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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--------------------------------------------------------------------------------------------------|-------------|----------------------|---------------------|------------------|
| 95/002,040 | 07/18/2012 | 7584899 | 36563-0005RX1 | 6075 |
| 131059 | 7590 | 11/29/2016 | EXAMINER | |
| Honeywell/Husch Patent Services 101 Columbia Road P.O. Box 2245 Morristown, NJ 07962 | | | ENGL, PATRICIA LYNN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3993 | |
| | | | MAIL DATE | DELIVERY MODE |
| | | | 11/29/2016 | PAPER |

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NEST LABS, INC.¹
Requester, Cross-Appellant, Respondent

v.

HONEYWELL INTERNATIONAL, INC.²
Patent Owner, Appellant, Respondent

Appeal 2016-007604
Inter partes Reexamination Control 95/002,040
Patent US 7,584,899 B2³
Technology Center 3900

Before JEFFREY B. ROBERTSON, DANIEL S. SONG and
BRETT C. MARTIN, *Administrative Patent Judges*.

SONG, *Administrative Patent Judge*

DECISION ON APPEAL

¹ Nest Labs, Inc. is the real party in interest for the Requester, and is a wholly-owned subsidiary of Google Inc. (Cross-Appeal Brief of Requester 1).

² Honeywell International, Inc. is the Patent Owner and the real party in interest (Appeal Brief of Patent Owner 1).

³ Patent US 7,584,899 B2 (hereinafter “the ’899 Patent”) issued September 8, 2009 to de Pauw et al.

STATEMENT OF THE CASE

Claims 18, 19, 21–29, 38–43, 54–57, 64–69, 71, and 72 are subject to reexamination and stand rejected (RAN⁴ PTOL-2066). Claims 1–17, 20, 30–37, 44–53, 58–63 and 70 have been canceled (*id.*). The Patent Owner appeals under 35 U.S.C. §§ 134 and 315 from the Examiner’s rejections with respect to all of the rejected claims (ABPO 1). The Requester cross-appeals under 35 U.S.C. §§ 134 and 315 from the Examiner’s refusal to adopt certain proposed rejections, and the withdrawal of certain previously adopted rejections as to various reexamined claims (CABR 4–6). We have jurisdiction under 35 U.S.C. §§ 134 and 315.

In addition to its Appeal Brief, Rebuttal Brief, and Respondent Brief, the Patent Owner relies on two declarations of Charles Garris in support of its positions. In addition to its Cross-Appeal Brief, Rebuttal Brief, and Respondent Brief, the Requester relies on four declarations of David Auslander in support its positions. We are also informed that the ’899 patent is involved in a concurrent legal action *Honeywell International Inc. v. Nest Labs, Inc. et al.*, Civil Action No. 0:12-cv-00299-SRN-JSM (D. Minn.) (ABPO 1).

⁴ The Examiner’s Answer incorporates by reference, the Right to Appeal Notice. While we have considered the entirety of the record on appeal, we refer to specific portions of the record, abbreviating the documents therein as follows:

1. Right of Appeal Notice = RAN
2. Appeal Brief of Patent Owner = ABPO
3. Rebuttal Brief of Patent Owner = Reb. Br. PO
4. Respondent Brief of Patent Owner = Res. Br. PO
5. Cross-Appeal Brief of Requester = CABR
6. Respondent Brief of Requester = Res. Br. R

We AFFIRM with respect to the Appeal of the Patent Owner. The Cross-Appeal of the Requester is moot.

THE INVENTION

The '899 Patent is directed to an HVAC controller (Title). Illustrative independent claims 18 and 19 read as follows (ABPO 33–34, Claims App'x, italics added):

18. An HVAC controller comprising:
 - a controller housing having a front face with a central region;
 - a liquid crystal display in the central region of the front face of the controller housing,*
 - wherein the liquid crystal display includes a liquid crystal display panel and a display retainer housing; and
 - an annular shaped rotatable interface member disposed around at least part of the central region of the front face of the controller housing, and forming part of the front face of the controller housing, wherein the rotatable interface member rotates relative to the central region of the front face of the controller housing, wherein rotation of the rotatable interface member can be used to adjust one or more operating parameters of the HVAC controller, at least one of the adjusted parameters being displayed on the liquid crystal display;*
 - wherein the front face comprises a button;*
 - a switch spaced back further from the front face of the controller housing than a back surface of the liquid crystal display panel; and*
 - a button support member for transferring movement of the button surface to the switch to actuate the switch.

19. An HVAC controller comprising:
 - a controller housing having a front face with a central region;

a liquid crystal display disposed in the central region for displaying an operating parameter of the HVAC controller;

a rotatable interface member extending around the central region of the controller housing, the rotatable interface member being rotatable relative to the central region, wherein rotation of the rotatable interface member can be used to select one or more operating parameters of the HVAC controller for display on the liquid crystal display,

the rotatable interface member moves a surface with raised portions relative to depressed portions, wherein the HVAC controller is structured to determine a direction and a magnitude of rotation of the rotatable interface member by monitoring movement of at least some of the raised portions as the rotatable interface member is rotated relative to the central region; and

a button disposed in the central region of the front face.

I. APPEAL OF THE PATENT OWNER

A. Examiner's Rejections

The Examiner rejects various claims on appeal in forty (40) different rejections, which are listed in the RAN (together with 29 non-adopted/withdrawn rejections) (RAN 3–7). For the sake of clarity and brevity, we summarize the Examiner's rejections as follows (*see also* ABPO 2):

1. Claims 67 and 68 under 35 U.S.C. § 112, second paragraph, as indefinite (RAN 3, 21–22).
2. Claim 27 under 35 U.S.C. § 112, second paragraph, as indefinite for failing to further limit base claim 22 from which claim 27 depends (RAN 3, 24–26).

3. Claims 19, 21, 38–43, 54–57, 64–69, and 71 under 35 U.S.C. § 103 as obvious over Honeywell 2002⁵ in view of one or more secondary references (RAN 3–5, 32–146, 148–188).
4. Claims 19, 21, 38–43, 54–57, and 64–69 under 35 U.S.C. § 103 as obvious over Honeywell 2003⁶ in view of one or more secondary references (RAN 5–6, 192–233, 235–257, 259–274).
5. Claims 18, 19, 21–29, 38–43, 54–57, 64–69, 71, and 72 under 35 U.S.C. § 103 as obvious over Sato⁷ in view of one or more secondary references (RAN 6–7, 274–322, 324–338).

B. Analysis

Preliminarily, we note that only those arguments timely made in the briefs of record in this appeal have been considered. Other arguments not made or those not properly presented to the Board have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.67(c)(1)(vii) (“Any arguments or authorities not included in the brief permitted under this section or §§ 41.68 and 41.71 will be refused consideration by the Board, unless good cause is shown”). In addition, we address the Examiner’s rejections in an order that differs from the order presented by the parties.

⁵ Honeywell, *Modulating Room Thermostat Installation and Operating Instructions* (2002). We note that there are both German and English portions in Honeywell 2002.

⁶ Honeywell, *CT8775A, C Digital Round Non-Programmable Thermostats Owner’s Guide* (2003).

⁷ Sato et al., US 5,819,597, issued Oct. 13, 1998.

Obviousness Rejection Based on Honeywell 2002

The Examiner rejects claims 19, 21, 38–43, 54–57, 64–69, and 71 as being obvious over Honeywell 2002 in view of one or more secondary references (RAN 3–5, 32–146, 148–188). For example, in Rejection XI, the Examiner rejects independent claim 19 based on the combination of Honeywell 2002 in view of Tanaka⁸ and Sato (RAN 32). The Examiner finds that Honeywell 2002 discloses most of the limitations of claim 19 including changing parameter settings by rotating a rotatable interface member (RAN 33). The Examiner also finds that:

Honeywell 2002 does not identify structural and functional details for achieving this objective. Accordingly, Honeywell 2002 does not explicitly describe the rotatable interface member as moving a surface having raised and depressed portions. Nonetheless, such a manner of employing rotation to change a parameter setting was known.

(RAN 33).

In this regard, the Examiner relies on Tanaka for disclosing:

a rotatable interface member (a dial knob 44) to move a slit ring 32 that includes a cylindrical portion 32a having a plurality of slits 33 (i.e., a surface with depressed portions relative to raised portions) (see col. 3, line 51 – col. 4, line 42; col. 5, lines 26–40; Figs. 3–6).

(*Id.*).

The Examiner further finds that the slit ring of Tanaka is used to detect rotation of the rotatable interface member and the amount of rotation (*id.*). Based on these findings, the Examiner concludes that:

⁸ Tanaka et al., US 4,8578,677, issued Aug. 15, 1989.

From Tanaka's teaching[,] it would have been obvious to one of ordinary skill in the art to modify Honeywell 2002 so as to include a surface that has slits (i.e., depressed/raised portions) and that is moved by the rotatable interface member (twist/adjust cover ring), and to include detectors for monitoring/detecting movement of the slits, as the rotatable interface member is rotated.

(*Id.*).

The Examiner further finds that although Tanaka does not describe determining a direction of rotation, this function was known in the art as evidenced by Sato, and concludes that:

it further would have been obvious to one of ordinary skill in the art to modify the combination of Honeywell 2002 and Tanaka, pointed out above, so that the positions of detectors and the detected raised portions/depressed portions (from the teaching in Tanaka) are shifted so as to provide four different outcomes of ON/OFF (or in the case of Tanaka, RECEIVED LIGHT/NON-RECEIVED LIGHT), to enable a direction of rotation to be determined, in addition to a magnitude of rotation.

(RAN 34–35).

We agree with the Examiner's analysis as to the rejections based on Honeywell 2002 in combination with various references, and find the Patent Owner's arguments unpersuasive for the reasons discussed *infra*.

The Patent Owner argues that the Examiner "does not provide an adequate reason why a skilled artisan would have incorporated the rotatable interface member of Tanaka into the controller of Honeywell 2002, and modify it according to the teachings of Sato, to yield the invention of claim 19 (RAN at 32–38)." (ABPO 7). According to the Patent Owner, the

Examiner's rejection is conclusory and contains no articulated reasoning with rational underpinnings as required to support the rejection (ABPO 7).

We disagree with the Patent Owner. The position of the Examiner and the articulated rationale is that Honeywell 2002 discloses a thermostat that provides various operational features like that of the claimed invention, but does not disclose the underlying structure or components of the thermostat for implementing these operational features, and as a result, a person of ordinary skill in the art would have looked to other prior art devices, such as Tanaka and Sato, for the underlying structure or components to implement the thermostat of Honeywell 2002 (RAN 33). This articulated reasoning for the suggested combination of the prior art references is supported by rational underpinnings. *KSR Int'l v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007).

In this regard, we agree with the Requester that the Patent Owner's argument:

ignores that the Honeywell 2002 and 2003 references are mere manuals that do not show the structures for such functionality, and that a skilled artisan would have been motivated to find references showing structure to carry out the functionality. This is not an issue of supplementing the actual thermostats, but in explaining what would be hidden in the owner's manuals—i.e., while the thermostats were complete, their description in the manuals was not, so a skilled artisan would have been motivated to determine the detail that was suggested by, but not explicit in, the manuals.

(Resp. Br. R 9).

The Patent Owner also argues that:

the Examiner must also show that a skilled artisan could have combined the elements as claimed *by known methods* (*see*,

MPEP 2143(I)(A)(2)[)], and must further show that one of ordinary skill would have recognized the results of the combination were *predictable* (see, MPEP 2143(I)(A)(3)[)]. The Examiner has not met their [sic] burden regarding either of these factors; indeed, they [sic] have [sic] not even considered these factors in their [sic] analysis.

(ABPO 7; *see also* ABPO 8; Reb. Br. PO 11).

The portion of the MPEP cited by the Patent Owner appears to stem from *KSR* wherein the Supreme Court stated that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR*, 550 U.S. at 415–16. However, we observe that the present rejection is not a combination of familiar elements such as in providing a rotatable interface member of Tanaka into a device without an interface, but rather in providing details as to how the Honeywell 2002 thermostat already having a rotatable interface member may be implemented in view of its lack of detail as to the structure enabling the disclosed rotatable interface.

While *KSR* does not explicitly address the circumstances presented in the current appeal, the problem may be considered to be lack of structural detail in Honeywell 2002 such that this problem “can provide a reason for combining the elements in the manner claimed.” *Id.* at 420. Hence, the Patent Owner’s argument is unpersuasive.

The Patent Owner further argues that:

the structure of Honeywell 2002, Tanaka, and Sato are substantially different from each other, and the Examiner did not show how the features of Honeywell, Tanaka, and Sato would have related to each other to result in the claimed invention.

(ABPO 7).

Notwithstanding the fact that it is not clear that the structures of Tanaka and/or Sato are, in fact, substantially different from Honeywell 2002 considering its lack of structural details, we generally agree with the Requester (Resp. Br. R 9) that the Patent Owner is improperly requiring explanation as to how to combine the structures of the references. Moreover, even if Honeywell 2002, Tanaka, and Sato are different, we are not persuaded that such differences are substantial so as to dissuade the person of ordinary skill in the art from applying the teachings of these references in the manner suggested considering their common operation and function.

The Patent Owner also argues that the Examiner failed to “provide recognized reason to incur the likely additional effort, complexity and cost of modifying Honeywell 2002 to somehow include the rotation detection features of Tanaka modified by Sato, without any disclosed benefit (since the thermostat of Honeywell 2002 necessarily has a mechanism to perform these functions).” (ABPO 8). Again, the premise of the Examiner’s rejection is to fill in the structural details that are missing in Honeywell 2002 for implementing its disclosed operation and function. In this regard, as the Requester responds, Honeywell 2002 is a reference manual that is incomplete and does not show the structures for such functionality so “a skilled artisan would have been motivated to find references showing structure to carry out the functionality.” (Resp. Br. R. 9; *see also* Resp. Br. 11; 3rd Decl. Auslander ¶¶ 10–13; 4th Decl. Auslander ¶¶ 6–7).

As to the asserted increase in cost, the fact that a substitution would not be made by businessmen for economic reasons does not mean that it would not have been obvious to a person of ordinary skill in the art to make such a substitution, or that such a person would not make the substitution. *See Orthopedic Equipment Company, Inc. et al. v. United States*, 702 F.2d 1005, 1013 (Fed. Cir. 1983) (“the fact that the two disclosed apparatus would not be combined by businessmen for economic reasons is not the same as saying that it could not be done because skilled persons in the art felt that there was some technological incompatibility that prevented their combination. Only the latter fact is telling on the issue of nonobviousness.”).

According to the Patent Owner:

If it was obvious to modify a primary reference to include a missing claim element merely because it does not show details of the claim element, then in this situation every combination of relevant known prior art elements would be obvious, nullifying *KSR*'s requirement for identifying a reason to combine. Examiners would be incented to apply the least detailed primary reference they could find, and then combine it with any secondary reference that discloses a particular claimed feature.

(ABPO 8–9).

However, as already discussed, the Examiner articulated a reason with rational underpinnings sufficient to support the obviousness rejection made as required. *KSR*, 550 U.S. at 418. Moreover, the Examiner clearly did not just “apply the least detailed primary reference.” The review of Honeywell 2002 clearly establishes its relevance to the claims in that it illustrates a Modulating Room Thermostat that generally resembles the HVAC controller illustrated in the '899 Patent (*compare* Honeywell 2002, pgs. 11–12, 19 *with*

the '899 patent, Figs. 1–2), and similar to the subject matter of the '899 patent, Honeywell 2002 specifically discloses controlling and changing the set temperature by rotating an adjusting ring, as well as a button switch on the front surface of the thermostat (Honeywell 2002, pgs. 22–23). Thus, the relevance of Honeywell 2002 cannot be reasonably disputed.

The Patent Owner submits similar arguments as those discussed above with respect to rejections based on the combination of Honeywell 2002 in view of: Zexel⁹ (ABPO 9–10); Tanaka, Sato, and Robertshaw¹⁰ (ABPO 10–11); Zexel and Robertshaw (ABPO 11); Sato and Karhu¹¹ (ABPO 15–16); and Tanaka (ABPO 16). However, these arguments are unpersuasive for substantially the same reasons discussed *supra*.

As to application of Karhu, the Patent Owner also argues that changing from a mechanical switch arrangement to a pure optical arrangement “would require extensive changes to Sato’s controller, and in fact would change the principle of operation of the device.” (ABPO 16). The Examiner agrees with Requester that:

A person of ordinary skill in the art would have been prompted to modify the thermostat resulting from the combination of Honeywell 2002 and Sato to include Karhu’s optical switches so that the mechanism for detecting rotation of the rotatable interface member would be less susceptible to mechanical failure due to the physical wear and tear on electromechanical switches over time. (See Auslander Decl. at ¶ 21.)

(RAN 73, *quoting* Comments filed December 31, 2012, pgs. 87–88).

⁹ Zexel, EP 1 276 123 A1, published Oct. 24, 2000.

¹⁰ Robertshaw, *9400 Digital Non-Programmable Thermostat*, User’s Manual (2002).

¹¹ Karhu, US 6,535,461 B1, issued March 18, 2003.

We agree with the Examiner. While substitution of an electro-mechanical switch arrangement with an electro-optical switch arrangement would be required, nothing indicates that such change is so extensive as to dissuade a person of ordinary skill in the art from such a substitution. Although an electro-optical switch arrangement would be used, the broader principle of operation of the thermostat adjustment via rotation of a rotatable interface member is not changed by the proposed substitution. In an analogous case, the Federal Circuit found that changing from a mechanical to an electrically based technology would have been obvious. Specifically, the court concluded that it would have been obvious to modify a mechanical device for actuating a phonograph to play back sounds associated with a letter in a word on a puzzle piece with an electronic, processor-driven device capable of playing the sound associated with a first letter of a word in a book. *Leapfrog Ent., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (Fed. Cir. 2007) (“[a]ccommodating a prior art mechanical device that accomplishes [a desired] goal to modern electronics would have been reasonably obvious to one of ordinary skill in designing children’s learning devices”). We find the facts of this case to be analogous wherein an electro-mechanical switch arrangement in the art of thermostatic control devices, is substituted with a known electro-optical switch arrangement, also in the art of thermostatic control devices.

In addition, while the Patent Owner also argues that there is no evidence that physical contact between parts was a known problem that would be solved by the proposed combination (Reb. Br. PO 16–17), wearing of parts over time due to physical contact is a well-known fact in all

mechanical and electro-mechanical arts, and is also common sense. *Dystar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1367 (Fed. Cir. 2006) (obviousness analysis requires “consideration of common knowledge and common sense.”). In the Examiner’s rejection (RAN 73), the application of a known electro-optical switch arrangement is not based on addressing a specific problem, but rather, improving the durability thereof by reducing susceptibility to physical wear and tear. In this regard, an implicit motivation to combine has been found to exist when the improvement is technology-independent and the combination of references results in a product that is more desirable, for example, more durable. *Dystar*, 464 F.3d at 1368.

As to claims 38, 39, and 41 that require “a sensor circuit board connected to and extending substantially perpendicular to the main circuit board,” the Patent Owner argues that “the supposed reason to combine the references (to move a temperature sensor away from heat emitted by a main circuit board) is purely speculative,” and that “there is no evidence this problem is recognized in the prior art or even exists.” (ABPO 11; *see also* Reb. Br. PO 10–11; RAN 53–55). The Patent Owner also argues that “it is possible to mount a temperature sensor on a thermostat’s circuit board and avoid problems caused by heat generated by the circuit board,” without using a motherboard-daughterboard arrangement of Yamatake¹² (ABPO 11–12), which the Examiner relied upon for disclosing such an arrangement. According to the Patent Owner, the Examiner’s contention is based on hindsight because there is “no recognized reason to incur the likely

¹² Yamatake-Honeywell, JP H9-298780 (1997).

additional effort, complexity and cost” without any disclosed benefit, and that there is also no reasonable expectation of success (ABPO 12).

We are not persuaded by the Patent Owner’s arguments and generally agree with the Requester that:

it is a simple fact of physics that when electricity is consumed, it turns into heat, so that electronic components on the motherboard of the Honeywell thermostat would generate heat, and thus a skilled artisan would be motivated to move a temperature sensor away from such components.

(Resp. Br. R. 12; *see also* 2nd Decl. Auslander ¶ 14).

We agree that it is well-known that heat is generated as electrical current moves through electronic circuits. In addition, Schindler recognizes that it is desirable to provide the sensor outwardly extending from the circuit board to extend away therefrom in order to improve accuracy of the temperature reading, and to avoid measuring the temperature of the wall or the heat from the operator’s hand (Schindler, col. 1, ll. 50–62). Hence, mounting the temperature sensor away from the main circuit board so that it extends outwardly would have been desirable and obvious to one of ordinary skill in the art in order to achieve higher level of accuracy in sensing the room temperature by the temperature sensor. Moreover, as to the assertion of the Patent Owner that there is no evidence of this “problem,” the thrust of the rejection is that improved accuracy in the sensed temperature can be attained by considering the heat generated by the circuit board, and correspondingly mounting the sensor so as to avoid the impact of this generated heat.

As to mounting the sensor board perpendicular to the main circuit board, we generally agree with the Requester that “the mere existence of

alternative arrangements for mitigating circuit board heat in the prior art does not impact the obviousness.” (Resp. Br. R. 12). While Schindler moves the sensor outwardly without using a daughter board, prior art Yamatake establishes that another manner of mounting the sensor outwardly, i.e., by using a daughter board that extends perpendicularly away from the main circuit board, was also known and within the skill of those in the art. Correspondingly, it would have been obvious to a person of ordinary skill in the art to utilize either technique to mount the sensor outwardly from the main circuit board. Furthermore, as previously explained, costs is not dispositive on the issue of obviousness. *Orthopedic*, 702 F.2d at 1013. Moreover, it is unclear why there would be no reasonable expectation of success considering mother-daughter board arrangements are known and used.

The Patent Owner further submits substantially the same arguments with respect to claim 40, 42, 43 that depend from claim 38, these claims having been rejected over Honeywell 2002 in view of: Yamatake, Schindler,¹³ and Umezawa¹⁴ (ABPO 13–14); Yamatake, Schindler and Sato (ABPO 14); and Yamatake, Schindler, and Iwatare¹⁵ (ABPO 14). However, these arguments are likewise unpersuasive.

The Patent Owner also argues that rejection of claims 64–66 based on Honeywell 2002 in view of Denso¹⁶ and Bougsty¹⁷ is improper because the

¹³ Schindler et al., US 5,008,775, issued April 16, 1991.

¹⁴ Umezawa, US 4,975,766, issued Dec. 4, 1990.

¹⁵ Iwatare et al., US 5,259,784, issued Nov. 9, 1993.

¹⁶ Denso, JP 2003-054290, published Feb. 26, 2003.

¹⁷ Bougsty, 4,789,224, issued Dec. 6, 1988.

thermostat of Honeywell 2002 already mounts its display panel securely so there is no reason to provide a display retainer housing, and the Examiner fails to provide a reason to incur the likely additional effort, complexity and cost of modifying Honeywell 2002 without any benefit (ABPO 16–17). In addition, the Patent Owner notes that claim 66 further recites through holes and support legs extending through holes in the circuit board for mounting the display, but the rejection merely asserts a skilled artisan would have incorporated the structure of Bougsty into the Honeywell 2002 thermostat (ABPO 18).

However, these arguments are unpersuasive because while the device of Honeywell 2002 already mount its display, it does not disclose the manner in which the display is mounted. Hence, it would have been obvious for a person of ordinary skill in the art to look to other prior art references for appropriate mounting structure and methods, which includes mounting the display using a display retainer housing, and providing through holes and support legs as disclosed in the applied prior art relied upon by the Examiner.

The Patent Owner also relies on arguments addressed above with respect to rejection of claims 67 and 68 over Honeywell 2002 in view of: Tanaka, Yamatake, Sato and Haga¹⁸ (ABPO 18–19); Haga and Yamatake (ABPO 20–21); Zexel, Yamatake and Haga (ABPO 22–24); as well as with respect to rejection claim 69 based on Honeywell 2002 in view of: Tanaka, Bougsty, Haga and Sato (ABPO 24–25); Haga and Bougsty (ABPO 25–26);

¹⁸ Haga et al., US 5,749,005, issued May 5, 1998.

and Zexel, Haga and Bougsty (ABPO 27). However, these arguments are unpersuasive as already addressed *supra*.

Additionally, the Patent Owner argues that it would not have been obvious to space a button switch “back further from the front face than a back surface of the liquid crystal display panel” as required by claims 68 and 69 (ABPO 20, 26). In this regard, the Patent Owner argues that Figure 3 of Haga relied upon by the Examiner for disclosing such a relationship “clearly shows its switch 82 is spaced back from its front face *the same amount* as display panel 28A.” (*Id.*; *see also* Reb. Br. PO 17). The Patent Owner’s assertion is without merit. The Examiner explained that “*the space enclosing the display* does not constitute *the display*.” (RAN 160, 175). Indeed, Figure 3 of Haga shows a sectional view in which button switch 82 is spaced back further from the face of rotary dial 32 than the back surface of display panel 28A (Haga, Fig. 3, col. 4, ll. 5–44; *see also* Resp. Br. R. 15). The Patent Owner does not appear to understand that the display of Haga is depicted in Figure 3 as the narrow parallel lines, and not the entire space in which the narrow parallel lines reside.

Therefore, we affirm the Examiner’s rejection of claims 19, 21, 38–43, 54–57, 64–69, and 71 as being obvious over Honeywell 2002 in view of one or more secondary references as set forth in the RAN.

Obviousness Rejections Based on Honeywell 2003

Claims 19, 21, 38–43, 54–57, and 64–69 stand rejected as obvious over Honeywell 2003 in view of one or more secondary references (RAN 5–6, 192–233, 235–257, 259–274). The Patent Owner argues that Honeywell

2002 and Honeywell 2003 are “similar in all relevant respects,” and relies on the same arguments submitted with respect to the rejections based on Honeywell 2002 in support of patentability of the claims over the rejections based on Honeywell 2003 in combination with one or more secondary references (ABPO 28). Thus, for the reasons already discussed, we are not persuaded that the Examiner erred. We further observe that in many aspects, the disclosure in Honeywell 2003 is even more pertinent than the disclosure in Honeywell 2002 in terms of general functionality and structural resemblance to the HVAC controller disclosed in the Specification of the ’899 patent (*compare* the ’899 patent, Figures 1, 2 *with* Honeywell 2003, pgs. 2, 10–13). Correspondingly, we affirm the Examiner’s rejection of claims 19, 21, 38–43, 54–57, and 64–69 as being obvious over Honeywell 2003 in view of one or more secondary references as set forth in the RAN.

Obviousness Rejections Based on Sato

The Examiner rejects claims 18, 19, 21–29, 38–43, 54–57, 64–69, 71, and 72 as obvious over Sato in view of one or more secondary references (RAN 6–7, 274–322, 324–338). For example, in Rejection LIX, the Examiner rejects independent claim 18 based on the combination of Sato in view of Denso (RAN 274). The Examiner finds that Sato discloses an HVAC controller with most of the limitations of claim 18 including a rotation detecting device having an outer knob member that changes the set room temperature based on the direction and amount of rotation of the outer knob member (*id.* at 275, 276). The Examiner also finds that while Sato discloses a display in the central region of the front face, it does not disclose

structural details for the display unit 20/20a (*id.* at 275). The Examiner relies on Denso for disclosing such a display retainer housing within a rotatable interface member of a temperature controller, and agrees with the Requester that it would have been obvious to a person of ordinary skill to incorporate a display retainer housing (i.e., bracket 11) of Denso for the display panel of the Sato controller “so that the display panel is sufficiently ‘supported and secured .., to the printed circuit board’ underlying the display panel.” (RAN 275–76, citing Requester’s Comments dated December 31, 2012, pg. 215).

The Examiner further finds that:

Sato does not further describe a button having a surface on the front face of the controller. Nonetheless, using a button on a HVAC controller is well known. Regarding this, Denso further describes a ‘pressing [action] to activate the rotary dial knob 12 in the left direction of FIG. 3’ (see paragraph [0031]; Fig. 3).

(RAN 276).

Moreover, the Examiner also relies on Denso’s further teaching of separating the pressing button function from the rotary dial knob by providing a button separate from the rotary dial knob (RAN 276–277; *see also* Denso ¶ [50](6)), and agrees with the Requester that:

it would have been obvious to one of ordinary skill in the art to have modified the controller of Sato based on the teachings of Denso regarding a pressed button, and thus to have provided the controller of Sato with a button as part of the housing front face thereof, for performing an operation associated with the controller.

(RAN 277).

Like the rejections based on Honeywell 2002 and Honeywell 2003 discussed *supra*, the Patent Owner argues that “the Examiner does not provide an adequate reason why a skilled artisan would have incorporated the display retainer housing, button, button support member and switch of Denso into Sato’s controller.” (ABPO 29). However, this argument is unpersuasive because as set forth above, the Examiner has set forth a reason with rational underpinnings for combining the references in the manner suggested such as the lack of detail in Sato as to mounting of its display panel, and the disclosure in Denso of providing a button (i.e., tact switch 17) to set a plurality of operation signals including those corresponding to various HVAC system operation or parameters (Denso, Abstract, ¶¶ 12, 40, claims 1, 4).

The Patent Owner argues that “the RAN did not articulate what components were substituted in Sato (indeed, since no button is in Sato, how can it be substituted?), nor was an analysis provided for why the results of the supposed substitution would have been predictable.” (ABPO 29). However, this argument is unpersuasive because the proposed combination does not substitute a button to the controller of Sato, but rather, adds a button to Sato (RAN 275).

The Patent Owner also argues that “there is no evidence in the record that an additional input is needed in Sato” (Reb. Br. PO 18), and that “adding a switch as proposed by the Examiner would change the principal [sic] of operation of Sato (there is no demonstrated need in Sato for an additional input), and [] it would also render Sato unsuitable for its intended

purpose (the switches which determine knob position would be inadvertently activated if the knob could also be pressed).” (ABPO 29).

However, the articulated rejection relies on the teaching of Denso that provides a button separate from the rotary dial knob, which would not be actuated by the knob (RAN 276–277). In addition, providing additional controller input is disclosed in Denso itself, and as the Examiner states, “Denso’s teaching regarding a button operation that will increase controller input is *sufficient* as a teaching for including a button operation with Sato’s controller.” (RAN 295). Moreover, it would have been entirely obvious to those of ordinary skill in the art to incorporate a button to control the HVAC controller as desired, and it is also generally desirable to provide additional features and capability to the controller, which would have led to providing additional input control. In this regard, as already noted, an implicit motivation to combine has been found to exist when the improvement is technology-independent and the combination of references results in a product that is more desirable. *See Dystar*, 464 F.3d at 1368.

The Patent Owner argues that, as to claims 54–57, the Examiner’s reason for substituting Denso’s optical rotary device into Sato because Sato’s rotary switch would wear over time makes no sense because wear comes through use and not through time (ABPO 29–30). The Patent Owner also argues that there is no evidence that contact leading to wear was a known problem (Reb. Br. PO 18). These arguments are unpersuasive. The Examiner stated that “one having ordinary skill in the art would have readily recognized that, over time, the physical interaction of components, such as those of Sato, would cause wear and tear that could eventually result in

failure of the device.” (RAN 297). Thus, the Examiner makes clear that it is the physical interaction of components that causes wear and tear over time. As stated by the Requester, “the RAN’s description of mechanical wear and tear over time implies use over time, and a skilled artisan would readily appreciate that.” (Resp. Br. R 16–17). Moreover, as previously noted, wearing of parts due to physical contact is not only a well-known fact, but is also common sense.

The Patent Owner argues that Sato teaches against rotary encoder types of devices disclosed in Denso because they are expensive (ABPO 30, citing Sato, col. 2, ll. 9–12), and the proposed combination “would require a complete replacement of the physical components of Sato and additional electronic circuitry and software, and its undesirable expense.” (ABPO 30). However, as explained *supra*, the fact that a combination would not be made by businessmen for economic reasons does not mean that such a combination would not have been obvious to a person of ordinary skill in the art. *See Orthopedic Equipment*, 702 F.2d at 1013 (Fed. Cir. 1983). In addition, while replacement of electronic components and software would have been required, the evidence indicates that such substitution was well within skill of those in the art as evidenced by application of the rotary encoder type device in the HVAC controller of Denso itself.

As to rejection of claims 38, 39, 41, 42, 67, and 68 based on Sato in view of Yamatake and Denso, the Patent Owner relies on the unpersuasive arguments already discussed *supra* (ABPO 30). The Patent Owner further argues that Sato and Denso do not disclose a controller having a temperature sensor because in automobiles, the temperature sensor could be remote from

the controller (ABPO 30; *see also* Reb. Br. PO 19). While we do not dispute this assertion of the Patent Owner, locating the temperature sensor at an already well-known location (i.e., in the HVAC controller), and in a manner taught by Yamatake would have been an obvious design choice to a person of ordinary skill in the art. Accordingly, we agree with the Examiner that:

it would have been obvious to one of ordinary skill in the art to modify the controller of Sato based on the teachings of Yamatake[] regarding placement of a temperature sensor and a sensor circuit board in relation to a main circuit board, to provide said controller with a sensor on a sensor circuit board and provide the location of the sensor circuit board wherein it extends in a plane substantially perpendicular relative to a main circuit board of the controller.

(RAN 306).

Moreover, we also note that altering a position of a component in a device does not render the device patentable. *See In re Japikse*, 181 F.2d 1019, 1032 (CCPA 1950) (specific positioning of a starting switch of a hydraulic power press held unpatentable because shifting the position of the starting switch would not have modified the operation of the device); *In re Kuhle*, 526 F.2d 553, 555 (CCPA 1975) (particular placement of a contact in a conductivity measuring device is an obvious matter of design choice).

As to the rejection of claim 43, which further relies on Iwatara for teaching a sensor circuit board on the perimeter of the main circuit board, the Patent Owner asserts that the prior arguments are equally applicable (ABPO 31). Hence, the Patent Owner's arguments are unpersuasive of Examiner error for the reasons already discussed. As to rejection of claims 64–66 and 69 over Sato in view of Denso and Bougsty, the Patent Owner relies on substantially the same unpersuasive arguments already addressed

supra (ABPO 32). As to claims 21, 24, 40, 71, and 72 that stand rejected over the combination of Sato, Denso, and Kuenzner,¹⁹ the Patent Owner relies on their dependency on claims 18 and 22 for patentability (ABPO 30–31). Hence, these claims fall with claims 18 and 22.

In view of the above, we affirm the Examiner rejection of claims 18, 19, 21–29, 38–43, 54–57, 64–69, 71, and 72 as obvious over Sato in view of one or more secondary references as set forth in the RAN.

Indefiniteness Rejections

Rejections 1 and 2 are rejections of claims 27, 67, and 68 under 35 U.S.C. § 112, second paragraph, as indefinite (RAN 3, 21–26). However, each of these claims stand rejected under one or more prior art rejections discussed *supra*. Correspondingly, Rejections 1 and 2 are moot, and we decline to reach the same.

C. Conclusions With Respect to Appeal of the Patent Owner

The Examiner's prior art Rejections 3–5 are AFFIRMED so that each of claims 18, 19, 21–29, 38–43, 54–57, 64–69, 71, and 72, subject to the present Appeal of the Patent Owner remains rejected.

¹⁹ Kuenzner, US 6,744,374 B1, issued June 1, 2004.

II. CROSS-APPEAL OF REQUESTER

The Examiner declined to adopt or withdrew various rejections (RAN 3–7). The Requester cross-appeals the following rejections:

1. Claims 18, 29, 41, and 67–69 under 35 U.S.C. § 112 as lacking written description support (CABR 4) for the claim terms: “front face comprises a button” (CABR 7); “situated in the volume” (CABR 12); and “moving a surface having a plurality of markings” (CABR 13).

2. Claims 28, 42, 67, and 68 under 35 U.S.C. § 112 as lacking written description support (CABR 5) for the claim terms: “visual change” (CABR 15); “detectors” (CABR 16); “markings” (CABR 16); and “monitoring movement” (CABR 17).

3. Claims 42 and 67–69 under 35 U.S.C. § 112 as indefinite for (CABR 5–6) for the claim terms: “detectors” (CABR 17); “monitoring movement of ...markings” (CABR 18); “monitoring movement of ...features” (CABR 19); and “moving a surface” (CABR 20).

4. Claims 18, 22–29, 67–69, and 72 as obvious under 35 U.S.C. § 103 over combinations of Honeywell 2002 in view of Denso (and other secondary references), and combinations of Honeywell 2003 in view of Denso (and other secondary references) (CABR 6, 20).

5. Claims 22–28 and 72 as obvious under 35 U.S.C. § 103 for the same reasons applied against claims 67 and 68 (CABR 6, 27).

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However, as set forth above, the Examiner's prior art Rejections 3–5 stand AFFIRMED so that each of the claims cross-appealed by the Requester remains rejected. Correspondingly, the Cross-Appeal of the Requester is moot, and we decline to reach the same.

Requests for extensions of time in this *inter partes* reexamination proceeding are governed by 37 C.F.R. §§ 1.956 and 41.77(g). In the event neither party files a request for rehearing within the time provided in 37 C.F.R. § 41.79, and this decision becomes final and appealable under 37 C.F.R. § 41.81, a party seeking judicial review must timely serve notice on the Director of the United States Patent and Trademark Office. *See* 37 C.F.R. §§ 90.1 and 1.983.

AFFIRMED

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