

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAVID G. ELLIS, LOUIS J. JOHNSON, BALAJI R.
PARTHASARATHY, PETER B. BLOCH, STEVEN R. FORDYCE and
BILL A. MUNSON

Appeal 2007-3101
Application 09/004,051
Technology Center 2600

Decided: February 8, 2008

Before KENNETH W. HAIRSTON, ROBERT E. NAPPI, and
MARC S. HOFF, *Administrative Patent Judges*.

NAPPI, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 6(b) of the final rejection of claims 49, 51, 52, 54, 55, 57, 58, 60, 61, 63, 64, 66 through 77, 79, 80, and 82 through 99.

We affirm-in-part the Examiner's rejections of these claims.

INVENTION

The invention is directed to a video conferencing camera system which includes a servo circuit to position the camera to point at the participant speaking. The location of the participant is determined by analyzing the difference in audio signal strength received at different microphones. See pages 3 and 4 of Appellants' Specification. Claim 49 is representative of the invention and reproduced below:

49. A method, comprising:
sensing audio from an audio source of a plurality of audio sources,
wherein the sensing of the audio is performed using a plurality
of microphones fixed on a video conferencing camera;
analyzing the sensed audio to determine a direction of the audio
source based on the difference in strengths of the audio sensed
from the plurality of audio sources;
in response to determining the direction of the audio source,
determining if the video conferencing camera has remained in
its current directional position beyond a minimum fixed
duration; and
directionally positioning the video conferencing camera toward the
direction of the audio source if it is determined that the camera
has remained in its current directional position beyond the
minimum fixed duration.

REFERENCES

Blazek	4,764,817	Aug. 16, 1988
Ashida	5,206,721	Apr. 27, 1993
Maeng	5,959,667	Sep. 28, 1999

REJECTION AT ISSUE

Claims 49, 51, 55, 57, 61, 63, 67, 69-77, 79, 83, 85, 87, 89, 91, 92, 94, 95, 97, and 98 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ashida in view of Blazek.

Claims 52, 54, 58, 60, 64, 66, 68, 80, 82, 84, 86, 88, and 90 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Maeng in view of Blazek.

Claims 93, 96, and 99 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ashida in view of Blazek and Maeng.

Throughout the opinion, we make reference to the Brief (received March 10, 2006) and the Answer (mailed May 26, 2006) for the respective details thereof.

ISSUES

Rejection based upon Ashida and Blazek

Appellants contend that the Examiner's rejection of claims 49, 51, 55, 57, 61, 63, 67, 69-77, 79, 83, 85, 87, 89, 91, 92, 94, 95, 97, and 98 under 35 U.S.C. § 103(a) is in error. Appellants argue, on pages 15 through 17 of the Brief, that the combination of Ashida and Blazek does not teach sensing audio from a plurality of microphones fixed on the video conferencing camera and determining a direction of the audio based upon the difference in strengths of the audio sensed from the plurality of audio sources. Appellants argue that Ashida teaches a microphone for each conference participant, and that the microphones are not mounted on the camera. Brief 15. Further, Appellants argue that Blazek teaches a camera with two microphones

mounted thereon but does not teach using the microphones to determine the direction of the audio. Brief 16.

Thus, the contentions of the Appellants present us with the issue of whether the Examiner erred in finding that the combination of the references teaches sensing audio from a plurality of microphones fixed on the video conferencing camera and determining a direction of the audio based upon the difference in strengths of the audio sensed from the plurality of audio sources.

Rejection based upon Maeng and Blazek

Appellants contend that the Examiner's rejection of claims 52, 54, 58, 60, 64, 66, 68, 80, 82, 84, 86, 88, and 90 under 35 U.S.C. § 103(a) is in error. Appellants argue, on pages 18 through 20 of the Brief, that the combination of Maeng and Blazek does not teach sensing audio from a plurality of microphones fixed on the video conferencing camera and determining a direction of the audio based upon the difference in strengths of the audio sensed from the plurality of audio sources. Appellants assert that while Maeng discloses a microphone array, Maeng does not teach that the microphones are on the camera or that they are used to determine the direction of the audio source based on the difference of the strengths of the audio sensed from the sources. Brief 20. Further, Appellants assert that Blazek teaches a camera with two microphones mounted thereon but does not teach using the microphones to determine the direction of the audio. Brief 20.

Thus, the contentions of the Appellants present us with the issue of whether the Examiner erred in finding that the combination of the references teaches sensing audio from a plurality of microphones fixed on the video

conferencing camera and determining a direction of the audio based upon the difference in strengths of the audio sensed from the plurality of audio sources.

Rejection based upon Ashida, Blazek and Maeng

Appellants contend that the Examiner's rejection of claims 93, 96, and 99 under 35 U.S.C. § 103(a) is in error. Appellants argue, on page 22 of the Brief, that these claims depend upon claims 91 and 94 and as such the Examiner's rejection is in error for the reasons discussed with respect to claim 91 and 94.

Thus, Appellants' arguments directed to the rejection of claims 93, 96, and 99 present us with the same issues discussed above with respect to claims 91 and 94.

PRINCIPLES OF LAW

On the issue of obviousness, the Supreme Court has recently stated that "the obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation." *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (U.S. 2007). Further, the Court stated "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1739 (U.S. 2007).

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. . . . [A] court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

Id. at 1740. “One of the ways in which a patent’s subject matter can be proved obvious is by noting that there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 1742.

FINDINGS OF FACT

1. Appellants’ Specification, on page 6, identifies that signals from the microphones are compared to each other to determine a difference in the signals. This difference is used to determine the direction of the audio source. This comparison of signals is performed by a processor. Appellants’ Specification provides no specific description of how the signal strength is determined or how the comparison is performed to determine the location of the audio source. Thus, as there is no question of the specification being enabling, we accept as an uncontested fact that the skilled artisan has the knowledge of how such determinations are performed.

2. Ashida teaches a video conferencing system in which the camera is automatically directed to the conference participant who is speaking. Abstract.

3. Ashida’s system determines which conference participant is speaking by monitoring the signals from microphones placed in front of each participant. See fig. 4; col. 5, ll. 19-25.

4. If there is a signal from a microphone for 2 seconds in any 4-second period, the participant at that microphone is deemed to be

speaking and the camera is directed to view that participant. Col. 5, l. 58-col. 7, l. 17.

5. We do not find a teaching in Ashida that the signals from the individual microphones are compared to each other, or that the microphones are mounted on the camera.

6. Blazek teaches a video recording camera with two microphones (items 31 and 32) mounted thereto. See figs. 1A and 1B, and col. 7, ll. 47-49.

7. Maeng teaches a voice activated camera selection system, wherein a camera is moved to view a preset position in the vicinity of a speaker. Abstract; col. 4, ll. 16-26.

8. Maeng uses an array of microphones to determine the location of the speaker. Two microphones are used if the speaker is to be located in one dimension, three for two dimensions, and four for three dimensions. Col 5, ll. 5-28 and figs. 2A-2C.

9. The output of the microphones is input to a “locator 14” that computes the speaker location based upon the audio signals and generates position data defining the speaker location. Maeng, col. 4, ll. 32-37.

10. Based upon facts 1, 8 and 9, we find that the skilled artisan would recognize that Maeng’s “locator 14” is determining the location by comparing the strength of the signals from the microphones to each other to determine the location of the speaker.

11. Maeng teaches that the microphone array may be centered in the same position as the camera, or may be translated away from the camera. Maeng teaches that the microphone array and camera sharing

the same center has the advantage of not requiring translation between coordinate systems. Col. 6, ll. 18-19.

ANALYSIS

Rejection based upon Ashida and Blazek

Appellants' arguments directed to the rejection of claims 49, 51, 55, 57, 61, 63, 67, 69-77, 79, 83, 85, 87, 89, 91, 92, 94, 95, 97, and 98 have persuaded us of error in the Examiner's rejection of these claims.

Independent claim 49 recites: "sensing audio ... using a plurality of microphones fixed on a video conferencing camera" and "analyzing the sensed audio to determine a direction of the audio source based on the difference in strengths of the audio sensed from the plurality of audio sources." Independent claims 55, 61, 91, 94, and 97 recite similar limitations. In the context of the claim, we consider determining a difference in strengths of the audio signals to require that the signals be compared to each other. Thus, the scope of each of the independent claims includes that there is more than one microphone on the video camera and that the signals from the microphones are compared to each other to determine a difference in the signals and the direction of the audio source.

We find that Ashida teaches a video conferencing system where more than one microphone is used to determine which participant is speaking.

Fact 3. In response to the Appellants' arguments, the Examiner states:

Ashida et al. teach identifying which microphone is capturing sound by assigning a plurality [*sic*] bits based upon whether input audio signal is "above" or "below" a "predetermined level", such that these "digital signals represent the existence of any input to the microphones." *See figures 5 and 6 and column 6 (lines 49 - 59)*. Furthermore, Ashida et al. state, "when the completion of the comparison of all the total times MIC(n)on and the detection time (step 61) is confirmed (YES in step 63), judgment is made . . . one of the participants . . . indicated by that

microphone identification number is specified as the current speaker" and "a signal containing that microphone identification number is output to the swivel base control apparatus 46 . . . the camera 48 is swiveled by the power base 47 so as to capture a picture of the specified participant." (*Emphasis Added*) See column 6 (lines 25 - 50). Finally, Ashida et al. conclude, "when a microphone input of over 2 seconds counted in the 4 second time frame is recognized, someone is definitely speaking, so it is possible to reliably specify the speaker who is speaking . . . it is possible to quickly and accurately recognize the speaker while completely eliminating the effects of noise." See column 7 (lines 24 - 37).

Answer 28. While we concur with the Examiner's finding that Ashida determines the location of the participant speaking by analyzing the signals from the microphones, we do not find that this determination is made by comparing the signals to each other to determine a difference. Facts 4 and 5. The Examiner has not found, nor do we find, that Blazek teaches or would have suggested determining the direction of a sound by comparing the signals from two microphones to determine a difference. Accordingly, we do not find that the references applied in the rejection teach all of the limitations of claims 49, 51, 55, 57, 61, 63, 67, 69-77, 79, 83, 85, 87, 89, 91, 92, 94, 95, 97, and 98 and we will not sustain the Examiner's rejection of these claims.

Rejection based upon Maeng and Blazek

Appellants' arguments directed to the rejection of claims 52, 54, 58, 60, 64, 66, 68, 80, 82, 84, 86, 88, and 90 have not persuaded us of error in the Examiner's finding that the combination of Maeng in view of Blazek teaches the claimed method. Initially, we note that Appellants' arguments on pages 18 through 20 of the Brief are directed to claims 52, 54, 58, 60, 64,

66, 68, 80, 82, 84, 86, 88, and 90 as a group. Thus, in accordance with 37 C.F.R. § 41.37 (c)(1)(vii), we group claims 52, 54, 58, 60, 64, 66, 68, 80, 82, 84, 86, 88, and 90 together and select claim 52 as representative of the group.

Claim 52 recites “sensing audio from an audio source of a plurality of audio sources, wherein the sensing of the audio is performed using a plurality of microphones fixed on a video conferencing camera” and “analyzing the sensed audio to determine a direction of the audio source based on the difference in strengths of the audio sensed from the plurality of audio sources.” As discussed above with respect to claim 49, in the context of the claim, we consider determining a difference in strengths of the audio signals to require that the signals be compared to each other. Thus, the scope of claim 52 is that there is more than one microphone on the video camera and that the signals from the microphones are compared to each other to determine a difference in the signals and the direction of the audio source.

We find that Maeng teaches that an array of microphones is used to determine the location of the speaker. Fact 8. We find that the skilled artisan would have recognized that this determination is made by comparing the strength of signals from the microphones to each other to determine the location. Fact 10. Further, we note that the Examiner’s taking of Official notice, on page 29 of the Answer, that “the concepts and advantages of determining the direction of an audio source based on the difference in strengths of the audio sensed are well known and expected in the art” is sufficiently supported by evidence in the record. Fact 1. While Maeng does not teach that the microphone array is mounted on the camera, it does teach that it is advantageous to mount them with the same center. Fact 11.

Blazek teaches mounting two microphones on a camera. Fact 6. We consider mounting Maeng's microphone array to the camera as taught by Blazek to be nothing more than the combination of old elements to provide predictable results. In this case, the combination would help achieve Maeng's stated advantage of providing a common center for both camera and microphone and would also provide a portable, compact system. Thus, Appellants' arguments have not persuaded us of error in the Examiner's rejection of representative claim 52. Accordingly, we affirm the Examiner's rejection of claims 52, 54, 58, 60, 64, 66, 68, 80, 82, 84, 86, 88, and 90.

Rejection based upon Ashida, Blazek and Maeng

Appellants' arguments directed to the rejection of claims 93, 96, and 99 have not persuaded us of error in the Examiner's finding that the combination of Maeng in view of Blazek and Maeng teaches the claimed method. As discussed *supra*, we reversed the Examiner's rejection of independent claims 91 and 94 as the combination of Ashida in view of Blazek does not teach sensing audio from a plurality of microphones fixed on the video conferencing camera, and determining a direction of the audio based upon the difference in strengths of the audio sensed from the plurality of audio sources. However, as discussed *supra* with respect to claim 52, we do find that the combination of Maeng and Blazek teaches these limitations. Thus, we find that Maeng resolves the argued deficiency of the rejection of independent claims 91 and 94. Accordingly, we affirm the Examiner's rejection of claims 93, 96, and 99. Further, as Appellants have not asserted that any of the other limitations of claims 49, 51, 55, 57, 61, 63, 67-77, 79, 83, 85, 87, 89, 91, 92, 94, 95, 97, and 98 define over the combination of

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Ashida , Blazek and Maeng, we now reject these claims under 35 U.S.C. § 103(a). We designate this as a new rejection under 37 C.F.R. § 41.50(b). We adopt the Examiner's findings regarding the uncontested limitations of these claims and apply the analysis discussed above with respect to claim 52 to the contested limitations of the microphones being mounted on the camera and the difference in signals being used to determine location.

ORDER

The Examiner's decision to reject claims 52, 54, 58, 60, 64, 66, 68, 80, 82, 84, 86, 88, 90, 93, 96, and 99 under 35 U.S.C. § 103(a) is affirmed. The Examiner's decision to reject claims 49, 51, 55, 57, 61, 63, 67, 69-77, 79, 83, 85, 87, 89, 91, 92, 94, 95, 97, and 98 under 35 U.S.C. § 103(a) is reversed. We enter a new rejection against claims 49, 51, 55, 57, 61, 63, 67-77, 79, 83, 85, 87, 89, 91, 92, 94, 95, 97, and 98 under 35 U.S.C. 103 as being unpatentable over Ashida, Blazek and Maeng. The decision of the Examiner is affirmed-in-part.

Regarding the affirmed rejection(s), 37 C.F.R. § 41.52(a)(1) provides "[a]ppellant may file a single request for rehearing within two months from the date of the original decision of the Board."

In addition to affirming the Examiner's rejection(s) of one or more claims, this decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b) (effective September 13, 2004, 69 Fed. Reg. 49960 (August 12, 2004), 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)). 37 C.F.R. § 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review."

37 C.F.R. § 41.50(b) also provides that the Appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

(2) *Request rehearing*. Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

Should the Appellants elect to prosecute further before the Examiner pursuant to 37 C.F.R. § 41.50(b)(1), in order to preserve the right to seek review under 35 U.S.C. §§ 141 or 145 with respect to the affirmed rejection, the effective date of the affirmance is deferred until conclusion of the prosecution before the Examiner unless, as a mere incident to the limited prosecution, the affirmed rejection is overcome.

If the Appellants elect prosecution before the Examiner and this does not result in allowance of the application, abandonment or a second appeal, this case should be returned to the Board of Patent Appeals and Interferences for final action on the affirmed rejection, including any timely request for rehearing thereof.

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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-IN-PART; 37 C.F.R. § 41.50(b)

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