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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte UNITY OPTO TECHNOLOGY CO, LTD

Appeal 2020-001245
Reexamination Control 90/014,107¹
Patent 9,523,487 B1
Technology Center 3900

Before JOHN A. JEFFERY, MARC S. HOFF, and ERIC B. CHEN,
Administrative Patent Judges.

HOFF, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 from a Final Rejection of claims 1–20. An oral hearing was held on February 10, 2020. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

Appellant’s invention (U.S. Patent No. 9,523,487 B1 to Myers) is a flat light emitting diode (LED) panel and LED driving circuitry. Power circuitry, configured to electrically couple the LED panel to external AC

¹ Appellant states that the real party in interest is Unity Opto Technology Co., LTD. Appeal Br. 4.

power supply, is disposed within a first channel of a frame. The power circuitry has a length to width ratio of at least 5 to 1, and optionally at least 10 to 1. The power circuitry is configured to convert an AC input into a DC output suitable for powering the substantially flat LED panel. Abstract.

Claim 1 is reproduced below:

1. A light fixture comprising:

a frame having a thickness of no more than about 1.0 inches and including a first portion of the frame and a second portion of the frame, wherein the first portion of the frame defines a first channel between a first edge of an optically transmissive panel and a first outer edge of the frame;

a substantially flat light emitting diode (LED) panel disposed within the frame, wherein the substantially flat LED panel includes an LED strip and the optically transmissive panel, and the optically transmissive panel is configured to distribute light received at a light-input edge of the optically transmissive panel from the LED strip, the LED strip comprising a plurality of LEDs mounted to the second portion of the frame adjacent the light-input edge of the optically transmissive panel; and

a first LED driver supported by the first portion of the frame and housed entirely within the first channel adjacent the first outer edge of the frame, wherein the first LED driver is configured to receive an AC input from an external AC power supply and to provide a DC output to the LED strip.

Appeal Br. 56 (Claims Appendix).

The prior art relied upon by the Examiner as evidence is:

Name	Reference	Date
Brown	US 6,240,665 B1	June 5, 2001
Schexnaider	US 2005/0219860 A1	Oct. 6, 2005
Spada	US 2008/0101094 A1	May 1, 2008
Tsai	US 2009/0316396 A1	Dec. 24, 2009
Lv	US 2011/0149596 A1	June 23, 2011
Glory	JP 3140783 U	Apr. 10, 2008
Jiancheng	CN 2015 13783 U	June 23, 2010
Power Integrations	<i>High Efficiency ($\geq 85\%$), High Power Factor (> 0.9) 15 W T8 Isolated LED Driver Using LinkSwitch™-PH LNK406EG</i>	Oct. 7, 2010

Claims 1–4, 6–14, and 16–20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsai.

Claims 1–20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsai and Spada.

Claims 10, 11, 16, 17, and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsai, Spada, and Power Integrations.

Claims 1–4, 6, 9, 10, 12–14, 16, and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brown.

Claims 1–6, 9, 10, 12–16, and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brown and Spada.

Claims 11, 17, and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brown, Spada, and Power Integrations.

Claims 19 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Glory, Spada, and Schexnaider.

Appeal 2020-001245
Reexamination Control 90/014,107
Patent 9,523,487 B1

Claim 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Glory, Spada, Schexnaider, and Power Integrations.

Claims 1–4, 6–14, and 16–20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lv and Jiancheng.

Claims 5 and 15 rejected under 35 U.S.C. § 103(a) as being unpatentable over Lv, Jiancheng, and Spada.

Claims 1–20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lv, Jiancheng, Spada, and Schexnaider.

Claims 10, 11, 16, 17, and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lv, Jiancheng, Power Integrations, Spada, and Schexnaider.

Throughout this decision, we make reference to the Appeal Brief (“Appeal Br.,” filed March 9, 2018), the Reply Brief (“Reply Br.,” filed March 9, 2018), and the Examiner’s Answer (“Ans.,” mailed September 27, 2019) for their respective details.

ISSUES

1. Does the combination of Lv and Jiancheng disclose or fairly suggest a frame having a thickness of no more than about 1.0 inches, and an LED driver disposed within said frame?

2. Do the teachings of Lv and Jiancheng lead the person having ordinary skill in the art away from the use of LED drivers that are relatively long and thin?

3. Does the combination of Lv, Jiancheng, and Spada disclose or fairly suggest an LED driver including a transformer?

ANALYSIS

Rejection of claims 1–4, 6–14, and 16–20 over Lv and Jiancheng

Appellant argues that the Examiner improperly relies on unsupported state-of-the-art allegations to support the proposed modifications. Appeal Br. 48. Appellant refers specifically to the Examiner’s findings that, inter alia, a person of ordinary skill “would appreciate that minimal overall size is one of the advantages of LED panels,” “dimensions of the frame members . . . can be selected based upon the specific application,” “various length to width ratios could be selected based upon specific applications.” Appeal Br. 48–49. Appellant contends that these allegations lack evidentiary support and are contrary to the actual state of the art. Appeal Br. 28, 49.

Appellant asserts that a person of ordinary skill in the art would not have modified Lv in view of Jiancheng as the Examiner proposes because such modifications would have had various disadvantages including a significant increase in heat generation. Appeal Br. 49.

Appeal 2020-001245
Reexamination Control 90/014,107
Patent 9,523,487 B1

Appellant asserts that it would not have been obvious to modify Lv in view of Jiancheng to have a frame thickness of no more than about 0.5 inches (claim 9), or to have the LED driver housed within a first channel of a frame having a thickness of no more than about 1.0 inches (claim 12).

Appeal Br. 49–50.

Appellant argues that it would not have been obvious to modify Lv in view of Jiancheng to provide a 10:1 length to width ratio, because “there is no indication that Lv’s driving modules do not already fit in its frame, so it is unclear how the proposed modification could ‘enable’ a fit that already exists.” Appeal Br. 50–51. Appellants also contend that the Examiner improperly relied on the apparent dimensions of a not-to-scale figure.

Appeal Br. 51.

Appellant’s argument concerning the disadvantages of combining Lv and Jiancheng are not persuasive. Appellant does not argue that Jiancheng teaches away from combination with Lv, and the teachings of the references do not in any event support such a contention. We agree with the Examiner that Lv teaches driving modules 70 disposed within channels 164 on the frame of a light fixture (Final Act. 17), and that Jiancheng teaches drivers 113 that convert AC voltage to DC voltage (Final Act. 18). We further agree with the Examiner that the combined teachings of Lv and Jiancheng suggest the desirability of sizing such drivers so that they may be contained within the channel of a frame, because such a dimension (for example, a thickness no more than about 1.0 inches or 0.5 inches) helps to minimize the overall size of the light fixture, one of the known advantages of LED panels. Ans.

21.

We further agree with the Examiner that such a change in dimensions would have been obvious when the change yields only a predictable result. Ans. 21. It would have been similarly predictable that the higher switching frequency resulting from smaller driver components would lead to increased heat generation. The person having ordinary skill in the art would have been aware of a trade-off to be made between driver size and heat generation, and could have selected any of several known methods for dissipating excess heat.

In response to Appellant's argument that the Examiner relied on unsupported state-of-the-art allegations regarding the desirability of overall smaller size of LED light panels, we determine that the prior art provides implicit motivation to reduce the size of the light panels of the invention. "[A]n implicit motivation to combine exists not only when a suggestion may be gleaned from the prior art as a whole, but when the 'improvement' is technology-independent and the combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient." *Dystar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006). In this case, because the combination of Lv and Jiancheng suggest LED drivers sized to fit within the channels of the light fixture frame, implicit motivation therefore exists to combine the references, resulting in a smaller overall light fixture.

We conclude that the Examiner did not err in rejecting claims 1–4, 6–14, and 16–20 over Lv and Jiancheng. We sustain the Examiner's § 103(a) rejection.

Rejection of Claims 5 and 15 over Lv, Jiancheng, and Spada

Appellant argues that the Examiner erred because Spada teaches the inclusion of a transformer in an external driver, rather than a driver embedded in a frame. Appeal Br. 51. Appellant further contends that the Examiner does not allege that Spada overcomes any of the shortcomings of the rejection over Lv and Jiancheng, discussed *supra. Id.*

Appellant's arguments are not persuasive. Appellant's argument against the teachings of Spada amounts to an attack on an individual reference, whereas the Examiner's rejection is based on a combination of references. We agree with the Examiner's finding that Lv teaches drivers 70 disposed in frame channels, and suggests the desirability of small frame thickness. Ans. 48. We agree that Spada suggests the utility of a transformer to step down input voltage to meet the voltage requirements of LEDs. Ans. 22. As for the alleged shortcomings of the Examiner's rejection over Lv and Jiancheng, we refer to our analysis of that ground of rejection, *supra.*

We conclude that the Examiner did not err in rejecting claims 5 and 15 over Lv, Jiancheng, and Spada. We sustain the Examiner's § 103(a) rejection.

Rejection of Claims 10, 11, 16, 17, and 20 over Lv, Jiancheng, Power Integrations, Spada, and Schexnaider

In affirming the rejection of claims 11, 17, and 20 over Lv and Jiancheng, *supra*, we observe that the Examiner's rejection mentions inferring a driver length to width ratio from not-to-scale drawings. We

determined that the Examiner need not use any such inferred teaching in order to reject these claims over Lv and Jiancheng. Nevertheless, we further consider this rejection of claims 10, 11, 16, 17, and 20, in which the Examiner proposes modifying Lv and Jiancheng to include an LED driver such as that taught by Power Integrations. The Power Integrations reference includes specific dimensions for its driver, and such dimensions satisfy the 10 to 1 length to width ratio recited in claims 11, 17, and 20. We agree with the Examiner that Power Integrations suggests modifying the driver dimensions of Lv so that the driver would fit within the space defined by the frame member. Ans. 24.

Appellant reiterates their arguments with respect to the rejection over Lv and Jiancheng alone (“Ground 9”). Appeal Br. 53. Appellant further contends that a person having ordinary skill in the art would not have modified Lv and Jiancheng in view of Power Integrations, because he or she would have expected the proposed modification to cause several disadvantageous effects, including “dangerous” heat levels. Appeal Br. 54. As discussed *supra*, we determine that increased heat would have been a predictable result of the Examiner’s proposed modification. We further determine that the person having ordinary skill in the art would have been aware of a trade-off to be made between driver size and heat generation, and could have selected any of several known methods for dissipating excess heat.

OTHER REJECTIONS

Affirmance of the rejection of claims 1–4, 6–14, and 16–20 based on Lv and Jiancheng, and affirmance of the rejection of claims 5 and 15 based on Lv, Jiancheng, and Spada, renders it unnecessary to reach the propriety of the Examiner’s decision to reject those claims based on other grounds. *See In re Gleave*, 560 F.3d 1331, 1338 (Fed. Cir. 2009) (not reaching an obviousness rejection of certain claims after affirming an alternative anticipation rejection of those claims); *see also Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) (approving ITC’s determination based on a single dispositive issue, and not reaching other issues not decided by the lower tribunal).

CONCLUSIONS

1. The combination of Lv and Jiancheng suggests a frame having a thickness of no more than about 1.0 inches, and an LED driver disposed within said frame.
2. The teachings of Lv and Jiancheng do not lead the person having ordinary skill in the art away from the use of LED drivers that are relatively long and thin.
3. The combination of Lv, Jiancheng, and Spada suggests an LED driver including a transformer.

Appeal 2020-001245
Reexamination Control 90/014,107
Patent 9,523,487 B1

DECISION SUMMARY

In summary:

Appeal 2020-001245
 Reexamination Control 90/014,107
 Patent 9,523,487 B1

Claims Rejected	35 U.S.C. §	Reference(s)/ Basis	Affirmed	Reversed
1-4, 6-14, 16-20	103	Tsai ²		
1-20	103	Tsai, Spada ²		
10, 11, 16, 17, 20	103	Tsai, Spada, Power Integrations ²		
1-4, 6, 9, 10, 12-14, 16, 19	103	Brown ²		
1-6, 9, 10, 12-16, 19	103	Brown, Spada ²		
11, 17, 20	103	Brown, Spada, Power Integrations ²		
19, 20	103	Glory, Spada, Schexnaider ²		
20	103	Glory, Spada, Schexnaider, Power Integrations ²		
1-4, 6-14, 16-20	103	Lv, Jiancheng	1-4, 6-14, 16-20	
5, 15	103	Lv, Jiancheng, Spada	5, 15	
1-20	103	Lv, Jiancheng, Spada, Schexnaider ²		
10, 11, 16, 17, 20	103	Lv, Jiancheng, Power Integrations, Spada, Schexnaider		
Overall Outcome			1-20	

Appeal 2020-001245
Reexamination Control 90/014,107
Patent 9,523,487 B1

The Examiner's decision to reject claims 1–20 under 35 U.S.C. § 103(a) is affirmed.

Requests for extensions of time in this ex parte reexamination proceeding are governed by 37 C.F.R. § 1.550(c). *See* 37 C.F.R. § 41.50(f).

AFFIRMED

KRH

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² As explained above, we do not reach this alternative rejection, for it is merely cumulative to the Examiner's obviousness rejection of claims 1–4, 6–14, and 16–20 over Lv and Jiancheng. *See In re Gleave*, 560 F.3d 1331, 1338 (Fed. Cir. 2009) (not reaching an obviousness rejection of certain claims after affirming an alternative anticipation rejection of those claims); *see also Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) (approving ITC's determination based on a single dispositive issue, and not reaching other issues not decided by the lower tribunal).