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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 48

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN P. SQUIRES,
THOMAS A. FIERS,
and LOUIS J. SHRINKLE

Appeal No. 1995-3903
Application No. 08/062,737[1]

ON BRIEF

Before THOMAS, MARTIN, and BARRY, Administrative Patent Judges.

BARRY, Administrative Patent Judge.

[1] The application was filed on May 14, 1993. It is a continuation of Application Serial No. 07/790,008, which was filed on November 4, 1991 and is now abandoned; which is a continuation of Application Serial No. 07/488,386, which was filed on February 23, 1990 and is now abandoned; which is a continuation of Application Serial No. 07/057,806, which was filed on June 2, 1987 and is now abandoned.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the final rejection of claims 37-47. We affirm-in-part.

BACKGROUND

The invention at issue controls a disk drive. The disk comprises a plurality of data tracks. Each track is divided into sectors; each sector contains a sector mark. A "sector period" is the time between two successive sector marks. A microcontroller schedules tasks to be done under control of a microprocessor during each sector period. A sector task and a motor speed control task are among those scheduled. The tasks are scheduled to maintain their initiation in a constant spatial relationship to the sector period despite the rotational speed of the disk.

Claim 37, which is representative for our purposes, follows:

> 37. A programmable microcontroller in a disk drive system for controlling the initiation of a plurality of processes during each sector period where said disk drive system performs a plurality of processes for controlling the operation of said disk

drive system and includes rotational media upon which is recorded a plurality of data tracks, where each data track is divided into sectors and each sector contains a recorded sector mark and a transducer for recovering data from said data tracks including said sector marks, where the time between the occurrence of two adjacent sector marks is defined as a sector period, said programmable microcontroller comprising:

> first means for detecting the occurrence of each said sector mark from the data read by said transducer;
>
> second means connected to said first means for determining and storing from the last two said sector marks detected by said first means the sector period for a previous sector to a present sector for use as a predicted length for the present sector; and
>
> third means, in response to said sector mark detected by said first means for said present sector and said sector period for said previous sector determined and stored by said second means, for scheduling the initiation of each of said plurality of processes so as to maintain said initiation of each of said processes in a constant spatial relationship to said predict present sector period thereby minimizing the effect of variations in the rotational speed of said rotating media and synchronizing the initiation of said processes to said sector mark for the present sector.

The reference relied on by the patent examiner in rejecting the claims follows:

Moon et al. (Moon) 4,669,004 May 26, 1987.

Claims 37-47 stand rejected under 35 U.S.C. § 103 as obvious over Moon. Rather than repeat the arguments of the appellants or examiner in toto, we refer the reader to the briefs and the answer for the respective details thereof.

OPINION

In reaching our decision in this appeal, we considered the subject matter on appeal and the rejection and evidence advanced by the examiner. We also considered the arguments of the appellants and examiner. After considering the record before us, it is our view that the evidence and level of skill in the art would have suggested the invention of claims 37 and 43-44. We cannot say, however, that they would have suggested the invention of claims 38-42 and 45-47. Accordingly, we affirm-in-part.

We begin our consideration of the obviousness of the claims by finding that the references represent the level of ordinary skill in the art. See In re GPAC Inc., 57 F.3d 1573, 1579, 35 USPQ2d 1116, 1121 (Fed. Cir. 1995) (finding that the Board of Patent Appeals and Interference did not err in concluding that the level of ordinary skill in the art was best determined by the references of record); In re Oelrich,

579 F.2d 86, 91, 198 USPQ 210, 214 (CCPA 1978) ("[T]he PTO usually must evaluate ... the level of ordinary skill solely on the cold words of the literature."). Of course, every patent application and reference relies on the knowledge of persons skilled in the art to

complement its disclosure. In re Bode, 550 F.2d 656, 660, 193 USPQ 12, 16 (CCPA 1977). Persons skilled in the art, moreover, must be presumed to know something about the art apart from what the references disclose. In re Jacoby, 309 F.2d 513, 516, 135 USPQ 317, 319 (CCPA 1962). Our opinion considers the obviousness of claims 37, 43, and 44 and of claims 38-42 and 45-47 seriatim.

In rejecting claims under 35 U.S.C. § 103, the patent examiner bears the initial burden of establishing a prima facie case of obviousness. A prima facie case is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art. If the examiner fails to establish a prima facie case, an obviousness rejection is improper and will be overturned. In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). With this in mind, we address the appellants' arguments.

Claims 37, 43, and 44

During patent examination, pending claims must be given their broadest reasonable interpretation. Limitations from the specification are not to be read into the claims. In re Van Geuns, 988 F.2d 1181, 1184, 26 USPQ2d 1057, 1059 (Fed. Cir. 1993); In re Prater, 415 F.2d 1393, 1404, 162 USPQ 541, 550 (CCPA 1969). With this in mind, we address the appellants' arguments.

Regarding claims 37 and 43, the appellants argue, "Moon does not control the initiation of a plurality of events or tasks that are to be processed during each sector period such that the initiation of each of those events will be maintained in a constant spatial relationship to the sector period regardless of the velocity of the disk." (Reply Br. at 3.) In response, the examiner asserts, "Moon is also directed to direct liner spatial relationship [sic]." (Examiner's Answer at 8.)

We find that invention of independent claims 37 and 43 does not define over Moon. The claims specify in pertinent part scheduling "the initiation of each of said plurality of processes so as to maintain said initiation of each of said processes in a constant spatial relationship to said predict present sector period thereby minimizing the effect of variations in the rotational speed of said rotating media and synchronizing the initiation of said processes to said sector mark for the present sector." Giving the claims their broadest reasonable interpretation, they recite scheduling tasks to maintain their initiation in a constant spatial relationship to a sector period.

Moon discloses a disk file subsystem 10 for storing and retrieving data. Col. 7, ll. 15-17. A DC spindle motor 16 rotates disks 22 at an angular velocity. Id. at 60-65. Head transducers 24 write and read data stored on each of the disks. Col. 8, ll. 2-4. Each surface of the disks comprises concentric data tracks 50. Each data track is divided into thirty two equal sectors 52. Col. 9, ll. 14-15, 22-23. Each sector includes a qualification area 250 followed by a user data region 54. Id. at ll. 24-27, col. 13, ll. 25-27. The

qualification area includes sector pulse pairs 254 and echo pulse pairs 258 separated by three erase gaps 252, 256, and 260. Col. 18, ll. 11-14. A reliable sector marker is achieved with the sector and echo pulse pairs in conjunction with a timing controller 130. Id. at ll. 46-48.

The timing controller responds to signals read by the transducer heads in qualification areas. It generates all the timing signals needed to position the transducer heads. Col. 10, ll. 64-68. The controller includes two counters, an up counter and a down counter. Each counter counts-out a 512-microsecond interval corresponding to the duration of each sector. The counters are clocked by a 15-MHz system clock. During system reset, the counters are set by a TRIGGER (TRIG) pulse after the first of two consecutive sectors has been read. Col. 14, ll. 12-20.

Upon arrival of the TRIG pulse, the up counter begins counting. It continues to count until the next TRIG pulse is received after the second of the two consecutive sectors has been read. At this point, the count in the up counter is

loaded into the down counter. Then, the up counter is reset to zero and begins counting. Simultaneously, the down counter begins to count. The down counter will reach a zero count after 512 microseconds, the nominal duration of each sector. Id. at ll. 24-34.

When a qualification area has been tested, the TRIG pulse is generated. It causes the up counter's count to be loaded into the down counter. The resultant count measures the time length of the preceding sector and is used to predict the beginning of the next qualification area. Id. at ll. 36-39.

When a qualification area is not validated, the timing controller does not initiate the clear and load operations of the up and down counters, and a "virtual" TRIG pulse is generated when the down counter reaches zero. The virtual TRIG pulse operates in the same way as the aforementioned TRIG pulse: the value in the up counter is loaded into the down counter and then reset to begin counting from zero. Thus, the timing controller achieves a flywheel action when a

qualification area of consecutively occurring sectors fails to be validated. Id. at ll. 48-60.

Accordingly, timing is seldom lost, and the system recovers absolute timing when a qualification area is validated. Also, the mechanism for marking in time the beginning of each sector is corrected when each qualification area is validated and is

averaged whenever a qualification area fails to be qualified. Id. at ll. 61-67.

Following a control program in a ROM 104, a microprocessor 102 executes three principal tasks. Col. 26, ll. 19-21. The first task 212 is called "Main Time." It comprises a collection of routines, e.g., spindle motor speed monitoring, not directly related to head transducer position or the handling of commands and status words passing through an SCSI interface controller 110 between the disk file subsystem and a host computer with which the subsystem operates. Id. at ll. 28-37.

The second task 214 is a position interrupt service routine (POS_ISR). WEDGE is an interrupt to the microprocessor, which initiates POS_ISR. When the down counter reaches a certain count for each sector, the interrupt is asserted. Col. 15, ll. 22-27. POS_ISR is thus executed thirty two times during each disk revolution, corresponding to the thirty two sectors. The task controls the position of the transducer heads. Id. at ll. 38-45.

The third task 216 is the SCSI interrupt service routine (SCSI_ISR). It is initiated by a low priority interrupt, which is asserted when a command has been received through the interface controller from the host. Id. at ll. 48-52.

The microprocessor spends approximately the first 300 microseconds of every sector interval executing POS-ISR. The remaining approximately 212 microseconds of each sector find the microprocessor executing Main Time to do housekeeping, to wait for an interrupt, or to respond to an interrupt by executing SCSI_ISR. Id. at ll. 52-60.

The appellants erred in reading limitations from their specification into the claims. Comparison of Moon's disclosure to the claim language evidences that the reference would have suggested the claimed scheduling of tasks to maintain their initiation in a constant spatial relationship to a sector period. Moon's Main Time and POS_ISR tasks would have suggested the claimed tasks. The reference's initiation of POS_ISR at the beginning of each sector interval and its initiation of Main Time after POS_ISR is completed would have

suggested the claimed scheduling of tasks in the same spatial relationship for each sector period. Moon's synchronization of the tasks to a qualification area for each sector would have suggested the initiation of tasks to a sector mark for a present sector. The reference's aforementioned scheduling of the tasks would have ipso facto minimized the effect of variations in the rotational speed of the disks as claimed. Therefore, we find that the reference would have suggested the language of claims 37 and 43.

Regarding claim 44, the appellants argue, "Moon does not generate count values for each event but rather uses the same count value for the same event for all sector periods." (Appeal Br. at 31.) In response, the examiner asserts, "Moon disclose [sic] an interrupt signal [WEDGE] (e.g. see col.15 lines 22-27) to initiate routine POS-ISR which included Seek Routine (see fig.17; col.28) and Servo Routine (see fig.18; col.29)." (Examiner's Answer at 9.)

We find that invention of claim 44 does not define over Moon. The claim specifies in pertinent part "generating an

initiation value for the initiation of each said processes as a function of said predicted present sector period" and "generating an initiation signal from said initiation value for each said processes to initiate said processes after the occurrence of said sector mark in said present sector period." Giving the claim its broadest reasonable interpretation, it recites generating a value and, in response to the value, generating a signal to start tasks.

The appellants erred in reading the limitation of a different count value for each task from their specification into the claim. Comparison of the Moon's disclosure to the claim language evidences that the reference would have suggested the claimed generating of a value and, in response to the value, generating a signal to start tasks. As aforementioned, Moon's Main Time and POS_ISR tasks would have suggested the claimed tasks. The reference's use of the up counter and down counter to generate counts would have suggested the claimed generating of a value. Moon's assertion of the WEDGE interrupt, when the down counter reaches a certain count, to initiate POS_ISR and its initiation of Main

Time when POS_ISR completes, would have suggested the claimed generating a signal to start tasks in response to the value. Therefore, we find that the reference would have suggested the language of claim 44. Next, we consider the obviousness of claims 38-42 and 45-47.

Claims 38-42 and 45-47

Regarding claim 38, the appellants argue, "Moon does not have an initiating means for each event that receives a count from the microprocessor which determines when that event occurs." (Appeal Br. at 29.) The examiner neither responds to the argument nor specifically addresses the argued limitations in his rejection.

We cannot find that Moon teaches or would have suggested the invention of claim 38. The claim specifies in pertinent part the following limitations:

> a plurality of initiation means, each said initiation means associated with one of said processes for receiving said initiation value for said process from said microprocessor and for generating an initiation signal for said process

> after the occurrence of said sector mark as a function of said received initiation value.

In short, the claim recites plural initiating means. Each of the initiating means is associated with one of the tasks and each receives one of a plurality of the count values for initiating a respective task.

The examiner erred in not addressing this limitation. Comparison of Moon's disclosure to the claim language does not evidence that the reference would have suggested the claimed initiating means. The reference's counters operate together to initiate the same task, viz., POS_ISR. Contrary to the claims, each counter does not initiate a different task. For the foregoing reasons, the examiner failed to show that Moon would have suggested the plural initiating means of claim 38 and its dependent claims 39-42. Therefore, we find that the examiner's rejection does not amount to a prima facie case of obviousness.

Regarding claim 45, the appellants argue, "Moon teaches that of the three routines only the POS-ISR routine is to be

initiated by an interrupt to the microprocessor." (Appeal Br. at 31.) The examiner neither responds to the argument nor specifically addresses the claim in his rejection. Instead, he alleges, "the scope of claims 43-47 is not distinguishable form [sic] claims 37-42." (Examiner's Answer at 8.)

We cannot find that the reference teaches or would have suggested the invention of claim 45. The claim specifies in pertinent part "generating for each said task to be scheduled during said present sector an interrupt signal from said initiation value for each said task" and "sending said interrupt signals to said microprocessor to initiate processing of said tasks by said microprocessor." In short, the claim recites
generating an interrupt for each task.

The examiner erred in not addressing these limitations. Comparison of Moon's disclosure to the claim language does not evidence that the reference would have suggested the claimed generating an interrupt for each task. Although Moon generates an interrupt to initiate POS_ISR, it does not

generate one to initiate Main Task. For the foregoing reasons, the examiner failed to show that Moon would have suggested the generation of an interrupt for each task of claim 45 and its dependent claims 46 and 47. Therefore, we find that the examiner's rejection does not amount to a prima facie case of obviousness.

Because the examiner has not established a prima facie case, the rejection of claims 38-42 and 45-47 over Moon is improper. Therefore, we reverse the rejection of the claims under 35 U.S.C. § 103.

We end our consideration of the claims by concluding that we are not required to raise or consider any issues not argued by the appellants. Our reviewing court stated, "[i]t is not the function of this court to examine the claims in greater detail than argued by an appellant, looking for nonobvious distinctions over the prior art." In re Baxter Travenol Labs., 952 F.2d 388, 391, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991).

37 C.F.R. § 1.192(a), as amended at 60 Fed. Reg. 14518 (Mar. 17, 1995), was controlling when the appeal brief was filed. Section 1.192(a) stated as follows:.

> The brief . . . must set forth the authorities and arguments on which the appellant will rely to maintain the appeal. Any arguments or authorities not included in the brief will be refused consideration by the Board of Patent Appeals and Interferences, unless good cause is shown.

Simultaneously, 37 C.F.R. § 1.192(c)(8)(iv) stated as follows:

> For each rejection under 35 U.S.C. 103, the argument shall specify the errors in the rejection and, if appropriate, the specific limitations in the rejected claims which are not described in the prior art relied on in the rejection, and shall explain how such limitations render the claimed subject matter unobvious over the prior art. If the

> rejection is based upon a combination of references, the argument shall explain why the references, taken as a whole, do not suggest the claimed subject matter, and shall include, as may be appropriate, an explanation of why features disclosed in one reference may not properly be combined with features disclosed in another reference. A general argument that all the limitations are not described in a single reference does not satisfy the requirements of this paragraph.

In summary, section 1.192 provides that just as the court is not under any burden to raise or consider issues not argued by the appellants, the Board of Patent Appeals and Interferences is also not under any such burden.

CONCLUSION

To summarize, the examiner's rejection of claims 37 and 43-44 under 35 U.S.C. § 103 is affirmed. His rejection of claims 38-42 and 45-47 under § 103, however, is reversed.

No period for taking subsequent action concerning this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED-IN-PART

JAMES D. THOMAS Administrative Patent Judge	)	
JOHN C. MARTIN Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
LANCE LEONARD BARRY Administrative Patent Judge	)	

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