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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MARCO J. DAOURA

Appeal 2020-002139
Application 14/368,107
Technology Center 3700

Before BRETT C. MARTIN, CARL M. DEFRANCO, and
LEE L. STEPINA, *Administrative Patent Judges*.

MARTIN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 9–16 and 21–32. *See* Final Act. 1. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Koninklijke Philips Electronics N. V. Appeal Br. 2.

CLAIMED SUBJECT MATTER

The claims are directed to a method and apparatus for interactive display of ultrasound images. Spec. ¶1. Claim 9, reproduced below, is illustrative of the claimed subject matter:

9. A medical imaging system, comprising:
- an ultrasound probe configured to capture three dimensional (3D) ultrasound data from a subject;
 - an ultrasound processing system comprising one or more hardware processors configured by machine readable instructions to generate live 3D images from the 3D ultrasound data;
 - a 3D holographic display system configured to display the live 3D images as a hologram suspended in space proximate to the subject; and
 - a touchless input user interface configured to detect a touchless input from a user and facilitate an image transformation of the live 3D images in the hologram in response to the touchless input,
 - wherein the touchless input comprises a detectable hand gesture along a portion of a circumference of the hologram,
 - wherein the detectable hand gesture along the portion of the circumference causes a corresponding rotation of the hologram about one or more axes along a path that corresponds to the detectable hand gesture such that the hologram rotationally tracks a corresponding direction of the detectable hand gesture,
 - wherein, responsive to detecting the touchless input, the touchless input user interface facilitates image transformation of the live 3D images by transmitting a control signal to the ultrasound probe to control a view of the ultrasound data captured by the ultrasound probe.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Aritake	US 5,589,957	Dec. 31, 1996
Mathew	US 2006/0020202 A1	Jan. 26, 2006

Steinle	US 2009/0259960 A1	Oct. 15, 2009
Curl	US 2009/0282371 A1	Nov. 12, 2009
Nishihara	US 2010/0050133 A1	Feb. 25, 2010
Butler	US 2010/0149182 A1	June 17, 2010
Brennan	US 2011/0282331 A1	Nov. 17, 2011
Katz	US 2014/0361988 A1	Dec. 11, 2014
G. Favalora	Volumetric 3D Displays and Application Infrastructure	Aug. 2005

REJECTION

Claims 9–13, 29, and 30 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Mathew, Favalora, Nishihara, Grossman, and Steinle. Final Act. 5.²

Claim 14 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Mathew, Favalora, Nishihara, Grossman, Steinle, and Butler. Final Act. 12.

Claim 15 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Mathew, Favalora, Nishihara, Grossman, Steinle, and Curl. Final Act. 13.

Claim 31 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Mathew, Favalora, Nishihara, Grossman, Steinle, and Katz. Final Act. 15.

² The Examiner originally rejected all of the claims with the inclusion of Brennan, but removed Brennan and replaced it with teachings from Favalora, which was already part of the rejection. *See* Ans. 17; Final Act. 5–8.

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Claim 32 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Mathew, Favalora, Nishihara, Grossman, Steinle, and Aritake. Final Act. 16.

Claims 16, 22–24, 27, and 28 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Mathew, Favalora, Nishihara, Grossman, Steinle, and Katz. Final Act. 17.

Claim 21 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Mathew, Favalora, Nishihara, Grossman, Steinle, Katz, and Aritake. Final Act. 20.

Claim 25 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Mathew, Favalora, Nishihara, Grossman, Steinle, Katz, and Butler. Final Act. 20.

Claim 26 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Mathew, Favalora, Nishihara, Grossman, Steinle, Katz, and Curl. Final Act. 22.

OPINION

Obviousness

The Examiner finds that Favalora generates the claimed “hologram suspended in space.” Ans. 19. Appellant is correct, however, that “Favalora’s projector displays the perceived 3D image onto a rotating disc,” which “cannot reasonably be considered to be a hologram suspended in space.” Reply Br. 5. Appellant’s Specification describes at least two different embodiments of a 3D holographic display system. In one embodiment, which is depicted in Figure 1, the system “has a spherical display suspended in air.” Spec. ¶ 53. In an alternative embodiment, the system “can be formed with a designated display medium such as a

container,” which “can be mounted on the ceiling or wall of cath lab 100 in proximity to the clinician to allow for convenient viewing.” Spec. ¶ 54. Favalora’s device is more akin to the use of the cylinder described in the alternative embodiment where some kind of substrate is necessary for the display. We take the term “suspended in space” as referring to a device such as that described in relation to Figure 1, where the image is, as described in the specification, “suspended in air.” Accordingly, we do not agree that Favalora teaches the claimed 3D holographic image “suspended in space.”

Appellant also asserts that “[n]one of the prior art references disclose a hand gesture along a portion of the circumference of a hologram that causes a rotation of the hologram corresponding to a direction of the hand gesture along the circumference.” Reply Br. 7. The Examiner finds that Nishihara teaches that “[t]he hand gesture is found to be performed ‘along’ a portion of the circumference of the hologram wherein the term ‘along’ is given its common interpretation as ‘next to.’” Ans. 20. Appellant has the better position.

The Examiner appears to interpret “along” without consideration of other terms in the claim. Not only is the gesture claimed as being “along the circumference” but the gesture “causes a corresponding rotation about one or more axes along a path that corresponds to the detectable hand gesture such that the hologram rotationally tracks a corresponding direction of the detectable hand gesture.” Appellant is correct that “the hand gestures of Favalora and Nishihara are performed ‘at a distance’ from the hologram.” Reply Br. 8. Appellant further explains that “[m]ost hand gesture systems will provide different gestures for rotation about the horizontal (x), vertical (y), and depth (z) axes, and the off-axis rotation is accomplished by rotating in one axis, then rotating in the other axis, then rotating in the remaining

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axis.” Appeal Br. 12. We agree with Appellant that the claim language reflects a “contrast to the gesture-at-a-distance approach” found in the cited prior art. *Id.*

Appellant’s Specification describes the claimed gesture in reference to Figure 2 stating that “a simple hand gesture is performed by moving a hand 205 in a sweeping motion from point “A” to point “B” around a circumference of the holographic display.” Spec. ¶ 61. It is clear from both the description and depiction in Fig. 2 that the user is actually interacting with the display itself and making gestures in close proximity such that rotation of the display corresponds to the hand gesture. We agree with Appellant that the cited prior art is more akin to the gesture-at-a-distance type of control, which is not the same as gestures “along the circumference” that generate “corresponding” movement of the image. For the reasons stated above, we do not sustain the Examiner’s prior art rejections.

CONCLUSION

The Examiner’s rejection is REVERSED.

More specifically,

DECISION SUMMARY

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Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
9–13, 29, 30	103	Matthew, Favalora, Nishihara, Grossman, Steinle		9–13, 29, 30
14	103	Matthew, Favalora, Nishihara, Grossman, Steinle, Butler		14
15	103	Matthew, Favalora, Nishihara, Grossman, Steinle, Curl		15
31	103	Matthew, Favalora, Nishihara, Grossman, Steinle, Katz		31
32	103	Matthew, Favalora, Nishihara, Grossman, Steinle, Aritake		32
16, 22–24, 27, 28	103	Matthew, Favalora, Nishihara, Grossman, Steinle, Katz		16, 22–24, 27, 28
21	103	Matthew, Favalora, Nishihara, Grossman, Steinle, Katz, Aritake		21
25	103	Matthew, Favalora, Nishihara, Grossman, Steinle, Katz, Butler		25
26	103	Matthew, Favalora, Nishihara, Grossman, Steinle, Katz, Curl		26
Overall Outcome				9–16, 21–32