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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/895.620	05/16/2013	Shaun Van Der Veen	11500C2/AGS/22558-0036003	3535

26185 7590 11/09/2016
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MINNEAPOLIS, MN 55440-1022

EXAMINER

MORGAN, EILEEN P

ART UNIT	PAPER NUMBER
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3723

NOTIFICATION DATE	DELIVERY MODE
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11/09/2016

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SHAUN VAN DER VEEN and STEVEN M. ZUNIGA

Appeal 2014-008674
Application 13/895,620
Technology Center 3700

Before MICHAEL C. ASTORINO, CYNTHIA L. MURPHY, and
BRADLEY B. BAYAT, *Administrative Patent Judges*.

MURPHY, *Administrative Patent Judge*.

DECISION ON APPEAL

The Appellants¹ appeal under 35 U.S.C. § 134 from the Examiner's rejection of claims 19–24 and 26–32. We have jurisdiction over this appeal under 35 U.S.C. § 6(b).

We REVERSE.

¹ The Appellants identify the real party in interest as “Applied Materials, Inc.” (Appeal Br. 1.)

STATEMENT OF THE CASE

The Appellants' invention "relates to a retaining ring for use in chemical mechanical polishing." (Spec. ¶ 2.)

Illustrative Claim

19. A retaining ring, comprising:

an annular lower portion of a first material, the lower portion having a lower surface to contact a polishing pad and an upper surface, wherein the upper surface of the lower portion includes an upwardly projecting step positioned along an inner diameter of the lower portion, wherein a remainder of the upper surface of the lower portion between the step and an outer diameter of the lower portion is flat, and wherein at the inner diameter of the lower portion a total height of the lower portion including the step and between the lower and upper surfaces is larger than a total height of the lower portion between the lower and upper surfaces at a location between the step and an outer diameter of the lower portion;

an annular upper portion of a different second material, the upper portion having a lower surface and an upper surface, wherein the lower surface of the upper portion includes a recess positioned along an inner diameter of the upper portion and the step fits into the recess, and wherein a remainder of the lower surface of the upper portion between the recess and an outer diameter of the upper portion is flat; and

a bonding layer securing the lower portion to the upper portion.

Rejection

The Examiner rejects claims 19–24 and 26–32 under 35 U.S.C. § 103(a) as unpatentable over Marohl (US 7,094,139 B2 issued Aug. 22, 2006) and Chen (US 2004/0219870 A1 published November 4, 2004). (Final Action 2.)

ANALYSIS

Independent claim 19 recites a “retaining ring” comprising a “lower portion,” and an “upper portion.” (Appeal Br., Claims App.) The Examiner finds that Marohl discloses such a retaining ring. (*See* Final Action 2.)

Marohl discloses a retaining ring comprising a lower portion having a “flat top surface” and an upper portion having a “flat bottom surface,” wherein “[t]he lower portion and the upper portion are connected at their top and bottom surfaces, respectively.” (Marohl, col. 3, ll. 36–37, 59–60, col. 4, ll. 36–38, 42, reference numerals omitted.) In other words, Marohl discloses that its upper and lower portions have flat interfacing surfaces.

Independent claim 19 requires the lower portion to include “an upwardly projecting step positioned along [its] inner diameter” and requires the upper portion to include “a recess positioned along [its] inner diameter.” (Appeal Br., Claims App.) The Examiner finds that “Chen teaches a retaining ring with a lower portion 105 and an upper portion 110, wherein there is a step protruding upward from lower ring at the inner most diameter and a recess in the upper ring at the inner most diameter to accommodate [the] step.” (Final Action 2.)

Chen discloses a retaining ring wherein “interlock features” are located on the interfacing surfaces (i.e., upper surface 108 of lower ring 105 and lower surface 112 of upper ring 110.) (Chen ¶ 29.) In the illustrated retaining ring 100, a dovetail-shaped projection and a corresponding depression are shown situated between the rings’ inner and outer diameters. (*Id.* Fig. 1.) According to the Examiner (*see* Answer 5), the undulating profile of Chen’s interlock features (i.e., the interlock projection and the interlock depression) creates a first step-recess arrangement on the ring’s

inner diameter and a second step-recess arrangement on the ring's outer diameter.

Independent claim 19 further requires that “a remainder of the upper surface of the lower portion between the step and an outer diameter of the lower portion [be] flat” and that “a remainder of the lower surface of the upper portion between the recess and an outer diameter of the upper portion [be] flat.” (Appeal Br., Claims App.)

As discussed above, Marohl discloses that its interfacing surfaces (i.e., the upper surface of its lower portion and the bottom surface of its upper portion) are flat. And, as pointed out by the Appellants, if Marohl's flat interfacing surfaces are modified to include Chen's interlocking features, the remainders of these surfaces would no longer be flat as required by independent claim 19. (*See* Appeal Br. 4–5.)

However, the Examiner does not view Chen as teaching an interlock depression and an interlock projection, but rather as teaching two steps: one at the inner diameter and one at the outer diameter. (*See* Final Action 2–3.) According to the Examiner, although Chen shows “another step at the outer diameter, this is irrelevant and one of ordinary skill would be motivated to use one step or a plurality of steps and the choice of one is obvious.” (*Id.* at 3.) The Examiner reasons that Chen's teachings would have motivated one of ordinary skill in the art “to use ONE step (at the inner diameter)” when modifying Marohl's retaining ring “to provide a more secure connection.” (Answer 4.)

We are persuaded by the Appellants' arguments that the Examiner's reasoning in this regard is flawed. (*See* Appeal Br. 3–6.) We are persuaded because Chen teaches a more secure connection is achieved by its

interlocking features which, in the illustrated embodiment, comprise an interlock projection and an interlock depression situated between the rings' inner and outer diameters. (*See* Chen ¶¶ 10–12, Fig. 1.) As discussed above, any alleged step-recess configurations in Chen's retaining ring are created incidentally by the undulating profile of these interlocking features. The Examiner does not sufficiently show that Chen teaches that such incidental configurations alone (i.e., without the interlocking features) would provide a more secure connection in a retaining ring. As such, the Examiner does not sufficiently show that it would have been obvious to one of ordinary skill in the art to modify Marohl's retaining ring in the proposed manner. Thus, we do not sustain the Examiner's rejection of independent claim 19 under 35 U.S.C. § 103(a) as unpatentable over Marohl and Chen.

The rest of the claims on appeal (i.e., claims 20–24 and 26–32) depend from independent claim 19. (*See* Appeal Br., Claims App.) The Examiner's further findings and determinations with respect to these dependent claims (*see* Final Action 2–3) do not compensate for the above-discussed shortcoming in the Examiner's rejection of independent claim 19. Thus, we also do not sustain the Examiner's rejection of dependent claims 20–24 and 26–32 under 35 U.S.C. § 103(a) as unpatentable over Marohl and Chen.

DECISION

We REVERSE the Examiner's rejection of claims 19–24 and 26–32.

REVERSED