UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOSEF A. GRAESSLE,
STEPHEN B. SCHENK,
and MICHAEL C. LEA

Appeal 2008-4141
Application 10/306,663
Technology Center 1700

Decided: November 28, 2008

Before EDWARD C. KIMLIN, ROMULO H. DELMENDO, and MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 the final rejection of claims 1-15, and 30-43 (App. Br. 3). We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).

We AFFIRM.

INTRODUCTION

Appellants claim a biological growth plate scanner comprising, in relevant part, a processor that processes the image to determine the bacterial colony count, an optical diffuser element, and an illumination source oriented to direct light into the optical diffuser element, wherein the processor controls the illumination source based on a plate type defined for the biological growth plate such that the light directed into the optical diffuser element differs for different types of biological growth plates scanned into the device (claim 1).

Claims 1, 2, 5, 8, 10, 11, and 12 are illustrative:

> 1. A biological growth plate scanner device comprising:
>
> an imaging device that captures an image of a biological growth plate;
>
> a processor that processes the image to determine a number of biological colonies on the biological growth plate;
>
> an optical diffuser element; and
>
> an illumination source oriented to direct light into the optical diffuser element,
>
> wherein the optical diffuser element directs the light toward a side of the biological growth plate when the imaging device captures the image of the biological growth plate, and wherein the processor controls the illumination source based on a plate type defined for the biological growth plate such that the light directed into the optical diffuser element differs for different types of biological growth plates scanned in the device.

2. The device of claim 1, wherein the optical diffuser element defines a first major surface, a second major surface and two or more side surfaces, and the illumination source includes a plurality of illumination sources oriented to direct the light into the optical diffuser element via at least some of the side surfaces.

5. The device of claim 2, wherein the optical diffuser element is movable to support and transport the biological growth plate to a scanning position for scanning of the biological growth plate.

8. The device of claim 1, wherein the illumination source selectively produces one or more different illumination colors based on the plate type of the biological growth plate, the device further wherein:

the imaging device comprises a monochromatic camera oriented to capture the image of the biological growth plate; and

the processor controls the camera to capture one or more images of the biological growth plate during illumination with each of the different illumination colors.

10. The device of claim 8, wherein the processor controls the illumination sources to sequentially illuminate the biological growth plate with each of the different illumination colors, and to control an illumination duration for each of the different illumination colors based on the plate type of biological growth plate.

11. The device of claim 1, wherein the illumination source includes:

a set of red light emitting diodes to produce red illumination;

a set of green light emitting diodes to produce green illumination; and

a set of blue light emitting diodes to produce blue illumination.

> 12. The device of claim 11, further comprising a processor to selectively control activation of the red, green and blue light emitting diodes according to illumination requirements of the biological growth plate selected based on the plate type of the biological growth plate.

The Examiner relies on the following prior art references as evidence of unpatentability:

Daughters	3,493,772	Feb. 3, 1970
Farber	4,724,215	Feb. 9, 1988
Tokunaga	5,375,043	Dec. 20, 1994
Vaidyanathan	5,448,652	Sep. 5, 1995
Inoue	5,781,311	Jul. 14, 1998
Gibbs	6,107,054	Aug. 22, 2000
Bochner	6,271,022 B1	Aug. 7, 2001

Copending U.S. Patent Application 10/305,722 filed Nov. 27, 2002
Copending U.S. Patent Application 10/306,579 filed Nov. 27, 2002

The rejections as presented by the Examiner are as follows:

1. Claims 1-4, and 7-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Vaidyanathan in view of either Tokunaga or Inoue, and further in view of either Gibbs or Farber.
2. Claims 5 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Vaidyanathan in view of either Tokunaga or Inoue, and either Gibbs or Farber, and further in view of Daughters.
3. Claims 30-43 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Vaidyanathan in view of either Tokunaga or Inoue, and either Gibbs or Farber, and further in view of Bochner.
4. Claims 1-15, and 30-43 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable

over claims 1, 3-14, 26, 28-37, and 39-50 of copending Application No. 10/305,772 in view of Tokunaga and either Farber or Gibbs.

5. Claims 1-15, and 30-43 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3-14, 26, 28-37, and 39-50 of copending Application No. 10/306,579 in view of Vaidyanathan and Tokunaga.[1]

Appellants separately argue claims 1, 5, 8, 10, and 12. Accordingly, we address Appellants' arguments regarding rejection 1 with respect to claims 1, 8, 10, and 12. With regard to rejection 2, we address Appellants' arguments with respect to claim 5. With regard to rejection 3, Appellants indicate that claims 30-33, 35, 37, 39, and 41-43 stand or fall with the arguments in support of rejection 1 (App. Br. 15). Appellants further indicate that with regard to claims 34, 36, 38, and 40 of rejection 3, those claims stand for fall with the arguments in support of separately argued claims 5, 8, 10, and 12, respectively (App. Br. 16). Appellants indicate that the claims subject to rejections 4 and 5 stand or fall with the arguments in support of the claims subject to rejection 1 (App. Br. 16-17).

[1] According to the USPTO's Patent Application Locating and Monitoring system (PALM), application 10/306,579 issued as U.S. Patent 7,298,885 on November 20, 2007. Therefore, the obviousness-type double patenting rejection is no longer provisional.

OPINION

35 U.S.C. § 103(a) REJECTION OVER VAIDYANATHAN IN VIEW OF EITHER TOKUNAGA OR INOUE, AND EITHER GIBBS OR FARBER

CLAIM 1

Appellants argue that there is no motivation to combine Tokunaga's or Inoue's optical light diffuser with Vaidyanathan's biological growth plate scanner (App. Br. 6-10). Appellants further argue that none of the applied prior art teach or suggest a processor that controls an illumination source based on a plate type (App. Br. 10-12).

The issue presented in this appeal is whether Appellants have established that the Examiner erred in concluding that it would have been obvious to combine Vaidyanathan in view of either Tokunaga or Inoue, and either Gibbs or Farber. We answer that question in the negative.

The findings of fact relevant to the issue presented in this appeal are as follows:

Vaidyanathan

Vaidyanathan discloses that display system 10 comprising a camera 12 and multicolor filter wheel 14 to record the image from a sample holder 16 illuminated using a light source 18 positioned below the sample holder in a computer system 24 (Fig. 2, col. 5, ll. 20-61). The multicolor filter wheel permits the camera to record a blue, green, red, or black and white image of the sample (col. 5, ll. 24-31). Vaidyanathan discloses an example of a display system that includes a bacteria colony counting system (col. 35, ll. 38-41). In the example, Vaidyanathan discloses that a fluorescent lamp is positioned above the sample holder to illuminate the dish uniformly on all

sides (col. 36, ll. 19-21). Vaidyanathan further discloses that the brightness of light source is controlled depending upon the type of plate (i.e., high or low contrast plates) (col. 36, ll. 31-36).

Tokunaga

Tokunaga discloses that most conventional indirect light units use large and powerful light sources such as fluorescent lights arranged on the side edges of a transparent plate (col. 1, ll. 22-25). Tokunaga discloses the light unit of the invention including a light guide plate 1 (i.e., an optical diffuser element) and light emitting diodes (LEDs) positioned in the side of the light guide plate to emit different colored light (col. 2, ll. 46-48). Tokunaga discloses that the lighting unit may be used in measuring instruments (col. 4, ll. 67-68). Tokunaga discloses that the lighting unit is capable of varying the luminance (e.g., brightness) and color of the illumination (col. 1, ll. 47-48). Tokunaga further discloses that the lighting unit produces substantially uniform illumination (col. 5, ll. 14-15).

Inoue

Inoue discloses a light source with little unevenness in the illumination (col. 2, ll. 2-5). Inoue discloses positioning a fluorescent light source 7 adjacent a light-guiding plate 19 (i.e., an optical diffuser element) to emit light in a planar, uniform manner (Figs. 4 and 5, col. 3, ll. 41-60, col. 4, ll. 12-15). Inoue discloses that positioning the fluorescent lights 7 adjacent the longer side of the light guiding plate reduces the power required to provide a suitable amount of light (col. 3, ll. 50-60).

Gibbs

Gibbs discloses an apparatus for use in automated antibiotic susceptibility testing of samples (col. 1, ll. 5-8). Gibbs discloses using an imaging device such as a camera to image a growth plate to determine where the growth occurs and which antibiotics are effective to stop the growth (col. 4, ll. 35-57). Gibbs discloses placing antibiotic disks labeled with an identification code on a growth plate (col. 2, ll. 49-67). The imaging device retrieves the codes to identify the antibiotic (col. 4, ll. 48-51).

Farber

Farber discloses a microbiological testing apparatus for automated incubation and reading of microbiological test arrays (col. 1, ll. 7-10). Farber discloses using a diffuser light source and color filters to image and inspect the sample on the carrier (col. 5, ll. 6-32). Farber discloses that the sample carrier has an identification code 119 formed thereon so that control circuitry 73 can determine the type of tray (col. 11, ll. 42-57). The image processing and control circuitry 73 require uniformity of lighting over the inspection station 37 such as diffuser plate 41 (col. 11, ll. 64-68, col. 12, l. 1). The tray type determined from the identification code 119 permits the control circuitry to set the incubation times (col. 12, ll. 65-68, col. 13, ll. 1-2). Farber discloses that the control circuitry 73 controls the color filter wheel to determine if a color change evincing a particular result has occurred (col. 13, ll. 36-44).

In assessing the obviousness of a claimed invention, a court must ask whether the claimed improvement is more than the predictable use of prior art elements according to their established function. *KSR Int'l Co. v.*

Teleflex, Inc., 127 S.Ct 1727, 1740 (2007). The test for obviousness is what the combined teachings of the prior art would have suggested to one of ordinary skill in the art. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). It is well settled that it would have been obvious to broadly provide a mechanical or automatic means to replace manual activity which accomplishes the same result. *In re Venner*, 262 F.2d 91, 95 (CCPA 1958).

Applying these legal principles to the factual findings noted above, we determine, like the Examiner, that the teachings of the references taken as whole provide a reason for the combination proposed by the Examiner and suggest the disputed claim feature. Specifically, Appellants contend that the Examiner's motivation for combining Tokunaga's or Inoue's optical diffuser element with Vaidyanathan's biological growth plate scanner (i.e., to reduce size or power) fails to address why one of ordinary skill would use an optical diffuser element in a biological growth plate scanner (App. Br. 7). However, Tokunaga discloses the light diffusing element is an improvement over the prior art indirect light units that use large and powerful light sources, such as fluorescent lights (col. 1, ll. 22-25; col. 2, ll. 46-48). Inoue further discloses that the indirect light source provides reduced power consumption (col. 3, ll. 50-60). Accordingly, the Examiner's stated reason for substituting Tokunaga's or Inoue's indirect lighting unit for Vaidyanathan's fluorescent bulb light source is taken from the teachings of the prior art such that one of ordinary skill would have been motivated to make the combination to reduce the power consumption of Vaidyanathan's light source.

We add that Tokunaga and Inoue each discloses that the diffuser provides a uniform light source (Tokunaga, col. 5, ll. 14-15; Inoue, col. 2, ll. 2-5) and Tokunaga discloses using the diffuser in a measurement device

(Tokunaga, col. 4, ll. 67-68). Vaidyanathan discloses the importance of having a uniformly distributed light source in a biological growth plate scanning device (i.e., a measurement device) (col. 36, ll. 19-21). Accordingly, it would have been obvious to combine Tokunaga's or Inoue's diffuser element with Vaidyanathan's biological growth plate scanning device to provide the desired uniform lighting. Such a modification would merely be the predictable use of prior art elements (i.e., light diffusers) according to their established function (i.e., providing uniform light). *KSR*, 127 S. Ct. at 1740. Appellants' motivation argument is without persuasive merit.

Regarding Appellants' argument that the processor claim feature is not taught or suggested by the prior art, we do not agree. The Examiner relied on Gibbs or Farber to teach or suggest the argued claim feature. Farber discloses to apply a code to a carrier so that the type of tray may be ascertained by scanning the tray and using the tray type to control, for example, incubation time (col. 11, ll. 42-57). Gibbs also discloses coding a tray to indicate the type of material on the tray (Col. 2, ll. 49-67). Vaidyanathan discloses remotely adjusting the brightness of the light source depending on the type of tray (col. 36, ll. 31-36).

Accordingly, the teachings of the references as a whole would have suggested using Farber's or Gibbs' coding of the tray to indicate tray type in Vaidyanathan's biological growth plate scanning apparatus in order to provide an automatic indication of tray type to control the brightness of the light source thereby satisfying the argued claim feature. Farber's or Gibbs' automatic detection and determination of tray type would have merely automated Vaidyanathan's apparent manual remote control of the light

source brightness based on tray type, which would have been obvious. *Venner*, 262 F.2d at 95.

Appellants' argument, that adjusting brightness of the light source based on tray type does not teach "the use of different types of illumination for different types of biological growth plates" (App. Br. 11), misses the point that claim 1 does not require the use of different types of illumination. Rather, claim 1 merely requires that "the processor controls the illumination source based on plate type . . . such that the light directed into the optical diffuser element differs for different types of biological growth plates scanned into the device" (claim 1). This feature of claim 1 is met by the teachings of the applied prior art as whole, including Vaidyanathan's adjustment of the brightness based on tray type. The claim is not limited to having "different types of illumination" as argued by Appellants.

For the above reasons, Appellants' arguments have not established that the Examiner erred in the obviousness conclusion.

CLAIMS 8, 10, AND 12

Regarding claim 8, Appellants argue that the Examiner did not identify anything in Vaidynanathan or Tokunaga that teaches the use of an illumination source to produce different illumination colors based on the type of plate (App. Br. 12). Regarding claims 10 and 12, Appellants argue that the Examiner cited no teachings or evidence to support the assertion that the features of these claims would have been obvious (App. Br. 13-14).

The issue presented in this appeal regarding claims 8, 10, and 12, is whether Appellants have established that Examiner erred in concluding that

the features of claims 8, 10, and 12 would have been obvious over the cited prior art. We answer that question in the negative.

In addition to our earlier presented factual findings, the following additional findings are relevant to claims 8, 10, and 12:

Vaidyanathan discloses using a multicolor filter wheel to filter or pull out the color from the white light illuminated sample image captured by a black and white camera (col. 5, ll. 26-28).

Tokunaga discloses using multicolor LEDs in the diffuser panel (col. 2, ll. 46-52).

Farber discloses that controller unit 73 which determines and records the tray type based on markings on the tray, also controls the filter wheel 69 to examine a particular cupule in the tray one or more times by using one or more color filters to determine if a color change has in fact occurred (col. 11, ll. 55-56, col. 13, ll. 36-44). Farber discloses that the incubation times are set depending on tray type (e.g., an identification tray versus a susceptibility tray (col. 12, ll. 65-68, col. 13, ll. 1-4).

The test for obviousness is what the combined teachings of the prior art would have suggested to one of ordinary skill in the art. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

With regard to claims 8, 10, and 12, the teachings of the references, taken as a whole, would have suggested controlling the color of illumination based on the type of tray. Vaidyanathan discloses that the filter wheel is used to control the extraction of color information about the sample from the black and white image of the camera (col. 5, ll. 26-28). Farber discloses that it is known in the art to use a controller 73 to determine the tray type, which is then used to determine the incubation times depending on the type of tray

that performs particular tests (e.g., identification or susceptibility tests) (col. 11, ll. 55-56; col. 13, ll. 36-44). Farber further discloses that identification tests (i.e., tests performed in identification trays) may produce color changes which would then require using multiple colors of the filter wheel to ascertain the color of the sample (col. 13, ll. 36-44). In other words, Farber recognizes that the type of tray (e.g., identification versus susceptibility) and thus the test type may be used to control the selection of colors on the filter wheel (col. 12, ll. 65-68; col. 13, ll. 1-4, 35-44).

Moreover, Tokunaga discloses using a multicolor LED diffuser plate in measurement devices (col. 2, ll. 46-52). Vaidyanathan and Farber both disclose using a multicolor filter wheel to extract the color information from an image produced using white light (Vaidyanathan, col. 5, ll. 26-28; Farber, col. 11, ll. 55-56, col. 13, ll. 36-44). We determine, like the Examiner, that the teachings of the references taken as a whole would have suggested to one of ordinary skill in the art that using a multicolor filter wheel or a multicolor light source are "alternate means recognized in the art for generating red, blue, and green images as required of the primary reference [Vaidyanathan]" (Ans. 7).

Therefore, we determine that the teachings of Vaidyanathan, Tokunaga, and Farber taken as a whole would have suggested the argued feature of claim 8.

With regard to claims 10 and 12, controlling the illumination requirements (i.e., colors and duration) of the LEDs of the panel, would have been suggested by the teachings of the references taken as a whole. As noted above, the combination of Vaidyanathan and Tokunaga would have suggested using a multicolor LED panel as an alternate means for

determining color using a multicolor filter wheel. Moreover, Vaidyanathan and Farber both disclose using a color filter wheel to extract color information from a sample image (Vaidyanathan, col. 5, ll. 26-28; Farber, col. 12, ll. 65-68, col. 13, ll. 1-4, 35-44). Farber further discloses that the type of tray (e.g., identification versus susceptibility) controls the number times (duration) and color of filter used. Accordingly, the argued distinctions regarding claims 10 and 12 would have been suggested by the prior art.

For the above reasons, we determine that Appellants have not established that the Examiner erred in concluding that the features of claims 8, 10, and 12 would have been obvious over the applied prior art.

35 U.S.C. § 103(a) REJECTION OVER VAIDYANATHAN IN VIEW OF EITHER TOKUNAGA OR INOUE, AND EITHER GIBBS OR FARBER, AND FURTHER IN VIEW OF DAUGHTERS

CLAIM 5

Appellants argue that Daughters teaches away from the proposed combination because Daughters uses a transparent table to support the sample, which is at odds with using a diffuser element as proposed by the combination (App. Br. 14-15).

The issue presented in this appeal with regard to this rejection is whether the Appellants have established that the Examiner erred in concluding that the combination of Daughters' moveable support member with Vaidyanathan's biological growth plate support as modified by either Tokunaga or Inoue, and either Gibbs or Farber, would have been obvious. We answer that question in the negative.

The Examiner finds that the combination of Vaidyanathan in view of either Tokunaga or Inoue, and either Gibbs or Farber disclose all the features of claim 5, except for the feature reciting that the "culture plate is supported on the diffuser element and the diffuser element is moveable" (Ans. 8). The Examiner finds that Daughters discloses that it is "known in the art to support a culture plate on a moveable support member . . . which includes back lighting" (Ans. 8). Based on these findings, the Examiner concludes that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the culture plate of the modified primary reference with a movable support for the known and expected result of adjusting the culture plate relative to the imaging system" (Ans. 9). We agree.

Notably, Appellants' arguments do not dispute the combination of Daughters' moveable support plate feature with the biological growth plate scanner proposed by the combination. Appellants merely contend that Daughters' transparent support plate disclosure would teach away from the combination of Daughters' features with the other references. Appellants' argument is unpersuasive for two reasons. First, as noted above with regard to the combination of Vaidyanathan and either Tokunaga or Inoue, there is motivation for combining the light diffuser element with Vaidyanathan's biological growth plate support. Second, the Examiner is not proposing to combine Daughters' transparent substrate support with the combination of references. Rather, the Examiner is proposing to combine Daughters' moveable support substrate with the combination in order to "provide the culture plate of the modified primary reference with a movable support for the known and expected result of adjusting the culture plate relative to the

imaging system" (Ans. 9). Appellants do not address the Examiner's proposed combination or the motivation for the combination.

Accordingly, we determine that Appellants have not established that the Examiner erred in concluding that the combination of Daughters' moveable support member with Vaidyanathan's biological growth plate support as modified by either Tokunaga or Inoue, and either Gibbs or Farber, would have been obvious.

DECISION

We affirm the Examiner's § 103 rejection of claims 1-4, and 7-15 over Vaidyanathan in view of either Tokunaga or Inoue, and either Gibbs or Farber.

We affirm the Examiner's § 103 rejection of claims 5 and 6 over Vaidyanathan in view of either Tokunaga or Inoue, and either Gibbs or Farber, and further in view of Daughters.

We affirm the Examiner's § 103 rejection of claims 30-43 over Vaidyanathan in view of either Tokunaga or Inoue, and either Gibbs or Farber, and further in view of Bochner.

We affirm the Examiner's provisional obviousness-type double patenting rejection of claims 1-15, and 30-43 over Application No. 10/305,772 in view of Tokunaga and either Gibbs or Farber.

We affirm the Examiner's provisional obviousness-type double patenting rejection of claims 1-15, and 30-43 over Application No. 10/306,579 in view of Vaidyanathan and Tokunaga.

The Examiner's decision is affirmed.

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

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3M INNOVATIVE PROPERTIES COMPANY
P.O. BOX 33427
ST. PAUL, MN 55133-3427