

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

EDMIT INDUSTRIES, INC.,
Petitioner,

v.

SMARTDOOR HOLDINGS, INC.,
Patent Owner.

Case IPR2015-00013
Patent 6,484,784 B1

Before JOSIAH C. COCKS, MEREDITH C. PETRAVICK, and
JAMES A. WORTH, *Administrative Patent Judges*.

WORTH, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Petitioner, Edmit Industries, Inc. (“Petitioner”), filed a Corrected Petition¹ (Paper 4, “Pet.”) requesting *inter partes* review of claims 16–18 and 27 of U.S. Patent 6,484,784 (“the ’784 patent”). Patent Owner, Smartdoor Holdings, Inc. (“Patent Owner”), filed no preliminary response. We determined that the information presented in the Petition demonstrated a reasonable likelihood that Petitioner would prevail with respect to claims 16–18 and 27. Pursuant to 35 U.S.C. § 314, we instituted trial as to those claims. Paper 9 (“Dec. Inst.”).

After institution of trial, Patent Owner filed a Patent Owner Response to the Petition (Paper 12, “PO Resp.”) and a Motion to Amend (Paper 13, “Mot. Amend”). Petitioner filed a Reply to Patent Owner’s Response (Paper 14, “Pet. Reply”) and an Opposition to Patent Owner’s Motion to Amend (Paper 15). Patent Owner filed a Reply to Petitioner’s Opposition to Patent Owner’s Motion to Amend (Paper 16).

Petitioner filed a Motion to Exclude Evidence (Paper 26, “Mot. Exc.”).

An oral hearing was held on December 14, 2015, a transcript of which has been entered in the record. Paper 30 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

¹ We refer to the Corrected Petition as simply the Petition for ease of reference henceforth. All citations to “Petition” or “Pet.” are to the Corrected Petition (Paper 4).

For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 16–18 and 27 of the ’784 patent are unpatentable. The motion to amend is denied.

A. Related Proceedings

Patent Owner has asserted the ’784 patent against Petitioner in a case pending in the United States District Court for the District of Columbia, *Smartdoor Holdings, Inc. v. Edmit Industries, Inc.*, Case No. 1:14-cv-00657 (D.D.C.). Pet. 4; see Paper 8, 2.

B. The ’784 Patent (Ex. 1001)

The ’784 patent is titled “Door Controlling Device,” and is expressed as relating to “a control device for closing and opening a door,” and in particular, a fire door. Ex. 1001, 1:5–6, 1:10–15. Fire doors “close the throughway automatically upon a sensed condition, such as excessive heat or smoke.” *Id.* at 1:15–18. Most fire doors close with gravity or the assistance of a spring in response to the presence of heat and are opened with an electric motor or manually. *Id.* at 1:27–50. The ’784 patent characterizes the disclosed invention as various “improve[ments] on the mechanisms of the background art to solve one or more of the drawbacks associated with the mechanisms of the background art.” *Id.* at 3:22–26. The ’784 patent describes that one of the features of its disclosed invention is that the fire door harnesses energy generated by the closing of the door to control the closing speed and to power auxiliary operations. *Id.* at 3:37–43.

Thus, when the fire door travels from its open position to its closed position, rotation of a rotor causes a generator function of motor/generator 68 to produce power. *Id.* at 8:23–25. Figure 7 of the ’784 patent depicts a

wiring diagram for an embodiment according to the invention and is reproduced below:

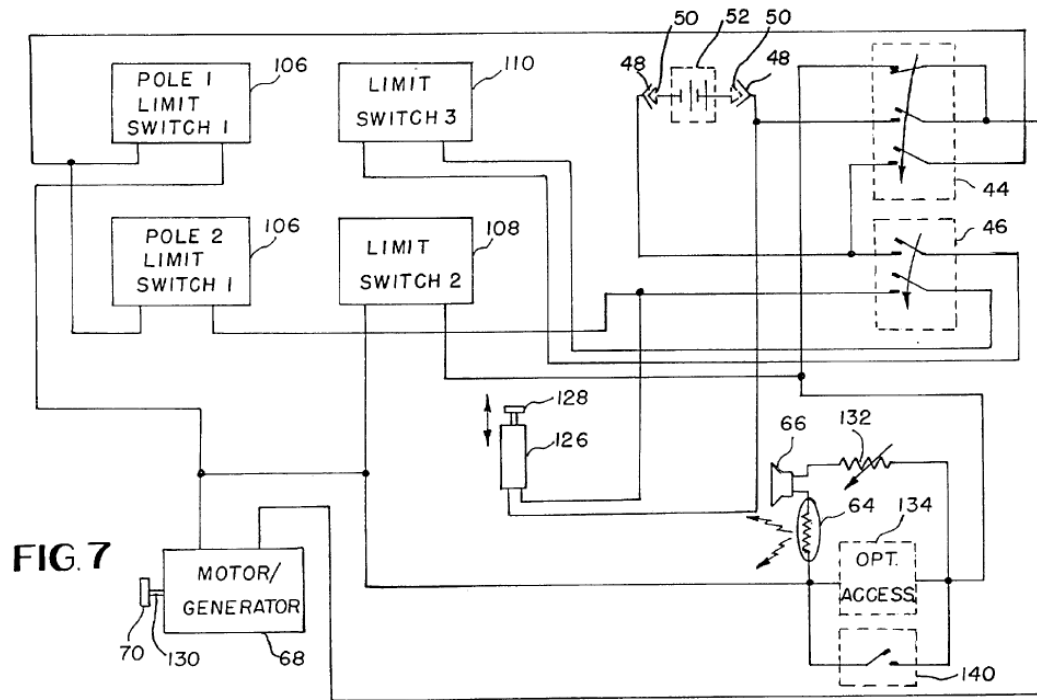


Figure 7 of the '784 patent.

As shown in the Figure above, the power produced in motor/generator 68 is used to activate visual indicators 64 and audible indicators 66. Ex. 1001, 8:29–32, 9:33–36. Further, the produced power is fed back to a motor function of motor/generator 68, in such a manner as to cause the motor function of motor/generator 68 to resist the rotation of rotor 130. *Id.* at 8:31–37; *see id.* at 9:33–10:11, 12:10–29. As described in the '784 patent, this use of power from the motor/generator is an arrangement that may be referred to as regenerative braking. *See id.* at 8:23–42.

Illustrative Claim

Claims 1, 7, 14, 16, and 32 are independent claims. Claim 16, reproduced below, is the only independent claim at issue in this proceeding and is illustrative of the subject matter at issue.

16. A device comprising:
- a door having an open, first position and a closed, second position, with a force tending to move said door toward said second position;
 - a disengageable stop connected to said door to hold said door in said first position;
 - a motor connected to said door, said motor having an ability to move said door from said second position to said first position; and
 - a generator connected to said door, wherein movement of said door from said first position to said second position causes said generator to produce power to apply a braking force to slow movement of said door from said first position to said second position and to power at least one auxiliary device.

C. Grounds of Unpatentability Instituted for Trial

We instituted a trial based on the following grounds of unpatentability:

Claims	Basis	References
16, 17	§ 103	Shea ² and Burke ³
18	§ 103	Shea, Burke, and O'Brien ⁴
27	§ 103	Shea, Burke, and Leivenzon ⁵

² Shea, U.S. Patent No. 5,386,891, iss. Feb. 7, 1995 (Ex. 1009).

³ Burke, U.S. Patent No. 1,367,298, iss. Feb. 1, 1921 (Ex. 1003).

⁴ O'Brien, II et al., U.S. Patent No. 5,193,647, iss. Mar. 16, 1993 (Ex. 1008).

⁵ Leivenzon, U.S. Patent No. 4,533,905, iss. Aug. 6, 1985 (Ex. 1006).

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, the Board interprets claim terms in an unexpired patent according to the broadest reasonable construction in light of the specification of the patent in which they appear. *See In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1280 (Fed. Cir. 2015), *cert. granted sub nom. Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 890 (mem.) (2016); 37 C.F.R. § 42.100(b). Under that standard, and absent any special definitions, we give claim terms their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definitions for claim terms must be set forth with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Petitioner requests construction of the following terms: a “disengageable stop”; a motor “connected” to said door; a generator “connected” to said door; “auxiliary”; and “said generator to produce power to apply a braking force to slow movement of the door from [said] first to [said] second position.” *See* Pet. 9–10. Patent Owner does not request construction of any terms.

We construe claim terms relevant to issues in dispute and to the extent necessary to resolve the issues presented by the Petition. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999). As with the Decision on Institution, we determine that it is not necessary to construe explicitly any claim terms for purposes of this *inter partes* proceeding.

B. Principles of Law

To prevail in its challenges to the patentability of the claims, Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966).

C. Obviousness of Claims 16 and 17 over Shea and Burke

Petitioner contends that Shea and Burke would have rendered obvious claims 16 and 17. Pet. 20–25. We have reviewed Petitioner’s explanation identifying where each limitation allegedly appears in Shea and Burke, along with the testimony of Petitioner’s declarant, Brian D. Haas. *Id.*; Ex. 1004 ¶¶ 22–28. We have also reviewed Patent Owner’s assertions and evidence as to why Petitioner’s explanations and evidence are deficient. PO Resp. 4–8.

1. Shea (Ex. 1009)

Shea is directed to a “mechanism for controlling the raising and lowering of a door.” Ex. 1009, Title. The mechanism is described generally as comprising a brake, with a speed reduction gearing, and a governor, to

control the speed of the door when it is closing under the gravitational pull on the door. *Id.* at 1:31–36, 5:41–48.

The door may be opened or closed by a hand chain assembly or a motor. *Id.* at 1:36–39, 4:31–40. A generator or battery may send power to a motor through a control box. *Id.* at 4:26–38.

Further, the door closes, *inter alia*, in response to a change in temperature or in response to an electric signal to actuate a solenoid, by the releasing of a brake 84. *See id.* at Abstract, 1:35–39, 3:46–52, 4:45–59, 5:23–25. Shea discloses that actuation of the solenoid by an electric signal is reversible such that the solenoid may re-engage brake 84. *Id.* at 5:28–31. When brake 84 is engaged, brake shoes 108 are in a brake position. *Id.* at 5:32–38. Shea describes a preferred embodiment in which a control box sends signals to both the motor and the solenoid based on “Up,” “Down,” and “Stop” buttons. *Id.* at 7:50–62.

Shea describes that the closing of the door also may be slowed mechanically with the use of a governor, which includes brake shoes 114 that centrifugally separate when the rotational speed of the input shaft exceeds a threshold to apply braking friction. *Id.* at 5:47–62.

2. *Burke (Ex. 1003)*

Burke relates to alternating current motors that regenerate current when driven by the load, i.e., the motor also serves as a generator. Ex. 1003, 1:9–12, 1:38–40. Burke is directed, in particular, to an improved alternating-current motor and generator that will be able to serve as a generator even when the alternating current supply to the motor is interrupted. *Id.* at Title, 1:38–65, 2:55–57. Burke accomplishes this result with a stator element having laminae of differing magnetic characteristics.

Id. at 3:71–115. Burke states that its motor/generator always maintains a magnetic field in its magnetic element or stator. *Id.* at 4:16–20. Burke describes that there are applications for a motor that also serve to regenerate electricity “in cases where an electrical braking action is required as in electrically operated elevators, motor vehicles, trains and the like,” and that the electricity may also be used, *inter alia*, to power an electric indicator light, or charge a storage battery. *Id.* at 1:18–24, 1:26–32, 3:8–16.

3. Analysis

i. Petitioner’s Assertions

In the Petition, Petitioner alleges how each limitation of claims 16 and 17 would be understood to be disclosed by Shea and Burke, and why such a combination would have been obvious. Pet. 20–25. Patent Owner focuses on the issues of whether a person of ordinary skill in the art would have sought to combine Shea and Burke and the feasibility of the combination, but Patent Owner does not generally dispute Petitioner’s contention that the individual limitations of claims 16 and 17 would be met by the teachings of Shea and Burke.⁶ PO Resp. 6–8; see 37 C.F.R. § 42.23(a).

With respect to the limitations, “a door having an open, first position and a closed, second position, with a force tending to move said door toward second position” and “a disengageable stop connected to said door to hold said door in said first position,” we find that Shea discloses a fire door which

⁶ As addressed below, Patent Owner does argue that the modification of Shea’s device with the teachings of Burke would require the use of an external power source (not claimed), as an additional, concomitant modification in order to use the motor/generator of Burke. PO Resp. 6. However, Patent Owner does not argue that the combination of Shea and Burke would lack any of the recited limitations.

is held open by releasing mechanism 82 and temperature sensitive means 88 (such as a fusible link), and which closes under the force of gravity when the fusible link separates (e.g., as in a fire). Ex. 1009, 3:25–52, 4:41–58; *see* Pet. 20–23.

With respect to the limitation, “a motor connected to said door, said motor having an ability to move said door from said second position to said first position,” we find that Shea discloses a motor which may lift the door from the closed position to the open position. Ex. 1009, 4:16–40; *see* Pet. 20–21, 23.

With respect to the limitation, “a generator connected to said door, wherein movement of said door from said first position to said second position causes said generator to produce power to apply a braking force to slow movement of said door from said first position to said second position and to power at least one auxiliary device,” we find that Burke discloses the motor/generator can be utilized, when operated as a generator, to provide braking action through regenerative braking. Ex. 1003, 1:16–23. Burke describes the use of a generator to produce power which can flow to additional element 13, i.e., “a resistance for absorbing the braking energy, a storage battery charged by the regenerated energy, a magnet for controlling the operation of some other mechanism, an electric light or any other desired translating device.” Ex. 1003, 3:4–16, Fig. 4; Pet. 21–24. Burke also discloses that “it is desirable to utilize the regenerative function of electric motors, the motor itself serving to build up and excite its own field when operated as a generator, as in cases where an electrical braking action is required as in electrically operated elevators, motor vehicles, trains, and the like, ...” Ex. 1003, 1:18–22 (*cited in* Pet. 23); Ex. 1004 ¶ 25. Thus, Burke

discloses the use of the regenerated energy from the generator both to power an additional device and at the same time to provide braking action, i.e., by dissipating mechanical energy through the generator's conversion of the mechanical energy to electrical energy (which is then absorbed by the electrical resistance, battery, or other components). *See id.*; Ex. 1004 (Haas Decl.) ¶ 26 (using a generator to slow the door on descent).⁷ As applied to the claim language, Burke's generator thereby accomplishes braking and powering at the same time through regenerative braking: "movement . . . causes said generator to produce power to apply a braking force to slow movement . . . and to power at least one auxiliary device."

Petitioner asserts that a person of ordinary skill would have modified Shea's fire door with Burke's motor/generator such that Burke's motor/generator would operate to raise the fire door or to slow the descent of the fire door. Pet. 22. In particular, Petitioner relies on Burke for the teaching of regenerative braking and contends that a person of ordinary skill in the art would have substituted the governor of Shea with the

⁷ We conclude that the motor/generator of both Burke and O'Brien, as applied to claim 18 *infra*, satisfy the terms of the claim language under the broadest reasonable interpretation. As stated in the Claim Construction section, *supra*, we determine that it is not necessary for purposes of the current dispute to conduct an explicit claim construction, *inter alia*, because Patent Owner does not dispute the meaning of the terms. Nevertheless, we note that Burke and O'Brien work in different ways to "apply a braking force." Burke, as set forth herein, applies a braking force mechanically through the action of the generator, in dissipating the mechanical energy and converting it to electrical energy. O'Brien, as discussed *infra*, applies a braking force by feeding back the generated electrical energy to cause the motor to tend in the opposite direction. We find both of these to be the application of a braking force despite the difference in mechanism.

motor/generator of Burke in order to slow the door on descent (for reasons discussed below). *Id.*

Petitioner relies on the same structures for claim 17 as for claim 16, and in particular, the motor/generator of Burke. *Id.* at 24–25 (citing Ex. 1003, Fig. 1, 2:55–57; Ex. 1004 ¶ 28). We find that the motor and generator of Burke do share a common housing, thus satisfying the additional recitation of claim 17. Ex. 1003, Fig. 1, 1:55–57, 2:10–19 (discussing Fig. 1); see Pet. 24–25. We, therefore, find that Petitioner’s contention that the limitations of claims 16 and 17 are met by the combination of Shea and Burke is supported by a preponderance of the evidence, and we adopt as factual findings Petitioner’s assertions set forth in the respective claim charts on pages 22–25 of the Petition.

ii. Whether a Person of Ordinary Skill Would Have Combined the References As Asserted

Petitioner argues that a person of ordinary skill would have used regenerative braking, as taught by Burke, as a substitute for use of the governor of Shea in order to optimize the function of the door closer and to power a light as described in Burke. Pet. 21–22, 24. Petitioner further reasons that the substitution would have been desirable by one skilled in the art so as to recover the excess energy, and as the use of a known technique to improve the functionality. *Id.* at 22. Petitioner further relies on paragraphs 21 and 26 of the Haas Declaration in its contentions. Pet. 21–22; Pet. Reply 11; see also *id.* at 7–13 (discussing *Randall Mfg. v. Rea*, 733 F.3d 1355 (Fed. Cir. 2013)).

Mr. Haas provides the following rationales for a substitution of Burke’s motor/generator for Shea’s motor/governor: (i) combining prior art

elements according to known methods to yield predictable results; (ii) substitution of one known element for another to obtain predictable results; (iii) use of known technique to improve similar devices in the same way; and/or (iv) applying a known technique to a known device to yield a predictable improvement. Ex. 1004 ¶ 21. Mr. Haas additionally states that a person would have been motivated to recover excess energy to use for lighting and to improve the functioning of Shea. *Id.* ¶ 26.

Patent Owner disagrees for three reasons. First, Patent Owner implies that Burke is not analogous art because Burke does not disclose a door. *See* PO Resp. 6. Art is analogous when it is: (1) from the same field of endeavor as the claimed invention; or (2) reasonably pertinent to the particular problem faced by the inventor, if the art is not from the same field of endeavor. *See In re Bigio*, 381 F.3d 1320, 1325–26 (Fed. Cir. 2004). In this case, as observed by Petitioner’s Declarant, Burke expressly describes an application “as in cases where an electrical braking action is required.” Ex. 1004 ¶ 25 (quoting Ex. 1003, 1:18–22). Thus, even under Patent Owner’s argument that Burke is not specific to the field of doors, we agree with Petitioner’s Declarant that Burke is relevant to the problem of braking in electrified devices. Burke discloses an approach to that problem by absorbing energy from a motor, operated as a generator, for the purpose of braking. Ex. 1003, 1:16–25, 3:11–12.

Second, Patent Owner argues that Burke’s motor/generator is not consistent with battery operation because it is an AC motor/generator, and that it therefore would be unable to function through all phases of the door cycle of operation (closed, opening, open, closing), and would require an external source of AC power. PO Resp. 5–7. Nevertheless, we regard this

to be largely an argument regarding bodily incorporation, i.e., whether an AC component can be integrated with a DC component, which does not directly address the issue of whether a person of ordinary skill in the art would have been motivated to combine the components. *See In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (en banc) (“*Etter’s* assertions that Azure cannot be incorporated in Ambrosio are basically irrelevant, the criterion being not whether the references could be physically combined but whether the claimed inventions are rendered obvious by the teachings of the prior art as a whole.”).

In this connection, counsel for Patent Owner acknowledged at oral argument that Patent Owner was not attempting to argue that Burke could not have been so incorporated. *See* Tr. 34:17–35:1. Indeed, Patent Owner’s main argument regarding the use of an AC motor/generator is that an external AC power source would be required to run the motor. PO Resp. 7. However, Burke teaches the use of an AC power source as item 10 of its circuit connection. Ex. 1003, Figs. 3, 4, 2:118–121. In combination with Shea, Burke would thus allow the door to be raised with the motor/generator of Burke if the door were plugged into a power source (*id.*; *see also* Ex. 1009, 4:27–31), or, during a power failure, to be raised with Shea’s hand chain assembly. Ex. 1009, 8:6–14, 4:28–40.

Third, Patent Owner argues that removing the governor and replacing it with Burke’s regenerative braking would “destroy the teachings of Shea.” PO Resp. 7–8. Specifically, Patent Owner argues that Shea utilizes a centrifugal governor in the high speed rotation portion of the gear, the operation of the governor using centrifugal force is integral to the Shea design, and Burke does not explain why a governor would be removed. *Id.*

at 8; Tr. 21:16–36:5. Patent Owner also argues that a governor operates only at high rotational speeds, and specifically in Shea’s embodiment, only at rotational speeds of the input shaft in excess of 1700 RPM. PO Resp. 7 (citing Ex. 1009, 5:59–63).

The Federal Circuit has explained that a substitution of components, e.g., the substitution of an electrical component for an optical component, does not destroy the principle of operation where it does not destroy the overall principle of operation of the device. *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012).

A governor, as taught by Shea, uses frictional braking by deploying brake shoes based on the application of centrifugal force. Ex. 1009, 5:59–63. Petitioner’s assertion is that a person of ordinary skill would have found it obvious to use a different braking mechanism as a substitute for a governor to achieve the same function. In particular, Petitioner proposes substitution of the frictional braking mechanism of Shea (i.e., a braking mechanism that is purely mechanical), with the dissipative braking mechanism of Burke (i.e., a braking mechanism that also converts mechanical energy to electrical energy). In this case, the fire door of Shea, with the motor/generator of Burke substituted for the motor/governor of Shea, would operate to blunt or slow the movement of the door on descent while allowing the door to close. See Ex. 1004 (Haas Decl.) ¶ 26. We determine that the asserted combination of Shea and Burke would operate in the same manner as the fire door of Shea—to slow the movement of the door, while allowing the door to close under the force of gravity. *Id.* ¶ 24. We agree with Petitioner’s Declarant that this would have been an obvious

substitution as the use of a known technique to improve functionality. *See id.* ¶ 26.

Petitioner’s proposed combination is thus the substitution of an electrical component for an analog component, which does not destroy the principle of operation because it does not destroy the overall principle of operation of the device. *See Mouttet*, 686 F.3d at 1332. We conclude that this type of fitting together of teachings would have been obvious to a person of ordinary skill in the art. *KSR*, 550 U.S. at 420 (“a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle”).

Viewing the evidence as a whole, we conclude that a person of ordinary skill in the art would have applied the teachings of Burke regarding regenerative braking to the fire door of Shea in order to improve operation of the door and to make use of excess energy from rotation. We are further persuaded by Petitioner’s arguments that Burke teaches that the braking can have the additional advantage of powering another device and that a person of ordinary skill would have sought a substitution of components in order to achieve the advantages of Burke’s motor/generator. *See* Pet. Reply 11–12 (quoting *Randall Mfg.*, 733 F.3d at 1363 (“doing so would allow the designer to achieve the other advantages of the Aquino assembly while using a stowage strategy that was very familiar in the industry”)).

The reasoning for the combination of Shea and Burke applies equally to claim 17 as to claim 16. We, therefore, conclude that Petitioner has shown by a preponderance of the evidence that Shea and Burke would have rendered obvious the subject matter of claims 16 and 17.

D. Obviousness of Claim 18 over Shea, Burke, and O'Brien

Claim 18 depends from claim 16 and adds “wherein said power is fed to said motor, so that said motor applies a force to said door attempting to move said door toward said first position, and thus applies the braking force to slow movement of said door from said first position to said second position.” Petitioner asserts that claim 18 is unpatentable over Shea, Burke, and O'Brien. Pet. 25–29.

1. O'Brien (Ex. 1008)

O'Brien is directed to an “Easy Opening Door Control Device.” Ex. 1008, Title. The device controls a pivoted, or swinging, door by storing the energy from manual opening of the door in a spring. *Id.* at Abstract, 2:41–29. After opening, the spring causes the door to swing back to a closed position. *Id.* at 2:35–43. The closing of the door causes the rotation of a rotor in a DC motor/generator, generating electricity which feeds back to the motor, which then retards the rotation of the rotor and causes a braking action on the door. *Id.* at 2:43–52, 5:9–15. O'Brien discloses that a user can select the desired closing speed with an adjustable resistance 80. *Id.* at 5:15–17.

2. Analysis

In the Petition, Petitioner alleges how each limitation of claim 18 would be understood to be disclosed by Shea, Burke, and O'Brien, and why such a combination would have been obvious. Pet. 25–27. Petitioner's ground of obviousness is based on the combination of Shea and Burke, as set forth above, further in view of the teachings of O'Brien. Pet. 25–26.⁸ For

⁸ We understand the reference in the claim chart on page 27 of the Petition to column 9, lines 9–15 of O'Brien to be a typographical error intended to refer

example, Petitioner asserts that a person of ordinary skill in the art would have incorporated O'Brien's teaching of feeding back the output of motor/generator 62 so that the motor applies a force to the door attempting to move the door toward the open position, thereby applying a braking force to slow the movement of the door toward the closed position. Pet. 26.

Patent Owner does not dispute Petitioner's contention that the individual limitations of claim 18 would be met by the asserted combination of Shea, Burke, and O'Brien. See 37 C.F.R. § 42.23(a). Rather, Patent Owner disputes whether a person of ordinary skill in the art would have combined the references. PO Resp. 5–8. We find that Petitioner's contention regarding the additional recitation of claim 18 is well supported by the declaration of Mr. Haas and the other evidence of record. O'Brien describes that the rotation of shaft 60 causes motor/generator 62 to act as a generator, the electrical output of direct current (DC) motor/generator 62 is fed back to motor/generator 62 to retard the rotation of shaft 60, and the closure speed of the door is retarded and controlled by motor/generator 62. Ex. 1008, 5:9–15.

We proceed to analyze whether a person of ordinary skill would have combined the references as asserted. Petitioner asserts that it would have been obvious to a person of ordinary skill to incorporate the motor/generator construction of O'Brien into the motor/generator construction of Shea as modified by Burke because it would have been simply a substitution of one known motor/generator for another to obtain a predictable result, or as a

to column 5 of O'Brien, as there is no column 9 and the claim chart refers to column 5, lines 1–9 immediately prior, i.e., Ex. 1008, col. 5, lines 9–15 rather than Ex. 1008, col. 9, lines 9–15.

design choice, or as the use of a known technique to improve the motor/generator functionality. Pet. 26–27 (citing Ex. 1004 ¶ 31); Pet. Reply 13–14.

Patent Owner does not provide any additional arguments with respect to the combination of Shea, Burke, and O’Brien. Patent Owner simply argues that O’Brien does not remedy the deficiency in the prior art as a whole. PO Resp. 5, 8.

O’Brien discloses feedback of regenerated energy from a generator to retard rotation of the motor itself. Ex. 1008, 5:4–14. In combination with Shea and Burke, O’Brien’s feedback of electricity would cause the motor to tend to rotate Shea’s door towards the open position when the shaft is rotating towards the closed position.

Viewing the evidence as a whole, we conclude that a person of ordinary skill in the art would have applied the teachings of O’Brien regarding regenerative braking to the fire door of Shea in order to improve operation of the door and to make use of excess energy from rotation. The resulting fire door would operate, using the teachings of O’Brien, to retard the closing speed, while allowing the door to close at a desired speed. See Ex. 1008, 5:14–17. This would have been consistent with Shea’s principle of operation of blunting the closing speed while allowing door closure. To the extent that the substitution would use (electro-mechanical) braking that generates electricity and feeds it back to the motor to oppose the movement of the door (as taught by O’Brien), rather than (mechanically-activated) frictional braking based on centrifugal force, we agree with Petitioner’s Declarant that this would have been an obvious substitution as the use of a known technique to improve functionality. See Ex. 1004 ¶ 31. Indeed,

O'Brien immediately thereafter discloses certain advantages of its system, and, in particular, an adjustable resistance can be provided so that the user can select the appropriate desired closing speed. Ex. 1008, 5:16–18.

We conclude that Petitioner has shown by a preponderance of the evidence that the combination of Shea, Burke, and O'Brien would have rendered obvious the subject matter of claim 18.

E. Obviousness of Claim 27 over Shea, Burke, and Leivenzon

Claim 27 depends from claim 16 and adds “wherein said at least one auxiliary device includes an indicator to provide a visual or audible indication that said door is moving from said first position to said second position.” Petitioner asserts that claim 27 is unpatentable over Shea, Burke, and Leivenzon. Pet. 29–32.

1. Leivenzon (Ex. 1006)

Leivenzon is directed to an “Indicating Means for a Door Operator Device.” Ex. 1006, Title. The indicating means generally is described as indicating when the door is fully open or fully closed, and preferably also indicating that the door is moving toward the closed position or toward the open position. *Id.* at 1:38–45. Leivenzon describes that the indicating means can be an LED which illuminates or flashes, or can be an audible means such as a burglar alarm. *Id.* at 2:5–14, 3:24–29, 5:41–48, 5:52–60.

2. Analysis

In the Petition, Petitioner alleges how each limitation of claim 27 would be understood to be disclosed by Shea, Burke, and Leivenzon, and why such a combination would have been obvious. Pet. 26–29. Petitioner relies on Leivenzon for the additional teaching of a visual or audible alarm. *Id.* Patent Owner does not dispute Petitioner’s contention that the individual

limitation of claim 27 would be met by the asserted combination of Shea, Burke, and Leivenzon. *See* 37 C.F.R. § 42.23(a). Rather, Patent Owner disputes whether a person of ordinary skill in the art would have combined the references. PO Resp. 5–8. We find that Leivenzon describes the illumination of an LED and/or the sounding of an audible alarm to indicate that the door is closing, and that this meets the additional recitation of claim 27. Ex. 1006, 2:37–45, 2:5–12, 6:55–66. We adopt as our findings Petitioner’s assertions set forth in the claim chart at page 32 of the Petition, as supported by a preponderance of the evidence of record.

Patent Owner does not provide any additional arguments with respect to the combination of Shea, Burke, and Leivenzon. Patent Owner simply argues that Leivenzon does not remedy the deficiency in the prior art as a whole. PO Resp. 5–8. We agree with Petitioner that a person of ordinary skill in the art would have combined the teachings of Leivenzon, to provide a warning of the door closing (as an additional safety feature), using the energy generated by the motor/generator of Burke. *See* Pet. 31–32; Ex. 1004 ¶ 38.

III. PATENT OWNER’S MOTION TO AMEND

Patent Owner’s motion to amend is contingent on a finding of unpatentability by the Board. Mot. Amend 2. Because we conclude that Petitioner has demonstrated that claims 16–18 and 27 are unpatentable, we proceed to consider Patent Owner’s motion to substitute claims 40–43 for claims 16–18 and 27. For the reasons discussed below, Patent Owner’s motion to amend is denied.

Rule 42.40(c) places the burden on the patent owner to show a patentable distinction of each proposed substitute claim over the prior art.

See Microsoft Corp. v. Proxyconn, Inc., 789 F.3d 1292, 1308 (Fed. Cir. 2015) (affirming the Board's denial of a motion to amend claims where the patent owner failed to establish the patentability of the substitute claims over the prior art of record). While not required to prove that the claims are patentable over every item of prior art known to a person of ordinary skill, the patent owner is required to explain why the claims are patentable over the prior art of record. *MasterImage 3D, Inc. v. RealD, Inc.*, Case IPR2015-00040, slip op. at 2 (PTAB July 15, 2015) (Paper 42). Prior art of record includes: any material art in the prosecution history of the patent; any material art of record in the current proceeding, including art asserted in grounds on which the Board did not institute review; and any material art of record in any other proceeding before the Office involving the patent. *Id.*

A. *Claims 40–42*

Proposed substitute claim 40 is reproduced as follows with marking showing the differences from original claim 16. The deletion is shown in brackets and additions are underlined.

Claim 40 (substitute for original claim 16): A device comprising:
a door having an open, first position and a closed, second position, with a force tending to move said door toward said second position;
a disengageable stop connected to said door to hold said door in said first position;
a DC powered motor/generator connected to said door, said motor having an ability to move said door from said second position to said first position;
a rechargeable battery; and
[[a]] said DC powered motor/generator being connected to said door, wherein movement of said door from said first position to said second position causes said DC powered motor/generator to produce DC power to said rechargeable battery so as to apply a regenerative braking force to slow movement of said door from

said first position to said second position and to power at least one auxiliary device.

Mot. Amend 2–3.

The additional limitations that Patent Owner seeks to introduce for proposed substitute claim 40 would be to recite that the motor is part of a motor/generator, to specify that the motor/generator uses DC power, and to recite the use of regenerative braking to charge a rechargeable battery. The additional limitations for proposed substitute claims 41 and 42 are similar to that for proposed substitute claim 40.

However, the additional limitations would not avoid unpatentability because Burke and O'Brien both use a motor/generator system, O'Brien's motor/generator uses DC power (Ex. 1008, 5:15), Burke and O'Brien both use regenerative braking, and Burke recites the charging of a storage battery by the motor/generator which is capable of braking (Ex. 1003, 3:4–16). Therefore, the asserted combination of Shea, Burke, and O'Brien already contains the features recited as additional limitations in proposed substitute claim 40 (and the similar recitations in proposed substitute claims 41 and 42). We have already concluded *supra*, that the combination of Shea, Burke, and O'Brien would have been obvious to a person of ordinary skill in the art.

Patent Owner does not explain why the additional recitations of its proposed substitute claims would have been nonobvious over this combination. Mot. Amend 4–14. Patent Owner argues that the combination of Shea and Burke would not make use of a DC battery by itself to open or close a door. *Id.* at 11–12. However, nothing in the additional limitations of proposed substitute claims 40–42 requires that a DC battery provide power

to open or close a door without an additional power supply (as discussed above with respect to claim 16). More importantly, the combination of Shea, Burke, and O'Brien would make use of the DC-powered components—the DC motor/generator of O'Brien. Ex. 1008, 5:4–15. Burke discloses using the motor/generator to charge a battery with the regenerated energy. Ex. 1003, 3:12–13. Therefore, the combination of Shea, Burke, and O'Brien already contains the elements of the additional limitations. We conclude that Patent Owner has not met its burden of proving that the additional recitations of proposed substitute claims 40–42 would have been nonobvious over this combination. See Paper 15, 4–16.⁹

B. Claim 43

For proposed substitute claim 43, Patent Owner proposes the following additional limitation: “and wherein more and more braking is applied as said door closes so that said door will close at a substantially uniform speed.” Mot. Amend 4, 6. Petitioner argues that the term “substantially uniform speed” is indefinite, and that in any event, the additional limitation as a whole would have been rendered obvious by the same combination of Shea, Burke, and O'Brien. Paper 15, 16–24 (citing Ex. 1012 ¶¶ 22–23). Petitioner points, *inter alia*, to the teaching of different levels of braking in O'Brien (Ex. 1008, 2:48–55), and to Shea's teaching of using a governor to prevent high speeds (Ex. 1009, 6:59–63, 7:9–21). Paper 15, 19–21.

⁹ For purposes of this *inter partes* review as to patentability, we do not reach the claim construction issue raised by Petitioner as to whether a capacitor is a battery and vice-versa. Paper 15, 4–5; see also Pet. Reply 4.

As to Petitioner’s argument that proposed substitute claim 43 is indefinite, we determine that the term “substantially uniform speed” is reasonably clear to a person of ordinary skill when read in context of the entire claim limitation and disclosure, which requires the application of “more and more braking” to compensate for the dynamics of the door during closing, e.g., to offset the potential for acceleration due to gravity. Ex. 1001, 12, 19–29; *see In re Packard*, 751 F.3d 1307, 1311 (Fed. Cir. 2014).

We agree with Petitioner that the combination of Shea, Burke, and O’Brien renders obvious the additional limitation of proposed substitute claim 43. We find that O’Brien discloses that a “different amount of braking force” can be used. Ex. 1008, 2:48–55. O’Brien further discloses that the rotational speed can be increased during closing (*id.* at 5:18–34), decreased during closing (*id.* at 5:35–41), or set to a desired speed (*id.* at 5:16–18). O’Brien discloses that adjustable resistor 80 can select a “desired closing speed.” *Id.* at 5:16–18. We conclude that Patent Owner has not met its burden of proving why it would have been nonobvious to a person of ordinary skill, given the teachings of Shea, Burke, and O’Brien, to use an adjustable resistor to increase the braking force to select a uniform speed or substantially uniform speed. Thus, Patent Owner has not met its burden for proposed substitute claim 43.

IV. PETITIONER’S MOTION TO EXCLUDE

Petitioner moves to exclude a MERRIAM-WEBSTER dictionary definition and a dailymail.co.uk website printout cited in Patent Owner’s Reply to Petitioner’s Opposition to Patent Owner’s Motion to Amend. Mot. Exc. 3–8. Specifically, Petitioner argues that the proffered materials are irrelevant under FRE 401 and 402, are not authentic as required by FRE 901,

are hearsay under FRE 802, and should furthermore be excluded as prejudicial, confusing, and misleading under FRE 403. *Id.* In any event, this opinion does not rely on any of the exhibits that were the subject of the motion. Accordingly, Petitioner's Motion to Exclude is *dismissed as moot*.

V. CONCLUSION

We conclude that Petitioner has shown by a preponderance of the evidence that (1) claims 16 and 17 are unpatentable over the combination of Shea and Burke; (2) claim 18 is unpatentable over the combination of Shea, Burke, and O'Brien; and (3) claim 27 is unpatentable over the combination of Shea, Burke, and Leivenzon.

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 16–18 and 27 are unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Amend (Paper 13) is *denied*;

FURTHER ORDERED that Petitioner's Motion to Exclude (Paper 26) is *dismissed*; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2015-00013
Patent 6,484,784 B1

PETITIONER

Arthur Schaier
Jennifer Calcagni
Carmody Torrance Sandak & Hennessey LLP
patents@carmodylaw.com
jcalcagni@carmodylaw.com

PATENT OWNER

Daniel Eisenberg
dane8000@gmail.com