

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SURE-FIRE ELECTRICAL CORPORATION,
Petitioner,

v.

YONGJIANG YIN and SHENZHEN EL LIGHTING CO. LTD.,
Patent Owner.

Case IPR2014-01448
Patent 7,671,279 B2

Before DEBRA K. STEPHENS, JENNIFER S. BISK, and PETER P.
CHEN, *Administrative Patent Judges*.

STEPHENS, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background*

Sure-Fire Electrical Corp. (“Petitioner”)¹, filed an *Inter Partes* Review Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1 and 7

¹ Along with Petitioner, Best Buy Stores, L.P. and BestBuy.com (collectively “Best Buy”), filed the Petition for *Inter Partes* Review (Paper 1). On May 1, 2015, Patent Owner and Best Buy jointly filed a motion to

(the “challenged claims”) of U.S. Patent 7,671,279 B2 (Exhibit 1001, “the ’279 Patent”). Petitioner relied on the following references: US 6,957,001 B2 (iss. Oct. 18, 2005) (“He”) (Ex. 1004); US 3,942,859 (iss. Mar. 9, 1976) (“Korodi”) (Ex. 1005); and Anton Gustafsson and Magnus Gyllenswärd, *The Power-Aware Cord: Energy Awareness through Ambient Information Display*, CHI 2005, 1423–26 (Apr. 2–7, 2005) (“Gustafsson”) (Ex. 1003). Yongjiang Yin and Shenzhen El Lighting Co. Ltd. (collectively “Patent Owner”), filed a Patent Owner’s preliminary response thereto (Paper 10, “Prelim. Resp.”).

On March 4, 2015, we instituted an *Inter Partes* review of claims 1 and 7 based upon Petitioner’s assertion that claims 1 and 7 are unpatentable under 35 U.S.C. § 103(a), for obviousness over Gustafsson and He (Paper 13 (“Inst. Dec.”)).

In response to Petitioner’s Request for Rehearing under 37 C.F.R. § 42.71(d) filed March 18, 2015 (Paper 15) (“Req. for Reh’g”), we modified our *inter partes* review based on Petitioner’s assertion that claims 1 and 7 are unpatentable under 35 U.S.C. § 103(a), for obviousness over He and Korodi (Paper 25 (“Dec. on Req. for Reh’g”)).

Accordingly, we instituted trial for both challenged claims, claims 1 and 7, on the grounds of unpatentability below.

Claims	Basis	References
Claims 1 and 7	§ 103(a)	Gustafsson and He

terminate proceedings between them (Paper 21). We granted that termination (Paper 24); thus, Best Buy is no longer a party to this review.

Claims	Basis	References
Claims 1 and 7	§ 103(a)	He and Korodi

After institution of trial, Patent Owner filed a Patent Owner's Response (Paper 27 ("PO Resp.)) and Petitioner filed a Reply to the Patent Owner's Response (Paper 38 ("Pet. Reply")).

An oral hearing was held on January 11, 2016, a transcript of which has been entered into the record (Paper 54 ("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. For the reasons given herein, Petitioner has shown by a preponderance of the evidence that the challenged claims are unpatentable.

B. Related Matters

Patent Owner and Petitioner both identify, as a related matter, the co-pending district court case asserting the '279 Patent, *in Shenzhen EL Lighting Technology Co., LTD et al. v. Sure-Fire Electrical Corp. et al.*, No. 1:14-cv-00727-PAB (D. Colo.) (Pet. 7; Paper 8, 1, § II).

C. '279 Patent (Ex. 1001)

The '279 Patent, titled "CURRENT-SEEN CABLE," issued on March 2, 2010 (Ex. 1001). The '279 Patent describes an electroluminescence power or signal cable (*id.* at Abstract, 1:15–29). According to the '279 Patent, a purpose of the invention is to provide a current-seen cable which combines an electroluminescence cable and various power or signal cords, having a simple structure and a visual indicator of its live state (*id.* at 1:33–37).

Specifically, the '279 Patent describes a cable which includes a main power or signal cord and a plurality of electroluminescence cords (*id.* at Abstract, 1:41–43).

Figure 1 is reproduced below:

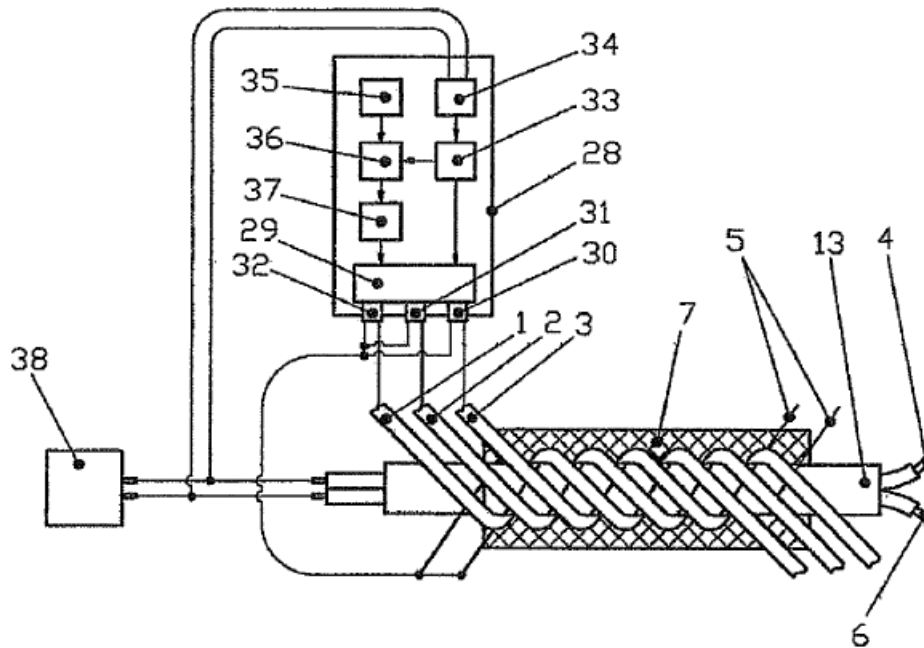


FIG 1

Figure 1, reproduced above, is a schematic diagram of an example configuration (*id.* at 2:15–16). In Figure 1, electroluminescence cored bars (or electroluminescence cored cords) 1, 2, 3 are made of metal foil strip 8 (see Fig. 2) or metal foil wire 9 (see Fig. 3) coated with insulating medium layer 10, layer 11 (which is a mixture of fluorescent powder and binder), and transparent conductive layer 12 (Ex. 1001, 4:9–16, Fig. 1). An insulated power cord forms a central axis, and includes live wire 4, zero phase wire 6, and insulation layer 13 (*id.* at 4:18–20). Bare metal wire 5 intertwists helically the insulated power cord (*id.* at 4:20–21). Electroluminescence cored bars 1, 2, 3 intertwist helically on the central axis so that transparent conductive layer 12 is in contact with bare metal wire 5 (*id.* at 4:21–25).

The whole cable is encapsulated by transparent plastics layer 7 to form a current-seen cable (*id.* at 4:25–27).

Metal base strips for each of electroluminescence cored bars 1, 2, 3 are connected to AC output line of outputs 32, 31, 30 of AC drivers 28 via a wire (*id.* at 4:38–48). Bare metal wire 5, as a central axis, is connected to another AC (alternating current) output line of outputs 32, 31, and 30 connected to AC drivers 28 (*id.* at 48–50). Input power ends of driver 28 are connected to live wire 4 and zero phase line 6 of the power (*id.* at 4:50–53).

In another embodiment, three electroluminescence cords 40, 41, and 42 are intertwined helically, forming an electroluminescence cable (*id.* at 6:10–12). A main cord is arranged in the central axis of the formed electroluminescence cable or lateral to the electroluminescence cable (*id.* at 6:18–20).

D. Claims

Both of the challenged claims, claims 1 and 7, are independent claims.

Claims 1 and 7 are reproduced below:

1. A current-seen cable, includes a driver, a main cord, a bare metal wire, a plurality of electroluminescence cored bars or electroluminescence cored cords and an outer transparent plastic layer, wherein said a plurality of electroluminescence cored bars or electroluminescence cored cords are arrayed abreast and are intertwined helically in sequence to form an electroluminescence cable, the bare metal wire is arranged in the center of the current-seen cable or lateral to the current seen cable and is in contact with a conductive layer of each electroluminescence cored bar or electroluminescence cored cord; a metal base strip of each electroluminescence cored bar or a conductive wire of each electroluminescence cored cord and the bare metal wire are connected to each corresponding

end of a multi-group AC output of the driver respectively; the main cord is arranged in the centre axis of the current-seen cable or lateral to the current-seen cable; said current-seen cable, said bare metal wire and said main cord are encapsulated in the outer transparent plastics layer; every electroluminescence cored bar or electroluminescence cored cord is driven by the driver and emits light in sequence when the main cord and the driver are live.

7. A current-seen cable, includes a driver, a main cord surrounded by an insulation layer, a plurality of electroluminescence cored cords which comprise a conductive wire surrounded by an insulating coat, an electroluminescence powder coat coated on said insulating coat and a transparent conductive layer coated on said electroluminescence powder coat, and an outer transparent plastic layer, wherein said plurality of electroluminescence cored cords are arrayed abreast and are intertwined helically in sequence to form an electroluminescence cable; the main cord is arranged in the center of the electroluminescence cable or lateral to the electroluminescence cable; said electroluminescence cable and said main cord are encapsulated in the outer transparent plastic layer; every electroluminescence cored cord is driven by the driver and emits in sequence when the main cord and the driver are live.

(Ex. 1001, 7:20–40, 8:8–23).

II. ANALYSIS

A. Claim Interpretation

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1277–1279 (Fed. Cir. 2015), *cert. granted sub nom. Cuozzo Speed Techs., LLC v. Lee*, 84 U.S.L.W. 3218 (U.S. Jan. 15, 2016) (No. 15-446) (“Congress implicitly approved the broadest

reasonable interpretation standard in enacting the AIA,”² and “the standard was properly adopted by PTO regulation”).

1. “*said plurality of electroluminescence cored cords are arrayed abreast and are intertwined helically in sequence*”

In our analysis in the Decision to Institute, we interpreted the limitations “intertwisted” and “abreast” (Inst. Dec. 7–8). We agreed with Patent Owner that intertwined should be interpreted as “twisted together” and “abreast” as “beside one another with bodies in line” (*id.*; Prelim. Resp. 25). Therefore, we interpreted “said plurality of electroluminescence cored cords are arrayed abreast and are intertwined helically in sequence” as the electroluminescence cored cords are set beside one another in line and twisted together (Dec. 7–8). Neither party contests this construction (*see e.g.*, PO Resp. 4) and we discern no reason to deviate from this construction.

2. “*emits light in sequence*” and “*emits in sequence*”

Claim 1 recites “every electroluminescence cored bar or . . . cord is driven by the driver and *emits light in sequence* when the main cord and the driver are live,” and claim 7 recites “every electroluminescence cored cord is driven by the driver and *emits in sequence* when the main cord and the driver are live” (Ex. 1001, 7:37–40, 8:21–23 (emphasis added)).

In the Patent Owner’s Response, Patent Owner contends “emits light in sequence” should be interpreted as “emits *and dies* light of each electroluminescent cored bar or cord in succession, one after the other” (PO Resp. 43) (emphasis added). Patent Owner points to various portions of the ’279 Specification as supporting this interpretation (*id.* at 44–47; Ex. 1001,

² Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”).

1:10–12, 1:40–2:8, 4:38–5:17) as well as discussion in the prosecution history (PO Resp. 48–49; Response to Office Action dated June 22, 2009 (Ex. 1002)).

Petitioner counters the '279 Patent does not support Patent Owner's interpretation and Patent Owner's interpretation is not the broadest reasonable construction (Pet. Reply 17–20). Specifically, Petitioner asserts Patent Owner relies almost exclusively on a description of one embodiment, although not every embodiment describes the process of “emits and dies light in sequence” (*id.* at 17–18). Instead, Petitioner contends, several other embodiments are not limited to “emits *and dies*” light in sequence (*id.* at 18 (emphasis added)). Additionally, Petitioner argues the prosecution history does not support the interpretation of “emits light in sequence” as “emits and dies light in sequence” because the portions relied upon by Patent Owner are directed to distinguishing claim 7 over the cited prior art and do not provide an interpretation or even discuss the limitation “emits light in sequence” (*id.* at 18–19). Petitioner further argues no reason exists to introduce extrinsic evidence, such as expert testimony, to interpret this limitation (*id.* at 20).

We decline to adopt Patent Owner's proposed claim construction. Claim terms are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). An inventor may rebut the presumption by providing a definition of the term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). In the absence of such a definition, limitations are not to be read from the

specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

Initially, we note Patent Owner chose not to recite “emits and dies” in its claims, but instead, recited only “emits.” Patent Owner has not proffered any evidence or argument as to why “emits and dies” used in the ’279 Patent Specification, would have been abbreviated to “emits” in recitation of the claims. Nor is the term “emits” defined explicitly in the ’279 Patent Specification. Thus, we begin with the assumption that the term “emits” does not include “and dies,” as that comports with the plain and ordinary meaning of the word “emits”

Thus, taking the plain and ordinary meaning at the time of the invention, we interpret “emits light in sequence” as “throws off or gives off or out light in a continuous or connected series” and interpret “emits in sequence” as “throws off or gives off or out, in a continuous or connected series” (see *e.g.*, *Merriam-Webster’s Collegiate Dictionary* 377, 1065 (10th ed. 2000)). Patent Owner has not proffered sufficient evidence or argument that “emits light in sequence” and “emits in sequence” should be read more narrowly than the plain and ordinary meaning as suggested by Patent Owner. Specifically, Patent Owner’s assertion that the Specification supports the proposed interpretation of “emits light in sequence” as “emits and dies light in sequence” is misplaced. The Specification of the ’279 Patent does not explicitly define “emits light in sequence” as “emits and dies light in sequence.” Nor is any explicit definition provided for “emits light in sequence” or “emits in sequence.” Patent Owner would have us import limitations disclosed in several of the embodiments, including Embodiment 1, to interpret “emits” as “emits and dies light in sequence” or “emits and

dies in sequence” (PO Resp. 44–47). However, as noted by Petitioner (Pet. Reply 17–20), the Specification of the ’279 Patent describes several other embodiments which do not limit the term “emits light in sequence” or “emits in sequence” to “emits *and dies* light in sequence” or “emits *and dies* in sequence.” For example, the Specification of the ’279 Patent describes, in the Description of the Invention and in Embodiments 3 and 6–8, emitting light “section by section” (*id.* at Abstract, 5:37–41, 6:39–42, 57–61). Indeed, these embodiments along with Embodiment 4 do not describe that the cable emits *and dies* light (*id.* at 5:19–7:18). Moreover, the Specification describes emitting light may be in a variety of forms (*id.* at 1:63–67).

Patent Owner additionally asserts “Patent Owner specifically disclaimed emission of light over the full length of the cable, but rather limited the patent to segment by segment illumination along the length of the cable,” thereby limiting the phrase “emits light in sequence” (PO Resp. 43). Patent Owner identified pages 9–10 of the Response to Office Action filed September 18, 2009 (Ex. 1002, 25–26), as providing this disclaimer (PO Resp. 48–49). However, we agree with Petitioner that the statements in the Response to Office Action do not disclaim subject matter, nor do these statements provide an explicit definition of “emits,” “emits light in sequence, and “emits in sequence.” Indeed, the discussion, limited to claim 7, discusses the object of the invention and distinguishes the invention as recited in claim 7 over the cited prior art, Baumberg *et al.* (US 5,869,930) (Resp. to OA 9–10). This discussion does not qualify as “clear and unmistakable” disavowing statements as required to meet the “demanding standard for finding a disclaimer.” *Avid Tech., Inc. v. Harmonic, Inc.*, No. 2015-1246, 2016 WL 363410, at *4 (Fed. Cir. Jan. 29, 2016).

We, therefore, determine the term “emits light in sequence” and “emits in sequence” used in the claims, should not be interpreted as “emits and dies light of each electroluminescent cored bar or cord in succession, one after the other,” but instead, should be interpreted giving the terms their ordinary and customary meaning as understood by an ordinarily skilled artisan at the time of the invention, in light of the Specification.

It follows, we determine the construction of “emits light in sequence” is “to throw off or give off or out light in a continuous or connected series” and “emits in sequence” is “to throw off or give off or out, in a continuous or connected series” (see *e.g.*, *Merriam-Webster’s Collegiate Dictionary* 377, 1065 (10th ed. 2000)).

B. Obviousness over He and Korodi

Petitioner argues claims 1 and 7 of the ’279 Patent are obvious over He and Korodi (Pet. 34–49).

1. Overview of He (Exhibit 1003)

He describes a color-changing and multi-colored electroluminescence cable (Ex. 1004, Abstract). A plurality of electroluminescent filaments are insulated from each other and helically wound on the outer side of the axis (*id.*).

Figure 1 is reproduced below:

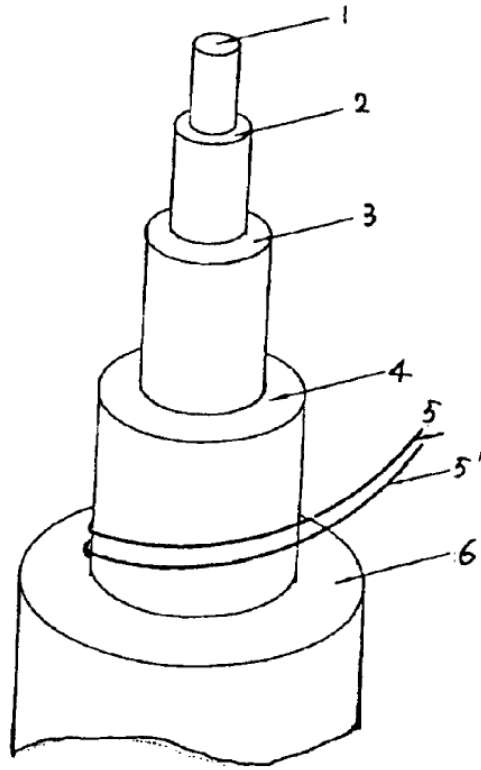


Figure 1, reproduced above, is a schematic diagram illustrating the structure of an individual electroluminescent filament of He (*id.* at 3:25–27). As illustrated, the electroluminescent filament comprises color polymer casing tube disposed on transmission wires 5 and 5', and the outer surface of conductive layer 4 (*id.* at 3:54–56). Transmission wires 5 and 5' are wound at intervals on conductive layer 4 (*id.* at 3:52–53). Conductive layer 4 is coated on light emitting layer 3, which is coated on medium insulating layer 2 (*id.* at 3:50–51). Medium insulating layer 2 is coated on core wire 1 which is led out as an electrode (*id.* at 3:46–47).

Figure 2 is reproduced below:

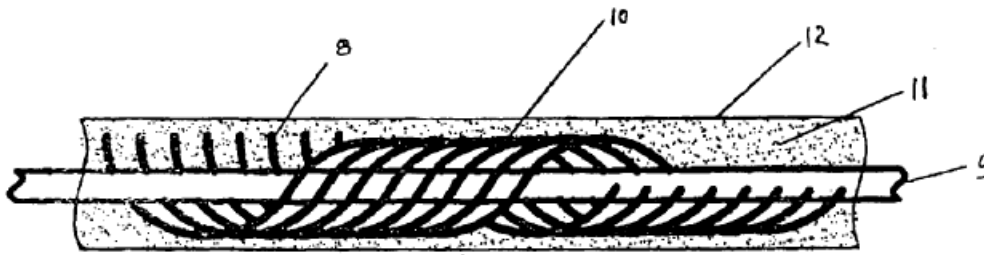


Figure 2, reproduced above, is a schematic diagram of an embodiment of the electroluminescent cable (*id.* at 3:28–30). Electroluminescence cable 12 comprises a transparent polymer casing tube 11 disposed on the outer side of a group of electroluminescent filaments 10 (*id.* at 4:21–23). The group of electroluminescent filaments includes individual electroluminescent filaments 8 insulated from each other and helically wound on the outer side of core wire 9 which acts as a central axis (*id.* at 4:16–19). Each of the electroluminescent filaments 8 connects with programmable electronic elements that control each electroluminescent filament 8, respectively, to emit light according to a predetermined program that controls color, saturation, luminance, and other aspects (*id.* at 4:25–39). When the electroluminescent filaments are activated, each electroluminescent filament will emit light in sequence so the light-emitting cable can emit changeable colors and brightness (*id.* at 4:39–42).

2. Overview of Korodi (Exhibit 1005)

Korodi describes a safety power conductor that includes light-emitting means used for signaling the location of the conductor and the presence of an electrical potential in the conductor with respect to ground (Ex. 1005, Abstract). A power cord, to be used as domestic extension cords, heavier

industrial cords, or cords used in inaccessible areas, comprising a conductor, having an insulated covering, is illuminated laterally by light that is emitted when current is applied (*id.* at Abstract, 1:15–19, 1:56–62, 3:39–44).

Figure 1 is reproduced below.

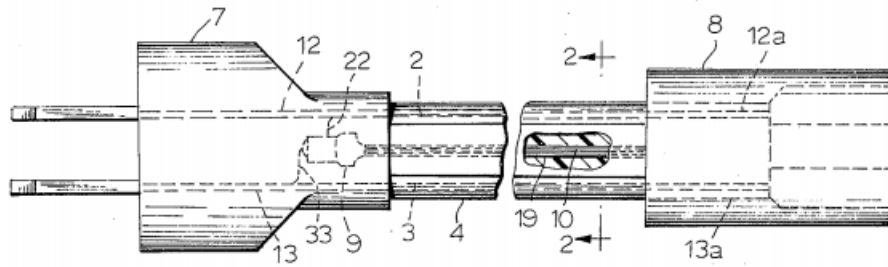


FIG. 1

Figure 1, reproduced above, is a side view of an embodiment of Korodi's invention. As shown in Figure 1, electrical line or cable 1 has a pair of parallel electrical conductors 2 and 3 separated and insulated by insulating covering 4 (*id.* at 2:55–59). Insulating covering 4 is at least partially transparent to light, and that transparent zone extends between optical fibers 10 in channel 19 and the external surface of the cable covering (*id.* at 2:55–59, 3:32–44). This structure permits transmission of light from bulb 9, via optical fibers 10, to the exterior of the cable along its length (*id.* at 3:32–38). The conductor, including the light-emitting means, signal location of the conductor and presence of an electrical potential in the conductor with respect to an electrical base or ground (*id.* at Abstract).

3. *Analysis*

a. “emits light in sequence” and “emits in sequence”

Petitioner asserts He teaches using programmable electronic circuitry (the driver) to light electroluminescent (or electroluminescence) wires in sequence when the main cord and driver are live (Pet. 42). Petitioner specifically points to He’s disclosure that color, saturation, luminance, and other aspects are controllable such that each filament of the cable will emit light in sequence (*id.* (citing Ex. 1004, 4:38–42)).

Patent Owner argues He’s sequence limitation relates to blending multi-colored electroluminescent filaments for creating various colors and brightness, in contrast to the ’279 Patent’s spatio-temporal sequence that does not energize the electroluminescent filaments simultaneously (PO Resp. 50).

We do not agree He requires blending of colors as asserted by Patent Owner. Patent Owner points to He’s description that describes its system has control over color, saturation, and luminance, and contends, as a result, that He’s multi-colored electroluminescent filaments are blended together, rather than distinct (Ex. 2015 ¶ 54). However, He discloses “the color, saturation, luminance and other aspects are controllable. Through the control of the programmable electronic elements, *each filament* of the cable will emit light in sequence such that the light-emitting cable can be formed with changeable colors and brightness” (Ex. 1004, 2:17–21) (emphasis added). Moreover, Patent Owner’s proffered Declarant, Dr. Robert T. Weverka, testifies that even blending to achieve a color such as purple, would require turning the electroluminescent filaments on or off to achieve colors such as turning off a green filament (Ex. 1016, 112:5–114:1). Thus,

we find He teaches the color, saturation, luminance and other aspects of the *electroluminescence cable* are controllable through control of the programmable electronic elements which in turn, control each filament of the cable to emit light in sequence (*id.* at 4:35–42). Therefore, we find He teaches every electroluminescence filament emits light in sequence.

Accordingly, we find He teaches or at least suggests the programmable electronic elements (driver) control each electroluminescent filament respectively by controlling color, saturation, and luminance, so each electroluminescent filament may emit or not emit light according to a predetermined program (Ex. 1004, 4:26–30). As He describes controlling the color of the cable, we find an ordinarily skilled artisan would have found it obvious upon reading He, that the cable may change from, for example, red to blue. As a result, we find specific electroluminescent filaments would emit light depending on the color, the specific electroluminescent filament emits. In the example, one filament may emit red light and be on when the cable emits red light, but that filament will not emit light when the cable is to emit blue light. Instead, a second filament will emit blue light.

Furthermore, we agree with Petitioner and find no evidence in the record that any reason has been articulated or evidence shown, why an ordinarily skilled artisan would not possess the skill to modify He’s ability to control each electroluminescent filament which emits light in a sequence, to control each electroluminescent filament to be on or off, and to control each electroluminescent filament to emit light in a continuous or connected series. Indeed, we are not persuaded an ordinarily skilled artisan would have found it “uniquely challenging” or “difficult for one of ordinary skill in the art” to exercise control over the filaments, to turn the electroluminescent

filaments on or off in a continuous or connected series (a sequence), to achieve a particular lighting effect, given He's teaching of control of the electroluminescent filaments. *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007). Nor are we persuaded the modification represented an unobvious step over the prior art. *See id.* Accordingly, we find He teaches each electroluminescent filament throws off or gives off or out light in a continuous or connected series.

Thus, we find He teaches or at least suggests "every electroluminescence cored bar or electroluminescence cored cord is driven by the driver and emits light in sequence when the main cord and the driver are live," as recited in claim 1 and "every electroluminescence cored cord is driven by the driver and emits in sequence when the main cord and the driver are live," as recited in claim 7.³

b. Obvious to Combine

Petitioner states He provides an illuminated electroluminescent cable "that fits seamlessly with the illuminated power cords disclosed in Korodi" (Pet. 35). According to Petitioner, He discloses a cable with EL wires intertwined helically on a metal core wire and circuitry for driving the wires such that light appears to flow through the cable (*id.*). Petitioner then asserts

³ Even if we were to adopt Patent Owner's proffered interpretation of "emits and dies light of each electroluminescent cored bar or cord in succession, one after the other," we conclude, based on the findings and reasoning set forth above, an ordinarily skilled artisan would have found it obvious to modify He to set the predetermined program to control each electroluminescent filament to "emit and die" light in succession, one after the other.

an ordinarily skilled artisan would have found replacing the aluminum core wire in He with a power cord, thereby “creating an improved illuminated cable using EL wires that light in sequence to indicate the presence of current,” to be obvious (*id.* at 36). Petitioner further contends that combining the teachings of He and Korodi would have been the merger of familiar elements according to their established functions, known methods, and predictable results (*id.*).

Patent Owner argues (i) He and Korodi are non-analogous art (PO Resp. 33–34); (ii) Petitioner provides no articulation of any motivation to combine the teachings of He and Korodi beyond conclusory statements (Prelim. Resp. 30); (iii) the proposed combination would render both references inoperable, Petitioner provided no evidence that the teaching of He and Korodi are “readily compatible” or evidence the teachings would have been a predictable variation of devices, and the proposed combination would not result in the claimed invention disclosed in the ’279 Patent (PO Resp. 33–34); and (iv) He teaches against combination with Korodi (*id.*).

Patent Owner initially argues He and Korodi are non-analogous art (PO Resp. 37–40). A reference qualifies as prior art for an obviousness determination under § 103 only when it is analogous to the claimed invention. *Innovention Toys, LLC, v. MGA Entm’t, Inc.*, 637 F.3d 1314, 1322 (Fed. Cir. 2011); *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004); *In re Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992). “Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is

reasonably pertinent to the particular problem with which the inventor is involved.” *Bigio*, 381 F.3d at 1325 (citations omitted).

Patent Owner contends He discloses multi-colored EL wires being blended to produce an array of different colors along the length of the cable unlike the ’279 Patent which requires that only one EL wire is live at any one given time (PO Resp. 34–35, 38–39). Patent Owner further argues the differences between He and the claimed invention and asserts Petitioner has failed to indicate why an ordinarily skilled artisan would look to He (*id.*). Patent Owner additionally argues Korodi does not teach or suggest use of the light to communicate direction of current flow (*id.* at 39–40).

We determine He and Korodi are analogous art to that of the ’279 Patent. Moreover, Patent Owner does not even sufficiently articulate from what field of endeavor Patent Owner believes applies to each of the ’279 Patent, He, and Korodi (*see* PO Resp. 37–40).

Nonetheless, even in light of Patent Owner’s assertions as to what the references teach, we agree with Petitioner that the ’279 Patent, He, and Korodi are from the same field of endeavor — the field of lighted cables (Pet. Reply 15). Specifically, we find He is related to color-changing and multi-colored electroluminescent cables — lighted cables (Ex. 1004, Abstract). We further find Korodi is related to electrical cables that include light-emitting means capable of transmitting light (Ex. 1005, Abstract, 2:55 – 3:4). The ’279 Patent is directed to a current-seen cable that emits light to indicate the live state of the cable (Ex. 1001, Abstract, 1:33–37). Moreover, Patent Owner’s own Declarant, Dr. Weverka, agrees all three references are from the field of lighted cables (Ex. 1016, 44:10–12, 104:12–14, 123:16–

21). Accordingly, we determine He, Korodi, and the '279 Patent are from the same filed of endeavor and thus, are analogous art.

Patent Owner further argues Petitioner has not articulated a motivation to combine He with Korodi (PO Resp. 40). Patent Owner's Declarant, Dr. Weverka states as He teaches use of multi-colored EL filaments to produce a variety of colors, and Korodi teaches the use of a central lighting source to show existence of a potential, an ordinarily skilled artisan would not have been motivated to combine the references to produce a current seen cable that produces the visual of current flow across the length of the power cable (Ex. 2015 ¶ 77).

Patent Owner does not directly address the specific teaching and combination as asserted by Petitioner. Petitioner's justification for combining He's and Korodi's teachings is not that Korodi be physically inserted into He (Pet. 36–38, 41). The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (citations omitted).

Nonetheless, we find Petitioner has articulated reasoning with a rational underpinning as to why an ordinarily skilled artisan would have been motivated to combine the teachings (Pet. 34–36; Ex. 1008 ¶¶ 98–104). Specifically, Petitioner contends an ordinarily skilled artisan would have been motivated to combine the teachings of He and Korodi because “such a modification is both a predictable variation and an incremental

improvement” (Pet. 35). According to Petitioner, an ordinarily skilled artisan would have found it obvious and “straight-forward” to replace the aluminum core wire in He with a power cord to create an improved illuminated cable using electroluminescent wires that light in sequence (*id.* at 36). Petitioner further asserts combining the teachings would “involve the merger of familiar elements according to their established functions, known methods, and predictable results” (*id.*). We agree with the Petitioner that an ordinarily skilled artisan would have been motivated to replace the core wire at the center of He’s cable with a power cord as taught by Korodi to create an improved illuminated cable. We find the combination of He and Korodi unites old elements with no change in their respective functions. Indeed, we agree that combining the teachings would be a merger of familiar elements, Korodi’s power cord and He’s electroluminescent cable, that perform their ordinary functions to predictably result in the recited cable which includes a main power cord and a plurality of electroluminescent cords which emit light in sequence when the main cord and the driver are live.

To be nonobvious, an improvement must be “more than the predictable use of prior art elements according to their established functions.” *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 417 (2007). Additionally, as further support, we credit Petitioner’s Declarant’s, Dr. Mark Horenstein’s, testimony that replacing the aluminum core wire in He for the power cord in Korodi would have been a merger of familiar elements according to their established functions, known methods, and predictable results that an ordinarily skilled artisan would have found obvious (Ex. 1008 ¶¶ 99, 102, 103).

Patent Owner next contends the teachings would not fit together seamlessly as He discloses illumination wrapped around a metal core while Korodi provides illumination from a central source (Prelim. Resp. 30–31). Specifically, Patent Owner asserts combining the illuminated power cords of Korodi with He’s EL filaments would result in an inoperable combination (PO Resp. 41). According to Patent Owner, Korodi’s illuminated power cord would obscure the overlying multi-colored electroluminescent filaments’ effects because Korodi’s illumination would overpower or obscure the blending of He’s electroluminescent filaments (*id.*). Thus, Patent Owner asserts the combination of He and Korodi would result in a cable illuminated across its entire length, at all times (*id.*).

We do not agree with Patent Owner. Patent Owner’s arguments again are based on replacing He’s core wire with the illuminated main cord of Korodi (PO Resp. 35, 41, 57). However, Petitioner relies on Korodi as teaching a main cord, at the center of the current-seen cable, and lighting the cord when the main cord is live; and Petitioner asserts an ordinarily skilled artisan would have found it obvious to replace the aluminum cord of He with the power cord in Korodi, not the illuminated main cord of Korodi (Pet. 36–43; Pet. Reply 16). We are not persuaded this combination would have rendered the cable inoperable. Indeed, He teaches powering the programmable electronic elements (Ex. 1004, 4:25–35). Thus, we are not persuaded using the power cord of Korodi as the main cord, would render the cable inoperable. Accordingly, we are not persuaded modifying He to include a power cord as taught by Korodi, would have rendered the cable inoperable.

Patent Owner additionally asserts He teaches away from a combination with Korodi (PO Resp. 53). Specifically, Patent Owner contends He teaches drawbacks of existing cables, including those having a substantial diameter and consuming excessive amounts of power, and states its object is to provide an electroluminescent cable low in electricity consumption and free from heating (*id.* at 54–55). Thus, Patent Owner argues, He teaches away from combination with Korodi (*id.* at 55).

We do not agree He teaches away from combination with Korodi. Patent Owner’s first argument is predicated on replacing He’s wire with an entire industrial-strength, illuminated power cord as taught by Korodi, resulting in a cable having an increased diameter that consumes additional power and is not free from heating (*id.* at 56). However, Petitioner did not rely on incorporating Korodi’s entire illuminated power cord into He’s cable, as set forth above (Pet. 36–43; Pet. Reply 16). Moreover, Korodi is not limited to “industrial-strength, illuminated power cords” but instead, includes domestic extension cords, as well as those installed in relatively inaccessible areas, such as areas occurring in aircraft or boats (Ex. 1005, 1:14–19).

Patent Owner additionally proffers the testimony of Dr. Weverka that “[e]ven if the power elements of Korodi were removed and combined with He, the combination would simply produce a multi-colored lighted cable with light emission [a]long the full length of the cable” (PO Resp. 56), as evidence He teaches away from combination with Korodi. “A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was

taken by the applicant.” *In re Kahn*, 441 F.3d 977, 990 (Fed. Cir. 2006) (citations and internal quotation marks omitted).

Patent Owner has not provided, nor do we readily find, evidentiary support for the allegation that He teaches away, by citation to any specific portion of He or Korodi that discourages modifying He to include the main cord taught by Korodi or would lead an ordinarily skilled artisan in a divergent path than that taken by Patent Owner. Nonetheless, we find He instead discloses only drawbacks of “neo[n] light, with fragile glass outer layers;” colored incandescent lights using a colored tube; and a mono-color light source using solvent to dilute the substance of electrolytic layers (Ex. 1004, 1:12–40). Thus, we determine He does not teach away from the present invention or combining He’s teachings with those of Korodi.

In summary, we do not agree (i) He and Korodi are non-analogous art; (ii) a motivation to combine the teachings of He and Korodi has not been articulated; (iii) the proposed combination would render both references inoperable, would not have been a predictable variation of devices, and would not result in the claimed invention disclosed in the ’279 Patent; and (iv) He teaches away from combination with Korodi. Instead, we find that a person of ordinary skill in the art would have found the subject matter recited by claims 1 and 7 obvious based on the teachings of He and Korodi.

Accordingly, based on the record before us, we are persuaded the combination of He and Korodi are properly combined as required by 35 U.S.C. § 103(a).

c. Conclusion

Based on the record before us, we are persuaded by Petitioner that the teachings of He and Korodi are properly combined and that the combination

of He and Korodi teaches or suggests the limitations recited in claims 1 and 7. Accordingly, Petitioner has established by a preponderance of the evidence, claims 1 and 7 are rendered obvious by the combination of He and Korodi.

C. Obviousness over Gustafsson and He

Petitioner contends claims 1 and 7 of the '279 Patent are unpatentable under 35 U.S.C. § 103(a) obvious over Gustafsson and He (Pet. 21–33). In light of our determination that Petitioner has established by a preponderance of the evidence that claims 1 and 7 of the '279 Patent are unpatentable under 35 U.S.C. § 103(a) as obvious over He and Korodi, we take no position on whether the same claims are also obvious over the combination of the teachings and suggestions of Gustafsson and He.

D. Patent Owner's Motion to Exclude

Patent Owner seeks to exclude references to US Patent 7,208,871 B2 (“Jonson”) made through citations in the Declaration by Dr. Horenstein, and any arguments based thereon (Paper 45, 2). Specifically, Patent Owner argues Petitioner is arguing a combination of He and Jonson teaches successive use of EL wires to produce the visual effect of flowing water or electricity (*id.*).

We agree with Petitioner's assertion in the Petitioner's Opposition to this motion that Dr. Horenstein's reference to Jonson was merely to reflect the skill of an ordinarily skilled artisan at the time of the invention (Paper 47, 5–6). Regardless, since our Decision does not rely on Jonson, this issue is deemed moot.

III. CONCLUSION

For the foregoing reasons, we determine based on the evidence and arguments presented, that Petitioner has demonstrated by a preponderance of the evidence claims 1 and 7 of the '279 Patent are unpatentable.

Specifically, we determine Petitioner has established by a preponderance of the evidence claims 1 and 7 are unpatentable under 35 U.S.C. § 103(a) over He and Korodi.

IV. ORDER

For the reasons given, it is:

ORDERED that pursuant to 35 U.S.C. § 318, claims 1 and 7 of U.S. Patent No. 7,671,279 B2 are determined to be *unpatentable*;

FURTHER ORDERED that Patent Owner's Motion to Exclude 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.

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Patent 7,671,279 B2

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