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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ALLAN DUNBAR, SICCD SCHETS,
FATEH MOHAMMED, and HIBA ARBASH

Appeal 2017-009705
Application 12/988,730
Technology Center 3700

Before FRANCISCO C. PRATS, MICHAEL J. FITZPATRICK, and
ELIZABETH A. LAVIER, *Administrative Patent Judges*.

FITZPATRICK, *Administrative Patent Judge*.

DECISION ON APPEAL

Allan Dunbar, Siccd Schets, Fateh Mohammed, and Hiba Arbash, (“Appellants”)¹ appeal under 35 U.S.C. § 134(a) from the Examiner’s final decision rejecting claims 29–33 and 35–38. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

¹ The real party in interest is identified as eZono AG. Appeal Br. 1.

STATEMENT OF THE CASE

The Specification

According to Appellants, their “invention relates to an ultrasound imaging system” and “a method of providing assistance to the user of an ultrasound imaging system.” Spec. 1. More specifically:

The method involves simultaneously presenting the following three components on a video display of the ultrasound imaging system:

(1) A **pre-recorded primary demonstration video clip** showing an animation of images which demonstrate the performance of steps of a medical procedure;

(2) A pre-recorded **ultrasound image video clip** in synchronism and corresponding with the pre-recorded primary demonstration video clip; and

(3) A **live ultrasound image** (i.e. a video image) of the anatomy of a patient being examined in real time.

Appeal Br. 3; *see also* Spec. 6 (discussing an embodiment having all three of the aforementioned components).

Figure 4 is reproduced below.

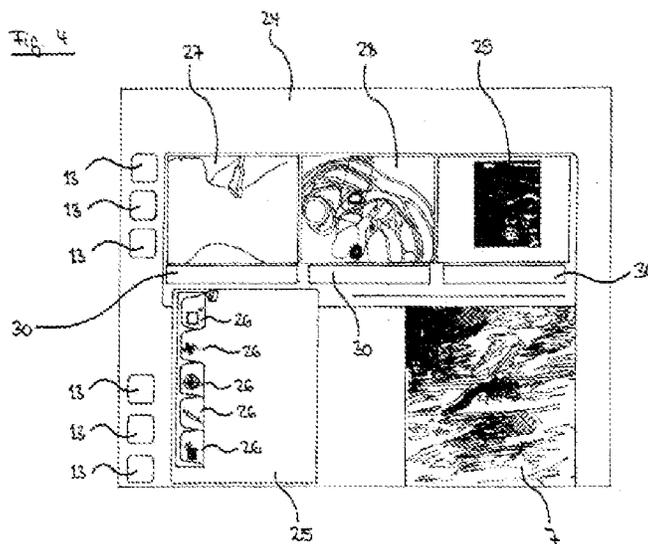


Figure 4, reproduced above, shows a “screen of the user interface presented on the video display, which screen comprises a step control and presentations of the first demonstration video clip [27], the second demonstration video clip [28], the ultrasound image video clip [29] and the ultrasound li[v]e image [7].” Spec. 12; *see also id.* at 15 (discussing Fig. 4).

In the claimed method, a demonstration video clip is synchronized with the ultrasound image video clip such that, “as the probe moves in the demonstration video clip, the ultrasound image in the ultrasound image video clip changes correspondingly.” Spec. 6. In this way, “the ultrasound image video clip shows the ultrasound image that results or would result from the position and orientation of the ultrasound scanning probe in the demonstration video clip.” *Id.* The demonstration and ultrasound image video clips are displayed simultaneously along with an actual live ultrasound image. *Id.*

According to Appellants, their invention allows an ultrasound technician “to more naturally grasp the relationship between the manipulation of the scanning probe and the ultrasound image” and “interpret the live ultrasound image.” *Id.* at 5.

The Rejected Claims

Claims 29–33 and 35–38 stand rejected. Final Act. 1. Of those, claims 37 and 38 are independent. Appeal Br., Claims App’x 2–3. Claim 37 is representative and reproduced below.

37. A method of assisting a user of an ultrasound imaging system in performing a medical procedure which comprises

presenting on a video display a pre-recorded primary demonstration video clip showing an animated sequence of

images demonstrating the performance of steps in the medical procedure for instructing the user as to how the steps of the medical procedure should be performed, the pre-recorded primary demonstration video clip showing, at target locations, a position, orientation and motion of the ultrasound scanner in respective steps of the medical procedure,

presenting on the video display a pre-recorded ultrasound image video clip in synchronism with and corresponding to the pre-recorded primary demonstration video clip, and

acquiring and presenting on the video display, simultaneously with the pre-recorded primary demonstration video clip and its corresponding, pre-recorded ultrasound image video clip, a live ultrasound image of portions of the anatomy of a patient being examined using n [sic] ultrasound scanner, such that

the user is shown how to perform the medical procedure by observing at the target locations the position, orientation and motion of the ultrasound scanner of the pre-recorded primary demonstration video clip and its corresponding, pre-recorded ultrasound image video clip as compared to the live ultrasound images of the medical procedure.

Appeal Br., Claims App'x. 2.

The Appealed Rejections

The following rejections are before us for review:

1. claims 29–33 and 37 under 35 U.S.C. § 112(b) or 35 U.S.C. § 112 ¶2 (pre-AIA) as being indefinite (Final Act. 2);
2. claims 30, 32, 33, and 37 under 35 U.S.C. § 103 as unpatentable over Takeuchi² and Heer³ (*id.* at 3, 7);

² US 2004/0019270 A1, published Jan. 29, 2004 (“Takeuchi”).

³ I. M. Heer et al., *Ultrasound training: the virtual patient*, 24 *ULTRASOUND OBSTET GYNECOL* 440–44 (2004) (“Heer”).

3. claims 32 and 33 under 35 U.S.C. § 103 as unpatentable over Takeuchi, Heer, and Shinichi⁴ (*id.* at 7);

4. claims 29, 31, and 38 under 35 U.S.C. § 103 as unpatentable over Takeuchi, Heer, and Ehrlicke⁵ (*id.* at 9); and

5. claims 35 and 36 under 35 U.S.C. § 103 as unpatentable over Takeuchi, Heer, Ehrlicke, Ohtake,⁶ and Mine⁷ (*id.* at 10).

DISCUSSION

Rejection 1

The Examiner rejects claims 29–33 and 37 under 35 U.S.C. § 112(b) or 35 U.S.C. § 112 ¶2 (pre-AIA) as being indefinite. Final Act. 2.

The Examiner asserts that claim 37 (and thus too dependent claims 29–33) is indefinite for two reasons: (1) it recites “the ultrasound scanner” without sufficient antecedent basis; and (2) its subsequently recites “n ultrasound scanner.” *Id.* Appellants do not argue any error in this rejection by the Examiner. Instead, they imply they eventually will amend the claims to remediate the indefiniteness. Appeal Br. 6 (“As can be readily recognized, the rejection of claims 29, 30–33 and 37 are editorial in nature and will be complied with upon the disposition of the present appeal.”).

We affirm Rejection 1.

⁴ JP 4135546 (A), published May 11, 1992 (“Shinichi”).

⁵ Hans-Heino Ehrlicke, *SONOSim3D: a multimedia system for sonography simulation and education with an extensible case database*, 7 EUROPEAN J. OF ULTRASOUND 225–30 (1998) (“Ehrlicke”).

⁶ US 7,806,824 B2, issued Oct. 5, 2010 (“Ohtake”).

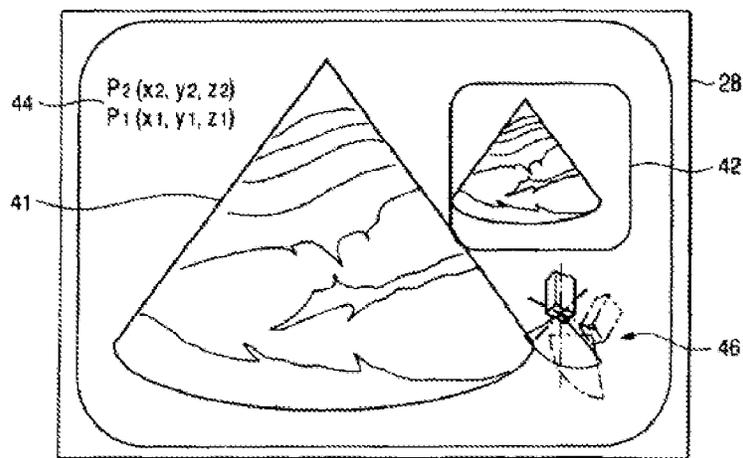
⁷ US 2005/0090742 A1, published Apr. 28, 2005 (“Mine”).

Rejection 2

The Examiner rejects claims 30, 32, 33, and 37 under 35 U.S.C. § 103 as unpatentable over Takeuchi and Heer. Final Act. 3 (so rejecting claim 30 and 37), 7 (so rejecting claims 32 and 33).

Takeuchi relates to “an ultrasonic imaging assisting method for use in, for example, medical care.” Takeuchi ¶3. Figure 7a of Takeuchi is reproduced below.

FIG. 7A



Takeuchi Figure 7a, reproduced above, shows display 28 for an ultrasonic diagnosis apparatus. *Id.* ¶60. The display shows live ultrasonic image 41, prerecorded reference ultrasonic image 42, current position information 44 for an ultrasonic probe, and “probe movement information 46.” *Id.* The probe movement information “is displayed as a view showing the relation between the ultrasonic probe 12 at the current position and the ultrasonic probe 12 at the position at which the reference image can be

acquired.” *Id.*⁸ The “probe movement information 46 shown in the drawing comprises a probe A (solid line) indicating the current position and posture of the ultrasonic probe 12, and a probe B (dotted line) indicating the position and the posture to which the ultrasonic probe 12 has to be moved” to obtain the an image corresponding to reference ultrasonic image 42. *Id.*

The Examiner finds that Takeuchi discloses the method of independent claim 37 except that, whereas claim 37 recites “presenting on a video display a pre-recorded primary demonstration video clip . . . [and] a pre-recorded ultrasound image video clip . . . ,” Takeuchi discloses presenting still images that otherwise meet these limitations. Final Act. 3–5; *see also* Appeal Br. 7 (“Thus, contrary to the present invention Takeuchi merely deploys two pre-recorded **still images** with a live ultrasound image.”).

Heer relates to “an ultrasound training system designed to standardize teaching and learning of gynecological sonography using a virtual model.” Heer 441 (Abstract). The Examiner finds:

Heer et al. disclose combining two-dimensional imaging information of the B-mode plane of a sonographic examination and the spatial information of the position of the ultrasound probe to generate a voxel cuboid, wherein the combined information is provided as a video (i.e. 6 minute video clip) in order to provide instructions for performing a sonographic examination (Abstract; pgs. 440–441, Section: Technical background; pg. 441, right column, 2nd paragraph; Figures 1-2, Table 2). Every B-mode plane of the voxel cuboid is linked to a single position of the ultrasound probe, and thus the B-mode video is in synchronism with the corresponding probe position information

⁸ The ultrasound probe 12 is shown but not labeled in Figure 7a. It is shown labelled in Figure 2.

(pg. 441, left column, 1st paragraph). Viewing the video provided improved ultrasound training (Abstract; pgs. 442–443, Section: Results).

Final Act. 5.

The Examiner concludes that the claimed invention would have been obvious for two independent reasons, stating:

[I]t would have been obvious to one of ordinary skill in the art to substitute the instructions for performing a sonographic examination provided in the form of still images with instructions for performing a sonographic examination provided in the form of video clips, as taught by Heer et al., as the substitution of one known form of providing instructions for performing a sonographic examination for another yields predictable results to one of ordinary skill in the art and further presenting instructions in the form of a video clip provides improved ultrasound training (Abstract; pgs. 442–443, Section: Results). One of ordinary skill in the art would have been able to carry out such a substitution and the results are reasonably predictable.

Alternatively, it would have been obvious to one of ordinary skill in the art to use synchronized video clips instead of using synchronized still images, respectively, for the pre-recorded primary demonstration information and pre-recorded ultrasound information, thus resulting in presenting a pre-recorded primary demonstration video clip and a pre-recorded ultrasound image video clip on the video display, as Takeuchi require providing instructions for performing a sonographic examination comprising of a linked pre-recorded ultrasound image (i.e. “reference image”) with pre-recorded probe information (i.e. “primary demonstration image”) and Heer et al. teach a successful method for providing instructions in the form of video clip for performing a sonographic examination. That is, using the known technique of using video clips to provide instructions for performing a sonographic examination, as desired in Takeuchi, would have been obvious to one of ordinary skill in the art.

Final Act. 5–6.

Appellants argue that the asserted combination of Takeuchi and Heer would not have led to the claimed invention. We address those arguments below but find none of them persuasive.

First, Appellants argue that “because Takeuchi’s method relies on indicating a fixed probe B position to which the user is meant to move the probe” (*see* Fig. 7a, ref. 46, dashed lines), “one skilled in the art would not be prompted to replace Takeuchi’s still image of the probe B position with Heer’s video.” Appeal Br. 10. Appellants elaborate that, in Takeuchi:

a comparison with the changing real-time ultrasound image 41 makes sense . . . only if the reference image is static . . . because Takeuchi’s method relies on presenting a reference image that corresponds to the very position and posture indicated in the probe movement information (depicted at 46 in Fig. 7A) by means of a still image of probe B.

Id. at 7. However, as articulated in the rejection, Takeuchi’s prerecorded reference ultrasonic image 42 and the probe movement information 46 are both modified to take the form of videos. *See* Final Act. 5–6, 14. Those videos can correspond to one another just as Takeuchi’s still images correspond with one another. *See* Ans. 14 (“by definition, a video is a digital recording of a *set of images*”). The teaching for such correspondence comes from Takeuchi, albeit in the context of still images, while Heer provides the teaching of using videos. *See id.* (“[I]t is the combination of Takeuchi in view of Heer that provides the pre-recorded ultrasound image information and the pre-recorded primary demonstration image information in the form of a video clip instead of in the form of still images.”). And, as the Examiner points out “it is well known in the art that video clips can be

paused in order to effectively present to a user a paused, still image, thus allowing for the comparison with a changing real-time ultrasound image (41).” Ans. 14; *see also* Final Act. 13 (making same point). Thus, the asserted combination preserves all functionality of Takeuchi yet also provides “improved ultrasound training” by “presenting instructions in the form of a video clip.” Final Act. 5–6.

Second, Appellants argue that “it is not apparent where one skilled in the art would obtain the idea of replacing Takeuchi’s reference image with an ultrasound image video clip.” Appeal Br. 10. However, the Examiner showed that the “idea” would come from the teachings of Heer, which provide sonographic training instructions in the form of video clips. Final Act. 5–6 (citing Heer 440 (Abstract), 442–43).

Third, Appellants argue that because “Heer suggest[s] presenting the tutorial video **prior** to performing any steps of the sonographic procedure, . . . it teaches away from the present invention.” *Id.* However, the rejection does not incorporate Heer’s teaching of when to present its tutorial video. The rejection relies on Heer for teaching sonographic training instructions in the form of video clips. In other words, Appellants’ “teaching away” argument is not commensurate with the rejection, and the particular combination of teachings, asserted by the Examiner.

For the foregoing reasons, we affirm the Examiner’s rejection of claims 32, 33, 37, and 40 under 35 U.S.C. § 103 as unpatentable over Takeuchi and Heer.

Rejection 3

The Examiner rejects claims 32 and 33 under 35 U.S.C. § 103 as unpatentable over Takeuchi, Heer, and Shinichi. Final Act. 7.

Claims 32 and 33 ultimately depend from claim 37 and add limitations directed to having “several pre-recorded primary demonstration video clips . . . , each . . . demonstrating a different step in the medical procedure.” Appeal Br., Claims App’x. 1.

Although the Examiner determined, and we affirm above, that claims 32 and 33 would have been obvious over Takeuchi and Heer, the Examiner also rejected these claims additionally in view of Shinichi. Final Act. 7.

Shinichi discloses an ultrasonic diagnostic device. Shinichi 1 (Title). The Examiner relies on Shinichi for its teaching of storing ultrasonic image data and operation image data (corresponding to “pre-recorded primary demonstration image”) in advance of an operation and in relation to different anatomical parts of the body (e.g., heart, abdominal region, and liver, corresponding to different medical steps). The Examiner articulates a reason how and why a person of ordinary skill in the art would have incorporated these teachings into Takeuchi and Heer. Final Act. 8.

In arguing against this rejection, Appellants merely assert that Shinichi “has little relevance to and is out of context with the side-by-side comparison as defined by the present invention.” Appeal Br. 11. This argument does not identify any error in the Examiner’s rejection.

Accordingly, we affirm the Examiner’s rejection of claims 32 and 33 under 35 U.S.C. § 103 as unpatentable over Takeuchi, Heer, and Shinichi.

Rejection 4

The Examiner rejects claims 29, 31, and 38 under 35 U.S.C. § 103 as unpatentable over Takeuchi, Heer, and Ehrlicke. Final Act. 9.

Claims 29 and 31 ultimately depend from claim 37 and add limitations reciting a “pre-recorded secondary demonstration video clip.”

Independent claim 38 is similar in scope to that of independent claim 37, except that it too recites a “pre-recorded secondary demonstration video clip.”

Ehricke discloses “a multimedia system for sonography simulation and education with an extensible case database.” Ehricke 225 (Title). The Examiner found that Ehricke discloses “that, during an ultrasound training session, two different views (i.e. front view and side view) of a transducer model are presented to a user in a user interface.” Final Act. 9 (citing Ehricke, Figs. 1–2). The Examiner concluded that it would have been obvious to incorporate into the asserted Takeuchi-Heer combination:

a corresponding pre-recorded secondary demonstration video clip on the video display in synchronism with the pre-recorded primary demonstration video clip and the pre-recorded ultrasound image video clip, as taught by Ehricke et al., in order to provide an additional directional view of the probe position, thereby providing an increased awareness of the probe position with respect to the patient.

Id. at 9–10.

Appellants argue that Ehricke “fails to disclose any video clips, let alone a demonstration video clip and a[n] ultrasound image video clip,” and “it also fails to disclose a live ultrasound image, let alone simultaneously presented with video clips.” Appeal Br. 12. All of these arguments are unpersuasive because the Examiner did not rely on Ehricke for teaching such things. Instead, the Examiner relied on Ehricke for its teaching of providing multiple views. Final Act. 9; *see also In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (“Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references.”).

Appellants also argue that “[t]here is no reason why one skilled in the art would take Ehricke into account since this document solely relates to the simulation of an ultrasound system, whereas in Takeuchi and in the present invention a real ultrasound system is contemplated.” Appeal Br. 12. This argument is not persuasive. Simulated and real ultrasound imaging are both within the field of ultrasound imaging as well as the broader field of medical imaging.

For the foregoing reasons, we affirm the Examiner’s rejection of claims 29, 31, and 38 under 35 U.S.C. § 103 as unpatentable over Takeuchi, Heer, and Ehricke.

Rejection 5

The Examiner rejects claims 35 and 36 under 35 U.S.C. § 103 as unpatentable over Takeuchi, Heer, Ehricke, Ohtake, and Mine. Final Act. 10.

Claim 35 depends from claim 38 and further recites “one of the pre-recorded primary and at least one secondary demonstration video clip shows a perspective view while the other shows a corresponding cross-sectional view which coincides with a scanning plane of the ultrasound image video clip.” Claim 36 depends from claim 35 and further recites “wherein the scanning plane changes over the course of the ultrasound image video clip together with a cross-sectional plane of the cross-sectional view.”

Ohtake and Mine both disclose ultrasound diagnosis apparatuses. Ohtake, at [54]; Mine, at [54]. The Examiner found that Ohtake teaches “providing probe operation support information by showing a perspective view (73) of a recorded probe position.” Final Act 11 (citing Ohtake, Fig. 5). The Examiner found that Mine teaches “providing probe position

information by showing a cross-sectional view which coincides with a scanning plane of the ultrasound image.” *Id.* (citing Mine, Figs. 18, 23, 24). The Examiner concluded that it would have been obvious to one of ordinary skill in the art to substitute:

the pre-recorded primary video clip displaying a probe position of the above combined references [(i.e., Takeuchi, Heer, and Ehrlicke)] with a primary video clip showing a perspective view of a probe position, as taught by Ohtake, as the substitution of one known form for displaying a probe position for another yields predictable results to one of ordinary skill in the art[; and]

the secondary demonstration video clip displaying a probe position of the above combined references with a secondary video clip showing a corresponding cross-sectional view which coincides with a scanning plane of the ultrasound image, as taught by Mine et al., as the substitution of one known form for displaying a probe position for another yields predictable results to one of ordinary skill in the art.

Id. at 11–12.

Appellants argue that “none of the representations in Figure 18 [of Mine] are concerned with a pre-recorded demonstration video clip as claimed, but rather and exclusively only live images.” Appeal Br. 13. This argument is inapposite as the Examiner did not rely on Mine for teaching particular views in the specific context of pre-recorded demonstration video clips. Rather, the Examiner explicitly relies on a combination of references. *See* Final Act. 11–12; *see also Merck*, 800 F.2d at 1097.

For the foregoing reasons, we affirm the Examiner’s rejection of claims 35 and 36 under 35 U.S.C. § 103 as unpatentable over Takeuchi, Heer, Ehrlicke, Ohtake, and Mine.

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CONCLUSION

For the reasons discussed, we affirm the Examiner's rejections of claims 29–33 and 35–38.

TIME PERIOD

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