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Pearne & Gordon LLP 1801 East 9th Street Suite 1200 Cleveland, OH 44114-3108			MCDONALD, RODNEY GLENN	
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SIEGFRIED KRASSNITZER and HELMUT RUDIGIER

Appeal 2019-006743
Application 14/367,354
Technology Center 1700

Before TERRY J. OWENS, GEORGE C. BEST, and JEFFREY R. SNAY,
Administrative Patent Judges.

OWENS, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1–8. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Oerlikon Surface Solutions AG. (Appeal Br. 3).

CLAIMED SUBJECT MATTER

The claims are directed to a method for physical vapor deposition by means of sputtering in an evacuated coating chamber. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. Method for the physical vapor deposition by means of sputtering in an evacuated coating chamber, said method comprising the steps of:
 - a) arranging a workpiece to be coated over a height of the coating chamber,
 - b) providing a generator with a predefined power output,
 - c) switching on the generator,
 - d) connecting a first partial cathode to the generator so that the first partial cathode is fed with a first power impulse from the generator,
 - e) separating the generator from the first partial cathode after expiration of a predefined first power impulse interval corresponding to the first partial cathode,
 - f) connecting a second partial cathode to the generator so that the second partial cathode is fed with a second power impulse from the generator, wherein the first partial cathode and the second partial cathode are provided at different vertical locations over the height of the coating chamber,
 - g) separating the generator from the second partial cathode after expiration of a predefined second power impulse interval corresponding to the second partial cathode, and
 - h) selecting respective lengths of the individual power impulse intervals based on the vertical locations of the first partial cathode and the second partial cathode independently and selecting the length of one of the power impulse intervals relative to the length of another of the power impulse intervals such that the layer resulting from the coating has a predefined layer thickness distribution over the height of the coating chamber.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Brownell	US 4,515,668	May 7, 1985
Gruen	US 5,015,493	May 14, 1991
Frach	US 6,063,245	May 16, 2000
Chistyakov	US 2005/0103620 A1	May 19, 2005
Bluck	US 2008/0202924 A1	Aug. 28, 2008

REJECTIONS

The claims stand rejected under 35 U.S.C. § 103(a) as follows: claims 1, 2, 4, 5, and 8 over Chistyakov in view of Brownell; claim 3 over Chistyakov in view of Brownell and Frach; claim 6 over Chistyakov in view of Brownell and Bluck; and claim 7 over Chistyakov in view of Brownell and Gruen.

OPINION

We need address only the sole independent claim, i.e., claim 1.

Chistyakov discloses a magnetron sputter-coating apparatus comprising multiple magnetron cathode segments (102a-d) spaced horizontally (¶ 24; Figs. 1, 2A). The cathode segments can have many different geometries and equal or different surface areas (¶ 23). A “switch 110 can be configured to provide one or more voltage pulses to each of the magnetron segments 102a-d in a predetermined sequence” (¶ 26). “The switch 110 can also route the voltage pulses to the various magnetron cathode segments 102a-d to create particular thickness profiles across the surface of the substrate 141” (¶ 45).

Brownell discloses an RF sputtering apparatus wherein the orientation of a sputtering chamber (10) and the target (26) and substrate holder therein can be rotated 90° to place substrates (62) “in a vertical plane in order to reduce the probability of film defects from particles falling on substrates **62**” (col. 2, ll. 12–16; Fig. 1). Brownell states that “[s]uch side sputtering apparatus is well known in the art” (col. 2, ll. 16–17).

Setting forth a prima facie case of obviousness requires establishing that the applied prior art would have provided one of ordinary skill in the art with an apparent reason to modify the prior art to arrive at the claimed invention. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

The Examiner finds that rotating Chistyakov’s apparatus 90° as done by Brownell would result in cathodes being at different vertical locations over the height of the coating chamber (Ans. 10–11). The Examiner concludes:

[I]t would have been obvious to one of ordinary skill in the art at the time of the invention to modify the first partial cathode and the second partial cathode of Chistyakov by arranging a workpiece to be coated over a height of the coating chamber and providing the first partial cathode and the second partial cathode are provided at different vertical locations over the height of the coating chamber and selecting respective lengths of the power intervals based on the vertical locations of the first and second partial cathodes to provide a coating with a predefined layer thickness distribution over the height of the coating chamber, as taught by Brownell, because it would reduce the probability of film defects from particles falling on the substrates (col. 2, ln. 10-17) [(Final Rej. 4)].

The Examiner does not address the differences between Chistyakov’s magnetron sputtering apparatus and Brownell’s RF sputtering apparatus and establish that regardless of those differences, one of ordinary skill in the art would have considered Brownell’s disclosure regarding apparatus rotation to

be applicable to Chistyakov's apparatus. Particularly, the Examiner does not establish that one of ordinary skill in the art would have considered film defects due to particles falling on the substrate to be a problem in Chistyakov's magnetron sputtering apparatus or expected that rotating Chistyakov's apparatus 90° such that the substrate is vertical would not adversely affect its operation or the sputtered film's desired thickness profile.

Thus, the Examiner has not established that Brownell would have provided one of ordinary skill in the art with an apparent reason to modify Chistyakov's magnetron sputtering apparatus such that its operation results in the Appellant's claimed method. The record, therefore, indicates that the Examiner's rejection is based upon impermissible hindsight in view of the Appellant's disclosure. *See In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967) ("A rejection based on section 103 clearly must rest on a factual basis, and these facts must be interpreted without hindsight reconstruction of the invention from the prior art"). Accordingly, we reverse the rejections.

CONCLUSION

The Examiner's rejections are reversed.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 2, 4, 5, 8	103(a)	Chistyakov, Brownell		1, 2, 4, 5, 8
3	103(a)	Chistyakov, Brownell, Frach		3

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Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
6	103(a)	Chistyakov, Brownell, Bluck		6
7	103(a)	Chistyakov, Brownell, Gruen		7
Overall Outcome				1-8

REVERSED