

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MOTOROLA MOBILITY LLC,
Petitioner,

v.

LARGAN PRECISION CO., LTD.,
Patent Owner.

IPR2024-00689
Patent No. 9,366,845

**PETITIONER'S REPLY TO
THE PATENT OWNER PRELIMINARY RESPONSE**

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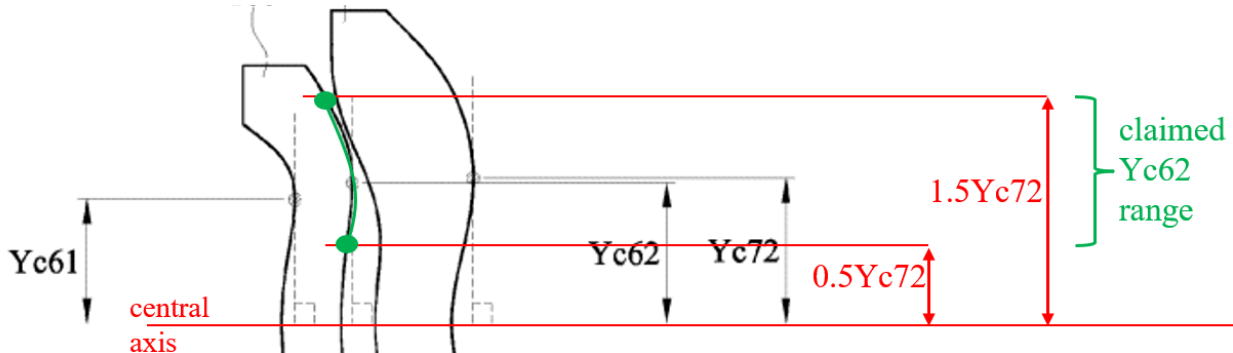
Pursuant to the Board email of November 13, 2024, Petitioner submits this Reply to the Patent Owner Preliminary Response (“POPR,” Paper 6).

Section 325(d) Denial Is Inappropriate: Contrary to the POPR’s assertions (POPR, 4-13), the Examiner materially erred in at least three different ways and the Board should not deny institution under Section 325(d).

First, the Examiner erred by allowing claim 20 (appl. claim 24) based solely on finding that “none of the prior art” disclosed a positive-powered sixth lens. *See* EX1002, 824, 864. **Second**, the Examiner erred by allowing claim 1 based in part on identifying “the fifth lens element has negative refractive power” as “allowable subject matter.” EX1002, 824, 864. Allowing these claims on this basis was material error because each of prior art Fukaya and Cai discloses a 7-lens system with lenses having the same power recited in these claims, including a positive-powered sixth lens (cl. 20) and a negative-powered fifth lens (cl. 1). *E.g.*, EX1004, [0125] (Table 1); EX1005, [0176] (Table 1); EX1032, 8:11-18, Table 1; Petition, 33, 64, 89, 113.

Third, the claimed condition $0.5 < Y_{c62}/Y_{c72} < 1.5$ is creative claim drafting, not actual invention, and the Examiner erred in finding this condition to be “allowable subject matter” in allowing claim 1. EX1002, 823, 863-64. This applicant-coined condition merely describes the shape of known, non-inventive lens forms. It requires a critical point on the image side of the sixth lens located *roughly* the same distance from the central axis (Y_{c62}) as a critical point on the image side

of the seventh lens (Y_{c72}). Y_{c62} can be anywhere from 50–150% of Y_{c72} , as seen by rewriting the claimed ratio as $0.5Y_{c72} < Y_{c62} < 1.5Y_{c72}$ and looking at FIG. 27:



EX1001, FIG. 27 (excerpted, annotated in red and green).

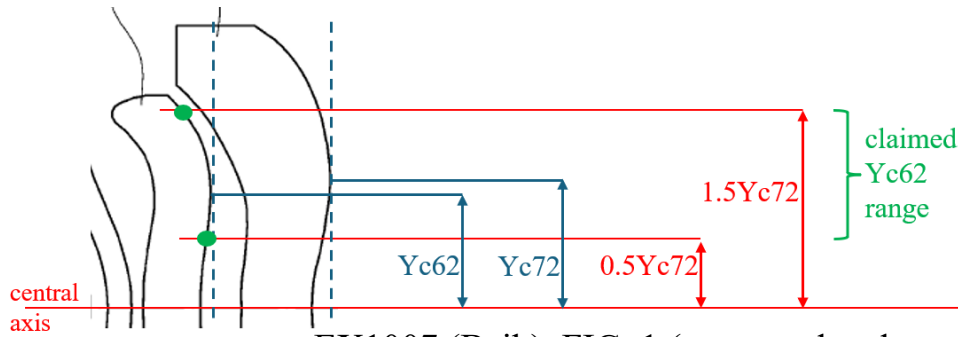
This condition describes the critical points found in known meniscus-gullwing lens pairs, which have “two gullwing lenses with meniscus shapes on the optical axis, having convex curvature on the object side and concave curvature on the image side.” Petition, 11-12; EX1003, ¶58. By their nature, every lens of such a pair includes non-axial critical points on the image-side surface. *See* EX1003, ¶¶51, 58-59; Petition, 9, 12. And these critical points were located neither too close to the optical axis or to the top edge of the lens. *E.g.*, EX1003, ¶202; EX1006, [0035]-[0038]. Consequently, the prior art is full of meniscus-gullwing lens pairs with critical points that are described by the Y_{c62}/Y_{c72} condition. *See, e.g.*, EX1007, [0052], FIG. 1; EX1006, [0035]-[0038]; EX1026, 7:4-67, FIG. 4; EX1027, 10:17:44, FIG. 1; EX1029, 10:13-40, FIGS. 1, 4, 7, 10.

By 2013, meniscus-gullwing lens pairs were used in 7-lens systems (Petition, 8-10) for benefits like correcting off-axis aberrations and controlling ray angles to

improve relative illumination at the edges (*id.*, 10-12, 25). After the gullwing lens became a standard feature in the 2000s (*id.*, 8-10), designs quickly evolved into using the meniscus-gullwing lens pair (*id.*, 10-12). The gullwing sixth lens played the “very important role” of “reducing the burden on the seventh lens.” EX1006, [0036].

The Examiner failed to appreciate that POSITAs would have been motivated to improve the designs of Fukaya (Ground 1) and Cai (Ground 2)—which suffered from off-axis aberrations and steep ray angles—by optimizing the sixth and seventh lenses to form a meniscus-gullwing lens pair that was known to solve these issues. Petition, 20-26, 78-81; EX1003, ¶¶81-87, 154-158. Expert analysis and evidence confirms these optimizations predictably led to “improved off-axis performance” and “better aberration control.” EX1003, ¶85 (further noting “improved relative illumination” for the optimized Fukaya design); ¶157 (further noting “significantly better focusing” for optimized Cai design). And each optimized system satisfied the recited Yc62/Yc72 claim element. Petition, 102, 171; EX1003, ¶¶102, 171. Thus, absent this material error, the Examiner would not have allowed the claims.

The failure to apprehend the simplicity of the supposedly “allowable” condition, and the satisfaction of that condition by known lens forms, is further reflected in the Examiner’s failure to find that Baik disclosed meniscus-gullwing lens pairs satisfying the Yc62/Yc72 condition, including as shown in FIG. 1:



EX1007 (Baik), FIG. 1 (excerpted and annotated).

Patent Owner suggests, without support, that Baik's figures cannot be trusted (POPR, 7) but the depicted lens forms are consistent with Baik's written description. EX1003, ¶68. While Baik states, "shapes and dimensions ... may be exaggerated for clarity" (EX1007, [0051]), it does not suggest that any particular figure is unreliable for understanding its lens designs. And Baik's aspheric lens data would confirm "what is clearly shown" in Baik's figures: "non-axial critical points on the image-side surfaces of the sixth and seventh lenses that satisfy the Y_{c62}/Y_{c72} condition." EX1003, ¶68. Use of the aspheric lens equation (EX1007, [0056]) required no "extraordinary" skill (POPR, 9-12), as lens patents routinely specified lens shapes via aspheric lens data for input into this "traditional" equation (EX1016, 61). *E.g.*, EX1004, [0123]; EX1005, [0158-65]; EX1006, [0130]; EX1003, ¶¶44, 46-47, 49.

Patent Owner's "Secret Prior Art" Theory Is Wrong: The Supreme Court has held that "prior art" as used in Section 103 is not limited to what was "publicly known," but encompasses all Section 102 prior art. *Hazeltine Rsch., Inc. v. Brenner*, 382 U.S. 252, 254 (1965). To conclude otherwise would "read into § 103 a restricted definition of 'prior art' which would lower standards of patentability." *Id.* at 256.

This is consistent with caselaw cited in POPR pages 18-19, which limits “secret prior art” to Section 112 and notes that “Sections 112 and 102(e) rest on different foundations, serve different purposes, and are not comparable.” *In re Glass*, 492 F.2d 1228, 1231-32 (CCPA 1974). The prior art references cited by the Petition thus appropriately illustrate the knowledge of a POSITA for obviousness purposes.

While the POPR argument is wrong legally, the facts here are also distinct from Patent Owner’s cases. For example, in *Glass*, a few references from *a single company* were inadequate for showing “what is known” for enablement purposes. 492 F.2d at 1231-32. Here, prior art from multiple assignees (Fujifilm, Kantatsu, Optical Logic, and Samsung) use meniscus-gullwing lens pairs in numerous 7-lens systems, thus evidencing that this usage was known in the art. *E.g.*, EX1006; EX1007; EX1008; EX1024; EX1025; EX1026; EX1027; EX1029. This shows that Patent Owner did not discover this form or its benefits.

The cited prior art background references thus “document the knowledge that skilled artisans would bring to bear in reading the prior art identified as producing obviousness.” *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1365 (Fed. Cir. 2015). It dispels any hint of hindsight, by “explain[ing] why an ordinarily skilled artisan would have been motivated to ... modify the cited references to arrive at the claimed inventions.” *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013); *see also* Petition, 8-12.

Respectfully submitted,

Dated: November 22, 2024

By: /Andrew M. Mason/

Andrew M. Mason (Reg. No. 64,034)

andrew.mason@klarquist.com

KLARQUIST SPARKMAN, LLP

One World Trade Center, Suite 1600

121 S.W. Salmon Street

Portland, Oregon 97204

Tel: 503-595-5300

Fax: 503-595-5301

Counsel for Petitioner

CERTIFICATE OF SERVICE
IN COMPLIANCE WITH 37 C.F.R. § 42.6(e)(4)

The undersigned certifies that on November 22, 2024, a complete copy of the **PETITIONER'S REPLY TO THE PATENT OWNER PRELIMINARY RESPONSE** was served on counsel for the Patent Owner via electronic mail as follows:

R. Parris Freeman
Eric L. Maschoff
Paul G. Johnson
Maschoff Brennan PLLC
1389 Center Drive, Suite 300
Park City, UT 84098
Email: pfreeman@mabr.com
emaschoff@mabr.com
pjohnson@mabr.com

By: /Andrew M. Mason/

Andrew M. Mason (Reg. No. 64,034)
andrew.mason@klarquist.com
KLARQUIST SPARKMAN, LLP
One World Trade Center, Suite 1600
121 S.W. Salmon Street
Portland, Oregon 97204
Tel: 503-595-5300
Fax: 503-595-5301

Counsel for Petitioner