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United States Court of Appeals for the Federal Circuit

00-1442

(Serial No. 08/262,157)

IN RE MICHAEL L. BEIGEL, NATHANIEL POLISH,
STEVEN R. FRANK, and ROBERT E. MALM

DECIDED: April 3, 2001

Before CLEVINGER, Circuit Judge, PLAGER, Senior Circuit Judge, GAJARSA, Circuit Judge.

CLEVINGER, Circuit Judge.

Michael L. Beigel et al. ("Appellants") appeal from the decision of the United States Patent and Trademark Office's ("USPTO") Board of Patent Appeals and Interferences ("Board") sustaining

the Examiner's rejection of claims 1, 2, 6, 7, 56, 57, 60, 98 and 107 of Appellants' patent application No. 08/262,157. We affirm-in-part, vacate-in-part, and remand.

I

Appellants' application, entitled "Electronic Identification System with Improved Sensitivity," was filed on June 20, 1994. In general terms, the claimed invention relates to an electrical object identification system consisting of an interrogator (the "reader") and a transponder (the "tag"). Circuitry is provided that controls and adjusts other circuitry in the overall system to allow the reader to read the tag or the tag to transmit electronic signals to the reader. The invention provides for two-way communication between the reader and the tag by means of inductively coupled coils. The reader drives its coil through capacitors at a driving frequency, and the tag detects the reader's signal by means of the tag's inductively coupled coil connected in parallel with a capacitor.

If the reader or tag is placed in adverse conditions, the circuitry adjusts the reader or tag to improve communication. In order to maintain good communication sensitivity, the coil and capacitor (the "resonating circuit") in both the reader and the tag are maintained at or near a state of resonance through circuitry adjustment.

II

Claims 1, 2, 6, 7, 56, 57, 60, 98 and 107 were rejected as obvious pursuant to 35 U.S.C. § 103 over Beigel et al. (U.S. Pat. No. 5,235,326) ("Beigel '326") in view of Chatelot (U.S. Pat. No. 4,864,633) ("Chatelot"). In addition, claim 107 was rejected pursuant to 35 U.S.C. § 112, ¶ 2, for failing to particularly point out and distinctly claim the subject matter which Appellants regard as their invention.

A claimed invention is unpatentable pursuant to 35 U.S.C. § 103 if the differences between it and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. In re Dembiczak, 175 F.3d 994, 998, 50 USPQ2d 1614, 1616 (Fed. Cir. 1999), abrogated on other grounds by In re Gartside, 203 F.3d 1305, 53 USPQ2d 1769 (Fed. Cir. 2000). The ultimate determination of whether an invention would have been obvious under 35 U.S.C. § 103 is a legal conclusion based on underlying findings of fact. Dembiczak, 175 F.3d at 998, 50 USPQ2d at 1616. We review the Board's ultimate determination of obviousness de novo. Id. However, we review the Board's underlying factual findings for substantial evidence. In re Gartside, 203 F.3d 1305, 1316, 53 USPQ2d 1769, 1776 (Fed. Cir. 2000).

Although the claims at issue were rejected under section 103 for obviousness, the disputed points mainly involve issues of claim construction. Claim construction by the USPTO is an issue of law that we review de novo. In re Baker Hughes Inc., 215 F.3d 1297, 1301, 55 USPQ2d 1149, 1152 (Fed. Cir. 2000).

A

Claims 2, 6 and 7 depend from independent claim 1. Because Appellants do not argue claims 2, 6 and 7 separately, these claims stand or fall with claim 1 in this appeal. In re King, 801 F.2d

1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986). Similarly, claims 56, 57 and 60 are grouped together.

Claim 1 is set forth in its entirety below, with emphasis on the disputed limitation:

1. A reader for use with a tag, the reader comprising:

[1] a coil;

[2] at least one capacitor;

[3] a means for coupling the capacitor(s) to the coil and coupling the coil to at least one other means, the signal(s) provided to the other means as a result of the coupling being called coupling-means signal(s), the combination of the coil, the capacitors and the coupling means being called the resonating circuit, the resonating circuit having a resonant frequency;

[4] a means for driving the coil through the capacitor(s) with a driving signal;

[5] a means for generating the driving signal;

[6] a resonating means for automatically maintaining the resonating circuit in a tuned condition, a tuned condition being the condition where the difference between the resonant frequency and the driving frequency is a predetermined value in the range from a negative predetermined value to a positive predetermined value.

(Emphasis supplied and numbers in brackets added.)

The obviousness rejection was based on combining the Beigel '326 reference as disclosing the first five elements of the claim with the Chatelot reference disclosing the sixth element. On appeal, Appellants contest only the determination that Chatelot discloses the sixth element, a "resonating means." Appellants present two arguments regarding the Chatelot reference. First, they argue that the function of Chatelot is different because Chatelot does not maintain a tuned condition in a range of predetermined values. Second, Appellants argue that Chatelot does not disclose identical or equivalent structure for carrying out the claimed function, as required by a 35 U.S.C. § 112, ¶ 6 analysis of the "resonating means" under In re Donaldson Co., Inc., 16 F.3d 1189, 1192-96, 29 USPQ2d 1845, 1848-51 (Fed. Cir. 1994) (en banc). We address each of these arguments in turn.

The Chatelot reference discloses a resonating means capable of automatically maintaining the resonating circuit in a tuned condition. The "tuned condition" in Chatelot corresponds to a zero difference between the tuning frequency (" F_T ") and the resonant frequency (" F_R ") of the resonating circuit. Therefore:

$$F_T - F_R = 0$$

The written description of the application at issue in part describes an embodiment of the "resonating means" in the following manner:

The output from the sampled integrator controls the frequency of the VCO in the VCO/CGC 13 thereby causing the VCO frequency and the driving signal frequency (which is derived from the VCO frequency) to either increase or decrease until the driving signal frequency is offset from the coil/capacitor resonant frequency by an amount determined by the magnitude of the bias voltage and in a direction determined by the sign of the bias voltage.

Thus, the resonating means disclosed in Appellants' application uses a tuning frequency wherein the difference between the tuning frequency and the resonant frequency is within a given range from a negative to a positive predetermined value ("PDV") corresponding to the bias voltage. This may be expressed as:

$$- PDV \leq F_T - F_R \leq PDV$$

It is undisputed that the Chatelot reference effectively discloses a PDV of zero, which falls within the range of values claimed. Appellants argue that because Chatelot only discloses a single value within the claimed range, Chatelot does not disclose the identical function of the claimed limitation. Appellants urge us to interpret the sixth element of claim 1 as requiring a resonating means capable of maintaining the resonating circuit in more than one tuned condition. We review this issue of claim construction de novo. In re Baker Hughes Inc., 215 F.3d at 1301, 55 USPQ2d at 1152.

Appellants' interpretation is contrary to the plain meaning of the claim limitation language. The claim language does not specify that the resonating means must be capable of maintaining the resonating circuit in a plurality of different tuned conditions:

a resonating means for automatically maintaining the resonating circuit in a tuned condition, a tuned condition being the condition where the difference between the resonant frequency and the driving frequency is a predetermined value in the range from a negative predetermined value to a positive predetermined value.

The language "a tuned condition" is plainly satisfied if the resonating means is capable of maintaining the resonating circuit in a single tuned condition. If Appellants intended to claim a resonating means capable of maintaining more than one different tuned condition, they should have so specified in the language of the claims. Thus, the Chatelot reference discloses the function of the sixth element of claim 1.

However, identity of function is not the only requirement to anticipate or render obvious a means-plus-function claim limitation:

[O]ne construing means-plus-function language in a claim must look to the specification and interpret that language in light of the corresponding structure,

material, or acts described therein, and equivalents thereof, to the extent that the specification provides such disclosure.

In re Donaldson, 16 F.3d at 1193, 29 USPQ2d at 1848. The Examiner's answer did not identify any particular structure from the application at issue corresponding to the "resonating means" limitation. The Board's decision noted this issue, but stated:

The examiner has not gone into great detail as to the equivalent structure to perform the function, but the difference in interpretation of the claim limitation makes any comparison of little value, since each sees the claim as directed to something different. In our view, claim 1 should be interpreted in light of this broad disclosure of Figure 1.

The Board's reliance upon Figure 1 as providing structural detail, in connection with its interpretation of this means-plus-function limitation, is misplaced. Figure 1 does not disclose any structure relevant to the "resonating means" of the reader. Figure 1 merely discloses a box entitled "resonance tracking demodulator 15," which performs the function of "maintain[ing] the coil/capacitor circuit in a resonant or near-resonant condition." The description of the resonance tracking demodulator 15 regarding Figure 1 refers only to the functional capabilities of this element, but discloses nothing at all about its structure.

By contrast, as stated before the Board and before this court, Figures 6 and 7 and their corresponding descriptions in the specification provide an explicit structure for different embodiments of the resonance tracking demodulator, which corresponds to the "resonating means" of claim 1. A proper means-plus-function analysis would compare the structure described in either Figure 6 or Figure 7 to the structure described in Chatelot, to determine if Chatelot discloses identical or equivalent structure. What a reference teaches is a question of fact, In re Beattie, 974 F.2d 1309, 1311, 24 USPQ2d 1040, 1041 (Fed. Cir. 1992), and this is an issue for the Board to resolve in the first instance.

The government argues that the specification of the application at issue discloses several structures, and that for a 35 U.S.C. § 112, ¶ 6 analysis, "[d]isclosed structure includes that which is described in a patent specification, including any alternative structures identified." Serrano v. Telular Corp., 111 F.3d 1578, 1583, 42 USPQ2d 1538, 1542 (Fed. Cir. 1997) (emphasis added). This is true. However, the government cites the following passage in the written description as citing an alternative structure relating to Figure 1:

In still another alternative arrangement, C_{fm} modulates either the inductance of coil 5 (e.g. by means of a saturable reactor on the field of the coil) or the capacitance of capacitors 9

The above passage in the specification, however, does not refer to Figure 1. The passage provides an alternative arrangement relating to the embodiment of the resonance tracking demodulator shown in Figure 6. A proper means-plus-function analysis would focus upon the structure in either Figure 6 or Figure 7 relating to the "resonating means," instead of focusing upon the functional description provided in Figure 1. We therefore vacate the rejection of

claims 1, 2, 6 and 7 and remand for additional proceedings by the Board. See *Gechter v. Davidson*, 116 F.3d 1454, 1460, 43 USPQ2d 1030, 1035 (Fed. Cir. 1997); *In re Bond*, 910 F.2d 831, 833-34, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990).

B

Claim 56 is structurally similar to claim 1, and reads in its entirety:

56. A tag for use with a reader, the reader establishing an alternating magnetic field in the proximity of the tag, the tag comprising:

a coil;

a capacitor;

a means for coupling the capacitor(s) to the coil and coupling the coil to at least one other means, the signal(s) provided to the other means as a result of the coupling being called coupling-means signal(s), the combination of the coil, the capacitors and the coupling means being called the resonating circuit, the resonating circuit having a resonant frequency;

a resonating means for automatically maintaining the resonating circuit in a tuned condition, a tuned condition being the condition where the difference between the resonant frequency and the frequency of the alternating magnetic field is a predetermined value in the range from a negative predetermined value to a positive predetermined value.

As the above language indicates, claim 56 is directed to the "tag," while claim 1 is focused on the "reader." Appellants make the same identity of function argument for claim 56 as they do for claim 1, *i.e.*, that the function of the Chatelot reference is different because Chatelot does not maintain a tuned condition in a range of predetermined values. For the reasons specified above, this argument is unpersuasive.

However, the rejection of claim 56 fails under an *In re Donaldson* means-plus-function analysis, because neither the Examiner nor the Board has made any attempt to identify the structure disclosed in the application at issue corresponding to the claimed "resonating means" for a tag. On appeal, the government argues that claim 56 recites the same structure as claim 1, merely calling the structure a "tag" instead of a "reader," and that therefore the same arguments apply. This argument ignores the fact that the specification clearly identifies different structures for the "resonating means" of a reader and the "resonating means" of a tag.

As the record indicates, due to differences between the operation of a reader and a tag, the structure used for tuning a tag is quite different than the structure used for tuning a reader. Indeed, even in the general functional block diagram of Figure 1, the reader's "resonating means" corresponds to the resonance tracking demodulator 15, whereas the tag's "resonating means" corresponds to the resonance tracking modem 57. Structure corresponding to the resonance tracking modem 57 is provided in Figure 18 and the accompanying description in the specification.

Additionally, we note that the structure shown in Figure 18 is different from the structures shown in Figures 6 and 7. This difference is to be expected, given the functional differences between the reader and the tag. Therefore, even if the Chatelot reference were to disclose structure identical or equivalent to an embodiment of the reader's "resonating means," an entirely different analysis would have to be performed regarding the tag's "resonating means" structure. We therefore vacate the rejection of claims 56, 57 and 60 and remand for further proceedings by the Board.

C

Claim 98 reads in its entirety:

98. A method for interrogating a tag, the method utilizing a resonating circuit comprising at least one capacitor coupled to a coil, the method comprising the steps:

generating a driving signal;

driving the coil through the capacitor(s) with the driving signal;

maintaining the coil and the capacitor(s) near resonance.

Appellants argue that the phrase "near resonance" does not include "at resonance" and that therefore the Chatelot reference disclosing maintaining the coil and capacitors at resonance does not disclose this limitation. We review this issue of claim construction de novo.

Appellants' definition is contrary to the plain meaning of the term "near," which encompasses the meaning of both "at" and "close to." Indeed, as Appellants themselves state in their brief, the dictionary definition of near is: "at or to a place a relatively short distance away . . ." If Appellants had intended to specifically exclude "at resonance," they should have so specified in their claims. Therefore, we affirm the rejection of claim 98.

D

Claim 107 is rejected on both 35 U.S.C. § 103 and 35 U.S.C. § 112, ¶ 2 grounds. Compliance with § 112, ¶ 2 is a question of law, which we review de novo. Miles Labs., Inc. v. Shandon, Inc., 997 F.2d 870, 874, 27 USPQ2d 1123, 1125 (Fed. Cir. 1993). Claim 107 recites in its entirety:

107. An apparatus for practicing the method of claim 98.

We agree with the Board that claim 107 fails to particularly point out and distinctly claim the subject matter which the applicant regards as his invention, as required by 35 U.S.C. § 112, ¶ 2. Appellants suggest that "a way of understanding claim 107" is to place the phrase "means

for" in front of each process limitation in claim 98. If that is the meaning that Appellants intended claim 107 to have, they should have rewritten claim 107 in this manner. Nothing in the claim as currently written mandates that this is the correct interpretation. The statutory requirement of distinctly claiming one's invention requires more than mere attorney suggestion as to "a way" in which the claim may be understood.

Appellants further suggest that the current form of claim 107 must be acceptable because it is explicitly presented as an acceptable format in the USPTO's Manual of Patent Examining Procedure ("MPEP"), and they cite MPEP § 806.05(e) for this proposition. MPEP § 806.05(e) (2000) states: "[i]f the apparatus claims include a claim to "means" for practicing the process, this claim is a linking claim. . . ." As noted above, claim 107 does not explicitly recite any "means" limitations.

MPEP § 806.05(e) also states:

It should be noted that a claim such as, "An apparatus for the practice of the process of claim 1, comprising" and then the claim continues with purely apparatus limitations, is not a linking claim.

(Emphasis added.) Claim 107 does not continue with purely apparatus limitations--it merely recites the preamble of this example with nothing further. Therefore, neither of the examples presented in MPEP § 806.05(e) provide support for Appellants' desired claim format. The rejection of claim 107 is therefore affirmed.

For the above reasons, we affirm the rejections of claims 98 and 107, and vacate and remand the rejections of claims 1, 2, 6, 7, 56, 57 and 60.