UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SALMAN AKRAM, DEREK J. GOCHNOUR, MICHAEL E. HESS, and DAVID R. HEMBREE

Appeal No. 2007-2977
Application No. 11/137,048
Technology Center 3700

Decided: November 13, 2007

Before TERRY J. OWENS, LINDA E. HORNER, and DAVID B. WALKER *Administrative Patent Judges.*

OWENS, *Administrative Patent Judge.*

DECISION ON APPEAL

The Appellants appeal from a rejection of claims 1-20, which are all of the pending claims.

THE INVENTION

The Appellants claim a saw for singulating a semiconductor substrate. Claim 1 is illustrative:

1. A semiconductor substrate singulation saw, comprising:
a substrate support, the substrate support including a substantially planar

surface; and

at least two substantially parallel saw blades having respective centers of rotation along a substantially common axis when in cutting positions and at least one blade of the at least two substantially parallel saw blades being laterally translatable relative to at least one other of the at least two substantially parallel saw blades.

THE REFERENCE

Simko	US 4,102,227	Jul. 25, 1978

THE REJECTION

Claims 1-20 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Simko.

OPINION

We reverse the Examiner's rejection. We need to address only the independent claims, i.e., claims 1, 7 and 14.

The preamble of claim 1 recites "a semiconductor singulation saw".

A term appearing in a preamble is limiting when it is found to be required to confer meaning on the claim. *See Phillips Petroleum Co. v. Huntsman Polymers Corp.*, 157 F.3d 866, 872 (Fed. Cir. 1998). "If the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is 'necessary to give life, meaning, and vitality' to the claim, then the claim preamble should be construed as if in the balance of the claim." *Pitney Bowes Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298 (Fed. Cir. 1999) (quoting *Kropa v. Robie*, 187 F.2d 150, 152 (CCPA 1951)). "The effect preamble language should be given can be resolved only on review of the entirety of the patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim." *Corning Glass Works v. Sumitomo Electric U.S.A., Inc.*, 868 F.2d 1251, 1257 (Fed. Cir. 1989). *In Corning Glass* the preamble was: "An

optical waveguide". *Id.* at 1256. The court stated that "contrary to Sumitomo's argument, the core and cladding limitations specifically set out in paragraphs (a) and (b) are not the only limitations of the claim. [citation omitted] The claim requires, in addition, the particular structural relationship defined in the specification for the core and cladding to function as an optical waveguide." *Id.* at 1257.

The Appellants' claim 1 preamble term "semiconductor substrate singulation saw" limits the claimed invention to a saw capable of singulating a semiconductor substrate and, therefore, is necessary to give life, meaning and vitality to that claim.

The preambles of claims 7 and 14 do not include the term "singulation saw" but, rather, recite "[a]n apparatus for singulating a semiconductor substrate". The bodies of claims 7 and 14, however, require "saw blades", as does the body of claim 1.

Simko discloses "a method of and apparatus for aligning ones of a plurality of scoring wheels with ones of a plurality of support wheels, e.g., lands using a laser and a position photodetector" (col. 1, ll. 7-10). The scoring wheels (16; figs. 3, 4) can be reciprocated vertically, transverse to a glass sheet movement path (24; fig. 1), and can be moved laterally (col. 3, ll. 54 – col. 4, ll. 3). The glass sheet can be both slit scored (from leading edge to trailing edge) and cross scored (col. 7, ll. 28-31; col. 11, ll. 3-7).

During patent prosecution, claims are to be given their broadest reasonable interpretation consistent with the specification, as the claim language would have been read by one of ordinary skill in the art in view of the specification. *See In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989); *In re Sneed*, 710 F.2d 1544, 1548 (Fed. Cir. 1983).

The Appellants' Specification states (Spec. ¶ 0002):

> This invention relates generally to a method and apparatus for sawing semiconductor substrates such as wafers and, more specifically, to a wafer saw and a method of using the same employing multiple indexing techniques and multiple blades for more efficient sawing and for sawing multiple die sizes and shapes from a single semiconductor wafer.

In the "Background of the Invention" section the Appellants' Specification states (Spec. ¶ 0003):

> Typically, the wafer is sawn or "diced" into rectangularly shaped discrete integrated circuits along two mutually perpendicular sets of parallel lines or streets lying between each of the rows and columns thereof. Hence, the separated or singulated integrated circuits are commonly referred to as dice.

The Appellants' Specification, however, in the "Detailed Description of the Invention" section, states:

> A silicon wafer 24 to be scribed or sawed may be securely mounted to the wafer table 22. As used herein, the term "saw" includes scribing of a wafer, the resulting scribe line 26 not completely extending through the wafer substrate. [Spec. ¶ 0021]
>
> * * *
>
> [A] wafer 24 having variously sized integrated circuits or other devices or components therein may be sectioned or diced into its nonuniformly sized components by the multi-indexing wafer saw 10. In addition, as previously alluded, the wafer saw 10 may be used to create scribe lines or cuts 26 that do not extend through the wafer 24. The wafer 24 can then subsequently be diced by other methods known in the art or sawed completely through after the wafer saw blade 18 has been lowered to traverse the wafer to its full depth or thickness. [Spec. ¶ 0022]

The Appellants argue (Br. 6):

> [A]s described by Simko, the scoring wheel creates a deep score and cut edge, which is the side wall of a deep score, by a stress field and not by removing material. Scoring wheels are suited for creating high localized forces on the surface of glass or other refractory material that crush a score line into the surface, and are not suited to facilitate cutting a workpiece by removing material. [1]
>
> A saw blade, in contrast, is known to those of ordinary skill in the art to remove material by friction or abrasion as an edge of the blade is moved or driven through a workpiece.

Regarding the interpretation of the Appellants' claims the Appellants argue (Reply Br. 2-3):

> Notably, the term "saw" that has been defined in the specification of the above-referenced application is a verb, not a noun, as the term "saw" is used in the claims. Specifically, the term "saw," as defined in the specification, does not refer to a "saw blade," as has been suggested by the Examiner; rather, when the language of paragraph **[0021]** is considered in context, it is clear that paragraph **[0021]** merely indicates that the verb "saw" includes the formation, with saw blades 18, of scribe lines 26 that do not extend completely through a substrate. The mere suggestion that saw blades may be used to cut partially through a substrate does not infer the equivalence of a saw blade to a glass-scoring blade.
>
> The Examiner has not provided any reason that the noun "saw" should be interpreted contrary to its art accepted definition aside from that "appellant has not defined any specific blade construction." Examiner's Answer, page 4. The specification of the above-referenced application describes non-limiting examples, such as a saw blade with "diamond particles," as well as a "toothed" type blade, both of which are consistent with the art accepted definition of the noun "saw". *See, e.g.*, paragraph **[0004]**. It is well known that saw

---

[1] The term "scribe" means "**1**: to mark a line on by cutting or scratching with a pointed instrument **2**: to make by cutting or scratching", and "score" means "**2**: to mark with lines, grooves, scratches, or notches". *Webster's New Collegiate Dictionary* 1034, 1036 (G. & C. Merriam 1973). There is no dispute as to whether Simko's term "scoring" falls within the Appellants' term "scribing".

> blades, or "saws," are configured to remove material by friction or abrasion as edges thereof are moved or driven through a workpiece.

The Examiner argues that "given appellant's disclosure, one of ordinary skill would consider the blades of Simko to be saw blades, as they scribe the surface of the workpiece without cutting all the way through" (Ans. 5).

The Appellants' entire disclosure is directed toward a saw that is capable of sawing, not just scoring or scribing. Even with respect to the Examiner's relied-upon Specification disclosure that "the term 'saw' includes scribing" (Spec. ¶ 0021), the Specification states that the saw may be used to create scribe lines or cuts and that the wafer then may be "sawed completely through after the wafer saw blade 18 has been lowered to traverse the wafer to its full depth or thickness" (Spec. ¶ 0022). That disclosure indicates that the same saw that forms the scribe lines or cuts is capable of sawing the wafer through its thickness. It is undisputed that Simko's scoring apparatus does not have that capability. The record, therefore, indicates that Simko's scoring apparatus is not a "singulation saw" and does not have "saw blades" as those terms are most broadly construed in view of the Appellants' Specification.

Thus, the Examiner has not established a prima facie case of anticipation of the Appellants' claimed invention.

DECISION

The rejection of claims 1-20 under 35 U.S.C. § 102(b) over Simko is reversed.

<u>REVERSED</u>

JRG

TRASK BRITT, P.C./MICRON TECHNOLOGY
P.O. BOX 2550
SALT LAKE CITY, UT 84110