

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte SASSAN PEJHAN, YA-QIN ZHANG, and TIHAO CHIANG

Appeal No. 2003-1617
Application No. 09/144,240

ON BRIEF

Before KRASS, DIXON, and BARRY, *Administrative Patent Judges*.

BARRY, *Administrative Patent Judge*.

DECISION ON APPEAL

A patent examiner rejected claims 1, 4-7, 9-12, 15, 16, and 19. The appellants appeal therefrom under 35 U.S.C. § 134(a). We reverse.

BACKGROUND

The invention at issue on appeal dynamically varies the frame rate of video clips, i.e., "video sequences." (Spec. at 2.) An increasing demand for digital video requires storing and transmitting enormous amounts of data. For example, the growth of the Internet has enabled millions of users to access myriad data in seconds. Most of the data are text, still images, and still graphics, which can be quickly downloaded and

displayed. More recently, however, video sequences have been added to many web sites. Without an increase in bandwidth, the size of such sequences requires more computational cycles and access time. (*Id.* at 1.)

Accordingly, the appellants' invention re-encodes video sequences at different frame rates. (Appeal Br. at 4.) Specifically, the invention stores only the motion information, i.e., motion vectors, for multiple frame rates. A sequence is first encoded and stored at a preferred frame rate. It is then encoded, off-line, at one or more other frame rates. Only the motion vectors are saved and stored (in "motion files") for the other frame rates, thereby reducing storage requirements. When necessary to re-encode the sequence to adapt to a different frame rate, the motion vectors are retrieved from storage instead of being computed. (Spec. at 3.) According to the appellants, this arrangement "provides an enormous time saving for the encoder." (Appeal Br. at 4.)

A further understanding of the invention can be achieved by reading the following claim.

1. A method for dynamically controlling the frame rate of an image sequence, said method comprising the steps of:

- a) transferring the image sequence at a first frame rate;
- b) receiving a request for a change from said first frame rate to a second frame rate; and

c) transferring the image sequence at said second frame rate by retrieving stored information of said image sequence in accordance with said second frame rate, wherein said transferring step transfers the image sequence at said second frame rate by retrieving a stored motion information of said image sequence encoded at said second frame rate.

Claims 1, 4-7, 9-12, 15, 16, and 19 stand rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 5,974,235 ("Nunally").

OPINION

Our opinion addresses the claims in the following order:

- claims 1, 4, 12, 15, 16, and 19
- claims 5 and 6
- claims 7 and 9-11.

A. CLAIMS 1, 4, 12, 15, 16, AND 19

Rather than reiterate the positions of the examiner or the appellants *in toto*, we focus on the point of contention therebetween. The examiner "direct[s] . . . attention to Nunally's fig. 126 where in step 2518 an image sequence is being received, and in step 2520, stored to a disk drive at a fist [sic] frame rate 'time lapse' (See Nunally col. 83, lines 16-25). In step 2522, the same a sequence is being stored at a second frame rate 'full field' in the buffer area (See Nunally col. 83, lines 25-27)." (Examiner's Answer at 5-6.) "[N]ot[ing] that data from **one sequence** is being stored at different rate

in two separate storages," (*id.* at 6), he concludes, "the frame rate change is inherently performed as the field rate change is requested." (*Id.*) The appellants argue, "selectively dropping frames or lines from an input stream is not changing the frame rate by retrieving the stored motion information of the same image sequence encoded at a second frame rate." (Reply Br. at 3.)

In addressing the point of contention, the Board conducts a two-step analysis. First, we construe the independent claims at issue to determine their scope. Second, we determine whether the construed claims are anticipated.

1. Claim Construction

"Analysis begins with a key legal question -- *what is the invention claimed?*" *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567, 1 USPQ2d 1593, 1597 (Fed. Cir. 1987). Here, claim 1 recites in pertinent part the following limitations: "transferring the image sequence at said second frame rate by retrieving stored information of said image sequence in accordance with said second frame rate, wherein said transferring step transfers the image sequence at said second frame rate by retrieving a stored motion information of said image sequence encoded at said second frame rate." Claims 12 and 16 include similar limitations. Accordingly, claims 1, 12, and 16 require changing the frame rate at which an image sequence is transferred by retrieving stored

motion information pertaining to the image sequence wherein the stored motion information is encoded at a different frame rate.

2. Anticipation Determination

"Having construed the claim limitations at issue, we now compare the claims to the prior art to determine if the prior art anticipates those claims." *In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1349, 64 USPQ2d 1202, 1206 (Fed. Cir. 2002). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (citing *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 715, 223 USPQ 1264, 1270 (Fed. Cir. 1984); *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548, 220 USPQ 193, 198 (Fed. Cir. 1983); *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 771, 218 USPQ 781, 789 (Fed. Cir. 1983)). Furthermore, "[t]o establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.'" *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (quoting *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991)) "Inherency . . . may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a

given set of circumstances is not sufficient." *In re Oelrich*, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981) (citing *Hansgirk v. Kemmer*, 102 F.2d 212, 214, 40 USPQ 665, 667 (Cust. & Pat.App. 1939)).

Here, Nunally discloses "an intelligent video information management (IVIM) system. . . ." Col. 15, ll. 43-44. "Key components of each IVIM system are video analysis and storage units 518 connected by data communication paths 519 to the respective local node 516. Each unit 518 has connected thereto one or more video cameras, indicated as cameras 520-1 through 520-N. Each video analysis and storage unit 518 provides storage, analysis and selective retrieval of video information streams generated by the video cameras 520 connected thereto." Col. 16, ll. 13-20.

"FIG. 126 portrays operation of the . . . unit to provide pre-alarm buffer storage of an incoming video signal stream at a field rate that is higher than a 'permanent' field rate that has been assigned to the video stream." Col. 83, ll. 13-16. "At step 2518, an incoming video data stream is received and captured in the form of a sequence of video data fields," *id.* at ll. 17-19; "the video data stream is captured at a rate of about three fields per second." *Id.* at ll. 19-21. "At step 2520, selected ones of the video data fields captured at step 2518 are recorded at a lower field rate, say one field per second, in a main 'permanent recording' area of a hard drive." *Id.* at ll. 22-25. "Meanwhile, at

step 2522, all of the captured data fields are recorded in a ring buffer area on the hard disk drive to provide a recording rate equal to the capture rate, i.e., three fields per second. . . ." *Id.* at ll. 30-33.

We are unpersuaded that Nunally's changing the recording rate of the captured video data stream necessitates changing the frame rate of the stream. Similarly, we are unpersuaded that the captured video data stream is encoded at a different frame rate. The absence of evidence showing the change of the frame rate at which an image sequence is transferred by retrieving stored motion information pertaining to the image sequence, wherein the stored motion information is encoded at a different frame rate, "negates anticipation." *Kloster Speedsteel AB v. Crucible, Inc.*, 793 F.2d 1565, 1571, 230 USPQ 81, 84 (Fed. Cir. 1986). Therefore, we reverse the anticipation rejection of claim 1; of claim 4, which depends therefrom; of claim 12; of claim 15, which depends therefrom; of claim 16; and of claim 19, which depends therefrom.

B. CLAIMS 5 AND 6

The examiner asserts that Nunally discloses " storing the image sequence encoded at a first frame rate (See Nunally col. 76, lines 35-40), and storing motion information of the image sequence encoded at least at a second frame rate (See Nunally col. 76, lines 40-45)." (Examiner's Answer at 7.) The appellants argue,

"Nunally is disclosing the storage of the input sequence at a different frame rate. There is absolutely no disclosure pertaining to storing the motion information of the image sequence **encoded** at least at a second frame rate as claimed by the Appellants. The Board's attention is directed to the simple fact that Nunally simply does not perform encoding." (Reply Br. at 4.)

1. Claim Construction

Claim 5 recites in pertinent part the following limitations: "storing said image sequence encoded at a first frame rate; and . . . storing the motion information of the image sequence encoded at least at a second frame rate." Accordingly, the limitations require encoding an image sequence and motion information of the image sequence at different frame rates.

2. Anticipation Determination

The passage of Nunally cited by the examiner "illustrates the processing by which an overall rate at which video data fields are captured and stored is increased when an alarm condition is detected." Col. 76, ll. 21-23. "[W]hen no alarm condition is present, the VR/PC unit operates to capture and store 30 fields per second," *id.* at ll. 36-37, "[b]ut when an alarm condition is detected, the aggregate field capture rate may be increased to 45 fields per second." *id.* at ll. 40-42. We are unpersuaded that the

reference's capturing and storing video data fields at different field rates necessitates encoding an image sequence and motion information of the image sequence at different frame rates. Therefore, we reverse the anticipation rejection of claim 5 and of claim 6, which depends therefrom.

C. CLAIMS 7 and 9-11

The examiner asserts that Nunally discloses "a motion information code field (See Nunally col. 83, lines 13-21), and a presence of motion information field (The alarm data as disclosed in Nunally provides the presence of motion information)." (Examiner's Answer at 7.) The appellants argue, "[t]his duality of separate data fields is simply not disclosed in the newly cited section in Nunally. . . ." (Reply Br. at 5.)

1. Claim Construction

Claim 7 recites in pertinent part the following limitations: "[a] data structure stored on a computer readable medium comprising . . . a motion information field; and a presence of motion information field." Accordingly, the claim requires that a data structure include a motion information field and a presence of motion information field.

2. Anticipation Determination

"For each rejection under 35 U.S.C. 102, the examiner's answer . . . shall explain why the rejected claims are anticipated or not patentable under 35 U.S.C. 102, **pointing out where all of the specific limitations recited in the rejected claims are found in the prior art relied upon** in the rejection." M.P.E.P. § 1208 (8th ed., rev. 1 Feb. 2003) (emphasis added). "[W]here there are questions as to how limitations in the claims correspond to features in the prior art . . . , the examiner shall compare at least one of the rejected claims feature by feature with the prior art relied on in the rejection. The comparison shall align the language of the claim side-by-side with a reference to the specific page, line number, drawing reference number, and quotation from the prior art, as appropriate." *Id.*

Here, the passage of Nunally cited by the examiner follows.

FIG. 126 portrays operation of the VR/PC unit to provide pre-alarm buffer storage of an incoming video signal stream at a field rate that is higher than a "permanent" field rate that has been assigned to the video stream. The first step in FIG. 126 is step 2518. At step 2518, an incoming video data stream is received and captured in the form of a sequence of video data fields. It is assumed for the purposes of this example that the video data stream is captured at a rate of about three fields per second.

Col. 83, ll. 13-21. We are uncertain, however, where the examiner believes the claimed "data structure" and "motion information field" are found therein. Likewise, we are uncertain where in the reference the examiner believes the claimed "presence of motion

information field" is found. Although the limitations may be taught in Nunally's 106-columns of text or 158-sheets of drawings, we "decline to substitute speculation as to the rejection for the greater certainty which should come from the [examiner] in a more definite [explanation] of the grounds of rejections." *Ex parte Gambogi*, 62 USPQ2d 1209, 1212 (Bd.Pat.App. & Int. 2001). Instead, we reverse the anticipation rejection of claim 7 and of claims 9-11, which depend therefrom. The examiner may wish to reopen prosecution to map each limitation of claim 7 to specific terms in the text of, or to specific items in the figures of, the reference.

CONCLUSION

In summary, the rejection of claims 1, 4-7, 9-12, 15, 16, and 19 under § 102(e) is reversed.

REVERSED

ERROL A. KRASS
Administrative Patent Judge

JOSEPH L. DIXON
Administrative Patent Judge

LANCE LEONARD BARRY
Administrative Patent Judge

)
)
)
)
)
) BOARD OF PATENT
) APPEALS
) AND
) INTERFERENCES
)
)
)
)

Appeal No. 2003-1617
Application No. 09/144,240

Page 13

MOSER, PATTERSON & SHERIDAN, LLP
SARNOFF CORPORATION
595 SHREWSBURY AVENUE
SUITE 100
SHREWSBURY , NJ
07702