

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEFAN STOCKER

Appeal 2008-1136
Application 10/631,597
Technology Center 2800

Decided: September 3, 2008

Before KENNETH W. HAIRSTON, MAHSHID D. SAADAT,
and CARLA M. KRIVAK, *Administrative Patent Judges*.

KRIVAK, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134 from a final rejection of claims 1-7. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

STATEMENT OF CASE

Appellant's claimed invention is directed to a gradient coil system such that an electrically conductive connection is produced within the system allowing production with minimal or no impact on the mechanical and electrical properties of the system (Spec. 2:13-17). The system includes a gradient coil having a conductor end of a first coil bent toward a second surface and is electrically conductively connected to the conductor arrangement (Spec. 2:18-24).

Claims 1 and 6, reproduced below, are representative of the subject matter on appeal.

1. A gradient coil system for a magnetic resonance apparatus comprising:

a gradient coil winding disposed on a first surface and a conductor arrangement disposed on a second surface spaced from said first surface;

said gradient coil winding having a conductor end located in an inner region of the first surface that is bent toward the second surface; and

an electrically conductive connection of the conductor end and the conductor arrangement comprising a point connection produced by applying heat at said conductor end.

6. A gradient coil system as claimed in claim 1, wherein the electrically conductive connection is selected from the group consisting of soldered connections and welded connections.

REFERENCES

Arz	US 6,236,209 B1	May 22, 2001
Konijn	US 6,696,837 B2	Feb. 24, 2004

Claims 1-7 stand rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative under 35 U.S.C. § 103(a) as obvious over Konijn. Claim 6 stands rejected under 35 U.S.C. § 103(a) as obvious over Konijn and Arz.

Appellant contends that claims 1-7 are not anticipated by nor obvious over Konijn, and that claim 6 is not obvious over Konijn and Arz (App. Br. 8).

ISSUES

Did the Examiner err in rejecting claims 1-7 under 35 U.S.C. § 102(e) or, in the alternative under 35 U.S.C. § 103(a) over Konijn?

Did the Examiner err in rejecting claim 6 under 35 U.S.C. § 103(a) over Konijn and Arz?

FINDINGS OF FACT

1. Appellant's invention is directed to a gradient coil system for a magnetic resonance apparatus that includes a first coil arranged on a first surface and a conductor arranged on a second surface (cl. 1; Spec. 2:18-22). A conductor end of the first coil located in an inner region of the first surface is bent toward the second surface (cl. 1; Spec 2:22-23). The bent conductor end is then electrically conductively connected to the conductor arrangement (cl. 1; Spec. 2:23-24) by soldering or welding (Spec. 6:20).

2. Appellant's Specification also mentions, as prior art, an example of a patent that teaches electrical connections between subcoils by interconnects projecting beyond the disk edge in a finger-like or strip-like manner that are bent and welded to one another (Spec. 1:19-24).

3. Konijn teaches a coil system that includes a plurality of series connected coils (Abstract), each of which is provided with a parallel coil turn configuration, that are insulated from each other and are connected to the coil turn configuration of a neighboring coil to form conductive path spanning coils (col. 1, ll. 7-12). There are two connections (7a and 7b) at the input side and two connections (8a and 8b) at the output side connected in parallel (col. 4, ll. 51-53). Two coils (1 and 2) are connected to one another via connection conductors (9a and 9b) (Figs. 1 and 2; col. 4, ll. 54-55).

4. Arz teaches, in the prior art section, using soldered pins as connector elements to connect conductor ends (col. 1, ll. 39-46).

PRINCIPLES OF LAW

Anticipation

In rejecting claims under 35 U.S.C. § 102, “[a] single prior art reference that discloses, either expressly or inherently, each limitation of a claim invalidates that claim by anticipation.” *Perricone v. Medicis Pharmaceutical Corp.*, 432 F.3d 1368, 1375-76 (Fed. Cir. 2005), citing *Minn. Mining & Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 1565 (Fed. Cir. 1992). “Anticipation of a patent claim requires a finding that the claim at issue ‘reads on’ a prior art reference.” *Atlas Powder Co. v. IRECO, Inc.*, 190 F.3d 1342, 1346 (Fed. Cir. 1999) (“In other words, if granting patent protection on the disputed claim would allow the patentee

to exclude the public from practicing the prior art, then that claim is anticipated, regardless of whether it also covers subject matter not in the prior art.” *Id.* at 1346) (internal citations omitted).

Obviousness

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). “[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). If the Examiner’s burden is met, the burden then shifts to the Appellants to overcome the *prima facie* case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *Id.* Furthermore,

“‘there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness’ . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.”

KSR Int’l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1741 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

In particular, the Supreme Court emphasized “the principles laid down in *Graham* reaffirmed the ‘functional approach’ of *Hotchkiss*, 11 How. 248.”

KSR, 127 S.Ct. at 1739 (citing *Graham v. John Deere Co.*, 383 U.S. 1, 12 (1966) (emphasis added)), and reaffirmed principles based on its precedent that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* The Court explained:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

Id. at 1740. The operative question in this “functional approach” is thus “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *Id.*

The determination of patentability in a product-by-process claim is based on the product itself, even though the claim may be limited and defined by the process. That is, the product in such a claim is unpatentable if it is the same as or obvious from the product of the prior art, even if the “prior product was made by a different process.” *See In re Thorpe*, 777 F.2d 695, 697 (Fed. Cir. 1985).

“The Patent Office bears a lesser burden of proof in making out a case of *prima facie* obviousness for product-by-process claims because of their peculiar nature” than when a product is claimed in the conventional fashion. *In re Fessmann*, 489 F.2d 742, 744 (CCPA 1974). Once the examiner provides a rationale tending to show that the claimed product appears to be

the same or similar to that of the prior art, “although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product.” *In re Marosi*, 710 F.2d 799, 803 (Fed. Cir. 1983).

The structure implied by process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. *See, e.g., In re Garnero*, 412 F.2d 276, 279 (CCPA 1969)

ANALYSIS

The Examiner rejected claims 1-7 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Konijn (Ans. 3). We address this rejection with respect to representative claim 1. Specifically, the Examiner states Konijn teaches all of the elements recited in claim 1 (Ans. 3), but it does not teach “a point connection produced by applying heat at said conductor end.” (Ans. 3) The Examiner contends, however, the language “produced by” is a process limitation and thus, is not considered as it is an “intermediate step(s) that does not affect the structure of the final device.” (Ans. 4)

Appellant asserts that the claim rejections are confusing and contradictory and that claims 1-7 are not anticipated by nor obvious over Konijn alone or in combination with Arz (App. Br. 7) because neither of these references teaches the end of a conductor of a gradient coil winding on

a first surface bent toward a second surface allowing a point connection to be produced by applying heat at the conductor end (App. Br. 9).

Appellant disagrees with the Examiner's product-by-process rejection rationale, stating that claim 1 is not a product-by-process claim as it does not refer to any process steps (App. Br. 10). Appellant asserts that a point connection produced by the application of heat is a legitimate way to describe a structural element (App. Br. 10-11). Appellant further asserts that the Examiner did not even consider the rudimentary, well-known attributes of a point connection produced by the application of heat. Even if claim 1 is a product-by-process claim as alleged by the Examiner, Appellant states, the Examiner failed to apply MPEP § 2113, paragraph 2 in assessing whether applying heat imparts distinctive structural characteristics to the point connection (App. Br. 11). Further, the "structural features of claim 1 that *follow from* the manufacturing process are highly relevant to the patentability of claim 1 because...those processing considerations result in at least two structural features in claim 1...the gradient coil winding having a conductor end that is bent toward the...second surface, and the...point connection that is produced by applying at the conductor end." (Reply Br. 4). We do not agree.

First, with respect to Appellant's argument that the claim rejections are confusing and contradictory, the Examiner states the alternate grounds of rejection were provided as recommended by MPEP § 2113 (Ans. 4).

Second, the Examiner contends that the language added to claim 1 "comprising a point connection produced by applying heat at said conductor end" is product-by-process language (emphasis added). The Examiner reasons the above phrase in claim 1 "clearly states 'produced by' which

implies process of manufacture to produce the point connection which is consider [sic] to be the product.” (Ans. 10) Thus, the Examiner dismissed this limitation as a process limitation that does not further define the actual structure of the product over the references.

A product-by-process limitation is considered where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. *See Garnero, supra*. In this instance, the process limitation of applying heat does not meet either of these requirements, and Appellant has not proven otherwise. The claim language and Specification fail to refer to a structural change in the structure of the gradient coil caused by the method of applying heat to the point connection. (Ans. 10). The Examiner also found that the limitation of producing a point connection by applying heat to a conductor end does not serve to patentably distinguish the gradient coil system of claim 1 over that of Konijn. The Examiner correctly states “the method of forming a device is not germane to the issue of patentability of the device itself...Therefore, this limitation has not been given patentable weight.” (Ans. 12)

Appellant has provided no evidence showing there is an unobvious difference between the claimed gradient coil system recited in claim 1 and the cited prior art. Thus, Appellant’s burden establishing an unobvious difference between the claimed product and the prior art product has not been met. *See Marosi, supra*.

Further, the determination of a product-by-process claim is based on the product itself (*Thorpe, supra*). Giving claim 1 a traditional product characterization (*see Hellman, supra*), we find Konijn teaches all the

features of claim 1 and, thus, claim 1 is anticipated by Konijn, even though the connection in Konijn may be made using a different process. We agree with the Examiner that Konijn teaches all the features of claim 1 including an electrically conductive connection of the conductor end and the conductor arrangement (Ans. 12; Fig. 1, 9a-9b; Fig. 2, 9a-9d).

Because claim 1 reads on Figs. 1 and 2 of Konijn, we sustain the Examiner's rejection under 35 U.S.C. § 102(e). Because claims 2-7 depend from claim 1, and Appellant has not argued these claims separately, we also sustain the Examiner's rejection with respect to claims 2-7.

Obviousness

Claims 1-7

The Examiner rejected claims 1-7 under 35 U.S.C. § 103(a) as obvious over Konijn. The Examiner contends Konijn does not specifically teach the point connection produced by applying heat as recited in the product-by-process limitation of claim 1 (Ans. 3). However, it would be obvious to an ordinarily skilled artisan at the time of the invention to provide a point (solder) connection to connect a gradient coil wiring with a conductor. This improvement is no "more than the predictable use of prior art elements according to their established functions." *See KSR, supra*. Thus, even if the product-by-process language is considered to provide a structure different from that of Konijn, which we do not agree, claim 1 (and therefore claims 2-7) would be obvious over Konijn.

We therefore sustain the Examiner's rejection of claims 1-7 under 35 U.S.C. § 103(a) over Konijn.

Claim 6

The Examiner rejected claim 6 under 35 U.S.C. § 103(a) as obvious over Konijn and Arz. Claim 6 recites the electrically conductive connector is either a solder or weld connection. The Examiner contends that Konijn and Arz teach this feature (Ans. 4-5). We agree that it would be obvious to an ordinarily skilled artisan at the time of the invention to provide a solder or weld connection to connect a gradient coil wiring to a conductor. Again, this improvement is no “more than the predictable use of prior art elements according to their established functions.” *See KSR, supra*.

Thus, for the reasons set forth above, we sustain the Examiner’s rejection of claim 6 over the collective teachings of Konijn and Arz.

CONCLUSION

We therefore conclude that the Examiner did not err in rejecting claims 1-7 under 35 U.S.C. § 102(e), or in the alternative, under 35 U.S.C. § 103(a).

DECISION

We affirm the decision of the Examiner rejecting claims 1-7.

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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)(1)(iv).

AFFIRMED

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