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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte J. CARL COOPER, MIRKO DUSAN VOJNOVIC,
JIBANANANDA ROY, SAURABH JAIN and
CHRISTOPHER SMITH

Appeal 2017-003677
Application 11/598,870
Technology Center 2400

Before CARL W. WHITEHEAD JR., ERIC B. CHEN and
IRVIN E. BRANCH, *Administrative Patent Judges*.

WHITEHEAD JR., *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants are appealing the Examiner's Final Rejection of claims 1–9, 14–22, and 26–37 under 35 U.S.C. § 134(a). Appeal Brief 19. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part.

Introduction

The invention is directed to “the creation, manipulation, transmission, storage, etc. and especially synchronization of multi-media entertainment, educational and other programming having at least video and associated information.” Specification 1.

Illustrative Claim

1. A method for measuring audio video synchronization, the method comprising:

receiving a video portion and an associated audio portion of a combined audio and visual presentation;

analyzing the audio portion to identify and filter audio data to reduce audio data related to a speaker's personal voice characteristics to produce a filtered audio signal;

analyzing the filtered audio signal to locate the presence of particular phonemes therein;

analyzing the video portion to locate the presence of particular spatial visemes therein by analyzing the mouth areas in a single frame or field of video; and

analyzing the phonemes and the visemes to produce a non-transitory measurement of the relative timing of relative phonemes and visemes.

Rejections on Appeal

Claims 1–4, 17 and 29 stand rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 7, 11, and 15 of Cooper (US Patent 7,499,104 B2; issued March 3, 2009) and Cooper (US Patent 5,572,261; issued November 5, 1996). Non-Final Action 23–25.

Claims 1–5, 8–9, 14–18, 21–22 and 26–37 stand rejected under 35 U.S.C. §102(b) as being anticipated by Cooper '261. Non-Final Action 25–30.

Claims 6, 7, 19 and 20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Cooper '261. Non-Final Action 30–31.

ANALYSIS

Rather than reiterate the arguments of Appellants and the Examiner, we refer to the Appeal Briefs (filed February 7, 2016; June 7, 2016), the Answer (mailed September 16, 2016) and the Non-Final Action (mailed September 25, 2015).

Nonstatutory obviousness-type double patenting rejection

The Examiner determines that “claim 7 of U.S. Patent No. 7,499,104 B2 recites all the claimed limitations of claim 1, except for providing the claimed analyzing the audio portion to identify and filter audio data to reduce audio data related to a speaker’s personal voice characteristics to produce a filter audio signal.” Answer 3. The Examiner relies upon Cooper ’261 to address the noted deficiency of Cooper ’104’s claim 7. Answer 3. Appellants argue that Cooper 104 fails to disclose multiple limitations of claim 1 in bold below:

analyzing the audio portion to identify and filter audio data to reduce audio data related to a speaker's personal voice characteristics to produce a filtered audio signal;

analyzing the filtered audio signal to locate the presence of particular phonemes therein;

analyzing the video portion to locate the presence of particular spatial visemes therein by analyzing the mouth areas in a single frame or field of video; and

analyzing the phonemes and the visemes to produce a non-transitory measurement of the relative timing of relative phonemes and visemes.

Appeal Brief 59.

The Examiner maintains that, “Cooper [’104] discloses all the claimed limitations including ‘analyzing the audio portion . . . related to a speaker's

personal voice characteristics to product a filter audio signal’ and would have been obvious to one of ordinary skill in the art to combine claims of 7,499,104 and Cooper [’261].” Answer 19. We find the Examiner’s determination of obviousness-type double patenting to be problematic because the Examiner’s findings fail to indicate limitations from Cooper 104 that discloses the same invention disclosed in claim 1. *See* M.P.E.P. § 804.02 II. (“Claims that differ from each other (aside from minor differences in language, punctuation, etc.), whether or not the difference would have been obvious, are not considered to be drawn to the same invention for double patenting purposes under **35 U.S.C. 101**.”). The Examiner’s reliance upon Cooper ’261 does not address Cooper 104’s noted deficiency. Consequently, we reverse the Examiner’s nonstatutory obviousness-type double patenting of claims 1–4, 17 and 29.

35 U.S.C. §102(b) Rejection

Appellants “believe[] the major disagreements between Applicants and Examiner results from a combination of improper[,] overly broad claim interpretation, divorced from the specification, and impermissible hindsight reconstruction of the references.” Appeal Brief 25.

Claim 1

Appellants argue in regard to claim 1 that the Examiner fails to recognize the meaning of spatial visemes as defined within the Specification. Appeal Brief 46. The Specification discloses on page 9, lines 13–18; *see* Appeal Brief 46–47 for added emphasis:

A further aspect of the invention is directed to a system and method for particularly analyzing the inner lip region. In operation, for viseme recognition, a process is provided that accurately extracts and examines the lip region. A narrow strip

on the central portion of the lips is analyzed to estimate the percentage of lips (upper and lower), teeth and open space between teeth. The process accurately detects closed lips, wide open mouth and all teeth and lips.

Appellants argue:

The recited underlined portions above make it clear that the particular visemes which are claimed are spatial visemes, that is the shape of the lips which correspond to the particular phonemes (sounds corresponding to a lip shape in a still image and thus themselves the claimed spatial visemes or spatial lip shape.)

Appeal Brief 47.

Appellants contend, “Clearly there is no teaching of the complete and properly interpreted claim [1] feature of ‘analyzing the video portion’ or ‘to locate the presence of particular spatial visemes therein’ or ‘by analyzing the mouth areas in a single frame or field of video.’” Appeal Brief 47.

Appellants argue, “Fig. 5 which is a block diagram of mouth motion logic 8 (9:22-23) clearly shows that it operates with multiple frames of pixel type data 7, rather than a single frame or field, and the pixel type data 7 is not video. The Cooper excerpt the Examiner points to clearly states that the input to the mouth motion logic circuit corresponds to the type of facial element which a particular pixel is taken from.” Appeal Brief 47–48. The Examiner relies upon Cooper’s pixel type logic 6, mouth motion logic circuit 8 and sites to column 4, line 47 to column 6, line 10 to disclose the disputed limitations. Answer 5. Copper discloses:

The inputs to the mouth motion logic circuit **8** thus correspond to the type of facial element which the particular pixel or point on the image is taken from or represents in a particular image frame, with a degree of certainty based on information of the

same and/or similarly locate pixels over past and future frames of the video.

Cooper, column 4, lines 61–66 (*referring to Figure 1*).

It may be noted that it is preferred that the output 16 represent the median frame of the group of frames from 8 and 11, in order that frames both before and after the median pixel are available. This relationship may however be changed to more accurately determine mouth sounds which have peculiar motions before or after the sound.

Cooper, column 5, lines 50–56 (*referring to Figure 1*).

Accordingly, we do not find Appellants' arguments that Cooper does not teach operating with a single frame or field persuasive because it is evident that Cooper discloses operating with a single frame. Further, claim 1 alternatively analyzes "the mouth area in a single frame or field of video" and it is apparent that Cooper discloses both options. *See Cooper, Abstract, column 4, lines 61–66.* We sustain the Examiner's anticipation rejection of claim 1.

Claim 2

Appellants contend the Examiner, "*fails to address, without clearly articulated reasoning, the full claim element, including the amendment, which recites 'analyzing the video information related to the calculation of width and height of lips which form mouth shapes corresponding to the formation of particular sounds.'*" Appeal Brief 49.

The Examiner finds Cooper teaches the disputed limitation and relies upon Cooper's pixel type logic 6 and the mouth motion logic circuit 8. Answer 5 (*citing Cooper Figures 1, 4 and 5; column 7, line 26 to column 9, line 47*).

Cooper discloses:

The comparators compare the level of the video 5 to a plurality of references R1-R4 which have values $R1 > R2 > R3 > R4 > 0$. The magnitude of the signal 5 will vary depending on the nature of the image corresponding thereto, for example black will have a level lower than R3 and higher than R4. Similarly, lips and other flesh will have a level greater than R3 but less than R2, teeth will have a level greater than R2 but less than R3.

Copper, column 7 lines 30–37 (*referring* Figures 4A, 4B).

Cooper discloses analyzing the opening and closing of a speaker's mouth and even distinguishes between upper and lower lips. (*See* Cooper, Abstract; column 8, lines 28–30). However, Cooper does not analyze video information related to the calculation of the width and the height of a speaker's lips that form mouth shapes corresponding to particular sounds. “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. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987). Consequently, we are constrained by the record, we reverse the Examiner's anticipation rejection of claim 2 for the reasons stated above.

Claim 3

“*Applicants incorporate herein by reference the arguments related to Mouth Shapes in claim 2 as well as the argument and discussion in claim 1.*” Appeal Brief 50; *see* Appeal Brief 71–72. Claim 3 requires, “analyzing the presence and location of vowel sounds located in step d) with the location of the corresponding mouth shapes of step e) to produce a non-transitory measurement of the relative timing thereof.” The Examiner finds Cooper teaches “analyzing the filtered audio portion to locate the presence of

particular vowel sounds therein is met by the sound type detection circuit 14.” Answer 6 (citing Cooper Figures 1, 6; column 6, lines 11–21 and column 9, lines 41 to column 10, line 40). Claim 3 differs from claim 2 because claim 3 does not require analyzing the shape of a speaker’s mouth based upon the calculation of the width and the height of a speaker’s lips. Consequently, we are constrained by the record, we sustain the Examiner’s anticipation rejection of claim 3 for the reasons stated above.

Claims 4, 5, 8, 9, 14, 15 and 16

Claim 4 recites, “determining and associating a dominant audio class in a video frame, locating matching locations, and estimating a non-transitory offset of audio and video timing.” Appellants contend:

It is not clear if the Examiner points to this section as anticipating the claimed ‘dominant audio class’ but it does appear that the Examiner believes, without clearly articulated reasoning, the dominant audio class is made up of spatial MuEvs, which is an incorrect interpretation of the claim. As seen in Fig. 8 of the instant specification the dominant audio class is a set of audio phonemes which are then associated with a corresponding video frame of visemes. The Examiner has not pointed to where a dominant audio class of audio MuEvs in Cooper is associated with a video frame of video MuEvs.

Appeal Brief 53 (*referring to Cooper, column 5, line 60 to column 6, line 41; column 6, lines 22–41*).

We find Appellants’ argument persuasive of Examiner error because the Examiner fails to address the disputed limitation in the anticipation rejection of claim 4. *See Answer 6* (“Claim 4 is rejected for the same reason as discussed in claim 1 above.”). Consequently, we reverse the Examiner’s anticipation rejection of claims 5, 8, 9, 14, 15 and 16 that depends upon claim 4 for the same reason.

Claims 17, 18, 21 and 22

Claim 17 requires a system to, “determine and associate a dominant audio class in a video frame, locate matching locations, and estimate offset of audio and video.” The Examiner finds, “Claims 17-18 are rejected for the same reason as discussed in claims 4-5, respectively.” Answer 8. Appellants repeat the same arguments for claim 17 as for claim 4. *See* Appeal Brief 54–55. We find Appellants’ argument persuasive of Examiner error because the Examiner fails to address the disputed limitation in the anticipation rejection of claim 17. *See* Answer 6. Consequently, we reverse the Examiner’s anticipation rejection of claims 18, 21, and 22 that depends upon claim 17 for the same reason.

Claims 29

Claim 29 recites, “analyzing the video information to determine mouth shapes in response to calculated width and height of lips corresponding to the glottal events.” Appellants “*incorporate herein by reference the arguments given in respect to claims 1-4 regarding mouth shapes and claim interpretation.*” Appeal Brief 55. The Examiner determines, “Claim 29 is rejected for the same reason as discussed in claim 2 above and further the claimed analyzing the audio information to locate the presence of glottal events therein is met by the sound type detection circuit 14.” Answer 8 (*citing* Cooper Figures 1 and 6, column 6, lines 11–21 and column 9, line 41 to column 10, line 40). As we stated above, Cooper does not analyze video information related to the calculation of the width and the height of a speaker’s lips that form mouth shapes corresponding to particular sounds. Further, Cooper does not teach glottal events as claimed. We find Appellants’ argument persuasive of Examiner error because the Examiner

fails to address the disputed limitation in the anticipation rejection of claim 29.

Claim 30

Claim 30 recites, “calculating non-transitory width and height measurements of the lips.” Appellants “*incorporate herein by reference the arguments given for the claims above regarding lip regions, mouth shapes and width and height measurements of the lips.*” Appeal Brief 56. The Examiner determines, “Claim 30 is rejected for the same reason as discussed in claim 14 above.” Answer 8. As we stated above, Cooper does not analyze video information related to the calculation of the width and the height of a speaker’s lips that form mouth shapes corresponding to particular sounds. In addition, it is apparent that Copper is silent in regard to calculating width and height measurements of a speaker’s lips. We find Appellants’ argument persuasive of Examiner error because the Examiner fails to address the disputed limitation in the anticipation rejection of claim 30.

Claims 33, 34

Claim 33 recites, “identifying the shape of the mouth on the face in response to calculating the width and height of the lips.” Appellants “*incorporate herein by reference the arguments given for the claims above as they related to the claimed features related to mouth shapes.*” Appeal Brief 57. The Examiner determines, “Claim 33 is rejected for the same reason as discussed in claim 2 above.” Answer 9. As we stated above, Cooper does not analyze video information related to the calculation of the width and the height of a speaker’s lips that form mouth shapes corresponding to particular sounds. In addition, it is apparent that Copper is

silent in regard to calculating width and height measurements of a speaker's lips. We find Appellants' argument persuasive of Examiner error because the Examiner fails to address the disputed limitation in the anticipation rejection of claim 33. Consequently, we reverse the Examiner's anticipation rejection of claim 34 that depends upon claim 33 for the same reason.

Claims 35, 36

The Examiner determines, "Claim 35 is rejected for the same reason as discussed in claim 2 above." Answer 9. Appellants argue, "because the Examiner has not given any discussion whatsoever of these claim elements, the Examiner has not made a prima facie case of unpatentability as discussed above." Appeal Brief 81. Claim 35 has limitations that differ from the limitations recited in claim 2. Further, we did not agree with the Examiner's findings in regard to claim 2. Accordingly, we find Appellants' argument persuasive because the Examiner failed to establish anticipation of claim 35 by Cooper in accordance with 35 U.S.C. §102(b). Consequently, we reverse the Examiner's anticipation rejection of claim 36 that depends upon claim 35 for the same reason.

Claim 37

The Examiner determines, "Claim 37 is rejected for the same reason as discussed in claim 2 above." Answer 9. Appellants argue, "because the Examiner has not given any discussion whatsoever of these claim elements, the Examiner has not made a prima facie case of unpatentability as discussed above." Appeal Brief 81. Claim 37 has limitations that differ from the limitations recited in claim 2. Further, we did not agree with the Examiner's findings in regard to claim 2. Accordingly, we find Appellants' argument

persuasive because the Examiner failed to establish anticipation of claim 37 by Cooper in accordance with 35 U.S.C. §102(b).

Claims 26–28

The Examiner determines, “Claims 26-28 are rejected for the same reason as discussed in claims 14-16, respectively.” Answer 9. The claims depend upon dependent claims 20 rejected by the Examiner under 35 U.S.C. §103(a). *See* Answer 9. Further, claim 20 depends upon independent claim 17 rejected under anticipation however we did not agree with the Examiner’s findings and reversed the anticipation rejection of claim 17 for the reasons stated above. Accordingly, we reverse the Examiner’s anticipation rejection of claims 26–28 because the Examiner failed to establish anticipation of the claims by Cooper in accordance with 35 U.S.C. §102(b).

35 U.S.C. §103(a) Rejection

We reverse the obviousness rejection of dependent claims 6, 7, 19, and 20 for the same reasons we reverse the anticipation rejection of independent claims 4 and 17.

DECISION

The Examiner’s nonstatutory obviousness-type double patenting of claims 1–4, 17 and 29 is reversed.

The Examiner’s 35 U.S.C. §102 rejection of claims 1 and 3 is sustained.

The Examiner’s 35 U.S.C. §102 rejection of claims 2, 4, 5, 8, 9, 14–18, 21, 22 and 26–37 is reversed.

The Examiner’s 35 U.S.C. §103 rejection of claims 6, 7, 19 and 20 is reversed.

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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). *See* 37 C.F.R. § 1.136(a)(1)(v).

AFFIRM-IN-PART