hanging the angle of the gas flows of one or more of the reactive gases can dramatically affect the gas flow balance in the particular process region of the processing chamber." *Id.* Appellant urges that a skilled artisan would have recognized that a change in gas flow balance would likely ruin the separation of reactive gases and,

therefore, would not have been motivated to modify Park as the Examiner proposes. *Id.* Appellant contends that angling the flow of gases in the reaction space balances out rotation friction that high speed rotation of the susceptor assembly causes and helps maintain separation of the gases. *Id.*

This argument is not persuasive of reversible error because it relies on limitations not appearing in the claims. *See In re Van Geuns,* 988 F.2d 1181, 1184 (Fed. Cir. 1993) (rejecting appellant's nonobviousness argument as based on limitations not recited in the claims); *In re Self*, 671 F.2d 1344, 1348 (CCPA 1982) ("Many of appellant's arguments fail from the outset because, as the solicitor has pointed out, they are not based on limitations appearing in the claims."). We note that claim 1 neither recites nor is limited to a processing chamber for ALD. Nor does claim 1 recite any specific arrangement of the reactive gas, purge gas, and vacuum ports that provides, much less maintains, a separation of reactive gases using one or more gas curtains that combinations of purge gas and vacuum streams form. Claim 1 also does not recite any coupling between the rotation speed of the susceptor assembly and the angle at which the gas exiting the diverter contacts the top surface of the susceptor assembly.

Appellant next argues that Park fails to teach or suggest a diverter changing the direction of gas flow. Appeal Br. 14. Appellant asserts that Park's gas injection plate 220 has a plurality of injection holes 250 penetrating therethrough such that a gas is injected downward. *Id.* at 15. According to Appellant, causing the gas to inject downward is not changing the direction of the gas flow because Park does not teach or suggest that such injecting is at an angle as recited in claim 1. *Id.*

We disagree. As the Examiner explains (Ans. 14), the recitation that "the diverter [has] a plurality of angled apertures therethrough to change a direction of a flow of gas passing through the diverter" in claim 1 is broad—claim 1's scope includes a diverter with angled apertures that change the direction of gas flowing through the diverter. As Appellant explains (Appeal Br. 15), Park has a plurality of apertures, in this case angled orthogonal to the surface of the diverter, that necessarily change the direction of gas flowing through the diverter, so as to flow downward through the apertures. In this regard, we note that Appellant's apertures 291 are also orthogonal to the surface of diverter 290, whereas the diverter itself is angled relative to the gas distribution assembly (and susceptor assembly) so as to direct gas flow to the susceptor assembly at an angle of less than 90˚. Thus, what Park is lacking is not a diverter having a plurality of angled apertures therethrough to change a direction of a flow of gas passing through the diverter, but a diverter that directs the gas flow toward the top surface at an angle *of less than 90˚* relative to the top surface of the susceptor assembly. This is precisely what the Examiner acknowledges Park does not teach and for which the Examiner relied upon Kato1's teaching.

Turning then to Kato1, Appellant argues that the Examiner has mischaracterized this reference. Appeal Br. 15. Appellant asserts that Kato1's inclination adjustment mechanism caused the gas delivery line of the reactant gas nozzle to be tilted. *Id.* at 16. Appellant contends that this structure is very different from that recited in claim 1, in that Appellant's diverter comprises a plurality of apertures and is positioned at the front face of the gas distribution assembly. *Id.* Appellant urges that Kato1's "inclination adjustment mechanism and reactant gas nozzle does not have

any apertures because no gas passes through the component." *Id.* Appellant also urges that Kato1's inclination adjustment mechanism and reactant gas nozzle is located within the vacuum container, rather than at the front face of the gas distribution assembly. *Id.* Moreover, Appellant contends that these components are not planar components and, therefore, cannot be coplanar with the front face of the gas distribution assembly. *Id.*

Appellant's argument is not persuasive of reversible error. As the Examiner explains (Ans. 15), Kato1's inclination adjustment mechanism is not the diverter; rather reactant gas nozzles 31, 32 and purge gas nozzles 41, 42 are diverters. Contrary to Appellant's assertion, each of these nozzles has gas discharge ports or apertures 33, 40 to discharge reactant or purge gas downwardly toward susceptor assembly 2. Kato1 ¶ 78. Also contrary to Appellant's assertion, Kato1's gas nozzles are positioned at the front face of gas distribution assembly 11, of which the vacuum chamber is a part. Kato1 Fig. 5. Although Kato1's gas nozzles are tubes rather than planar components, such configuration does not prevent these nozzles from being "approximately coplanar" with the front face of the gas distribution assembly. Indeed, Kato1's Figure 5 depicts nozzle 32 as approximately coplanar with the gas distribution assembly in that apertures 33 are all aligned in the same plane as the lower face of gas distribution assembly 11. Further, notwithstanding this fact, as the Examiner finds (Ans. 16), Park's diverter 220 is also coplanar with the front face of the gas distribution assembly. Park Fig. 6.

Appellant next argues that it makes no sense to equate a flow of 90˚ with a flow of less than 90˚ because the purpose of the recited diverter is to change the angle of gas flow from 90˚ to less than 90˚. Appeal Br. 16.

Appellant also contends that "an angle of 90˚ cannot reasonably be considered a range." *Id.*

This argument is not persuasive of reversible error because it mischaracterizes the Examiner's rejection, specifically the modification of Park in view of Kato1's teaching. As the Examiner finds (Ans. 4, 16), Kato1 teaches an inclination adjustment mechanism for adjusting the inclination of the reactant gas nozzle relative to the horizontal position, which angles the apertures so as to direct the gas flow onto the susceptor assembly at an angle that may be less than or greater than 90˚. Thus, Kato1 teaches a diverter that may direct gas flow over a range that overlaps the angles recited in claim 1. *See E.I. DuPont de Nemours & Co. v. Synvina C.V.*, 904 F.3d 996 (Fed. Cir. 2018) ("[A] *prima facie* case of obviousness typically exists when the ranges of a claimed composition overlap the ranges disclosed in the prior art." (quoting *In re Peterson*, 315 F.3d 1325, 1329 (Fed. Cir. 2003))).

Appellant next argues that there would have been no rational reason for a skilled artisan to turn to Kurita for a suggestion of actuators because Kurita does not teach or suggest spatial ALD. Appeal Br. 17. Appellant also contends that Kurita fails to teach or suggest a diverter or changing the angle of gas flow. *Id.*

These arguments are not persuasive of reversible error. The Examiner did not rely upon Kurita in the rejection for teaching either a diverter or changing the angle of gas flow. As discussed above, Park and Kato1teach these features. Further, the Examiner finds that Kurita is within Appellant's field of endeavor, which the Examiner defines as "gas phase deposition," and that Kurita is reasonably pertinent to the problem with which Appellant is concerned, which the Examiner defines as a "reliable substrate support."

Ans. 17. *In re Kahn*, 441 F.3d 977, 987 (Fed. Cir. 2006) (A reference is analogous art if it is either in the field of the applicant's endeavor, or is reasonably pertinent to the particular problem with which the inventor was concerned.)

Appellant disputes the Examiner's definition of the field of endeavor because plasma enhanced chemical vapor deposition ("PECVD") as Kurita teaches "is distinct in method and apparatus from spatial atomic layer deposition," which functions by maintaining separation of reactive gases using one or more gas curtains. Reply Br. 6–7. However, Appellant's claims neither recite nor are limited to a processing chamber for ALD. Also, claim 1 does not recite any specific arrangement of the reactive gas, purge gas, and vacuum ports that provides, much less maintains, a separation of reactive gases using one or more gas curtains. Moreover, Appellant discloses that the invention relates to a batch processing platform for performing ALD and CVD on substrates. Spec. ¶ 2. Thus, we find no error in the Examiner's definition of the field of endeavor as "gas phase deposition." Notwithstanding this, we also note that Appellant fails to respond to or otherwise challenge the Examiner's finding that Kurita is reasonably pertinent to the problem with which Appellant was concerned. Accordingly, a preponderance of the evidence supports the Examiner's position that Kurita is analogous prior art.

Appellant next argues that the Examiner's proposed combination of the teachings of the references constitutes improper picking and choosing from these various unrelated teachings and amounts to improper hindsight reconstruction. Appeal Br. 17–18. Appellant also argues that the Examiner's

rejection lacks articulate reasoning with rational underpinning to support the proposed combination. *Id.* at 18–19.

Neither of these arguments is persuasive of reversible error in the Examiner's rejection. Appellant has not shown error in any of the Examiner's findings or reasoning regarding the teachings of each of the references. Nor has Appellant shown that the Examiner's rationale for modifying Park in view of the secondary teachings is present only in Appellant's disclosure and not in these prior art teachings. For example, Appellant urges that the Examiner's obviousness conclusion lacks articulated reasoning even though the Examiner states that it would have been obvious to modify Park to include a diverter controller "in order to adjust the amount of reactant gases supplied from the diverter and adsorbed by a substrate being worked as taught by [Kato1]." Ans. 4; *see* Kato1 ¶ 25. Thus, the prior art disclosures themselves support the Examiner's reasons for combining the teachings of Park, Kato1, Yudovsky1, Kurita, and Yudovsky2.

Accordingly, we sustain the Examiner's obviousness rejection of claims 1, 4, 5, 10, and 14–16.

Rejection 2

The Examiner rejects claims 2, 3, and 6–9 under 35 U.S.C. § 103 as unpatentable over Park in view of Kato1, Yudovsky1, Kurita, Yudovsky2, and Kato2. Ans. 7–8. Appellant argues claims 2 and 3 as one group and claims 6–9 as a separate group. Appeal Br. 21–23. In each instance, Appellant repeats the argument that Park fails to teach or suggest a diverter to control one or more direction of the reactive gas flow and the angle of the

reactive gas flow," and that none of Kato1, Yudovsky1, Kurita, and Yudovsky2 remedies this deficiency. *Id.* at 21, 22. However, for the reasons we explain above, this argument is not persuasive of reversible error. Moreover, Appellant raises the same additional argument for each of these two groups of claims. Accordingly, we address these claims together as a single group.

Claims 2, 3, and 6–9 individually depend directly from claim 1. As Appellant states, claim 2 further requires that "the diverter changes the flow of reactive gas to be angled in a direction of rotation of the susceptor assembly," and claim 3 further requires that "the diverter changes the flow of reactive gas to be angled in a direction opposite of rotation of the susceptor assembly." Further, each of claims 6–9 further requires the diverter to change the flow of reactive gas to be angled toward either the inner peripheral edge or outer peripheral edge of the susceptor assembly and against or along a direction of rotation of the susceptor assembly.

The Examiner finds that Kato2 teaches a diverter comprising flow regulation plates 37a, 37b to change the flow of a reactive gas, which may be angled in both a direction of rotation and a direction opposite of rotation of the susceptor assembly for preventing dilution of the reactive gas. Ans. 7. Therefore, the Examiner concludes that one of ordinary skill in the art would have modified Park's diverter as Kato2 teaches to change the flow of reaction gas in both a direction of rotation and a direction opposite of rotation in order to prevent dilution of reactive gas. *Id.* at 8. Such a combination would, in combination with Kato1's angle adjustment, provide a diverter to change the flow of reactive gas to be angled toward either the

inner peripheral edge or outer peripheral edge of the susceptor assembly, and against or along a direction of rotation of the susceptor assembly. *Id.* at 19.

Appellant argues that Kato2 fails to teach or suggest a diverter positioned approximately coplanar with the front face of the gas distribution assembly and having a plurality of apertures therethrough to change a direction of a flow of gas. Appeal Br. 22, 23. Appellant contends that Kato2's flow regulation plates 37a, 37b do not have a plurality of angled apertures. *Id.*

Appellant's arguments are not persuasive of reversible error. We first note that the Examiner does not rely on Kato2 for teaching a diverter positioned approximately coplanar with the front face of the gas distribution assembly or for having a plurality of apertures therethrough to change a direction of a flow of gas. As discussed above, the Examiner finds, and we agree, that Park and Kato1 teach these features. Further, although flow regulation plates 37a, 37b do not themselves have a plurality of angled apertures, Kato2 teaches that these plates are part of a diverter that does include a plurality of angled apertures. *See* Kato2, Fig. 14, apertures 33. Appellant does not dispute the Examiner's finding that these plates function to change the flow of reaction gas in both a direction of rotation and a direction opposite of rotation in order to prevent dilution of reactive gas. Ans. 7. In addition, we note that Kato1 teaches that purge gas exiting purge gas nozzles 41, 42 splits and flows in a direction of rotation, as well as a direction opposite of rotation of the susceptor assembly. *See* Kato1, Figs. 13, 16.

Accordingly, we sustain the Examiner's obviousness rejection of claims 2, 3, and 6–9.

CONCLUSION

Upon consideration of the record, and for the reasons given above and in the Examiner's Answer, the decision of the Examiner rejecting claims 1–10 and 14–16 under 35 U.S.C. § 103 is *affirmed*.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
1, 4, 5, 10, 14, 15	103	Park, Kato1, Yudovsky1, Kurita, Yudovsky2	1, 4, 5, 10, 14, 15	
2, 3, 6–9	103	Park, Kato1, Yudovsky1, Kurita, Yudovsky2, Kato2	2, 3, 6–9	
16	103	Park, Kato1, Yudovsky1, Kato2, Kurita, Yudovsky2	16	
Overall Outcome			1–10, 14–16	

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