THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte EISUKE TOMITA and NAGOTO MORIYA

_____

Appeal No. 1997-0252
Application 08/200,820[1]

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ON BRIEF

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Before JERRY SMITH, LALL, and GROSS, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 7-28, which constitute all the claims in the application. Three amendments after final rejection were filed, and each of these amendments was entered

[1] Application for patent filed February 23, 1994.

by the examiner. These amendments resulted in an indication of the allowability of claims 16-21 and 23. Accordingly, this appeal is directed to the rejection of claims 7-15, 22 and 24-28.

The disclosed invention pertains to a magnetic force sensor for detecting magnetization on a surface. More particularly, the tip portion of a probe is coated with a hard-magnetic material which maintains the magnetization direction of the probe constant and parallel to the magnetization on the surface. The probe scans the surface and is deflected as a function of the direction of the magnetization on the surface.

Representative claim 7 is reproduced as follows:

7. A magnetic force sensor for detecting a magnetic force of a magnetic sample having a given magnetization direction, the magnetic force sensor comprising: a magnetic probe having a tip portion, the tip portion being coated with a film of hard-magnetic material effective to maintain the magnetization direction of the probe constant and parallel to the given magnetization direction of the sample.

The examiner relies on the following reference:

Clabes et al. (Clabes) 5,171,992 Dec. 15, 1992

Claims 7-15, 22 and 24-28 stand rejected under 35 U.S.C. § 103. As evidence of obviousness the examiner offers Clabes taken alone.

Rather than repeat the arguments of appellants or the examiner, we make reference to the briefs and the answer for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejection advanced by the examiner and the evidence of obviousness relied upon by the examiner as support for the rejection. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellants' arguments set forth in the briefs along with the examiner's rationale in support of the rejection and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in claims 7-15, 22 and 24-28. Accordingly, we affirm.

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, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to

one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant 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. See Id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). Only those arguments actually made by appellants have been considered in this decision. Arguments which appellants could have made but chose not to make in the brief have not been considered [see 37 CFR § 1.192(a)].

We consider first the rejection of independent claims 7 and 22 which are essentially argued together on pages 11-20 of the brief. Dependent claims 8 and 9 have been

grouped to stand or fall with claim 7 [brief, page 9]. The examiner finds that Clabes teaches a magnetic force sensor of the type recited in claims 7 and 22 in which a probe tip is coated with a hard-magnetic material and is scanned across a surface having magnetization. The examiner notes that Clabes does not disclose any specific alloy of hard-magnetic material, but the examiner observes that the selection of such an alloy would have been obvious to the artisan [answer, page 3].

Appellants make several arguments in opposition to the rejection which we will consider in turn. First, appellants argue that there is no recognition of the problem in Clabes which the invention is designed to overcome. While recognition of the problem may be a factor in determining the obviousness of a solution, it is not necessarily so. The test for obviousness is whether the references would have suggested doing what appellants have done. In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). Thus, the absence of express suggestion or motivation in the applied prior art is not alone determinative. The prior art need not suggest solving the same problem set forth by appellants. In re Dillon, 919 F.2d 688, 692-693, 16 USPQ2d 1897, 1901 (Fed. Cir. 1990) (in banc) (overruling in part In re Wright, 848 F.2d 1216, 1220, 6 USPQ2d 1959, 1962 (Fed. Cir. 1988)), cert. denied, 500 U.S. 904 (1991). For reasons which will become clear below, we find that Clabes suggests the structure recited in claims 7 and 22, and the problem to be solved, therefore, is not critical.

The key feature of claims 7 and 22 argued by appellants is that Clabes does not teach or suggest a tip portion coated with a hard-magnetic material effective to maintain the magnetization direction of the probe constant and parallel to the given magnetization direction of the sample. Appellants argue that Clabes' use of a carbon matrix with nickel, cobalt or iron particles results in a probe made of soft-magnetic materials rather than the claimed hard-magnetic materials [brief, page 13]. Although the examiner adds to the confusion by referring to nickel, iron and cobalt as hard-magnetic materials, there is, nevertheless, a suggestion in Clabes that true hard-magnetic materials should be used to coat the tip of the probe.

It should be noted that Clabes is not directed only to magnetic force microscopes, but is generically directed to atomic force microscopes. Thus, it is clear that the characteristics of the Clabes probe would be governed by the type of microscope being used and the type of forces being monitored. We agree with the examiner that the abstract in Clabes clearly states that the tip of the probe can be made "with hard or soft magnetic properties at the distal end of the needle structure." The artisan would have understood this disclosure to suggest that the probe tip in certain circumstances should be coated with a hard-magnetic material. The very nature of a hard-magnetic material is that it will maintain the magnetization direction constant in the presence of a magnetic field.

Appellants argue that the probe produced in Clabes does not have magnetic properties, and the method of making the probe in Clabes would not suitably function as a magnetic force microscope [brief, pages 14-15]. As we noted above, Clabes relates to atomic force microscopes which teachings have application as magnetic force microscopes. A probe in Clabes made for use as a magnetic force microscope would clearly have magnetic properties since it is required to sense magnetic forces [column 2, lines 14-25]. The methods of manufacture in Clabes are also not relevant to the claimed invention. There is no method of manufacture before us. The question before us is whether Clabes teaches or suggests the obviousness of the probe, per se, and not any method of manufacture of such a probe. We are not persuaded by appellants' bare allegations that a probe of the type claimed cannot result from the teachings of Clabes.

Appellants argue that even if the Clabes probe is coated with a hard-magnetic material, the magnetization direction of the hard-magnetic material is not always parallel to the magnetization direction of the magnetized surface of the sample [reply brief, pages 7-8]. The magnetization direction of a hard-magnetic material will remain constant in the direction established regardless of the presence of a magnetic field. Clabes states that "it will probably be advantageous to produce an elongated magnetic tip shape, which would guarantee that the tip be magnetized along its long axis" [column 10, lines 34-37].

Thus, Clabes clearly contemplates that the magnetization direction of the probe should be parallel to its long axis which would also be parallel to the surface magnetization when the probe is scanned along the surface of a sample. If this magnetization is established using a hard-magnetic material as suggested in Clabes' abstract, then the magnetization direction of the probe will remain constant and parallel to the magnetization direction of the sample as claimed. The fact that the Clabes probe can map the flux distribution of a surface [column 9, lines 61-63] also suggests that the magnetization direction of the probe is parallel to the magnetization of the sample.

In summary, even though Clabes is directed to the generic field of atomic force microscopes, Clabes also suggests using such a device as a magnetic force microscope and coating the distal end of the needle structure with a hard-magnetic material. These teachings and suggestions render the invention of claims 7 and 22 obvious within the meaning of 35 U.S.C. § 103. Therefore, we sustain the rejection as it applies to claims 7-9 and 22.

The remaining claims on appeal stand or fall with claim 10 or claim 13 [brief, page 9]. Claim 10 recites that the hard-magnetic material comprises an alloy of iron and cobalt whereas claim 13 recites that the hard-magnetic material comprises an alloy of cobalt and nickel. The examiner's rejection is based on the position that the use of a particular alloy would be an obvious matter of engineering design selection [answer, page 3]. Appellants

argue that alloys of iron and cobalt and of cobalt and nickel are not mentioned anywhere in Clabes. Appellants argue that the claimed hard-magnetic alloys are not obvious design selections [reply brief].

As we noted above, we find that Clabes broadly teaches the use of a hard-magnetic material for the tip portion of the probe. Based on this finding, the artisan would expect any such hard-magnetic material to be suitable because it is only the property of being a hard-magnetic material which is relevant. Alloys of iron and cobalt and of cobalt and nickel were well known in the art as being hard-magnetic materials [see, for example, 14 Kirk-Othmer Encyclopedia of Chemical Technology 669-673 (3d ed. 1981) (copy attached)]. It would have been obvious to the artisan to select the alloys recited in claims 10 and 13 when deciding to use a hard-magnetic material for the probe as suggested by Clabes. Therefore, we sustain the rejection of claims 10-15
and 24-28.

In conclusion, we have sustained the examiner's rejection of each of the appealed claims under 35 U.S.C. § 103. Therefore, the decision of the examiner rejecting claims 7-15, 22 and 24-28 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR
§ 1.136(a).

AFFIRMED

Jerry Smith Administrative Patent Judge	)
Parshotam S. Lall Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
Anita Pellman Gross Administrative Patent Judge	)

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