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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BRAD A. ARMSTRONG

Appeal 2018-002457
Application 14/570,814
Technology Center 2600

Before JOHN P. PINKERTON, JON M. JURGOVAN and
NABEEL U. KHAN, *Administrative Patent Judges*.

KHAN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1–5, 9, 10, 17, and 19–40. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Anascape, Ltd. Appeal Br. 2.

CLAIMED SUBJECT MATTER

Appellant describes the invention as relating to:

structuring for sheet supported sensors and associated circuitry in hand-operated graphic image controllers, and particularly six degree of freedom computer image controllers which serve as interface input devices between the human hand(s) and graphic image displays such as a computer or television display, a head mount display or any display capable of being viewed or perceived as being viewed by a human.

Spec. ¶ 3.

Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A device, comprising:
 - a housing with
 - a display, said housing hand moveable in 6 degrees of freedom (6DOF) said display having a surface;
 - a plurality of sensors configured to detect 6DOF movement, said sensors mounted on a sheet,
 - wireless communication circuitry,
 - random access memory (RAM),
 - programmable memory,
 - a secondary input, and
 - circuitry enabling one or more functions, e-mail functions, web browsing functions, remote controller functions, video game play functions, telephone functions, PDA functions, and time display functions all contained within said housing.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Copper	US 5,485,171	Jan. 16, 1996
Thomas	US 5,128,671	July 7, 1992
Armstrong	US 6,347,997 B1	Feb. 19, 2002
Paley	US 5,296,871	March 22, 1994
Hilton	US 5,706,027	Jan. 6, 1998
Knowles	US 6,027,024	Feb. 22, 2000
Armstrong '414	US 2004/0160414 A1	Aug. 19, 2004

REJECTIONS²

1. Claims 1–5, 9, 10, 17, and 19–40 stand provisionally rejected on the grounds of nonstatutory obviousness-type double patenting over Armstrong '414. Final Act. 45–47.

2. Claims 1–5, 9, 10, 17, and 19–35 stand rejected under 35 U.S.C. § 112(b) as indefinite. Final Act. 7–8.

3. Claims 1–5, 9, 10, 17, and 19–40 stand rejected under 35 U.S.C. § 112(a) as failing to comply with the written description requirement. Final Act. 8–31.

4. Claims 1, 2, 4, 5, 9, 10, 17, 19–21, 24–29, 31–36, 39, and 40 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Copper, Thomas, and Armstrong. Final Act. 32–41.

² We note there is a dispute as to whether this application benefits from an earlier priority date (February 4, 2004) of a previously filed application. Final Act. 5–6. We do not address this dispute because it does not affect the merits of the rejections at hand, as all the relied upon references are dated well before the claimed earlier priority date.

5. Claims 3, 22, 23, 30, 37, and 38 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Copper, Thomas, Armstrong, and Paley. Final Act. 42–45.

6. Claims 1, 2, 4, 5, 9, 10, 17, 19–21, 24–29, 31–36, 39, and 40 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Armstrong, and Hilton. Ans. 3–17.

7. Claims 3, 22, 23, 30, 37, and 38 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Armstrong, Hilton, and Paley. Ans. 17–21.

8. Claims 10, 19, 28, 29, and 35 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Armstrong, Hilton, and Knowles. Ans. 22–23.

OPINION

Provisional Double Patenting Rejection

The Examiner provisionally rejects claims 1–5, 9, 10, 17, and 19–40 on the grounds of non-statutory obviousness-type double patenting over claims 28, 30, 32, 33, 37, 41, 43, 46, and 50 of co-pending Application No. 10/773,025. Final Act. 45–47. We do not reach the merits of the Examiner’s obviousness-type double patenting rejection because this issue is not ripe for decision by the Board. Panels have the flexibility to reach or not reach provisional double-patenting rejections. *See Ex parte Moncla*, 95 USPQ2d 1884 (BPAI 2010) (precedential).

Indefiniteness Rejection

The Examiner rejects claims 1–5, 9, 10, 17, and 19–35 under 35 U.S.C. § 112(b). Final Act. 7–8. Specifically, claim 1 recites “a plurality of sensors configured to detect 6DOF movement.” The Examiner finds that claim 1 is unclear whether the 6DOF movement refers to the movement of

the device, the housing, the display, or other elements. Final Act. 7–8. The Examiner finds similar issues with the remainder of the aforementioned claims.

Appellant argues that each of independent claims 1, 17, and 25, explicitly recites “said housing hand moveable in 6 degrees of freedom (6DOF)” and a “plurality of sensors configured to detect 6DOF movement.” Thus, according to Appellant, “it is clear that the sensors are configured to detect 6DOF movement of the housing, particularly since no other element of the respectively recited device or controller is (hand) movable in 6DOF.”
Appeal Br. 9.

We are persuaded by Appellant’s argument. As Appellant argues, claim 1 recites “said housing hand moveable in 6 degrees of freedom.” Thus, one of ordinary skill in the art would understand that the subsequent limitation directed to “a plurality of sensors configured to detect 6DOF movement, said sensors mounted on a sheet” refers to the 6DOF movement of the previously mentioned housing that is hand moveable in 6 degrees of freedom.

Accordingly, we do not sustain the Examiner’s rejection of claims 1–5, 9, 10, 17, and 19–35 as indefinite.

Written Description Rejection

The Examiner rejects claims 1–5, 9, 10, 17, and 19–40 under 35 U.S.C. § 112(a) as failing to comply with the written description requirement. Final Act. 8–31. In the rejection of these claims, the Examiner notes that Appellant has elected to restrict the claims to certain disclosed embodiments, namely Species XVI illustrated by Figures 52, 53, and 61 and corresponding paragraphs 208–220 of Appellant’s Specification. The

Examiner finds that many of the limitations of the aforementioned claims are not included in the disclosure of Figures 52, 53, and 61 and corresponding paragraphs 208–220 of Appellant’s Specification. *See* Final Act. 8–31.

Appellant responds generally by pointing to portions of the Specification outside of the portions that relate specifically to Species XVI and argues that those portions, combined with the disclosure of Species XVI and the knowledge of one of skill in the art, would convey that the inventor had possession of the invention at the time of filing of this application. *See* Appeal Br. 10–45.

Just as one example, the Examiner rejects independent claim 1 (and similarly independent claims 17 and 25) highlighting that Figures 52, 53, and 61 do not convey to the ordinary artisan that the inventors had possession of the claimed “a plurality of sensors configured to detect 6DOF movement and mounted on a sheet” and also “circuitry enabling e-mail function, video game play functions, PDA functions, and time display functions.” Final Act. 9–10; Ans. 30, (emphasis omitted). The Examiner finds that combining features from different embodiments without providing sufficient information as to how to integrate the features of the embodiments fails to convey that the inventors had possession of the invention. *See* Ans. 29.

Appellant responds that “‘a plurality of sensors configured to detect 6DOF movement’ wherein those sensors are provided on ‘a sheet’ is fully described by the specification and can be easily extrapolated by ‘one-skilled in the art’ from Figures 14, 17, 18, 20-28, 29, 31 and 61, as disclosed in detail on pages 18 through 57 of the specification.” Reply Br. 11. Specifically, Appellant points to paragraph 155 of the Specification

“discussing ‘6 DOF sensors 207 are positioned on a flexible membrane’” and argues that when this teaching is applied to the embodiments of Figures 52, 53, and 61 one of skill in the art would recognize that the application teaches the claimed “a plurality of sensors configured to detect 6DOF movement and mounted on a sheet.” Reply Br. 11.

Similarly, Appellant argues that the claimed e-mail functions, PDA function, and time display functions are described in paragraphs 215, 205 and Figures 53, 61, 62, and 63 of the Specification and that these disclosures combined with the disclosures relating to the elected Species XVI would convey to one of ordinary skill in the art that the inventors had possession of the claimed features. Reply Br. 11.

Appellant argues that 35 U.S.C. § 112 does not require that the Specification disclose a single embodiment comprising all claimed features and thus the disclosure of the claimed features from several embodiments suffices to show that the inventors had possession of the invention at the time of the filing of the application. Reply Br. 9.

We are persuaded by Appellant’s arguments. We agree with Appellant that the Specification discloses “membrane 206 in a variation where all 6 DOF sensors 207 are positioned on a flexible membrane sensor sheet and positioned on a single flat plane” (Spec. ¶ 155) and that this supports the claimed feature of “a plurality of sensors configured to detect 6DOF movement and mounted on a sheet.” Similarly, we agree with the Appellant that the Specification discloses circuitry that enables e-mail and time display functions. For example, the Specification describes that the claimed device includes circuitry that allows the user to manipulate functions of the device and the shown imagery, functions such as “numeric

settings such as related to time.” Spec. ¶ 205. Similarly, the Specification discloses one embodiment in which the housing of the invention includes a keypad for inputting numbers and letters that allow for e-mail functionality. Spec. ¶ 215. Although these features are disclosed in embodiments that may or may not be included in the portion of the Specification describing elected Species XVI, we agree that their disclosure would convey to one of ordinary skill in the art that the inventors had possession of the claimed features and that these features would be included with the other claimed features of the independent claims.

The remaining claims rejected by the Examiner follow a similar pattern, in which the Examiner rejects the claims because the specific portion of the Specification related to elected Species XVI may not disclose the claimed features, but other portions of the Specification do. *See* Final Act. 8–31. We agree generally with the Appellant that one of ordinary skill in the art would look to the Specification as a whole when determining whether the inventors had possession of the invention at the time of the filing of this application.

Accordingly, we do not sustain the Examiner’s rejection of claims 1–5, 9, 10, 17, and 19–40 under 35 U.S.C. § 112(a) as failing to comply with the written description requirement.

Obviousness Rejection over Combination of Copper, Thomas and Armstrong and Combination of Copper, Thomas, Armstrong, and Paley

Claim 1

The Examiner finds Copper teaches a plurality of sensors to detect 4DOF movement mounted on a sheet. Final Act. 33 (citing Copper Fig. 3, 5:50–6:30). The Examiner acknowledges that while Copper teaches sensors

that detect movement, it does not teach detecting movement in 6DOF. Final Act. 34. For this reason, the Examiner relies on Thomas as teaching a device able to detect at least six degrees of freedom of the handheld control device. Final Act. 34 (citing Thomas Fig. 1, 1:29–31; 2:34–55). The Examiner finds that it would have been obvious to combine Thomas’s teaching of sensors that detect 6DOF movement with Copper’s teaching of mounting sensors on a single sheet. Final Act. 34–35.

Reminding us that neither Copper nor Thomas teaches the limitations of the claims individually, Appellant argues that the combination of the two would also not result in the claimed invention. Appeal Br. 65. Specifically, Appellant argues

if one combines the accelerometers of Thomas into Copper, there would be no need for transducer/potentiometer 15 in Copper for sensing 2DOF (not 4DOF as suggested by Final Office Action) since Thomas already senses 6DOF movement. Further there is no disclosure, teaching or suggestion of how one skilled in the art would integrate such 6DOF sensors into the Copper circuitry such that movement in 6DOF could be detected. Therefore, Appellant's invention could not be obtained by merely inserting elements of Thomas into Copper without further teaching.

Alternatively, if one combines the sensors for sensing 4DOF from Thomas with the 2DOF transducer/potentiometer 15 from Copper, it would necessitate two different types of input. A finger input on disk 13 from Copper for 2DOF and manually movable enclosure input from Thomas for 4DOF. This would not provide the 6DOF movement detection of movement of the housing, in the manner claimed.

Appeal Br. 65–66; *see also* Reply Br. 47–48.

Here, the Examiner finds that Copper teaches sensors mounted on a single sheet that detect movement in some number of degrees of freedom. The Examiner also finds that Thomas teaches using sensors to detect

movement in 6DOF. These references then would teach one of ordinary skill in the art that Thomas's 6DOF sensors can be mounted on a single sheet just as the sensors in Copper are.

Appellant's arguments to the contrary are unpersuasive. For example, Appellant's argument that if the accelerometers of Thomas are combined into Copper, there would be no need for Copper's sensors to sense 2DOF movement because Thomas already senses 6DOF movement supports the Examiner's finding that combining Thomas's sensors with Copper would allow for detection of 6DOF movement. Moreover, Appellant's argument misunderstands the Examiner's combination, which replaces Copper's sensors with Thomas's. Appellant's argument, combining the two references would necessitate two different types of input, is unpersuasive. "The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference. . . . Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art." *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). The Examiner's combination does not require that the input types of the two references be combined with each other, only their teachings regarding their sensors.

Accordingly, we sustain the Examiner's rejection of claim 1 and of independent claims 17 and 25 for which Appellant makes the same arguments. *See* Appeal Br. 73–74. We also sustain the Examiner's rejection of claims 2, 3, 4, 5, 21, 23, 30, 31, 32, 33, and 34, for which Appellant does not make separate arguments for patentability. *See* Appeal Br. 83–84.

Claims 9, 20 and 27

Claim 9 depends indirectly from claim 1 and recites “a rotatable input and one or more sensors associated with said rotatable input.” Claim 20 depends from claim 17 and recites “sensing rotation of said secondary input and generating an image on said display in response to said rotation.” Claim 27 depends from claim 25 and recites “wherein said secondary input is rotatable and said method further comprise converting input sensed from said rotatable secondary input into images on said display.”

The Examiner finds that Copper teaches disc 13 that moves in a rocking motion tilting or rotating when pressed. Ans. 53–54 (citing Copper Figs. 2–3, 5:50–64). The Examiner also finds that Thomas teaches a rotatable input by teaching rotation about one of the axes. Ans. 54 (citing Thomas 2:1–3:25). Appellant argues

it appears that Copper teaches that cursor position control is a pressure sensitive control rather than a rotational control, as claimed, and hence the proposed combination of Copper, Thomas and Armstrong does not appear to teach or suggest any sort of “rotatable input,” much less any sort of sensors associated with such a rotatable input, as claimed.

Appeal Br. 67; *see also* Appeal Br. 71, 76.

Appellant’s arguments are unpersuasive. Appellant does not sufficiently explain why a pressure sensitive control where the disc rocks does not teach a rotational control or sensing rotation of a secondary input. Moreover, Appellant does not provide an argument rebutting the Examiner’s finding that Thomas teaches a rotatable input.

Accordingly, we sustain the Examiner’s rejection of claims 9, 20 and 27.

Claims 10, 19, 28, and 29

Claim 10 depends indirectly from claim 1 and recites “wherein one or more of the following functions further comprising scanning functions.”

Claim 19 depends from claim 17 and recites “receiving scanned information in said remote controller and communicating said scanned information to

said host.” Claim 28 depends from claim 25 and recites “said method further comprising scanning an image into said 6DOF remote controller.”

Claim 29 depends from claim 28 and further recites “wherein said method further comprises receiving scanned information in said 6DOF remote controller and communicating said scanned image to said host device.”

The Examiner rejects claims 10, 19, 28, and 29 based partially on taking Official Notice of scanning functions. Final Act. 37, 39. Appellant challenges the Examiner’s Official Notice for claims 10, 19, 28, and 29 arguing that the Official Notice is circular in nature and that it does not “establish[] how or why it was well known in the art to provide such a scanning function in a 6DOF remote controller at the time of the invention.” Appeal Br. 68; *see also* Appeal Br. 70, 77, 78. In response the Examiner relies on Knowles as having a scanning function. Ans. 55 (citing Knowles 5:45–61, Fig. 1); *see also* Ans. 58. Appellant does not rebut the Examiner’s finding.

Accordingly, we sustain the Examiner’s rejection of claims 10, 19, 28, and 29.

Claim 35

Claim 35 depends from claim 10 and recites

a bendable membrane wherein one or more of following are mounted on said bendable membrane, said plurality of sensors

configured to detect 6DOF movement, said wireless communication circuitry, said random access memory (RAM), said programmable memory and/or said circuitry enabling e-mail functions, web browsing functions, remote controller functions, video game play functions, telephone functions, PDA functions, scanning functions and/or time display functions.

The Examiner rejects claim 35 taking Official Notice of “both the concept and the advantages, of utilizing a flexible printed circuit board” Final Act. 40–41. Appellant challenges the Official Notice arguing it is insufficient. Appeal Br. 69. In response, the Examiner relies on Hilton’s disclosure of “a flexible PCB” as teaching the claimed bendable membrane. Ans. 56–57. Appellant does not rebut this finding.

Accordingly, we sustain the Examiner’s rejection of claim 35.

Claim 24

Claim 24 depends from claim 17 and recites “wherein said 6DOF remote controller is structured to enable ease in replacing a malfunctioning sensor sheet and/or display sheet by replacement of the entire said malfunctioning sensor sheet and/or display sheet.” Appellant argues the Examiner does not cite enough evidence to support a finding that the combination of Copper, Thomas, and Armstrong renders the 6DOF remote controller structured to enable ease in replacing a malfunctioning sensor sheet. Appeal Br. 72. Further, Appellant argues “Given the difficulty one would in counter [sic] in combining the references, as discussed above with respect to the rejection of independent claim 17,” the combination would not teach the aforementioned limitations of claim 24. Appeal Br. 72. The Examiner responds by providing citation to Armstrong teaching that its housing may be easily separated to allow for easy replacement of its

malfunctioning display. Ans. 59–60 (citing Armstrong Fig. 15). Appellant does not rebut the Examiner’s findings.

Accordingly, we sustain the Examiner’s rejection of claim 24.

Claim 26

Claim 26 depends from claim 25 and recites “wherein said display is said secondary input and said secondary input is a pressure sensitive input and said method further comprises converting input from said secondary input into images on said display.” The Examiner rejects claim 26 taking Official Notice that “both the concept and the advantages of utilizing a touch screen display, as being a secondary input and the secondary input being pressure sensitive input . . .” are well known in the art. Final Act. 38–39. Appellant challenges the Official Notice arguing that the Official Notice is circular in nature and

fails to establish how or why it was well known in the art to utilize a touch screen display as a secondary input, particularly where that secondary input is pressure sensitive, and especially where the touch screen itself is acting as to display images in response to the pressure sensitive input to the screen itself, in the manner claimed.

Appeal Br. 75. The Examiner responds to the challenged Official Notice by providing support from Goldstein (US 5,410,326) as disclosing a remote control device comprising a touch screen display being a secondary input, the second input being a pressure sensitive input and converting the input into images on the display. Ans. 61 (citing Goldstein Fig. 1, 2A, 7:15–32, 9:3–14, 4:6–10). Appellant does not rebut these findings.

Accordingly, we sustain the Examiners’ rejection of claim 26.

Claim 36

The Examiner rejects claim 36 on the same grounds as independent claims 1 and 17. Final Act. 41. Appellant argues claim 36 recites elements not present in claims 1 or 17. For example, Appellant calls our attention to limitations such as a “‘method for controlling a graphic image on a display’ that include ‘displaying said graphic image on a six degree of freedom (6DOF) remote controller display screen,’ such that ‘rotating said 6DOF remote controller wherein said rotation causes said graphic image on said display to rotate.’” Appeal Br. 79. In response, the Examiner points us to the rejection of claims 10 and 19, which address limitations directed to “communicating said scanned information to host.” Ans. 63. This response, however, does not address the limitations in claim 36 directed to rotation of the 6DOF remote controller that causes an image on the display to also rotate.³ We, therefore, agree with Appellant that the Examiner has not addressed all the limitations of claim 36.

Accordingly, we do not sustain the Examiner’s rejection of claim 36, nor of claims 37, 38, 39 and 40, which depend from claim 36.

Claim 22

Claim 22 depends from claim 17 and recites “wherein said 6DOF remote controller further comprises a silent sensor and said method further comprises sensing activation of said silent sensor wherein said activation provides no audible or tactile indication of said activation” The Examiner finds one of switches 18/20 of Copper teaches the claimed silent

³ The Examiner may want to determine whether the analysis included in the rejection of claim 9, and its associated findings, may apply to the limitations of claim 36 that were not addressed in the rejection of claim 36.

sensor. Appellant argues switch 18 is similar to a mouse button and that switches 18 and 19 are made of a plastic or other material and so arranged that deformation of the cap or a portion thereof must occur in order to operate one of the switches. Appeal Br. 84. Therefore, Appellant argues that switches 18 and 20 of Copper are intended to provide tactile and/or audible indications of activation and hence are not silent sensors. Appeal Br. 84–85. The Examiner responds that Copper does not explicitly disclose that switches 18 and 20 provide audible or tactile indication of activation. Ans. 65.

We are persuaded of Examiner error. The fact that Copper does not explicitly disclose that the switches do not provide audible or tactile feedback does not mean that it positively teaches such switches. Accordingly, we do not sustain the Examiner’s rejection of claim 22.

Obviousness Rejection over Armstrong Combined with Hilton, Armstrong Combined with Hilton and Paley, and Armstrong Combined with Hilton and Knowles

The Examiner rejects claims 1, 2, 4, 5, 9, 10, 17, 19–21, 24–29, 31–36, 39, and 40 over Armstrong and Hilton. Ans. 3–17. The Examiner also rejects claims 3, 22, 23, 30, 37, and 38 over Armstrong, Hilton, and Paley. Finally, the Examiner alternatively rejects claims 10, 19, 28, 29, and 35 over Armstrong, Hilton, and Knowles. The Examiner finds Armstrong teaches all the limitations of claim 1 but does not explicitly disclose “a plurality of 6DOF sensors configured to detect 6DOF movement of the housing or the device.” Ans. 4, (emphasis omitted). The Examiner finds Hilton teaches the claimed sensors by disclosing a “*device utilizing a sensor arrangement for a three-axis embodiment the sensor arrangement comprising a plurality of*

sensors sets 107-109 configured to detect 6DOF movement of the housing 100 or the device.” Ans. 5 (citing Hilton 8:12–19, 14:63–15:18). Appellant argues that in Hilton “pressure (force or torque) applied to grip 9 (or the like) relative to base 8 (or the like) is detected, not 6DOF movement, much less 6DOF movement of the housing or device” Reply Br. 2; *see also* Reply Br. 3–5.

We are unpersuaded by Appellant’s argument. Hilton recognizes that while joysticks and mouse-type controls have used planar sensors that detect two degrees of freedom, certain applications may need six degrees of freedom. Hilton 8:4–19. Hilton discloses an embodiment that, along with sensors that detect movement along two axes, includes sensors that detect movement and rotation about the Z axis. Hilton 14:63–15:18. Thus, we agree with the Examiner that Hilton teaches a plurality of 6DOF sensors configured to detect 6DOF movement of the housing or device.

Appellant’s argument that by detecting pressure or force applied to a grip relative to the base, Hilton does not detect 6DOF movement is unpersuasive. Appellant does not sufficiently explain why detecting pressure or force of a grip such that 6DOF movement of the grip may be detected necessarily excludes detecting movement of the housing or device in 6DOF as claimed. Moreover, Appellant’s Specification describes 6DOF controllers that include a “hand operable input member defined in relationship to a reference member of the controller.” Spec. ¶ 30. “The input member can be a trackball . . . [or] any handle fit to be manipulated by a human hand, such as a joystick type handle, but in either case, the input member accepts 6 DOF of hand input relative to the reference member” *Id.* Thus, to the extent Appellant argues that the 6DOF movement of

Hilton’s grip does not teach the claimed 6DOF movement of the housing or device, Appellant’s own Specification which describes the movement of an input member (e.g. Hilton’s grip) in relationship to a reference member (e.g. Hilton’s base) contradicts this argument.

Accordingly, we sustain the aforementioned Examiner’s rejections over Armstrong Combined with Hilton, Armstrong Combined with Hilton and Paley, and Armstrong Combined with Hilton and Knowles.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–5, 9, 10, 17, 19–35	112(b)	Indefiniteness		1–5, 9, 10, 17, 19–35
1–5, 9, 10, 17, 19–40	112(a)	Written Description		1–5, 9, 10, 17, 19–40
1, 2, 4, 5, 9, 10, 17, 19–21, 24–29, 31–36, 39, 40	103(a)	Copper, Thomas, Armstrong	1, 2, 4, 5, 9, 10, 17, 19–21, 24–29, 31–35	36, 39, 40
3, 22, 23, 30, 37, and 38	103(a)	Copper, Thomas, Armstrong, Paley	3, 23, 30	22, 37, 38
1, 2, 4, 5, 9, 10, 17, 19–21, 24–29, 31–36, 39, 40	103(a)	Armstrong, Hilton	1, 2, 4, 5, 9, 10, 17, 19–21, 24–29, 31–36, 39, 40	
3, 22, 23, 30, 37, 38	103(a)	Armstrong, Hilton, Paley	3, 22, 23, 30, 37, 38	
10, 19, 28, 29, 35	103(a)	Armstrong, Hilton, Knowles	10, 19, 28, 29, 35	

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Overall Outcome			1–5, 9, 10, 17, 19–40	
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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). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED