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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* RICHARD WILLSSHERE,  
MARTYN BUTTLE, MICK BARTHOLOMEW,  
JOHN BRUCE KNOWLES, and DARREN BROWN<sup>1</sup>

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Appeal 2017-011559  
Application 12/676,261  
Technology Center 3600

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Before JAMES P. CALVE, PAUL J. KORNICZKY, and  
BRENT M. DOUGAL, *Administrative Patent Judges*.

CALVE, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from the Office Action finally rejecting claims 51–53, 57, 60, 61, 65, 67, 69, 72, 79, 81, 84, 87, 88, 94, 96, 98, and 101–114. *See* Appeal Br. 1. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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<sup>1</sup> ASM Assembly Systems Switzerland GmbH is identified as the real party in interest. Appeal Br. 2.

### CLAIMED SUBJECT MATTER

The claims relate to workpiece processing systems and methods for processing workpieces, in particular electronic substrates such as printed circuit boards and wafers. Spec. 1. The claimed system and method relate particularly to workpiece printing systems and methods that provide high throughput of workpieces in a small work area. *Id.* at 2.

Claims 51 and 79 are independent. Claim 51 is reproduced below.

51. A workpiece processing system comprising a plurality of workpiece processing modules, each comprising a workpiece processing unit for processing workpieces and a feed unit for transferring workpieces to and from the workpiece processing unit, wherein the feed units together provide at least one common output workpiece feed along which workpieces are transferred from the workpiece processing units of each of the workpiece processing modules.

### REJECTIONS

Claims 51, 52, 53, 61, 65, 67, 69, 72, 79, 81, 88, 94, 96, 98, 101, 106, 107, 108, 113, and 114 are rejected under 35 U.S.C. § 103(a) as unpatentable over Takai (US 5,906,158, issued May 25, 1999) and Hansl (WO 2006/042347 A2, published Apr. 27, 2006).

Claims 57, 60, 84, 87, 102, 103, 109, and 110 are rejected under 35 U.S.C. § 103(a) as unpatentable over Takai, Hansl, and Schäfer (US 5,843,621, issued Dec. 1, 1998).

Claims 104, 105, 111, and 112 are rejected under 35 U.S.C. § 103(a) as unpatentable over Takai, Hansl, Schäfer, and Lapastora (US 5,782,399, issued July 21, 1998).

## ANALYSIS

*Claims 51, 52, 53, 61, 65, 67, 69, 72, 79, 81, 88, 94, 96, 98, 101, 106, 107, 108, 113, and 114 Rejected Over Takai and Hansl*

The Examiner finds that Takai teaches a workpiece processing system (printer 1, feed-in unit 2, feed-out unit 3, and substrate rack 9) and method as recited in claims 51 and 79, but lacks plural workpiece processing modules and a common output workpiece feed as claimed. Final Act. 2–3, 6–7. The Examiner finds that Hansl teaches a workpiece processing system having plural workpiece processing modules and units (workplaces 18) and a feed unit (continuous conveying devices 14) to transfer workpieces to and from the workpiece processing units. *Id.* at 3, 7. The Examiner determines that it would have been obvious to combine Takai’s system with Hansl’s multiple workpiece processing modules and common output “to provide a processing system capable of increased productivity,” “to provide a means processing multiple substrates simultaneously with a unified input and output in order to increase productivity of the system with a simple workpiece infeed and outfeed,” and to “create[] a system with increased capacity and increased workpiece processing flexibility.” *Id.* at 3, 7, 24; Ans. 4, 5.

Appellants argue that a skilled artisan would not have combined the disparate teachings of Hansl’s warehouse distribution system with Takai’s screen printing apparatus to increase capacity and processing flexibility of a single screen printer when neither reference teaches this technical solution or suggests how Hansl’s warehouse shipping conveyors would modify Takai’s screen printing apparatus with a reasonable expectation of success. Appeal Br. 14–15. Appellants also argue that Hansl does not teach multiple screen printing apparatuses and feed units or a common output to increase capacity and processing flexibility of screen printing. *Id.* at 13; *see* Reply Br. 2–3.

The issue is whether a skilled artisan would have been motivated to combine the teachings of Hansl with those of Takai in the manner proposed by the Examiner. Because “a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art,” “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (“To facilitate review, this analysis should be made explicit.”) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, *there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness*”).

The Examiner has not explained sufficiently with scientific evidence or technical reasoning why a skilled artisan would have used the continuous conveyors and plural workstations of Hansl’s distribution center to improve the productivity, flexibility, or capacity of Takai’s single printing apparatus. The Examiner correctly finds that Hansl teaches a system that provides high turnaround, high flexibility, and high use of storage capacity in a goods distribution center. Ans. 9 (citing Hansl ¶¶ 5, 15, 24). However, Takai is directed to the proper alignment and adjustment of the printing position of a substrate placed in a screen printing apparatus. Appeal Br. 12 (citing Takai, 1:20–24, 2:9–15). Thus, we are not persuaded that a skilled artisan would have been motivated to increase the processing or productivity of Takai’s printing apparatus by connecting multiple printing apparatuses to a common output conveyor, as claimed, with a reasonable expectation of success.

The Examiner is correct that the test for obviousness is not whether features of a secondary reference may be incorporated bodily into structure of a primary reference. Final Act. 23. However, the test for obviousness does consider what the combined teachings of the references would have suggested to skilled artisans. *See id.; In re Keller*, 642 F.2d 413 (CCAP 1981). The Examiner has not explained sufficiently why Hansl's warehouse distribution center with conveyors running to workstations where operators fill orders (*see* Hansl ¶ 53) would have suggested to modify Takai's single printing apparatus into multiple workstations with a common output feed.

Hansl achieves high turnaround of goods in a distribution center using continuous conveyors to provide flexible allocation between different areas of the distribution center, to achieve faster reaction times to requests at order picking areas, and to process incoming and outgoing goods continuously in parallel without interrupting or reducing output. Hansl ¶¶ 5, 6. Hansl uses separate storage areas 5, 7 for high- and low-turnover goods with separate conveyors 14, 16 and another conveyor 27 to convey goods directly from storage to workstations 18 independently of conveyors 14, 16. *Id.* ¶¶ 39, 45, 51–53, Figs. 1, 2. Workers at workstations 18 fill containers 8 with goods conveyed to the workstations. *Id.* ¶¶ 24, 46–48, 53–60; Appeal Br. 12–13.

Takai is not concerned with a high turnover of printing material or the use of multiple storage areas to fill orders. Takai's printing apparatus uses separate, computer-controlled feed-in and feed-out units 2, 3 to transfer substrates "P" to and from printer 1 using forks 8 attached to movable bases 5 as illustrated in Figure 1 of Takai, which is reproduced below. *See* Takai, 4:22–67. This computer-controlled individual placement precisely positions each substrate P within a screen printing apparatus. *See id.* at 14:3–16:64.

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**Fig. 1**

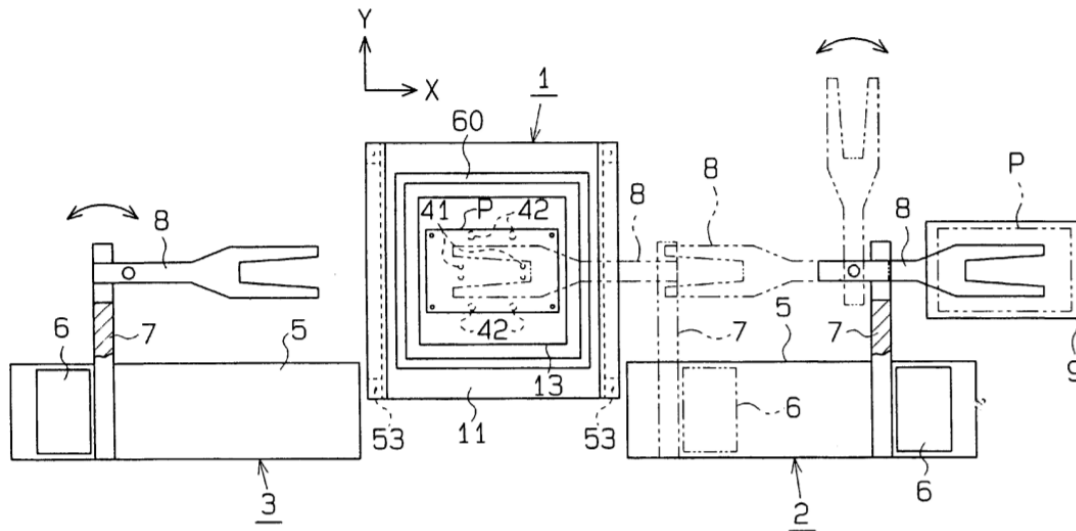


Figure 1 of Takai illustrates screen printing apparatus 1 with feed-in unit 2 and feed-out unit 3, each comprising forks 8 connected to movable posts 6 on bases 5 to move substrate “P” from shelfboards of rack 9 to table 13 and remove substrate “P” from table 13 in a similar way. *Id.* at 4:22–67

We are not persuaded that a skilled artisan would have modified Takai with Hansl’s teachings to connect multiple workstations to common input and output conveyors to improve the productivity of Takai, which precisely positions substrates on a printer using computer-controlled forks 8 rather than workers at workstations as in Hansl. *See id.* at 4:22–67, 14:3–15:61, 20:22–49, 23:35–40. Furthermore, it is unclear how continuous conveyors at the input and output of plural printing apparatuses (*see* Ans. 4) would improve productivity or efficiency with a reasonable expectation of success when Takai precisely moves substrates “P” between the printer and racks 9 using computer-controlled forks 8. *Id.* at 4:22–67. Outputting a substrate of one printer to a common output conveyor would not improve input of that substrate into a subsequent printing apparatus along the output conveyor.

Thus, we do not sustain the rejection of independent claims 51 and 79 or their respective dependent claims 52, 53, 61, 65, 67, 69, 72, 81, 88, 94, 96, 98, 101, 106, 107, 108, 113, and 114.

*Claims 57, 60, 84, 87, 102, 103, 109, and 110  
Rejected Over Takai, Hansl, and Schäfer*

The Examiner's reliance on Schäfer to teach features of claims 57, 60, 84, 87, 102, 103, 109, and 110 does not cure the deficiencies of Takai and Hansl above as to claims 51 and 79 from which these claims depend. *See* Final Act. 11–17. Thus, we do not sustain the rejection of these claims.

*Claims 104, 105, 111, and 112  
Rejected Over Takai, Hansl, Schäfer, and Lapastora*

The Examiner's reliance on Lapastora to teach features of claims 104, 105, 111, and 112 does not cure the deficiencies of Takai and Hansl above as to claims 51 and 79 from which these claims depend. *See* Final Act. 17–23. Thus, we do not sustain the rejection of these claims.

DECISION

We reverse the rejections of claims 51–53, 57, 60, 61, 65, 67, 69, 72, 79, 81, 84, 87, 88, 94, 96, 98, and 101–114.

REVERSED