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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte STEVEN L. HARTMANN, BRUCE M. BURG,
ANDREW BZOSTEK, BRAD JACOBSEN,
and MATTHEW W. KOENIG [1]

Appeal 2016-006089
Application 13/016,740
Technology Center 3700

Before JEFFREY N. FREDMAN, JOHN G. NEW,
and JOHN E. SCHNEIDER, *Administrative Patent Judges*.

SCHNEIDER, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 involving claims to navigation system for surgical instruments, which have been rejected as obvious. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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[1] Appellants identify the Real Party in Interest as Medtronic Navigation, Inc. Appeal Br. 3.

STATEMENT OF THE CASE

The Specification describes tracking devices which can be used to track the location of a small or low invasive surgical instrument. Spec. ¶ 6.

Claims 35–43 and 45–58 are on appeal. Claim 35 is representative of the rejected claims and reads as follows:

> 35. A navigation system, comprising:
>
> an instrument that is operable to be moved relative to a subject and having an exterior wall and defining a through bore defined along an instrument axis;
>
> a tracking device positioned on the exterior wall of the instrument, the tracking device including:
>
> a first portion having first and second guide posts radially extending from the exterior wall at first and second circumferential locations, the first and second guide posts each having a planar first guide wall having a surface formed at an acute first guide wall angle relative to the instrument axis and a first opposed guide wall perpendicular to the exterior wall, and a first conductive wire wound around the exterior wall of the instrument and engaging the first guide wall of the first guide post and the first opposed guide wall of the second guide post to define a first navigation vector that is acute with respect to the instrument axis; and
>
> a second portion having third and fourth guide posts radially extending from the exterior wall at third and fourth circumferential locations different from the first and second circumferential locations, the third and fourth guide posts each having a second planar guide wall formed at an acute second guide wall angle relative to the instrument axis, and a second opposed guide wall perpendicular to the exterior wall, and a second conductive wire wound around the exterior wall of the instrument and engaging the second planar guide wall of the third guide post and the second opposed guide wall of the fourth guide post to define a second navigation vector that is acute with respect to the instrument axis;

> wherein the first guide post includes a first side support wall that extends from the exterior wall to a first top wall and the second guide post includes a second side support wall that extends from the exterior wall to a second top wall, and the second guide post is disposed axially between the first and third guide posts;
>
> a navigation processor operable to receive a signal based upon the first navigation vector and the second navigation vector to determine a position of the instrument; and
>
> a display device operable to display determined position information.

The claims stand rejected as follows:

Claims 35–41 and 57 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Acker[2] in view of Zaviska[3], Susel[4], Jascob[5] and Gilboa.[6]

Claims 42, 45, 46, and 58 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Acker in view of Jascob, Susel and Zaviska.

Claim 43 has been rejected under 35 U.S.C. § 103(a) as unpatentable over Acker in view of Jascob, Susel, Zaviska and Gilboa.

Claims 47–54 and 56 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Acker in view of Jascob, Susel and Zaviska.

Claim 55 has been rejected under 35 U.S.C. § 103(a) as unpatentable over Acker in view of Jascob, Susel, and Zaviska in further view of Gilboa.

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[2] Acker et al., US 6,253,770 B1, issued July 3, 2001 ("Acker").
[3] Zaviska, US 5,963,120, issued Oct. 5, 1999 ("Zaviska").
[4] Susel et al., US 2007/0157828 A1, published July 12, 2007 ("Susel").
[5] Jascob et al., US 7,751,865 B2, issued July 6, 2010 ("Jascob").
[6] Gilboa, US 2005/0171508 A1, published Aug. 4, 2005 ("Gilboa").

DISCUSSION

CLAIMS 43 AND 55

Appellants have presented no arguments with respect to these claims. Therefore, we summarily affirm the rejections.

CLAIMS 35–41 AND 57

Issue

The issue with respect to this rejection is whether a preponderance of the evidence supports the Examiner's conclusion that claims 35–41 and 57 would have been obvious over Acker combined with Zaviska, Susel, Jascob and Gilboa.

The Examiner finds that Acker "discloses a navigation system, comprising: an instrument that is operable to be moved relative to a subject and having an exterior wall and defining a through bore defined along an instrument axis; a tracking device positioned on the exterior wall of the instrument, the tracking device." Final Act. 3. The Examiner finds that Zaviska teaches the use of guide posts extending from the exterior wall of the instrument, further comprising a conductive wire wound around the exterior wall of the instrument and engaging the wall of the guide post. *Id.* The Examiner finds that Susel also teaches the use of guide posts to hold the conductive wire securing in place along the surface of the instrument. Final Act. 4. The Examiner finds that Susel teaches winding two conductive wires about the surface of the instrument with each conductive wire defining different navigational vectors. *Id.* The Examiner finds that Jascob teaches the use of guide walls that are planar or at acute angles relative to the

instrument axis which hold the conductive wires at specific angles. Final Act. 5. The Examiner concludes the

> It would have been obvious to one of skill in the art to have combined the teachings of Acker with the further teachings of Jascob because doing so would ensure that the wires of Acker would remain in place at a specified angle, which would create a more durable and reliable device. The combination of Susel, Zaviska, and Jascob with Acker would also have provided the predictable and desirable result of securely holding the coils of Acker in place.

Id.

Appellants contend that Acker does not disclose placing the coils on the exterior of the instrument and does not teach how to hold the coils in place. Appeal Br. 13. Appellants argue that Jascob uses grooves instead of posts to hold the coils in place and that the grooves are internal to the instrument. Appeal Br. 14. Next, Appellants argue that Susel does not teach a surface formed at an acute angle and a first sopped guide wall perpendicular to the exterior wall. Appeal Br. 16. Appellants argue that the remaining references do not overcome the deficiencies of these references. *Id.*

Findings of Fact

We adopt the Examiner's findings as our own, including with regard to the scope and content of, and motivation to modify or combine, the prior art. The following findings are included for emphasis and reference purposes:

FF1. Acker discloses a catheter containing a position sensor where the position sensor comprises at least one lateral sensing coil having windings which are not coaxial with the catheter. Acker col. 2, ll. 29–34.

FF2. Figures 5A and C of Acker, reproduced below, disclose a catheter with sensing coils placed along the length of the catheter.

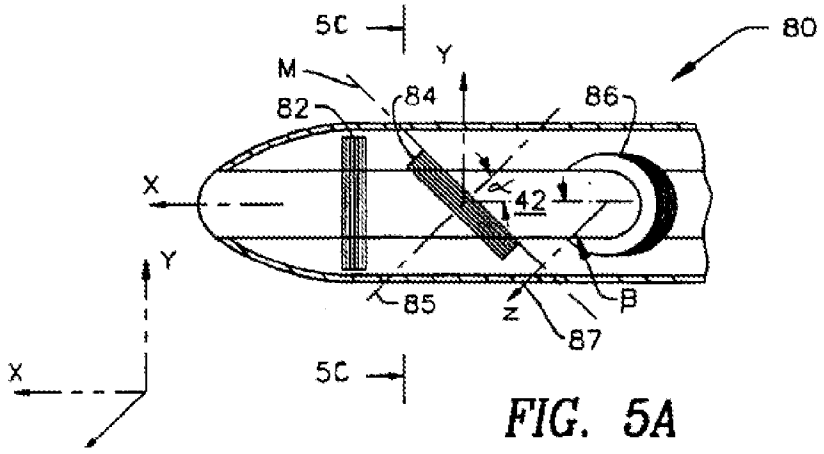

FIG. 5A

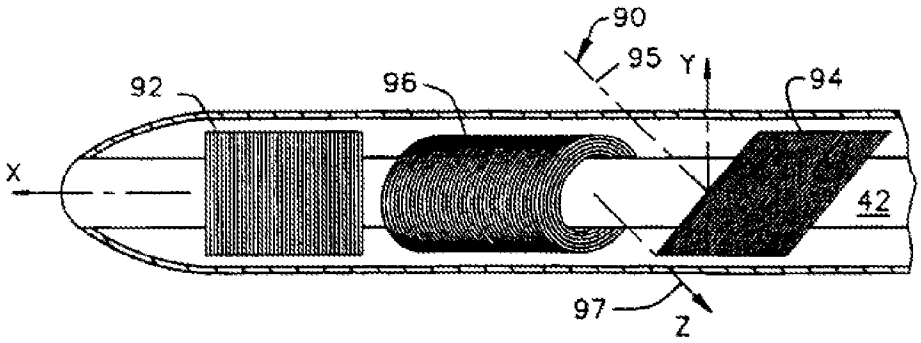

FIG. 5B

Figures 5A and C show placement of location of instrument coils within the instrument.

FF3. Zaviska discloses a support for electromagnetic coils as shown in Figure 1, reproduced below.

Fig. 1

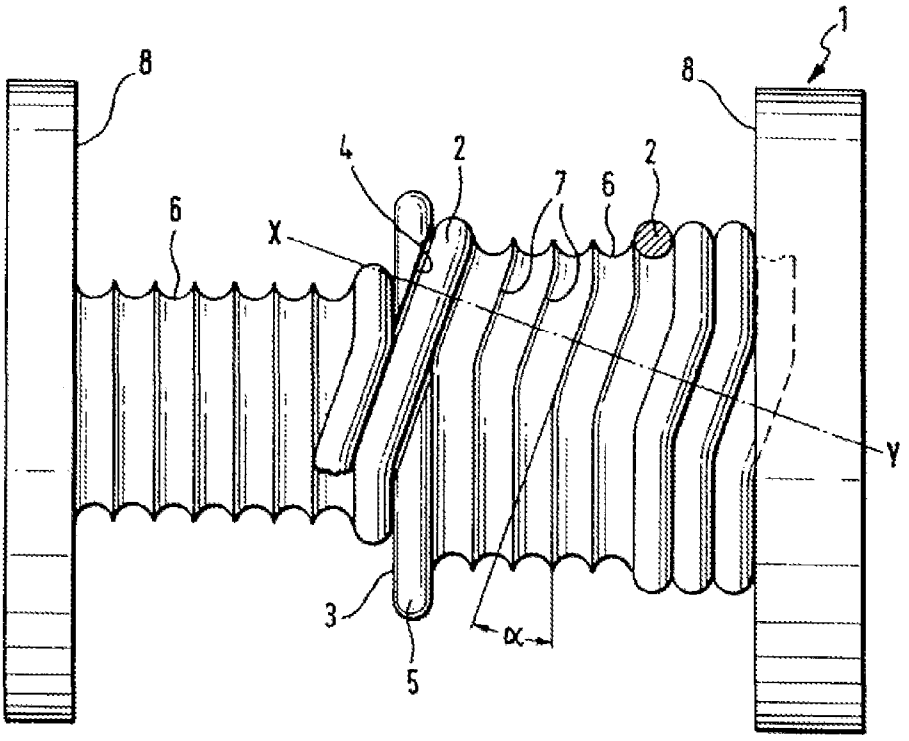

Figure 1 shows conductive wire wrapped around a grooved cylinder.

FF4. Susel discloses a multi-axis coil assembly as shown in Figures 3A and 3B, reproduced below.

FIG. 3A

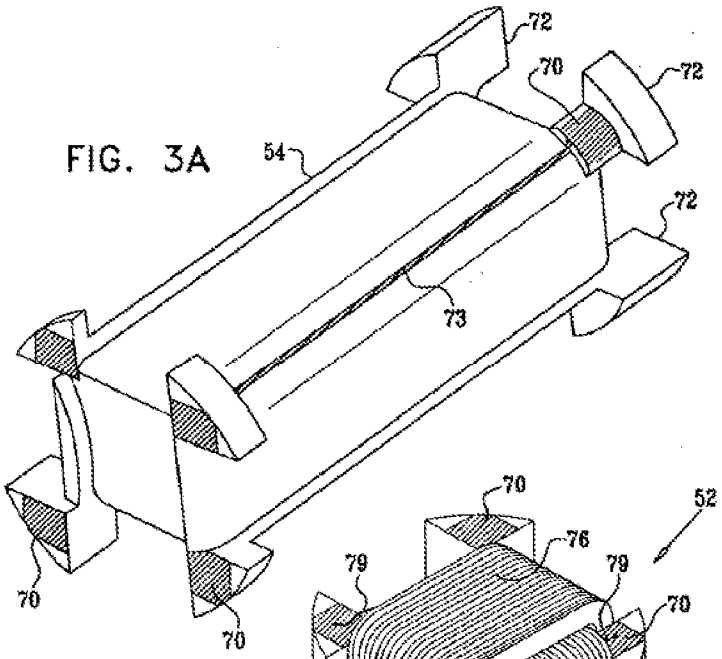

FIG. 3B

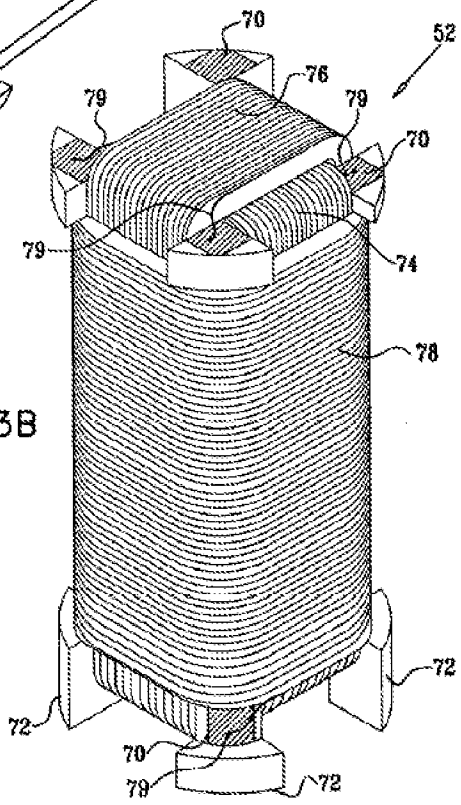

Figure 3A and 3B show bobbins for wrapping conductive wires.

FF5. Jascob discloses a surgical navigation system which uses positioning sensors to locate a surgical instrument. Jascob col. 2, ll. 28–35.

FF6. Jascob discloses that the positioning sensors comprise a bobbin of multiple coil members, as shown in Figure 6, reproduced below.

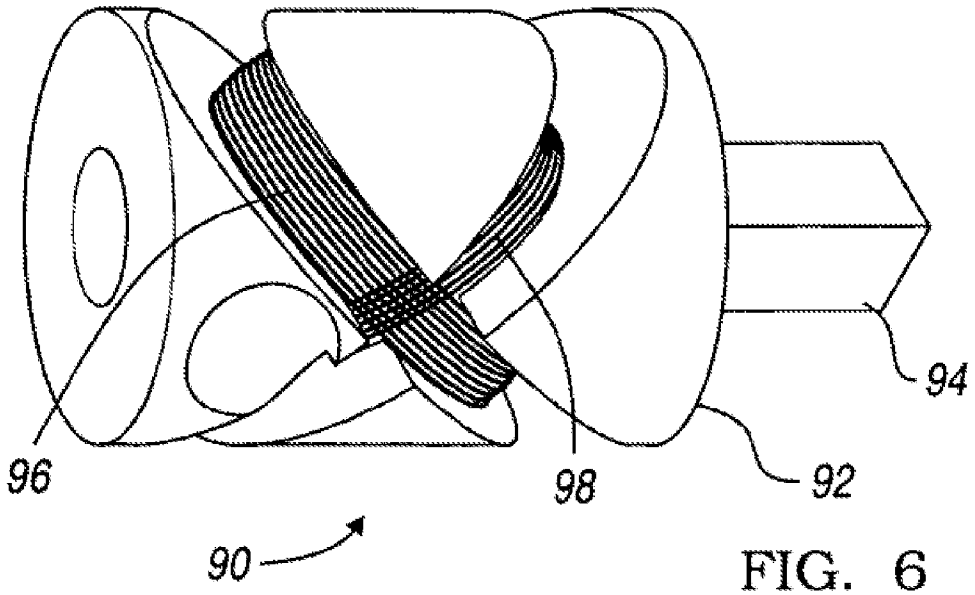

FIG. 6

Figure 6 shows a bobbin with conducive wire wrapped around the bobbin.

Principles of Law

"The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art." *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991).

"Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references. . . . [The reference] must be read, not in isolation, but for what it fairly teaches in combination with the prior art as a whole." *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

A change of shape does not make a product nonobvious where the claimed shape is not of functional significance and accomplishes the same purpose as the prior art shape. *See In re Dailey*, 357 F.2d 669, 672–73 (CCPA 1966).

Rearranging parts disclosed in the prior art is "devoid of invention." *In re Japikse*, 181 F.2d 1019, 1032 (CCPA 1950).

Analysis

Claim 35 is representative of the claims in this rejection.

We find that the subject matter of claim 35 would have been obvious to one skilled in the art at the time the invention was made. Acker discloses a surgical instrument navigational system using wire coils as location sensors. FF1. Susel teaches the use of posts to hold the wire coils in place. FF4. The posts of Susel extend out perpendicularly from the surface of the instrument. *Id.* Jascob teaches placing the coils on the exterior and holding the coils at an acute angle. FF6. As the Examiner points, out, one skilled in the art would have found these coil arrangements obvious equivalents and found it obvious to combine the references to securely hold the coils of Acker in the desired position and orientation. Final Act. 5.

Appellants contend that Acker does not teach placing the coils on the exterior of the instrument nor does it teach any method for holding the coils in place. Appeal Br. 14. While this may be true, Appellants' argument is an attack on the individual reference which will not defeat a finding of obviousness. *In re Merck & Co.*, 800 F.2d at 1097. Moreover, as the Examiner points out, placement of the coils on the exterior of the instrument and use of posts are taught by Susel and Jascob. Ans. 2–3.

Appellants next contend that Jascob teaches the use of grooves to hold the coils in place in lieu of posts. Appeal Br. 15. We are unpersuaded. While Appellants may be correct with respect to the teachings of Jascob, Susel clearly teaches the use of posts to hold the coils in place. FF4.

Appellants contend that Susel does not teach posts where one wall forms an acute angle and the opposite wall is perpendicular to the instrument. Appeal Br. 16. Again, we are unpersuaded. Susel teaches posts were the walls are perpendicular to the instrument. FF4. Jascob teaches the use of walls with acute angles to orient the coiled wires. FF6. It would have been obvious to one skilled in the art to modify one of the post walls in Susel to form an acute angle as shown in Jascob as an obvious equivalent, in the absence of any evidence of a secondary consideration such as unexpected results.

Conclusion of Law

We conclude that a preponderance of the evidence supports the Examiner's conclusion that the subject matter of claim 35 would have been obvious over Acker combined with Zaviska, Susel and Jascob under 35 U.S.C. § 103(a).

Claims 36–41 and 57 have not been argued separately and therefore fall with claim 35. 37 C.F.R. § 41.37(c)(1)(iv).

CLAIMS 42, 45, 46, AND 58

Issue

The issue with respect to this rejection is whether a preponderance of the evidence supports the Examiner's conclusion that claims 42, 45, 46, and

58 would have been obvious over Acker combined with Jascob, Susel and Zaviska.

In addition to the findings discussed above, the Examiner finds that Acker teaches a first and second wire winding where the windings are spaced apart and axially displaced along the instrument axis. Final Act. 10. The Examiner also finds that Jascob teaches forming a first wire winding at a first wire angle and forming a second wire winding at a second wire angle. Final Act. 10. The Examiner also finds that Jascob teaches forming guide walls at acute angles. Final Act. 11. The Examiner finds that Zaviska teaches forming a curved surface on a guide wall. Final Act. 12. The Examiner concludes that it would have been obvious to combine the teachings of the references to accommodate round wires and hold the wires in the desired angle. *Id.*

Appellants contend that the references do no teach a curved guide wall. Appeal Br. 18. Appellants contend that Zaviska does not teach an arcuate groove and does not teach a guide post extending radially from the exterior wall. Appeal Br. 18–19. Appellants also argue that none of the references teach a first and second wire windings that are wound around the instrument axis and are spaced apart. Appeal Br. 19. Appellants also argue that none of the references teach that the second winding engages a second curved wall of a second guide post. *Id.*

Analysis

We find claim 42 to be representative of the claims in this rejection. Claim 42 reads as follows:

42. A navigation system, comprising:

> an instrument that is operable to be moved relative to a subject and having an exterior wall defining an instrument axis;
>
> a first guide post extending radially from the exterior wall, the first guide post having a first curved guide wall formed at a first acute guide wall angle having a first curved guide surface defining an axis normal to the first guide curved surface intersecting the instrument axis at an acute angle, and a first opposed planar guide wall, joined to the first curved guide surface;
>
> a first conductive wire wound around the exterior wall of the instrument and engaging the first curved guide surface of the first guide post to form a first acute wire winding at the first acute guide wall angle, the first wire winding assumes a first acute wire angle that has a first navigation vector defined by the first conductive wire at a first navigation vector angle intersecting the instrument axis;
>
> a second guide post radially extending from the exterior wall, the second guide post having a second curved guide wall, a second opposed guide wall, joining the second curved guide wall; and
>
> a second conductive wire wound around the exterior wall of the instrument and engaging the second curved guide wall of the second guide post to form a second wire winding, the second wire winding assumes an acute second wire angle such that a second navigation vector is defined by the second conductive wire at a second navigation vector angle relative to the instrument axis, the second navigation vector angle being different than the first navigation vector angle;
>
> wherein the first wire winding and the second wire winding are wound around the instrument axis and spaced apart and axially displaced along the instrument axis.

We find that the Examiner has established that claim 42 would have been obvious over Acker combined with Jascob, Susel and Zaviska. The Examiner provides a detailed and well-reasoned explanation as to how the prior art combination teaches and suggests the claimed subject matter. Final

Act. 9–13; Ans. 6–7. Further, we agree that there would have been reason to combine the cited prior art, at least because they are each directed to sensors used to determine the location of surgical instruments and describe wire windings used in such sensors. Appellants have not produced evidence showing, or persuasively argued, that the Examiner's determinations are incorrect. We address Appellants' arguments below.

Appellants contend that none of the references teach a curved guide wall and that Zaviska only teaches a grooved surface. Appeal Br. 18–19. We are unpersuaded. Zaviska teaches grooves or a curved surface which holds the wire coil in place. FF3. Susel teaches posts which are perpendicular to the instrument surface. FF4. Jascob teaches angled walls to orient the coiled wires. FF6. We agree with the Examiner that it would have been obvious to adapt the posts of Susel to have angled and curved walls as known alternative arrangments. Ans. 7. Functional equivalency does not necessarily require structural similarity, as shown in *KSR* itself, where the mechanical ("Asano ... and the Rixon ... are complex mechanical linkage-based devices") and electrical ("an adjustable pedal with a single pivot reflecting pedal position combined with an electronic control") pedals differed substantially in structure but represented "the mere substitution of one element for another known in the field." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416, 423 (2007).

Appellants next argue that the references do not teach a second wire coil spaced apart from the first coil and held in place with a second post. Appeal Br. 19. We are unpersuaded. Acker discloses a plurality of coils wound around the instrument axis and spaced apart. FF2, Fig. 5B. It would have been obvious to one skilled in the art to use a post arrangement like that show in Susel to hold each coil in place.

Conclusion of Law

We conclude that a preponderance of the evidence supports the Examiner's conclusion that claim 42 would have been obvious over Acker combined with Jascob, Susel and Zaviska.

Claims 45, 46, and 58 have not been argued separately and therefore fall with claim 42. 37 C.F.R. § 41.37(c)(1)(iv).

CLAIMS 47 AND 52

Issue

The issue with respect to these rejections is whether a preponderance of evidence supports the Examiner's conclusion that claims 47 and 52 would have been obvious over Acker combined with Jascob, Susel and Zaviska.

Analysis

We find that, under the above-cited precedent, the Examiner has established that claims 47 and 52 would have been obvious over Acker combined with Jascob, Susel and Zaviska. The Examiner provides a detailed and well-reasoned explanation as to how the prior art combination teaches and suggests the claimed subject matter. Final Action 14–17; Ans. 8–9. Further, we agree that there would have been motivation to combine the cited prior art for the reasons discussed above. Appellants have not produced evidence showing, or persuasively argued, that the Examiner's determinations are incorrect. We address Appellants' arguments below.

Appellants contend that none of the references teach the limitations of

> the first planar guide wall defining an axis normal to the first planar guide wall, *the axis normal to the first planar guide wall intersecting the instrument axis,* the *first guide post having*

> *a first top surface and a first side support wall intersecting the first planar guide wall and the first top surface,* a first conductive wire wound around the exterior wall of the instrument and engaging the first planar guide wall of the first guide post at a coil angle equal to the acute first guide wall angle

(claim 47 (emphasis added))

and

> . . . the first guide post having a first flat guide wall formed at an *acute first guide wall angle* relative to the instrument axis, the first flat guide wall having a *first planar surface defining an axis normal to the first planar surface which intersects the axis of the instrument* and a first pair of opposed side support walls perpendicular to the first flat guide wall and a flat top surface defined between the pair of opposed side walls . . .

(claim 52 (emphasis added)).

We are unpersuaded. While the references do not specifically teach the recited limitations, the structure resulting from the combination of references would possess the recited structures. For example, Susel discloses posts with flat sides that are perpendicular to the instrument axis. FF4. When the posts are modified to include the sloped sides disclosed in Jascob the resulting structure will have a planar surface normal to the first planar surface, which has an axis that intersect the axis of the instrument. Susel also teaches a post with a top surface. FF4.

With respect to claim 47 Appellants contend that the references do not disclose a second guide post "having a second planar guide wall formed at an acute second angle relative to and displaced along the axis of the instrument, a second top surface and a second side support wall intersecting

the second planar guide wall and the second top surface." Appeal Br. 21. We are unpersuaded. As discussed above, it would have been obvious to one skilled in the art to add a post to control the position of the coils.

As to claim 52, Appellants argue that none of the references teach the limitation of wrapping "a first conductive wire around the exterior of wall of the instrument and engaging a first guide post that radially extends from the exterior wall at a first circumferential and first axial location to form an oval coil." Appeal Br. 21. We are unpersuaded. Susel teaches a conductive wire wrapped around the exterior of an instrument such that the wire engages a post that extends out from the exterior wall of the instrument in the manner described. FF4. Acker and Jascob teach wrapping the conductive wire to form an oval. FF2 and 6. It would have been obvious to one skilled in the art to position the posts of Susel such that the wires form ovals as taught by Acker and Jascob.

Conclusion of Law

We conclude that a preponderance of the evidence supports the Examiner's conclusion that claims 47 and 52 would have been obvious over Acker combined with Jascob, Susel and Zaviska.

HINDSIGHT

Appellants contend that the Examiner has engaged in impermissible hindsight in rejecting the claims in that the Examiner has simply identified similar elements and reconstructed them in view of Appellants' claimed structure. Appeal Br. 24.

We are unpersuaded.

> Any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper.

In re McLaughlin, 443 F.2d 1392, 1395 (CCPA 1971). Appellants have not pointed to any evidence to show that the Examiner has used knowledge gleamed from Appellants' disclosure.

Appellants also argue that the fact that the Examiner relies upon five different references demonstrates that the claims are not obvious. Appeal Br. 25. Appellants rely on our reviewing court's decision in *Spine Solutions v. Medtronic Sofamor Danek USA*, 620 F.3d 1305 (Fed. Cir. 2010) to support this proposition. We are unpersuaded.

Spine Solutions does not stand for the proposition that reliance on four or five references demonstrates non-obviousness. In *Spine Solutions*, two references were found to disclose all the limitations of the claim at issue. 620 F.3d at 1312. The claims was found to be unobvious because the finder of fact concluded that there was not motivation to combine the teachings of the reference. *Id.* (Proposed design considered unstable). Nowhere in *Spine Solutions* did the court hold that reliance on four or five references showed the invention to be nonobvious.

Contrast this with *In re Gorman*, 933 F.2d 982 (Fed. Cir. 1991), where reliance on thirteen references to support obviousness rejection did not of itself weigh against conclusion of obviousness. "The criterion . . . is not the number of references, but what they would have meant to a person of ordinary skill in the field of the invention." 933 F.2d at 986. In this case,

reliance on four or five references does not indicate that the claimed invention was non-obvious.

Appellants also contend that the Examiner has not stated a factual basis for combining the references. Appeal Br. 24. Again, we are unpersuaded. As the Examiner points out, one skilled in the art would combine the references to create posts which would hold the wires firmly in place at a given orientation. Ans. 10.

SUMMARY

We affirm the rejections based on 35 U.S.C. § 103(a).

TIME PERIOD FOR RESPONSE

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