





OPINION

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2 We affirm the aforementioned rejections. The Appellants do not separately  
3 argue dependent claims 14, 15, 17-19, and 51 (Br. 9-12). We therefore limit our  
4 discussion to independent claims 8 and 47. *See* 37 C.F.R. § 41.37(c)(1)(vii)(2004).

5  
6 Rejections under 35 U.S.C. § 102(a) over Toshio and  
7 under 35 U.S.C. § 103 over Toshio in view of Young and Hanson  
8

9 Toshio discloses a substrate aligning device for transporting a substrate from  
10 a substrate processing part to another processing part (Toshio, ¶ 0007). The device  
11 includes a substrate supporting arm (3) having therein a supporting pin (11) that  
12 supports a rolling ball (9) (Toshio, ¶ 0019; fig. 3). The upper end of the rolling  
13 ball protrudes from a top plate (10) bolted onto the substrate supporting arm  
14 (Toshio, ¶ 0020; fig. 3). “In order to have the function of preventing fall of rolling  
15 ball (9) and to fix the position of ball supporting pin (11), a hole is formed through  
16 it [the top plate] in a size that ensures that rolling ball (9) cannot be pulled from the  
17 upper end surface of top plate (10)” (Toshio, ¶ 0020).<sup>3</sup>

18 The Appellants argue that Toshio lacks a formed end to retain the ball in the  
19 socket and that “[a]dhesion of the ball 9 to the substrate 1 in *Toshio* would lift the  
20 ball 9 out of the top plate 10 based on Figures 3 and 4 in *Toshio*” (Br. 9). That  
21 lifting out would not occur because the hole in Toshio’s top plate is sized such that  
22 the rolling ball cannot be pulled from the top plate’s upper surface (¶ 0020).  
23 Toshio therefore has a formed end (the hole in the top plate) to retain the ball 9 in  
24 the socket.

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<sup>3</sup>We need not address Young and Hansson.

1           The Appellants argue that Toshio’s top plate is not part of a socket but,  
2 rather, is a separate piece (Reply Br. 4). The Appellant indicates that the socket’s  
3 formed end can be a retaining ring (606) disposed in a sidewall of the socket  
4 (Spec. 0047; fig. 6C). Hence, the broadest reasonable interpretation of “at least  
5 one socket ... having a ... formed end” in claim 8, in view of the Appellants’  
6 Specification, *see In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir.  
7 1989); *In re Sneed*, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983),  
8 encompasses a socket and its formed end that are separate, joined pieces.  
9 Consequently, the Appellant’s claim term “formed end” encompasses Toshio’s top  
10 plate.

11           The Appellants argue that Toshio does not disclose that the substrate support  
12 is in a chamber body (Reply Br. 4). Toshio’s disclosures that the apparatus is for  
13 aligning substrates used in making color filters for liquid crystal display elements  
14 and that even dirt from scratches caused by sliding between a substrate and its  
15 support is unacceptable (Toshio, ¶¶ 0001, 0004-0005) would have indicated to one  
16 of ordinary skill in the art that the support member is in a chamber to provide the  
17 required cleanliness.

18           The Appellant argues that the applied references do not disclose or suggest a  
19 ball having a surface roughness of 4 microinches or less as required by the  
20 Appellants’ claim 47 (Br. 10). Toshio’s disclosure that sliding between the  
21 substrate and the ball can form scratches or dirt that cause poor product quality  
22 (Toshio, ¶¶ 0004, 0005, 0017, 0018) would have led one of ordinary skill in the art  
23 to make the surface of the ball as smooth as reasonably possible, such as 4  
24 microinches or less surface roughness, to minimize scratches and dirt formation  
25 due to sliding.

1 For the above reasons we are not convinced of reversible error in the  
2 rejections over Toshio and over Toshio in view of Young and Hanson.  
3 Rejections under 35 U.S.C. § 103 over the combined disclosures of Okayama and  
4 Young, and over the combined disclosures of Okayama, Young, and Hansson.

5 Okayama discloses a device for positioning a semiconductor wafer in a  
6 particular direction before supplying it to a process such as inspection or etching  
7 (Okayama 2-3). The device includes a holder (10) having ball bearings (11)  
8 therein that support a rotatable ball (7) (Okayama 6). The holder is shown as  
9 having a lip that holds the rotatable ball in the holder (fig. 3(a)).

10 The Appellants argue that the applied references do not teach, show or  
11 suggest all of the limitations of claim 8 (Br. 10-12), but the Appellants do not  
12 provide a substantive argument as to what the Appellants consider the references to  
13 be lacking.

14 The Appellants argue that the applied references do not teach, show, or  
15 suggest a ball with a surface roughness of 4 micro-inches or less (Br. 11-12).  
16 Okayama's disclosure that the coefficient of friction between the balls and the  
17 wafer is to be low to prevent dust generation (Okayama 5, 8-9) would have led one  
18 of ordinary skill in the art to make the ball surface roughness as low as reasonably  
19 possible, such as 4 micro-inches or less, to avoid dust generation.

20 We therefore are not convinced of reversible error in the rejections over the  
21 combined disclosures of Okayama and Young and over the combined disclosures  
22 of Okayama, Young, and Hansson.

