

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BEE SIANG KOH, BENG KIAT KUAH, YEONG HWUI LIM,
and KUMAR P. SIVA

Appeal 2008-3313
Application 10/193,029
Technology Center 3600

Decided: December 23, 2008

Before: JENNIFER D. BAHR, LINDA E. HORNER, and MICHAEL W.
O'NEILL, *Administrative Patent Judges.*

BAHR, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Bee Siang Koh et al. (Appellants) appeal under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1-11 and 18. The Examiner has withdrawn claims 12-17, the only other pending claims, from consideration. We have jurisdiction over this appeal under 35 U.S.C. § 6 (2002).

Appellants' representative presented oral argument in this appeal on December 11, 2008.

The Invention

Appellants' claimed invention is directed to an in-circuit test fixture loader. Spec. 1:7-8. Claims 1 and 18, reproduced below, are the only independent claims involved in this appeal.

1. An in-circuit test fixture loader apparatus comprising:

a carrier operable to receive and support an in-circuit test fixture and move the in-circuit test fixture between a receive position and a test position, the in-circuit test fixture configured to support a device under test; and

a clamp mounted on a testing base operable to selectively fix the in-circuit test fixture in place in the test position.

18. An in-circuit test fixture loader, the loader comprising:

a carrier operable to receive and support an in-circuit test fixture so that the in-circuit test fixture is positioned between opposing side rails of the carrier and the in-circuit test fixture abuts an end rail of the carrier that extends between the side rails; and

means for clamping the in-circuit test fixture to a testing base in a test position.

The Rejections

The Examiner relies upon the following as evidence of unpatentability:

Foley

US 4,776,745

Oct. 11, 1988

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Bullock	US 5,094,584	Mar. 10, 1992
Nucci	US 5,614,819	Mar. 25, 1997
Cook	US 5,823,737	Oct. 20, 1998

Appellants seek review of the Examiner's rejections of claims 1, 2, 4-11, and 18 under 35 U.S.C. § 102(b) as being anticipated by Cook; claim 3 under 35 U.S.C. § 103(a) as being unpatentable over Cook, Bullock, and Nucci; and claim 18 under 35 U.S.C. § 103(a) as being unpatentable over Bullock and Foley.

SUMMARY OF DECISION

We AFFIRM.

ISSUES

Appellants argue that Cook does not anticipate claim 1 because Cook does not disclose both a carrier and a clamp. Appeal Br. 12. Specifically, Appellants allege that the Examiner has erroneously read two separately claimed elements, namely, the carrier and the clamp, onto the same items, namely, the screw 86 and crank 92, of Cook. *Id.* Appellants further argue that neither Bullock nor Nucci cures the perceived deficiency in Cook. Appeal Br. 13. Therefore, according to Appellants, the Examiner has also failed to make out a prima facie case of obviousness of claim 3. *Id.* In response, the Examiner argues that lower frame assembly 24 and uprights 29 and 30 of Cook's handler 20, alone, can receive, support, and move a test fixture as claimed. Ans. 6. The Examiner further points out that Cook also has "a clamp means for clamping 92,86 mounted on a testing base 94 (figure 1) capable of selectively fixing a test fixture in place." *Id.*

Appellants additionally argue that the Examiner has failed to establish a prima facie case of anticipation or obviousness of claim 18, because the Examiner fails to construe claim 18 as a “means claim.” Appeal Br. 13-14. More specifically, Appellants argue that neither Cook nor Bullock discloses structure that satisfies the “clamping means” limitation of claim 18. Reply Br. 11. In response, the Examiner contends that Cook’s clamping means (“items 92,86”) and Bullock’s clamping means (“latch means in column 5, line 51”) selectively secure the test fixture on at least two sides to hold it for transport or processing, and thus are equivalent to Appellants’ clamp 222. Ans. 6-7.

In light of the contentions of Appellants and the Examiner, the issues presented in this appeal are:¹

- (1) Have Appellants demonstrated that the Examiner erroneously read both the recited carrier and clamp on the same structure of Cook in rejecting claims 1, 2, and 4-11 as being anticipated by Cook and claim 3 as being unpatentable over Cook, Bullock, and Nucci?
- (2) Have Appellants demonstrated the Examiner erred in the anticipation rejection of claim 18 by not identifying structure in Cook that satisfies the “clamping means” limitation of claim 18?

¹ On pages 9-10 of their Appeal Brief and pages 3-4 and 8-9 of their Reply Brief, Appellants make much of the Examiner’s statement of reasons for allowance of a prior version of claim 1 conceded by Appellants to be narrower in scope than claim 1 before us in this appeal. However, the accuracy or appropriateness of the Examiner’s statement of reasons for allowance of claims no longer pending in this application has no bearing on our review of the present claims in this appeal.

- (3) Have Appellants demonstrated the Examiner erred in the obviousness rejection of claim 18 by not identifying structure in Bullock that satisfies the “clamping means” limitation of claim 18?

FACTS PERTINENT TO THE ISSUES

A “clamp” is “any of various devices for clasping or fastening things together, or for bracing parts; esp., an appliance with two parts that can be brought together, usually by screws, to grip something.” *Webster's New World Dictionary* 261 (David B. Guralnik ed., 2nd Coll. Ed., Simon & Schuster, Inc. 1984).

The verb “clamp” means “to grip, fasten, or brace with or as with a clamp.” *Id.*

Appellants describe a clamp assembly 222 that clamps the fixture 212 so that it is stationary relative to the testing base 224. Spec. 5:9-10. The clamp assembly 222 includes four clamps 380 each fixed to the upper end of a ram 368 actuated by a pneumatic cylindrical actuator 366. Spec. 8:22-23 and 28; figs. 10 and 11. Each clamp 380 includes a pair of clamp arms 384 that extend in opposite horizontal directions from the top of a clamp body 382. Spec. 8:28-29. The clamp actuators move the rams, and thus the clamps 380, in a downward spiral motion from their uppermost or release position (fig. 10) to their lowermost or clamp position (fig. 11), wherein the clamps abut the test fixture. Spec. 8:31 to 9:4 and 13:16-17. As illustrated in fig. 10, in the release position, the clamp arms 384 are aligned with clamp-receiving holes 238 in the test fixture 212. Spec. 5:29-30, 8:13-14. As illustrated in fig. 11, in the clamp position, the clamp arms 384 extend perpendicular to the major axes of the clamp-receiving holes 238, thereby

capturing the test fixture between the clamp arms 284 and the testing base 224. The actuators 366 each include an upper reed sensor 370 and a lower reed sensor 372 that sense when the ram is in its release and clamp positions, respectively. Spec. 8:24-27; fig. 5.

In light of the above description, Appellants' clamping structure includes clamps having clamping arms that are moved from a release position to a clamp position in which the clamp arms abut the test fixture. Appellants do not indicate that any positive clamping pressure is applied to the test fixture. In fact, the incorporation of reed sensors that sense when each ram is in its release and clamp positions, respectively, implies that clamping pressure is not applied. Rather, the clamp arms appear to function to capture the test fixture by extending across the clamp-receiving openings in the clamp position.

Cook teaches a handler for lifting, carrying, and positioning probemats or test fixtures for connection with automatic test equipment (ATE). Cook, col. 1, ll. 8-9, 58-60, col. 5, ll. 20-24. The handler 20 comprises a frame 22 including a lower frame assembly 24 having wheels 25-28 rotatably attached thereto, first and second upright members 29 and 30 attached to the lower frame assembly 24, and top support member 33 and cross-support members 31 and 32 joining first and second upright members 29 and 30. Cook, col. 4, ll. 14-20. Cook's frame 22 is portable and can be maneuvered easily to, from, and near an ATE system. Cook, col. 4, ll. 25-32. Cook's frame 22, with the elements discussed above, is fully capable of receiving and supporting a probemat or test fixture and of moving the probemat or fixture between a receive position and a test position.

Cook's handler 20 also comprises a handling mechanism 50 including first and second jaws 60 and 62 formed on first and second side arms 64 and 66, respectively, for holding a fixture or probemat therebetween. Cook, col. 5, ll. 11-13, 16-19. Jaws 60 and 62 are provided with channels 114 for receiving probemat handles or formed edges. Cook, col. 5, ll. 13-16, col. 7, ll. 66-67, figs. 1 and 4. Each jaw additionally includes first and second stop brackets 115 and 116 that close the channels 114 to stop a probemat handle or formed edge from sliding out of the jaw. Cook, col. 8, ll. 1-3, fig. 4. Side arms 64 and 66 are moved toward and away from one another along lead screws 86 and 88 by rotation of crank 92. Cook, col. 6, ll. 45-64. The use of lead screws provides for accurate separation of first and second arms 64 and 66 to accommodate a plurality of probemats which vary in width. Cook, col. 6, l. 66 to col. 7, l. 2. Cook also provides structure for permitting jaws 60 and 62 to be oriented at an angle relative to the horizontal for placement of a probemat held by the jaws onto a non-horizontal surface of an ATE system. Cook, col. 7, ll. 9-23.

Based on the above teachings of Cook, we find that Cook's arms 64 and 66 are moved toward each other such that jaws 60 and 62 abut the handles or formed edges of the probemat to hold the probemat between the jaws so as to accurately position the probemat in or on an ATE system.

Cook's arms 64 and 66 are slidably connected to upright members 29 and 30 of frame 22 via base plate 52. Cook, col. 4, ll. 49-51, col. 5, ll. 16-19 and 28-29.

Bullock discloses an apparatus for loading and unloading test fixtures in a printed circuit board test facility. Bullock, col. 1, ll. 16-20. Each test fixture 115 is in the form of a cassette operable to be separated into two

halves, an upper probe plate 40 and a lower probe plate 42, designed to be latched together. Bullock, col. 3, ll. 56-61, col. 6, l. 42. A test fixture transport apparatus 101 retrieves the test fixture 115 from fixture storage apparatus 102 and transports it to a test facility 103. Bullock, col. 6, ll. 28-59, fig. 1. The upper probe plate 40 and lower probe plate 42 are attached to upper section 12 of a fixturing apparatus or frame 10 and a support structure or lower section 14, respectively, of the test facility 103. Bullock, col. 4, ll. 5-7. The upper probe plate 40 can be attached to upper section 12 by means of L-shaped pins 55 adapted to be received in appropriately shaped grooves in upper probe plate 40 and to move downwardly and out of the grooves when upper section 12 is raised to its uppermost position, thereby enabling upper probe plate 40 to slide in or out of the test fixture frame 10. Bullock, col. 4, ll. 12-22. A conveyor 27 moves a printed circuit board 11 to be tested to a position within frame 10 between upper section 12 and lower section 14. Bullock, col. 3, l. 67 to col. 4, l. 3. Upper probe plate 40 is then lowered and biased against the upper surface of printed circuit board 11. Bullock, col. 4, ll. 33-35.

The latch means referred to at column 5, line 51 of Bullock, and relied upon by the Examiner as satisfying the “clamping means” in Appellants’ claim 18, is for latching together the two halves of the test fixture cassette. Bullock does not disclose a clamp mounted on a testing base, namely, frame 10, for fixing the test fixture 115 in place in the test position. Nor does Bullock disclose structure for clamping the test fixture 115 to the testing base, namely, frame 10.

The Examiner does not rely on Foley for any teaching related to the clamping means limitation of claim 18.

PRINCIPLES OF LAW

Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention. *RCA Corp. v. Applied Digital Data Sys., Inc.*, 730 F.2d 1440, 1444 (Fed. Cir. 1984). In other words, there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. *Scripps Clinic & Research Found. v. Genentech Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991). It is not necessary that the reference teach what the subject application teaches, but only that the claim read on something disclosed in the reference, i.e., that all of the limitations in the claim be found in or fully met by the reference. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 772 (Fed. Cir. 1983).

In order to meet a “means plus function” limitation, the prior art must (1) perform the identical function recited in the means limitation and (2) perform that function using the structure disclosed in the specification or an equivalent structure. *Valmont Indus., Inc. v. Reinke Mfg. Co.*, 983 F.2d 1039, 1042 (Fed. Cir. 1993). An equivalent structure under 35 U.S.C. § 112, sixth paragraph “performs the claimed function in substantially the same way to achieve substantially the same result as the corresponding structure described in the specification.” *Cross Medical Products, Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1316 (Fed. Cir. 2005) (quoting *Odetics, Inc. v. Storage Technology Corp.*, 185 F.3d 1259, 1267 (Fed. Cir. 1999)).

ANALYSIS

Issue (1)

As noted in our findings above, Cook's frame 22, with its lower frame assembly 24 having wheels 25-28 rotatably attached thereto, first and second upright members 29 and 30 attached to the lower frame assembly 24, and top support member 33 and cross-support members 31 and 32 joining first and second upright members 29 and 30, is fully capable of receiving and supporting a probemat or test fixture and of moving the probemat or fixture between a receive position and a test position. Cook's frame 22, with the elements discussed above, thus satisfies the requirements of the carrier recited in claim 1.

Based on our findings above, Cook's arms 64 and 66 are moved toward each other along lead screws 86 and 88 by rotation of crank 92 such that jaws 60 and 62 abut the handles or formed edges of the probemat to hold the probemat between the jaws so as to accurately position the probemat in or on an ATE system. Cook's lead screws 86 and 88, crank 92, arms 64 and 66, and jaws 60 and 62 thus constitute a "clamp" in that they form an appliance with two arms that can be brought together, by lead screws, to grip something, namely, the probemats.

Cook's lead screws 86 and 88, crank 92, arms 64 and 66, and jaws 60 and 62 are elements distinct from the elements of Cook's frame 22, mentioned above, that satisfy the requirements of the carrier. Thus, we do not agree with Appellants that the Examiner erroneously read both the recited carrier and clamp on the same structure of Cook in rejecting claims 1, 2, and 4-11 as being anticipated by Cook and claim 3 as being unpatentable over Cook, Bullock, and Nucci. We sustain these rejections.

Issue (2)

As noted in our findings above, the structure described in Appellants' Specification for performing the clamping function includes clamps having clamping arms that are moved from a release position to a clamp position in which the clamp arms abut the test fixture. Appellants do not indicate that any positive clamping pressure is applied to the test fixture. In fact, the incorporation of reed sensors that sense when each ram is in its release and clamp positions, respectively, implies that clamping pressure is not applied. Rather, the clamp arms appear to function to capture the test fixture by extending across the clamp-receiving openings in the clamp position.

Cook's lead screws 86 and 88, crank 92, arms 64 and 66, and jaws 60 and 62 perform a "clamping" function in that they form an appliance with two arms that are brought together, by lead screws, to grip or brace something, namely, the probemats, to a testing base, namely, base plate 52. Cook therefore discloses structure that performs the identical function recited in the means limitation of claim 18.

Moreover, as noted in our findings above, Cook's arms 64 and 66 are moved toward each other such that jaws 60 and 62 abut the handles or formed edges of the probemat to hold the probemat between the jaws so as to accurately position the probemat in or on an ATE system. As such, they abut and capture the test fixture or probemat to fix it in position. Cook's clamping structure thus performs the claimed function in substantially the same way to achieve substantially the same result as the corresponding structure described in Appellants' Specification. Therefore, Appellants fail to convince us that the Examiner erred in finding Cook's clamping structure to be an equivalent to Appellants' clamping structure under 35 U.S.C. § 112,

sixth paragraph. We sustain the rejection of claim 18 as being anticipated by Cook.

Issue (3)

The latch means referred to at column 5, line 51 of Bullock, and relied upon by the Examiner as corresponding to the “clamping means” in Appellants’ claim 18, is for latching together the two halves of the test fixture cassette. Bullock does not disclose structure for clamping the test fixture 115 to the testing base, namely, frame 10. Thus, we agree with Appellants that the Examiner erred in the obviousness rejection of claim 18 by not identifying structure in Bullock that satisfies the “clamping means” limitation of claim 18. Moreover, the Examiner does not rely on Foley for any teaching related to the clamping means limitation of claim 18. We will not sustain the rejection of claim 18 as being unpatentable over Bullock and Foley.

CONCLUSIONS OF LAW

- (1) Appellants have not demonstrated that the Examiner erroneously read both the recited carrier and clamp on the same structure of Cook in rejecting claims 1, 2, and 4-11 as being anticipated by Cook and claim 3 as being unpatentable over Cook, Bullock, and Nucci.
- (2) Appellants have not demonstrated the Examiner erred in the anticipation rejection of claim 18 by not identifying structure in Cook that satisfies the “clamping means” limitation of claim 18.
- (3) Appellants have demonstrated the Examiner erred in the obviousness rejection of claim 18 by not identifying structure in Bullock that satisfies the “clamping means” limitation of claim 18.

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Accordingly, we sustain the rejections of claims 1, 2, 4-11, and 18 under 35 U.S.C. § 102(b) as being anticipated by Cook and claim 3 under 35 U.S.C. § 103(a) as being unpatentable over Cook, Bullock, and Nucci, but we do not sustain the rejection of claim 18 under 35 U.S.C. § 103(a) as being unpatentable over Bullock and Foley.

DECISION

The Examiner's decision is AFFIRMED.

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) (2007).

AFFIRMED

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