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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte AVIV BALAN[1]

Appeal 2015-005240
Application 11/958,201
Technology Center 2800

Before CATHERINE Q. TIMM, BEVERLY A. FRANKLIN, and DEBRA L. DENNETT, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL[2]

STATEMENT OF CASE

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's decision to reject claims 1, 3–19, and 22–25. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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[1] Appellant identifies the real party in interest as KLA-Tencor Corporation. Appeal Br. 2.

[2] In our opinion below, we reference the Specification filed Dec. 17, 2007 (Spec.), Final Office Action mailed Feb. 5, 2014 (Final), the Appeal Brief filed Dec. 12, 2014 (Appeal Br.), the Examiner's Answer mailed Feb. 20, 2015 (Ans.), and the Reply Brief filed Apr. 15, 2015 (Reply Br.).

The claims are directed to a substrate processing system including first and second chucks mounted side-by-side on a stage in a line parallel to an axis translation of the relative movement between the stage and a processing head (*see, e.g.*, claim 1), and a substrate processing method in which first and second substrates are disposed on the first and second chucks and both substrates scanned in a serpentine manner by moving the stage and processing head moved relative to one another (*see, e.g.*, claim 19).

Figures 1 and 2 show an embodiment of the system and are reproduced below:

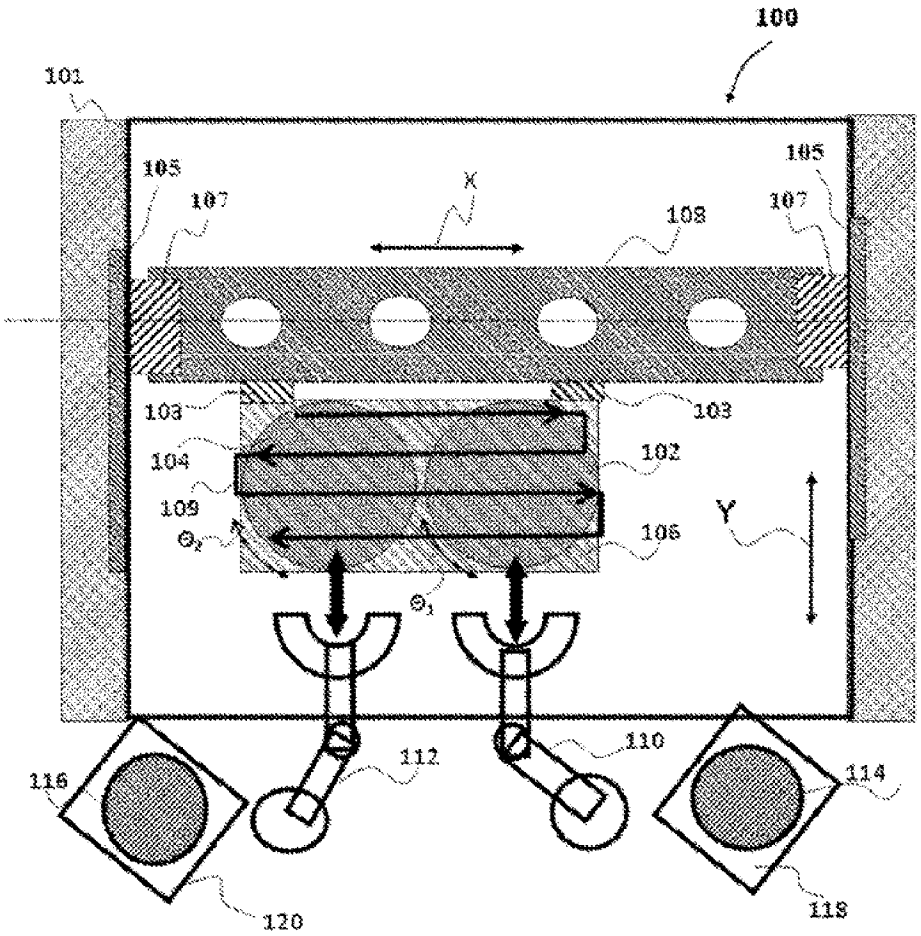


Figure 1 is a top view of an embodiment of Appellant's multiple-chuck system

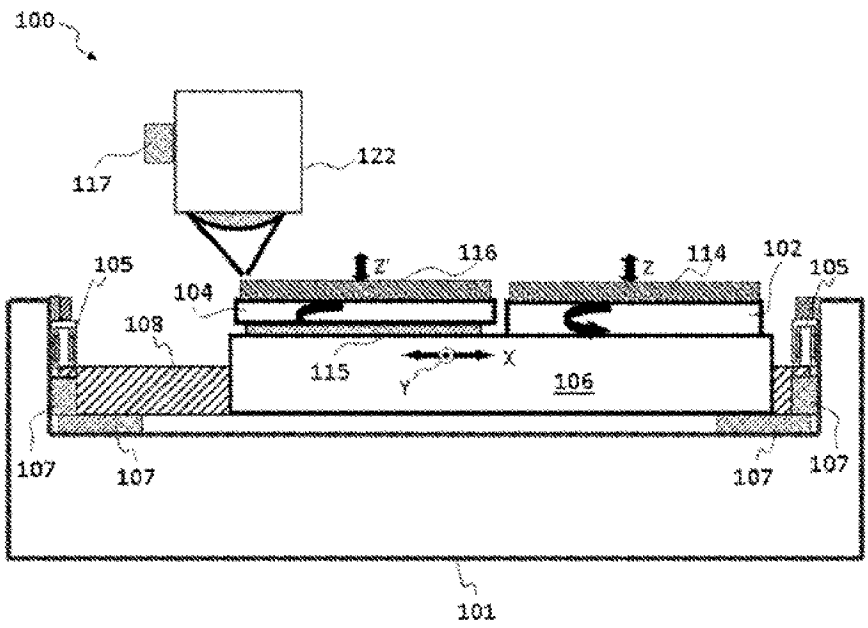


Figure 2 is a side view of the multiple-chuck system of Figure 1

Claim 1, with the key limitation at issue in the appeal emphasized, is further illustrative of the claimed apparatus:

> 1. A substrate processing system [100], comprising:
>
> a stage [106];
>
> first and second chucks [104, 102] mounted on the stage [106], wherein the first and second chucks [104, 102] are adapted to hold first and second substrates [116, 114 (as shown in Fig. 2)], wherein the first and second chucks [104, 102] are adapted to move independently with respect to a [sic] first and second vertical axes [Z, Z′], respectively, while applying a force to retain the first and second substrates [116, 114] respectively as the first and second substrates [116, 114] are processed; and
>
> at least one processing head [122 (Fig. 2)] positioned proximate the stage [106] adapted to process the first and second substrates [116, 114],

> wherein the stage [106] and the processing head [122] are configured for relative movement for a sufficient distance for the processing head [122] to process both the first and second substrates [116, 114], *wherein the first and second chucks [104, 102] are mounted side by side on the same stage [106] along a line parallel to an axis translation of the relative movement between the stage and the processing head [X-direction]*, wherein the relative movement [serpentine pattern 109] is configured such that processing of the first substrate [116] starts before processing of the second substrate [114] starts and the processing of the second substrate [114] is started before the processing of the first substrate [116] is complete,
>
> wherein the first and second chucks [104, 102] are adapted to rotate independently with respect to the first and second vertical axes [Z, Z′], respectively, for independent angular alignment of the first and second chucks [104, 102] and substrates [116, 114].

Claims Appendix, Appeal Br. 11 (emphasis added).

The Examiner maintains the following rejections under 35 U.S.C. § 103(a):

A. The rejection of claims 1 and 3–18 as obvious over Ockwell[3] in view of Loopstra[4] and Wihl[5]; and

B. The rejection of claims 19 and 22–25 as obvious over Wihl in view of Ockwell and Loopstra.

[3] Ockwell, US 2006/0092399 A1, published May 4, 2006.
[4] Loopstra et al., US 5,969,441, issued Oct. 19, 1999.
[5] Wihl et al., US 5,572,598, issued Nov. 5, 1996.

OPINION

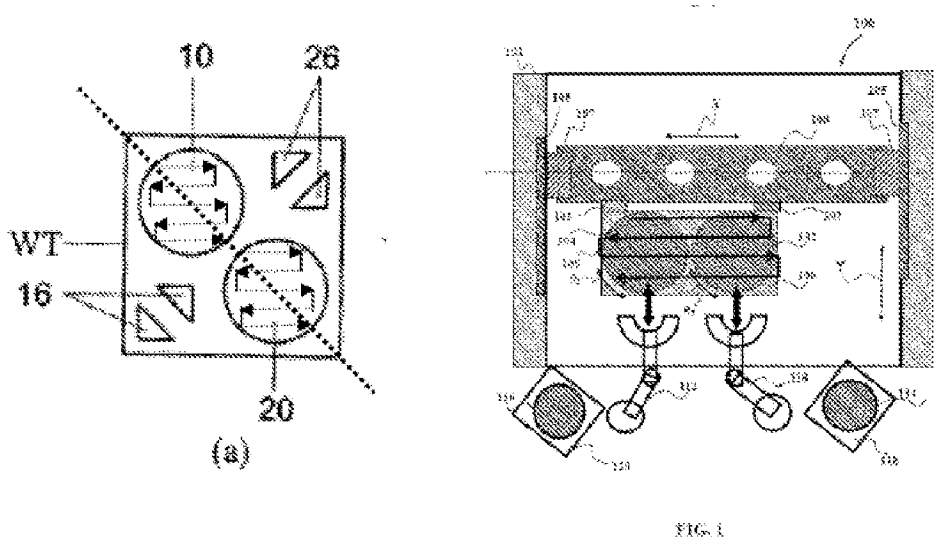
Rejection A

For the rejection of claims 1 and 3–18 as obvious over the combination of Ockwell, Loopstra, and Wihl, the dispute centers on the requirement in claim 1 that "the first and second chucks [be] mounted side by side on the same stage along a line parallel to an axis translation of the relative movement between the stage and the processing head." *Compare* Appeal Br. 6–8; Reply Br. 8–9 *with* Final 2–4; Ans. 2–3. Thus, we select claim 1 as representative for resolving the issue on appeal. The issue is: Has Appellant identified a reversible error in the Examiner's finding of a suggestion within Ockwell and Wihl for aligning Ockwell's chucks in the parallel arrangement of claim 1 "for the purpose of efficiently processing the first and second substrates"? *Compare* Final 4; Ans. 2–3 *with* Appeal Br. 6–8; Reply Br. 10–12.

Appellant has not identified such a reversible error.

As found by the Examiner, Ockwell discloses a substrate processing system (Fig. 1) including first and second chucks (10, 20) mounted side-by-side on the same stage. Final 2; Ockwell ¶ 43. In Figure 2, as further found by the Examiner, this alignment is shown along a line (IV-IV).

There is no dispute that Ockwell's two-wafer arrangement shown in Figure 2 is not arranged "along a line parallel to an axis translation of the relative movement between the stage and the processing head" as recited in claim 1. *Compare* Final 4 *with* Appeal Br. 7. Appellant illustrates the chuck arrangement of Ockwell's Figure 2 embodiment alongside their Figure 1 embodiment as follows:



Appellant's image depicts two top views, the left image showing Ockwell's locations 10, 20 at an angle relative to the relative movement (path with arrows), the right image showing Appellant's two chucks 102, 104 parallel to the relative movement

The Examiner finds that Wihl teaches mounting first and second subareas (Fig. 3 at 33, 35) side-by-side on the same stage (Fig. 1 at 12) along a line (X) parallel to an axis translation (in X) of the relative movement between the stage and the processing head (16). Final 4. The Examiner concludes that "it would have been obvious to one of ordinary skill in the art to have the line of Ockwell be parallel to an axis translation of the relative movement between the stage and the processing head, as taught by Wihl, for the purpose of efficiently processing the first and second substrates." *Id.*

There is no dispute that Wihl teaches scanning subareas on a single substrate rather than scanning multiple substrates. *Compare* Final 4 *with* Appeal Br. 7.

Appellant contends that none of the individual references disclose or suggest placing multiple chucks in the arrangement of claim 1, but Appellant's arguments fail to take into account the knowledge and

perspective of one of ordinary skill in the art. It would be improper for us to consider the teachings of the prior art so narrowly. *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362–63 (Fed. Cir. 2013). "[T]he test for combining references is not what the individual references themselves suggest but rather what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art." *In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971). It is well established that "it is not necessary that the inventions of the references be physically combinable to render obvious the invention under review." *In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983).

Ockwell is not limited to positioning two wafers in two corners as shown in Figures 2 and 3(a), but also teaches positioning "any plurality of substrates disposed at any respective plurality of exposable locations," for example, four 3 inch wafers on an 8 inch substrate table, four 6 inch wafers on a 12 inch substrate table, etc. Ockwell ¶ 44. Thus, Ockwell alone would have suggested placing the chucks holding the substrates side-by-side in two rows on the substrate, which would result in first and second chucks located along the x-axis.

Wihl conveys the concept of scanning multiple subareas, such as individual die on a substrate, in a serpentine fashion and comparing the data from one die to another die. Wihl, col. 10, ll. 24–41. Whether the dies are located on a single wafer as taught by Wihl or located on separate wafers, the method of scanning the dies would accomplish the same result of comparing data derived from one die to data from another die. "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

Appellant has not identified a reversible error in the Examiner's finding of a suggestion within the prior art for mounting the chucks of Ockwell in the required parallel side-by-side arrangement.

Rejection B

To reject claims 19 and 22–25, the Examiner again relies upon the combination of Wihl's teaching of scanning in a serpentine movement over subareas (individual die) and Ockwell's teaching of disposing first and second substrates on first and second chucks. Final 7–8. Appellant does not argue any claim apart from the others. We select claim 19 as representative.

Claim 19 is directed to a substrate processing method. There is no dispute that Wihl teaches moving a stage and processing head in the serpentine manner required by claim 19, nor that Ockwell teaches disposing first and second substrates on first and second chucks mounted on the same stage as further required. *Compare* Final 7–8 *with* Appeal Br. 8–9. Appellant contends that the Examiner's combination would require a substantial reconstruction and design of the invention of Wihl as well as a change in the basic principle of Wihl's operation, which Appellant characterizes as the inspection of operator-defined target subareas of a single substrate with several subareas on a stage. Appeal Br. 9. But, we agree with the Examiner that whether the two areas being inspected are subareas on a single wafer or areas on two different wafers, the principle of operation is substantially the same: two areas are inspected and data from one compared to data from the other. Ans. 4–5. Moreover, the combination of references would have suggested to one of ordinary skill in the art the devices needed to accomplish the process when using two substrates including two chucks as taught by Ockwell.

CONCLUSION

We sustain the Examiner's rejections.

DECISION

The Examiner's decision is affirmed.

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)(1).

AFFIRMED