

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MICHAEL S. BUTLER

Appeal 2007-0053
Application 10/225,829
Technology Center 3700

Decided: April 16, 2007

Before ANITA PELLMAN GROSS, STUART S. LEVY, and
LINDA E. HORNER, *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Michael S. Butler (“Appellant”) appeals under 35 U.S.C. § 134 from the Examiner’s final rejection of claims 1-7, 9-15, 17-24, 27-30, 32-34, 36-45, 47, 48, 50-54, 56, 58-72, 74-80, and 82-84. Claims 8, 16, 25, 26, 31, 35, 46, 49, 73, and

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81 have been withdrawn from consideration, and the Examiner objected to claims 55 and 57 as being dependent upon a rejected base claim, but indicated these claims would be allowable if rewritten in independent form (Final Office Action 5). We have jurisdiction under 35 U.S.C. § 6(b).

SUMMARY OF DECISION

We AFFIRM.

THE INVENTION

Appellant's claimed invention relates to a tape for temporarily carrying electronic components in pockets for storage or transportation, where the tape includes weakened areas between the pockets (Specification 1:[0001]). Appellant also claims methods for designing, making, and using the tape. Claims 1 and 11, reproduced below, are representative of the subject matter on appeal.

1. A temporary component-carrier tape comprising:

a device-retaining layer including a plurality of apertures for receiving and storing components;

a top cover layer securable to a surface of the device-retaining layer and covering at least a portion of each of the plurality of apertures; and

at least one weakened feature included in at least one of the device-retaining layer and the top cover layer, extending across a width of the temporary component-carrier tape, and located between an adjacent pair of apertures of the plurality of apertures.

11. The temporary component-carrier tape of claim 10, wherein the bottom cover layer includes at least one weakened feature positionable between adjacent apertures of the plurality of apertures.

THE REJECTION

The Examiner relies upon the following as evidence of unpatentability:

Bird	US 5,857,572	Jan. 12, 1999
Yanagisawa	US 6,744,120 B1	Jun. 01, 2004
		(Nov. 8, 2000)

Claims 1-7, 9-15, 17-24, 27-30, 32-34, 36-45, 47, 48, 50-54, 56, 58-72, 74-80, and 82-84 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bird and Yanagisawa.

ISSUE

Appellant contends the Examiner erred in finding that one of ordinary skill in the art would have been motivated to modify the foam carrier tape of Bird with the low-bending-resistance portions taught in Yanagisawa (Br. 7-8). Appellant further contends that the Examiner erred in finding that the combination of Bird and Yanagisawa teaches or suggests a bottom or second cover layer of a carrier tape having at least one weakened feature therein, as recited in dependent claims 11, 34, 51, 52, and 76 (Br. 8-9). The Examiner determined it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the tape of Bird with weakened features, including apertures through the

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entire structure, as taught by Yanagisawa, in order to prevent stress concentrations within the article receiving regions (Final Office Action 3 and Answer 4-7). The issues before us are whether Appellant has shown that the Examiner erred in finding that one having ordinary skill in the art would have been motivated to combine the teachings of Bird and Yanagisawa in the manner claimed and whether Appellant has shown that the Examiner erred in finding that the combined teachings of Bird and Yanagisawa teach or suggest a bottom or second cover layer of a carrier tape having at least one weakened feature.

FINDINGS OF FACT

We find that the following enumerated findings are supported by at least a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427, 7 USPQ2d 1152, 1156 (Fed. Cir. 1988) (explaining the general evidentiary standard for proceedings before the Office).

1. The Examiner found that Bird discloses a temporary component-carrier tape 10 comprising a device-retaining layer 12 including a plurality of apertures 22, at least one electronic device 84, and a top cover layer 28 (Final Office Action 2 (citing Bird, col. 4, ll. 14-17)). Appellant does not challenge this finding (Br. 6).

2. Bird further discloses that the carrier tape 10 has a bottom cover layer 26 (Bird, col. 4, ll. 61-63).

3. Bird discloses that its carrier tape is wound about the hub of a reel to form a supply roll 68 and the carrier tape can be used for transporting and

delivering surface mount electronic components such as memory chips, integrated circuit chips, resistors, connectors, microprocessors, capacitors, gate arrays, and the like (Bird, col. 9, ll. 28-33 and col. 10, ll. 33-37).

4. Bird does not disclose at least one weakened feature extending across the width of the component-carrier tape and located between an adjacent pair of apertures.

5. Bird discusses that removal of material for the component openings and advancement holes reduces the inherent strength of the strip portion, and teaches that one practicing the invention should preferably use a polymeric foam having a sufficient tensile strength to compensate for the reduced strength resulting from the removed material. Rather than discouraging the removal of material from the strip portion, Bird teaches compensating for the openings and holes by selecting the appropriate polymeric foam (Bird, col. 7, ll. 15-29).

6. Appellant admits that Yanagisawa teaches a strip that includes a plurality of tape substrates and low bending resistance portions located between adjacent tape substrates to prevent bending of the tape substrates and, thus, bending of leads of the tape substrates (Br. 6).

7. Yanagisawa teaches a flexible base substrate 10 having a plurality of first regions 44 and a plurality of second regions 45 (Yanagisawa, col. 5, ll. 58-60).

8. Yanagisawa teaches that a device hole 14 is formed within each first region 44, and the second region 45 is positioned between two adjacent first regions 44 (Yanagisawa, col. 6, ll. 9-15).

9. Yanagisawa teaches that at least one low-bending-resistance portion 40 is formed within each second region 45 to ensure that the second region 45 bends more readily than the first region 44, such as when the assembly is being wound on a reel (Yanagisawa, col. 6, ll. 39-47).

10. Yanagisawa teaches that the low-bending-resistance portions 40 ensure that when the base substrate 10 is being bent, such as when it is being wound, bending stresses concentrate in the second regions 45, avoiding bending stress concentrations at the first regions 44 (Yanagisawa, col. 6, ll. 47-51).

11. Yanagisawa teaches that the low-bending-resistance portions 40 can be slits formed to extend across the width of the base substrate 10, through-holes cuts, or thinner portions, or formed of a material that is weaker than the material of the first regions 44 (Yanagisawa, col. 6, ll. 53-59).

12. The purpose of the low-bending-resistance portions of Yanagisawa is to prevent the leads connected to a semiconductor chip in each first region 44 from bending when the flexible interconnect substrate 10 is wound onto a reel for reel-to-reel processing (Yanagisawa, col. 1, ll. 22-24).

13. The general problem facing the inventor at the time of the invention was to improve the handling characteristics of component-bearing tape as it is loaded with components, rolled into a reel, transported, and unrolled for removing components from the tape (Specification 3:[0006] - 4:[0010]).

PRINCIPLES OF LAW

To determine whether a *prima facie* case of obviousness has been established, we are guided by the factors set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), *viz.*, (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; and (3) the level of ordinary skill in the art.

In addition to our review of the *Graham* factors, we also consider whether a person of ordinary skill in the art, possessed with the understandings and knowledge reflected in the prior art, and motivated by the general problem facing the inventor, would have been led to make the combination recited in the claims. *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1337 (Fed. Cir. 2006). “In considering motivation in the obviousness analysis, the problem examined is not the specific problem solved by the invention but the general problem that confronted the inventor before the invention was made. *Kahn*, 441 F.3d at 988, 78 USPQ2d at 1336 (citations omitted).

To establish a *prima facie* case of obviousness, the references being combined do not need to explicitly suggest combining their teachings. *See e.g.*, *Kahn*, 441 F.3d at 987-88, 78 USPQ2d at 1337-38 (“the teaching, motivation, or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references”). “The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in

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the art.” *Kahn*, 441 F.3d at 987-88, 78 USPQ2d at 1336 (quoting *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000)).

In addition to considering whether a person of ordinary skill in the art would have been motivated to combine the prior art to achieve the claimed invention, we must also determine whether there would have been a reasonable expectation of success in doing so. *Brown & Williamson Tobacco Corp. v. Philip Morris, Inc.*, 229 F.3d 1120, 1124 (Fed. Cir. 2000). “Obviousness does not require absolute predictability of success.” *In re O’Farrell*, 853 F.3d 894 (Fed. Cir. 1988). “For obviousness under § 103, all that is required is a reasonable expectation of success.” *Id.* (*citing In re Longi*, 759 F.2d 887, 897, 225 USPQ 645, 651-52 (Fed. Cir. 1985); and *In re Clinton*, 527 F.2d 1226, 1228, 188 USPQ 365, 367 (CCPA 1976)).

ANALYSIS

Both Bird and Yanagisawa relate to flexible tapes in which electrical components are housed in apertures formed in the tape (Findings of Fact 1 and 5). The tapes of both Bird and Yanagisawa are subjected to being wound about a reel during handling and use (Findings of Fact 3 and 9). Yanagisawa teaches that to avoid damage to component leads located in the region of the tape containing the aperture, a weakened portion is added to the adjacent region of the tape to ensure that as the tape is wound onto a reel, the tape bends at the weakened area instead of bending in the region holding the electrical component and leads (Findings of Fact 9 and 10). Bird discloses that its carrier tape can be used for transporting and

delivering surface mount electronic components such as memory chips, integrated circuit chips, resistors, connectors, microprocessors, capacitors, gate arrays, and the like (Finding of Fact 3). One having ordinary skill in the art at the time of the invention, possessed with the carrier tape design of Bird and the knowledge of how to avoid bending stresses at the portion of the tape containing the electronic components, as taught in Yanagisawa, and facing the problem of improving the handling characteristics of component-bearing tapes, would have been motivated to add the low-bending-resistance portions of Yanagisawa to the carrier tape of Bird to avoid damage to the component parts as the tape is wound about a reel, as suggested in Yanagisawa.

We reject Appellant's assertion that Bird "teaches away" from including any additional apertures in the strip portion of the carrier tape because doing so would undesirably weaken the tape. Although Bird discusses that removal of material for the component openings and advancement holes reduces the inherent strength of the strip portion, Bird teaches that one practicing the invention must use a polymeric foam having a sufficient tensile strength to compensate for the reduced strength resulting from the removed material. Rather than discouraging the removal of material from the strip portion, Bird teaches compensating for the openings and holes by selecting the appropriate polymeric foam (Finding of Fact 5).

We further reject Appellant's assertion that one skilled in the art would have no reasonable expectation of success when modifying the carrier tape of Bird with the weakened portions of Yanagisawa. To the contrary, we find that there is a high

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degree of predictability in the mechanical arts, and we do not find anything in Bird or Yanagisawa that would negate a reasonable expectation of success when adding weakened areas to Bird's carrier tape. Thus, for the reasons stated *supra* in addressing the "teaching away" argument, we find that the prior art references would have led the skilled artisan to have had a reasonable expectation of success.

With respect to dependent claims 11, 34, 51, 52, and 76, we agree with the Examiner that one having ordinary skill in the art, in view of the teaching of Yanagisawa to cut the slits or holes all the way through the tape (Finding of Fact 11), would have been led to modify the carrier tape of Bird with weakened areas formed by cutting slits or holes through the entire thickness of the tape, including the bottom cover layer 26 of Bird's tape (Finding of Fact 2). As such, the combined teaching of Bird and Yanagisawa would have led one having ordinary skill in the art to cut at least one weakened feature into the bottom cover layer of the carrier tape, as recited in these dependent claims.

CONCLUSIONS OF LAW

We conclude Appellant has not shown that the Examiner erred in rejecting claims 1-7, 9-15, 17-24, 27-30, 32-34, 36-45, 47, 48, 50-54, 56, 58-72, 74-80, and 82-84 under 35 U.S.C. § 103(a) as unpatentable over Bird and Yanagisawa.

DECISION

The decision of the Examiner to reject claims 1-7, 9-15, 17-24, 27-30, 32-34, 36-45, 47, 48, 50-54, 56, 58-72, 74-80, and 82-84 is AFFIRMED.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2006).

AFFIRMED

vsh:

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