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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/602,640	11/21/2006	Maurice R. Ferre	125632-16 (MHM 13832US16)	9029
23446	7590	02/28/2013	EXAMINER	
MCANDREWS HELD & MALLOY, L.L.P. 500 WEST MADISON STREET SUITE 3400 CHICAGO, IL 60661			KISH, JAMES M	
			ART UNIT	PAPER NUMBER
			3737	
			NOTIFICATION DATE	DELIVERY MODE
			02/28/2013	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MAURICE R. FERRE,
PETER D. JAKAB, and JAMES S. TIEMAN

Appeal 2011-009655
Application 11/602,640
Technology Center 3700

Before ERIC GRIMES, FRANCISCO C. PRATS, and
SHERIDAN K. SNEDDEN, *Administrative Patent Judges*.

PRATS, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal under 35 U.S.C. § 134 involves claims to medical devices that aid in determining the position of a medical instrument during a surgical operation. The Examiner entered rejections for anticipation and obviousness.

We have jurisdiction under 35 U.S.C. § 6(b). We affirm in part.

STATEMENT OF THE CASE

Claims 1, 3, 5, 6, 8-14, 16, 17, and 19-26 stand rejected and appealed (App. Br. 2). Claims 1 and 14, the independent claims, illustrate the appealed subject matter and read as follows:

1. A system for monitoring a position of a medical instrument with respect to a patient's body, comprising:
a medical instrument;
a reference mount attachable to the patient's body, wherein the reference mount comprises a headset;
markers coupled to the headset for providing reference points on computer images of the head; and
an electromagnetic unit for monitoring movement of the medical instrument relative to the reference mount, the electromagnetic unit including a first electromagnetic member attachable to the patient's body by the reference mount, and a second electromagnetic member attachable to the medical instrument.

14. A system for monitoring a position of an instrument with respect to an object, comprising:
an instrument;
a reference mount attachable to the object;
markers coupled to the reference mount for providing reference points on computer images of the object; and
an electromagnetic unit for monitoring movement of the instrument relative to the reference mount, the electromagnetic unit including a first electromagnetic member attachable to the object by the reference mount, and a second electromagnetic member attachable to the instrument.

The following rejections are before us for review:

(1) Claims 1, 3, 5, 6, 10, 13, 14, 16, 17, 19, and 20, under 35 U.S.C. § 102(b) as anticipated by Crum¹ (Ans. 4-6);

(2) Claims 21 and 22, under 35 U.S.C. § 103(a) as obvious over Crum and Allen² (Ans. 6-7);

(3) Claims 1, 3, 5, 6, 10-14, 16, 17, 19, 20, and 23-26,³ under 35 U.S.C. § 103(a) as obvious over Schulz⁴ and Crum (Ans. 7-8); and

¹ U.S. Patent No. 4,793,355 (issued December 27, 1988).

² U.S. Patent No. 5,016,639 (issued May 21, 1991).

(4) Claims 8 and 9, under 35 U.S.C. § 103(a) as obvious over Schulz and Crum, combined with either LeVeen⁵ or Peyman⁶ (Ans. 9-10).

ANTICIPATION

The Examiner cited Crum as describing an apparatus for making biomagnetic measurements, the apparatus including a headset worn by the patient to be analyzed, the headset having several receivers 38 attached to it (*see* Ans. 4; *see also* Crum, Figs. 1 and 2). The Examiner found that because Crum described the receivers 38 as being used to determine the location of the patient's head, the receivers could properly be considered as both the headset-coupled markers recited in claims 1 and 14, as well as the first patient-attachable electromagnetic member recited in those claims (*see id.*).

Appellants argue that the Examiner improperly found that claims 1 and 14 encompass devices in which the markers and electromagnetic members are the same element (*see* App. Br. 7, 9-11; *see also* Reply Br. 2-6). Appellants note that Crum refers to marks on the patient's body, and urge that if Crum had contemplated using the receivers as markers, Crum would have "noted as much, based on the fact that Crum acknowledges and describes 'marks.'" (App. Br. 8.)

³ As Appellants point out (*see* Reply Br. 2), the Schulz/Crum obviousness rejection did not include claims 23-26 in the Final Rejection (*see* Final Rejection 9 (entered August 16, 2010)). In response to this new ground of rejection, Appellants have argued the merits of claims 23-26 (*see* Reply Br. 13-15), rather than requesting that prosecution be reopened.

⁴ U.S. Patent No. 5,622,170 (filed October 4, 1994).

⁵ U.S. Patent No. 3,991,770 (issued November 16, 1976).

⁶ U.S. Patent No. 4,428,748 (issued January 31, 1984).

Moreover, Appellants argue, “the claims indicate that the markers and the electromagnetic member are not the same. If the Applicants contemplated that they were the same, the Applicants would not have drafted the claims so that the same item was represented by different terms (per the principles of claim differentiation)” (App. Br. 7; *see also* Reply Br. 2-3).

Appellants’ arguments do not persuade us that the Examiner erred in finding that Crum anticipates claims 1 and 14.

Crum describes an apparatus “for making biomagnetic measurements of the human body, wherein the location of the portion of the body from which measurements are taken is determined and recorded with the biomagnetic data itself” (Crum, col. 3, ll. 37-40). As Crum is particularly interested in localizing biomagnetic fields associated with brain abnormalities (*see id.* at col. 2, ll. 41-51), Crum’s device includes a headband having attached receivers 38, which allow determination of the position of the patient’s head:

At least one, and most preferably three, receivers **38** are mounted on the portion of the body **12** of the patient from which biomagnetic data is to be taken, here illustrated as the head **14**. These receivers **38** receive electromagnetic signals from the transmitter **30**, to permit determination of the location of the receivers **38** with respect to the transmitter **30**

(*Id.* at col. 9, ll. 15-21; *see also id.* at col. 12, ll. 1-12.) Thus, in addition to undisputedly being electromagnetic members, and because receivers 38 indicate the relative position of the patient’s head, we agree with the Examiner that an ordinary artisan would also have recognized that receivers

38 would be considered markers capable of providing reference points on computer images of the head, as recited in claims 1 and 14.

We acknowledge, as Appellants argue, that claims 1 and 14 recite the markers and first electromagnetic members separately. We are not persuaded, however, that claims 1 and 14 therefore necessarily require those elements to be distinct entities.

Specifically, claims 23-26, which depend from claims 1 and 14, expressly recite separate and distinct markers and electromagnetic members (*see* App. Br. 27):

23. The system of claim 1, wherein the markers are separate and distinct from the first and second electromagnetic members.

24. The system of claim 1, wherein the first and second electromagnetic members are not markers.

25. The system of claim 14, wherein the markers are separate and distinct from the first and second electromagnetic members.

26. The system of claim 14, wherein the first and second electromagnetic members are not markers.

By virtue of their dependency, claims 23-26 necessarily recite narrower subject matter than recited in claims 1 and 14. *See* 35 U.S.C. § 112(d) (2012) (“[A] claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed.”). Because claims 23-26 require the markers and electromagnetic members to be separate entities, claims 23-26 demonstrate that claims 1 and 14, which are by definition broader than claims 23-26, encompass systems in which the markers and electromagnetic members are, in fact, the same.

Appellants' arguments therefore do not persuade us that the Examiner improperly interpreted claims 1 and 14 as encompassing the apparatus described by Crum. We therefore affirm the Examiner's anticipation rejection of claims 1 and 14 over Crum. As they were not argued separately, claims 3, 10, 13, 16, and 19 fall with claims 1 and 14. *See* 37 C.F.R. § 41.37(c)(1)(vii).

As to claim 5, given Crum's disclosure that its headband is elastic (*see* Crum, col. 6, ll. 55-57), we are not persuaded Crum fails to describe a headset that is configured for attachment to the patient's head at three points. We therefore also affirm the Examiner's rejection of claim 5 as anticipated by Crum.

As to claim 6, Appellants argue that the passage in Crum cited by the Examiner does not demonstrate that Crum's apparatus is "configured for use during scanning and surgery to provide registration with a computer image during surgery" (App. Br. 9).

Appellants' arguments do not persuade us that the Examiner erred in maintaining the rejection as to claim 6. Claim 6 recites "[t]he system of claim 1, wherein the headset is configured for use during scanning and surgery to provide registration with a computer image during surgery" (App. Br. 25 (claim 6)).

Claim 6 thus encompasses systems which include a headset that is configured such that it is capable of being used during scanning and surgery, and is capable of providing registration with a computer image during surgery. *See In re Swinehart*, 439 F.2d 210, 213 (CCPA 1971) ("'[F]unctional' terminology may render a claim quite broad . . . [;] a claim employing such language covers *any and all* embodiments which perform

the recited function.” (Emphasis added.); *see also In re Schreiber*, 128 F.3d 1473, 1478-79 (Fed. Cir. 1997) (holding that a prior art apparatus meeting all claimed structural limitations was anticipatory because it was inherently capable of performing the claimed function).

As the Examiner found, in addition to having all of the structural features required by claim 6, Crum’s headset allows a practitioner to determine the relative location of the head when scanning for biomagnetic fields emitted by the brain:

The present invention thus provides a system for taking biomagnetic data in which the data is readily correlated with the positions of the features of the head. The locations of the regions of the brain can be determined by X-ray or other technique and correlated to the reference points in a separate procedure. By matching the spatially correlated biomagnetic data and the biological locations of the regions of the brain, it is possible to locate the biological source of the magnetic fields to within about 2-3 millimeters using the present approach.

(Crum, col. 13, ll. 36-46; *see also id.* at col. 12, ll. 50-59.) Given this disclosure, we agree with the Examiner that it was reasonable to find that Crum’s device was capable of use not only during brain scanning, but also during surgery directed, for example, to the particular brain regions of interest.

In contrast, Appellants point to no specific feature of Crum’s device that would prevent it from being used in the claimed manner, nor do Appellants point to any specific feature of the claimed device which is absent from Crum’s device. Thus, Appellants’ arguments do not persuade us that a preponderance of the evidence fails to support the Examiner’s position.

We therefore also affirm the Examiner's anticipation rejection over Crum as to claim 6. Claim 17 recites essentially the same language as claim 6, except that claim 17 depends from claim 14. We therefore also affirm the Examiner's rejection as to claim 17.

Claim 20 recites "[t]he system of claim 14, wherein the reference mount is configured to be registered relative to a computer image" (App. Br. 27). Appellants' argument regarding claim 20 is essentially the same as that of claims 6 and 17, discussed above.

Similar to the previous argument, however, Crum describes its headset as providing the location of the patient's head, and Appellants point to no specific feature of Crum's headset that would prevent it from being registered relative to a computer image. Moreover, Appellants again do not point to any specific feature of the claimed device that is absent from Crum's device.

Thus, because Appellants' arguments do not persuade us that a preponderance of the evidence fails to support the Examiner's position, we also affirm the Examiner's anticipation rejection as to claim 20.

OBVIOUSNESS – CRUM AND ALLEN

Claim 21 recites "[t]he system of claim 1, wherein each of the markers comprises a radiopaque metal ball" (App. Br. 27).

Claim 22 recites "[t]he system of claim 14, wherein each of the markers comprises a radiopaque metal ball" (*id.*).

In rejecting claims 21 and 22 as obvious, the Examiner noted Crum's disclosure that brain locations determined using X-ray or another technique could be correlated to the reference points determined using Crum's device (Ans. 6). Therefore, the Examiner reasoned, an ordinary artisan would have

considered it obvious that, “when X-ray imaging is used to determine locations of regions of the brain (and these regions are determined via correlation of the reference points) markers that provide reference points within the X-ray image would be utilized for the correlation process” (*id.* at 6).

The Examiner cited Allen as evidence that radiopaque metal balls were known in the art to be useful as registration or location markers in X-ray imaging, and concluded, therefore, that an ordinary artisan would have considered it obvious to include such balls as registration markers for the X-ray analysis described in Crum (*see id.*).

We agree with Appellants that the Examiner has not made out a prima facie case of obviousness. While we note that Crum describes “matching the spatially correlated biomagnetic data and the biological locations of the regions of the brain” (Crum, col. 13, ll. 41-43), Crum states that the correlation of the X-ray data and biomagnetic measurements is performed “in a separate procedure” (*id.* at col. 13, l. 41).

As Crum does not suggest performing the X-ray mapping of the brain and the biomagnetic measurements as part of the same procedure, we are not persuaded that an ordinary artisan would have been prompted to include radiopaque metal balls, useful in X-ray mapping (*see Allen*), on Crum’s headband, which instead uses a transmitter/receiver combination to determine the spatial location of magnetic fields generated by the brain.

Accordingly, we are not persuaded that an ordinary artisan would have been prompted to include on Crum’s headband X-ray detectable metal balls in addition to Crum’s location-providing receivers. Rather, we agree with Appellants that the Examiner has not made out a prima facie case of

obviousness as to claims 21 and 22. We therefore reverse the Examiner's rejection of those claims as obvious over Crum and Allen.

OBVIOUSNESS – SCHULZ AND CRUM

The Examiner rejected claims 1, 3, 5, 6, 10-14, 16, 17, 19, 20, and 23-26 as obvious over Schulz and Crum (Ans. 7-8).

The Examiner cited Schulz as describing an apparatus for determining the position and orientation of an invasive portion of a probe inside a three-dimensional body, the apparatus including a set of three or more light sensors having known positions with respect to a predetermined coordinate system, the sensors detecting the positions of two or more light emitters on a probe placed within the coordinate system (Ans. 7). The Examiner noted that the coordinate system was acquired using reference points placed on a patient by methods which an ordinary artisan would consider to be “uncomfortable to the patient” (*id.* at 8). The Examiner concluded:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the elastic headband taught by Crum to determine reference points in the system of Schulz, thereby not requiring insertion of pins, or bone screws into the patient's skull/head, providing a more comfortable experience for the patient.

(*Id.*)

Appellants argue that the combination of references does not teach or suggest a system having the features recited in claims 1, 5, 6, 14, 17, and 20 (*see* App. Br. 19-21; Reply Br. 10-13).

As the Federal Circuit has stated, “[i]t is well settled that ‘anticipation is the epitome of obviousness.’” *In re McDaniel*, 293 F.3d 1379, 1385 (Fed.

Cir. 2002) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)).

As discussed above, Appellants' arguments do not persuade us that Crum fails to describe a system having the features recited in claims 1, 5, 6, 14, 17, and 20. We are therefore not persuaded that the combination of Crum and Schulz fails to teach or suggest a system having all of the claimed features.

Accordingly, we affirm the Examiner's obviousness rejection of claims 1, 5, 6, 14, 17, and 20 over those references. As they were not argued separately, claims 3, 10-13, 16, and 19 fall with claims 1 and 14. *See* 37 C.F.R. § 41.37(c)(1)(vii).

Claims 23-26, however, stand on a different footing. As noted above, claims 23-26 require the electromagnetic members and the markers of the systems in claims 1 and 14 to be distinct elements.

The Examiner contended that, because Crum's receivers 38 could be considered markers as well as electromagnetic members, and because Crum described its headband as including a plurality of such receivers, "two of the numerals 38 may be markers while one of numerals 38 may be the first electromagnetic member" (Ans. 8 (citing Crum, Figs. 1 and 2)).

We are not persuaded. Crum discloses that elements 38 on its headband are either receivers or transmitters (*see* Crum col. 9, ll. 53-63), both of which are undisputedly electromagnetic members.

In contrast, claims 23-26 require the markers to either be "separate and distinct" from the electromagnetic members (claims 23 and 25), or to not be electromagnetic members (claims 24 and 26). As each of the receivers 38 in Crum's device is necessarily an electromagnetic member, we

are not persuaded that Crum teaches or suggests the combination of elements required by claims 23-26. We therefore reverse the Examiner's obviousness rejection of claims 23-26.

OBVIOUSNESS –
SCHULZ, CRUM, LEVEEN, PEYMAN

Claim 8 recites “[t]he system of claim 1, wherein the medical instrument comprises an aspirator” (App. Br. 25). Claim 9 recites “[t]he system of claim 8, wherein the aspirator defines an instrument mount for receiving the second electromagnetic member” (*id.*).

In concluding that claims 8 and 9 would have been obvious, the Examiner conceded that the system suggested by Schulz and Crum failed to describe the use of an aspirator as the deployed medical instrument, but noted, however, that LeVeen and Peyman taught aspirators as being medical instruments known to be useful in brain surgery, as well as other surgery on other organs (Ans. 9).

In traversing this rejection, Appellants rely on their previous arguments directed to the deficiencies of Crum and Schulz as to claim 1 (*see* App. Br. 22; Reply Br. 15). For the reasons discussed above, we do not find these arguments persuasive. We therefore affirm this rejection as well.

SUMMARY

We affirm the Examiner's anticipation rejection of claims 1, 3, 5, 6, 10, 13, 14, 16, 17, 19, and 20 over Crum.

We reverse the Examiner's obviousness rejection of claims 21 and 22 over Crum and Allen.

We affirm the Examiner's obviousness rejection of claims 1, 3, 5, 6, 10-14, 16, 17, 19, and 20 over Schulz and Crum.

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We reverse the Examiner's obviousness rejection of claims 23-26 over Schulz and Crum.

We affirm the Examiner's obviousness rejection of claims 8 and 9 over Schulz and Crum, combined with either LeVeen or Peyman.

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).

AFFIRMED-IN-PART

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