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On behalf of **Global Shade Corp.**

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GLOBAL SHADE CORPORATION,
Petitioner,

v.

WITH-U E-COMMERCE (SHANGHAI) CO., LTD.,
Patent Owner.

IPR2023-00580
Patent 10,669,738

**PETITIONER'S OPPOSITION TO
PATENT OWNER'S REVISED MOTION TO AMEND**

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EXHIBIT LIST

Exhibit No.	Description
1001	U.S. Patent No. 10,669,738 (“the ’738 patent”)
1002	Declaration of Jeffrey L. Stein, Ph.D.
1003	U.S. Patent No. 6,345,639 (“Rousselle”)
1004	International Patent Publication No. WO2000/023676 (“Chang”)
1005	UK Patent Application No. GB2321913A (“Tsai”)
1006	U.S. Patent No. 8,066,300 (“Ohnishi”)
1007	U.S. Patent Publication No. 2005/0241688 (“Wu”)
1008	U.S. Patent No. 6,929,017 (“Byun”)
1009	U.S. Patent No. 7,735,505 (“Carter”)
1010	U.S. Patent Publication No. 2005/0178419 (“Tseng”)
1011	U.S. Patent No. 3,335,815 (“Oakes”)
1012	U.S. Patent No. 5,944,040 (“Jang”)
1013	Excerpts from Thomas W. Barber, <i>The Engineer’s Sketch-Book of Mechanical Movements, Devices, Appliances, Contrivances and Details</i> (3d ed. 1897)
1014	Excerpts from the ’738 Patent File History
1015	CV of Jeffrey L. Stein, Ph.D.
1016	Final Written Decision in <i>Global Shade Corp. v. With-U E-Commerce (Shanghai) Co., Ltd.</i> , IPR2021-00365, Paper 36 (P.T.A.B. July 25, 2022) (“ <i>Global Shade</i> ”)
<i>Exhibit numbers 1017-1100 not used.</i>	

Exhibit No.	Description
1101	Transcript of Jan. 24, 2024 Deposition of Wendy S. Reffeor, Ph.D.
1102	Second Declaration of Jeffrey Stein, Ph.D.
1103	U.S. Patent No. 6,484,376 (“Khatchadourian”)
1104	U.S. Patent No. 8,544,489 (“Choi”)
1105	U.S. Patent Publication No. 2011/0061702 (“Lin”)
1106	U.S. Patent No. 4,607,656 (“Carter II”)
<i>Exhibit numbers 1107-1201 not used.</i>	
1202	Third Declaration of Jeffrey Stein, Ph.D.
1203	U.S. Patent No. 3,611,513 (“Hoover”)
1204	U.S. Patent Publication No. 2005/0097829 (“Seo”)

Patent Owner’s (“PO”) revised substitute claims 15-19 are unpatentable in view of prior art references asserted in the Petition in this IPR, the file history of the ’738 patent, and other references.¹ PO’s revised substitute claims 15-17 recite new limitations that are disclosed by the prior art, rendering the claims obvious. Revised substitute claims 18-19 merely change dependency, meaning that they must rise and fall with revised substitute claims 15 and 17. Consequently, the Board should deny PO’s motion to amend because the proposed claims are unpatentable.

I. THE SUBSTITUTE CLAIMS WOULD HAVE BEEN OBVIOUS

The Petition and Reply show how each of the limitations in original claims 1-2, 4, and 13-14 are disclosed by Rousselle, Tsai, and/or Ohnishi. Paper 1 (“Pet.”), §V; Paper 18 (“Reply”), §§I-III. Accordingly, this Opposition will address only the new and/or different limitations of the revised substitute claims. *See Aqua Prod., Inc. v. Matal*, 872 F.3d 1290, 1326 (Fed. Cir. 2017) (endorsing “consideration of the entirety of the IPR record”).

A. Revised Substitute Claim 15 Would Have Been Obvious

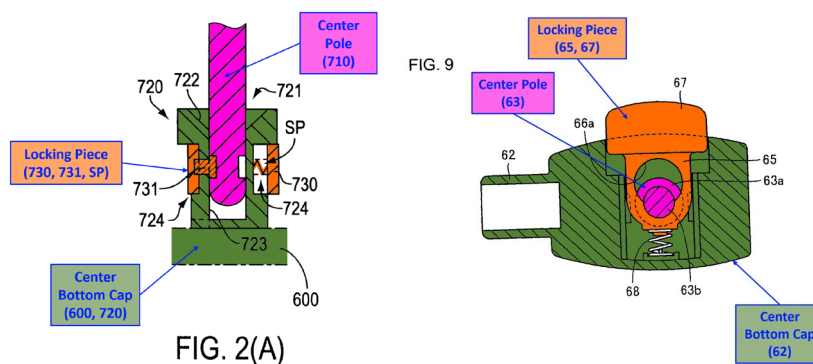
PO’s revised substitute claim 15 adds five new limitations to claim 1. Each is disclosed by the prior art and, as a result, revised substitute claim 15 would have

¹ PO’s expert did not opine on the revised substitute claims or their patentability. *See generally* Paper 22 (“RMTA”).

been obvious as a whole to a POSITA.² Ex. 1102 ¶¶40-60; Ex. 1202 ¶¶7-34.

1. Locking Piece

Revised substitute claim 15 recites “a locking piece received in said center bottom cap.” The Petition explained how the prior art, including Rousselle and Ohnishi, discloses this limitation. Pet., §§V.A.5.a, V.B.2.a. In particular, Rousselle and Ohnishi each disclose a locking piece, highlighted in orange:



Ex. 1003, Fig. 2(A); Ex. 1006, Fig. 9; Ex. 1102 ¶42. Furthermore, as shown, each locking piece is received in a center bottom cap. *Id.*; Ex. 1003, 7:1-31; Ex. 1006, 7:51-60; Ex. 1002 ¶¶159, 182.

The Petition also discusses why a POSITA would have been motivated to combine Ohnishi’s locking piece with Rousselle’s lock (thereby replacing Rousselle’s locking piece) and why a POSITA would have had a reasonable expectation of success in doing so. Pet., §V.B.2.e. For example, Ohnishi’s locking

² Petitioner agrees with PO that the level of skill for the substitute claims is the same as the original claims (e.g., as discussed in the Petition). RMTA, 11; Pet., 7.

piece interacts with a center pole that is essentially identical to Rousselle's and would work in exactly the same way when used in Rousselle's center lock. *Id.*; Ex. 1002 ¶¶194-98; Ex. 1102 ¶43. Furthermore, Rousselle's lock would continue to work in exactly the same way. *Id.* Thus, Rousselle and Ohnishi disclose, or at least suggest, this limitation. Ex. 1102 ¶¶41-44.

2. Bottom Cap Seat & Bottom Cap Cover

Revised substitute claim 15 further recites that the “center bottom cap comprises a bottom cap seat and a bottom cap cover that are connected to one another, wherein said bottom cap seat is located between said bottom cap cover and said center top cap,” “a receiving chamber is provided in said center bottom cap at a junction between said bottom cap seat and said bottom cap cover,” and the “locking piece is located within said receiving chamber and between said bottom cap cover and said bottom cap seat.”³

PO argues that neither Rousselle nor Ohnishi teaches these limitations. RMTA, 15-18. However, a POSITA combining Rousselle and Ohnishi as discussed in the Petition would have been motivated to implement the combination in a way that meets the limitations. Ex. 1202 ¶¶8-19.

As discussed in the Petition and above, a POSITA would have been motivated

³ Certain of these limitations are discussed out-of-order for clarity.

to replace Rousselle's locking piece with Ohnishi's. Pet., §V.B.2.e; *supra* §I.A.1. In doing so, a POSITA would have needed to solve practical problems such as how to retain Ohnishi's locking piece within Rousselle's structure and would have done so using routine design changes. Ex. 1202 ¶9. For example, for ease of manufacturing and maintenance, a POSITA would have recognized that it would be advantageous to have easy access to insert and remove the locking piece. *Id.*

To solve this practical problem, a POSITA would have understood that there are a finite number of identified, predictable solutions. *Id.* ¶10. One such solution is simply to manufacture the bottom cap in two pieces (e.g., a bottom cap seat and bottom cap cover) that meet where the locking piece is to be located:

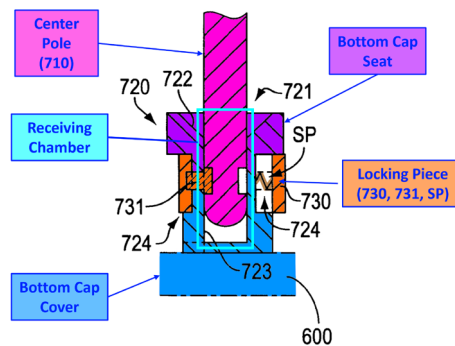


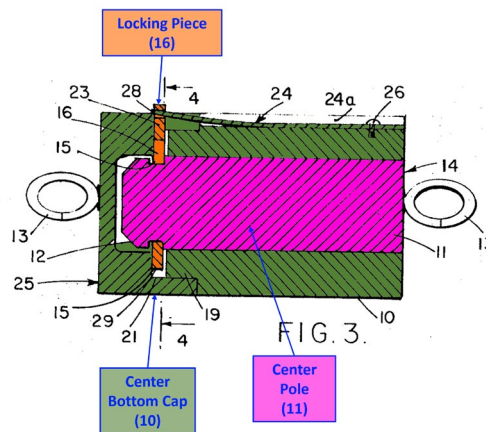
FIG. 2(A)

Ex. 1003, Fig. 2(A); Ex. 1202 ¶10. Because the center top cap is located at the other end of the center pole, the bottom cap seat is located between the bottom cap cover and the center top cap in this configuration. Ex. 1202 ¶10.

A POSITA would have been motivated to adopt such a solution, and would have reasonably expected success doing so, because the solution was known. *Id.*

¶11. One reference that discloses this solution is Hooper (Ex. 1203).

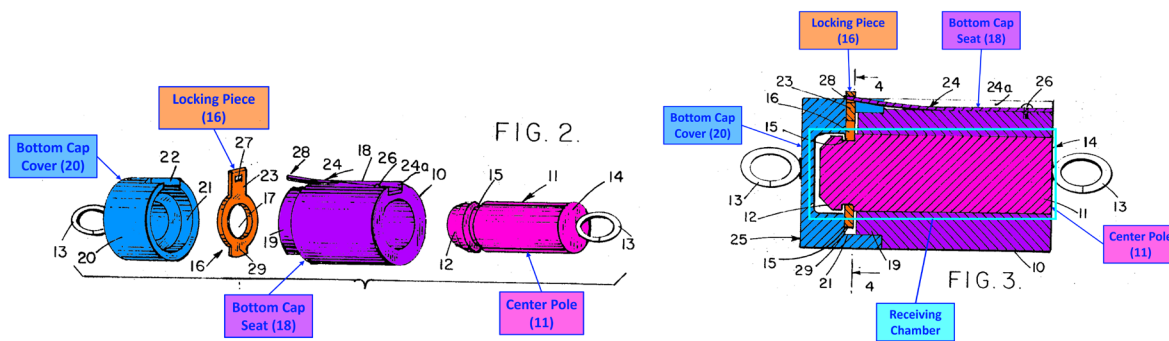
Hooper discloses a jewelry clasp with a locking mechanism very similar to Rousselle and Ohnishi's.⁴ E.g., Ex. 1203, Abstract, Figs. 2-3; Ex. 1202 ¶12. For example, Hooper's locking mechanism includes a center bottom cap (10) and a center pole (11) that is engaged by a locking piece (16):



Ex. 1203, Fig. 3; see *id.*, Fig. 2; Ex. 1202 ¶13. Hooper's center bottom cap is

⁴ Hooper is prior art to the '738 patent because it issued on Oct. 12, 1971. Ex. 1203. Hooper is analogous art because it relates to the same type of locking mechanism discussed in the '738 patent. *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1000 (Fed. Cir. 2016); *Netflix, Inc. v. DivX, LLC*, 80 F.4th 1352, 1358-61 (Fed. Cir. 2023); Ex. 1202 ¶12. It is also reasonably pertinent to a particular problem addressed by the '738 patent (the need for easy-to-use, reliable locking mechanisms), is in the same field of endeavor (locking mechanisms), and uses similar technology (e.g., locking onto a grooved central pole). *Id.*

comprised of two pieces—a “main body 18” (e.g., a bottom cap seat) and a “cap 20” (e.g., a bottom cap cover). Ex. 1203, 3:1-5, Figs. 1-3. Furthermore, Hooper discloses that the center bottom cap is “adapted internally to receive a male member” 11, including through “central aperture 17” of the locking piece 16, and thus comprises a receiving chamber that extends between main body 18 (bottom cap seat) and cap 20 (bottom cap cover). *Id.*, 2:45-60, 3:13-22, Figs. 1-3. Thus, Hooper discloses a receiving chamber at a junction between the bottom cap seat and bottom cap cover. Ex. 1202 ¶13. Finally, Hooper’s locking piece 16 is located in the receiving chamber and between the bottom cap seat and bottom cap cover:



Ex. 1203, Figs. 2-3; Ex. 1202 ¶14.

Based on Hooper's disclosure and the benefits a POSITA would have understood from such an arrangement, a POSITA would have been motivated to include a bottom cap seat and bottom cap cover in Rousselle's center bottom cap when modifying it to include Ohnishi's locking piece, and would have reasonably expected success doing so. For ease of manufacturing and maintenance, a POSITA would have recognized that it would be advantageous to have easy access to insert

and remove the locking piece from the lock. Ex. 1002 ¶15. The arrangement shown in Hooper, where the locking piece sits between a bottom cap seat and a removable bottom cap cover, provides such easy access to the locking piece. *Id.* Thus, a POSITA would have been motivated to incorporate such an arrangement in the combination of Rousselle and Ohnishi. *Id.* Furthermore, such an arrangement was known in the art, as evidenced by Hooper and other references, leading a POSITA to reasonably expect success in the combination. *Id.* (citing Exs. 1103, 1203).

Additionally, the combination represents nothing more than the simple addition of one known element (Hooper's bottom cap seat and cover) to another known element (Rousselle's lock with Ohnishi's locking piece) to obtain predictable results (a lock as in Rousselle with a locking piece as in Ohnishi, accessible using Hooper's bottom cap seat and cover). *Id.* ¶16; *see KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007).

The combination also represents the use of a known technique (using a bottom cap seat and cover as in Hooper) to improve a similar device and method (Rousselle's lock with Ohnishi's locking piece) in the same way. Ex. 1202 ¶17; *KSR*, 550 U.S. at 417.

Finally, the combination applies a known technique (including a bottom cap seat and cover as in Hooper) to a known device and method (Rousselle's lock with Ohnishi's locking piece) that is ready for improvement and yields predictable results

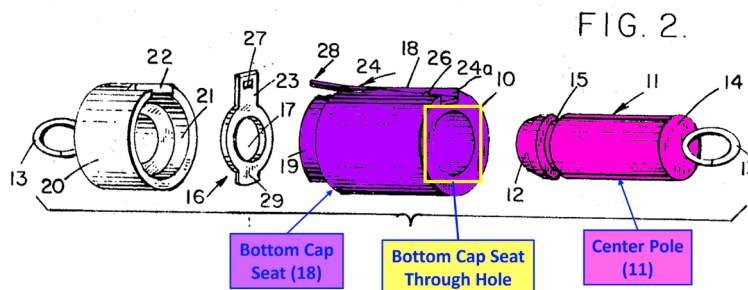
(a lock as in Rousselle with a locking piece as in Ohnishi, accessible using Hooper's bottom cap seat and cover). Ex. 1202 ¶18; *KSR*, 550 U.S. at 417.

Thus, Rousselle and Ohnishi, in view of Hooper, disclose, or at least suggest, this limitation. Ex. 1202 ¶¶8-19.

3. Bottom Cap Seat Through Hole

Revised substitute claim 15 further recites that “said bottom cap seat is provided with a bottom cap seat through hole through which said center pole can enter.” Hooper discloses this limitation. Ex. 1202 ¶¶20-22.

As discussed above, Hooper discloses that its bottom cap, including the bottom cap seat 18, is “adapted internally to receive a male member” 11. Ex. 1203, 2:45-60, Figs. 1-3. Figure 2 of Hooper shows the bottom cap seat through hole which allows the center pole 11 to enter:



Id., Fig. 2; *see id.*, Fig. 3; Ex. 1202 ¶21. This is consistent with Rousselle's design, which features a through hole in the upper portion of the bottom cap through which the center pole is inserted. Ex. 1202 ¶21.

Thus, Hooper discloses, or at least suggests, this limitation. *Id.* ¶¶20-22.

4. Connecting Rod

Revised substitute claim 15 later recites that “a first connecting rod is hinged with a connection piece of said bottom cap seat.”

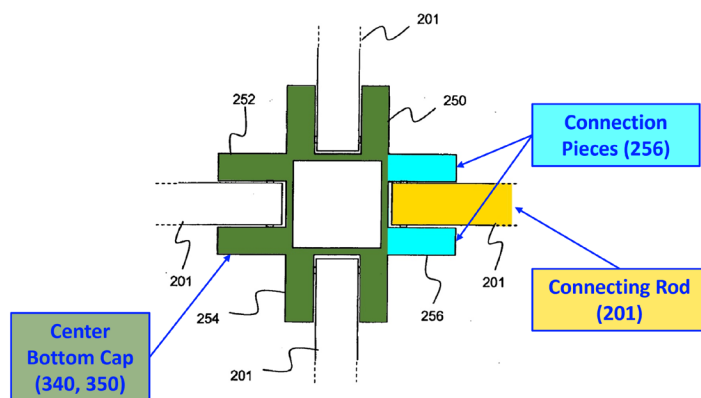
PO argues Rousselle does not teach this limitation because it “does not teach any connection piece ... located in that position” or “any first connecting rod that is hinged at that location.” RMTA, 18. But, as discussed in the Petition and as PO does not dispute, Rousselle discloses a first connecting rod hinged with the center bottom cap. Pet., §V.A.4.g. A POSITA combining Rousselle with Ohnishi and Hooper as discussed above would further have been motivated to connect the first connecting rod with the center bottom cap by hinging it with a connection piece of the bottom cap seat in view of Seo (Ex. 1204). Ex. 1202 ¶¶23-33.

Seo discloses a collapsible canopy having a central locking mechanism.⁵ See, e.g., Ex. 1204, Abstract, Figs. 1, 3, 6; Ex. 1202 ¶25. Like Rousselle, Seo’s central locking mechanism includes a center top cap (upper central hub 330) and center bottom cap (lower central hub 340 and fixing bracket 350). Ex. 1204 ¶[0037], Fig. 7. And, like Rousselle, Seo’s center top and bottom caps are connected to inner

⁵ At least because Seo published on May 12, 2005 and relates to a collapsible canopy with a central locking mechanism, it is both prior art and analogous art to the ’738 patent. Ex. 1204; *Unwired Planet*, 841 F.3d at 1000; Ex. 1202 ¶25.

retractable units, which include connecting rods attached to the center bottom cap.

Id. As shown in Figure 5, which shows a top-down view of the center bottom cap, each connecting rod is hinged with two connection pieces of the center bottom cap:

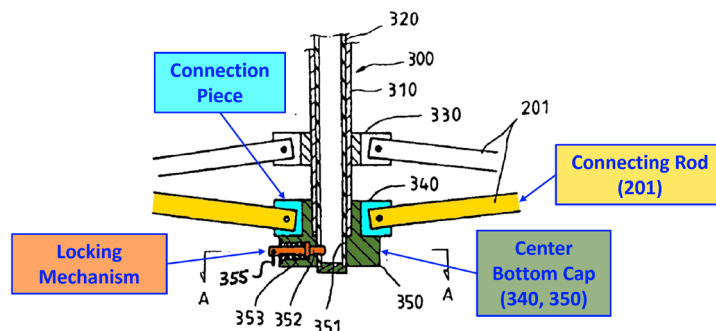


Id., Fig. 5; Ex. 1202 ¶25. Specifically, Seo discloses that “[t]he upper and lower central hubs 330 and 340 each have four connecting members 250, 252, 254, 256, each facing one set of edge scissor assemblies” and that “the lower end of a rib [e.g., connecting rod] is pivotably coupled to the respective connecting member of the lower central hub 340.”⁶ Ex. 1204 ¶¶[0037]-[0038]. Thus, Seo discloses a first connecting rod hinged with a connection piece of the bottom cap. Ex. 1202 ¶25.

Seo also discloses that the connection pieces of its center bottom cap are located above its locking mechanism, as shown in Figure 7:

⁶ A POSITA would have understood that each of Seo’s “connecting members” comprises two connection pieces (e.g., one on each side of the rod). Ex. 1202 ¶25.

FIG. 7



Ex. 1204, Fig. 7; Ex. 1202 ¶26. As discussed above, when Rousselle's center bottom cap is modified to include a bottom cap cover and bottom cap seat (e.g., as disclosed in Hooper), the bottom cap seat is the portion of the bottom cap located above the locking piece. *Supra* §I.A.2; Ex. 1202 ¶26. Thus, a POSITA would have understood that when structuring Rousselle's center bottom cap to connect to Rousselle's connecting rods in the manner disclosed in Seo, one would form the connecting pieces as part of the bottom cap seat (above the locking piece). Ex. 1202 ¶26.

A POSITA would have been motivated to include Seo's connecting pieces in Rousselle's center bottom cap to connect to Rousselle's connecting rods, and to position the connection point as disclosed in Seo, for several reasons. *Id.* ¶¶27-32.

First, a POSITA would have recognized several advantages of the configuration. The hinges and connecting pieces disclosed in Seo provide a sturdy, durable, easy-to-manufacture and easy-to-maintain connection with the connecting rods. *Id.* ¶28. Such hinges were well-known in the art, giving a POSITA a reasonable expectation of success in the combination. *Id.* (citing Exs. 1004, 1005,

1010, 1104, 1105). Furthermore, a POSITA would have recognized that positioning the connection point above the locking mechanism was advantageous for the user of the canopy, who would be able to operate the locking mechanism from below without the connecting rods getting in the way. *Id.*

Second, Rousselle suggests the combination because it discloses that “various aspects of the present invention are not limited to frame structures exactly as described” and that “the locking mechanisms 700 ... can be used with a variety of other frame structures[.]” Ex. 1003, 15:59-6; Ex. 1202 ¶29.

Third, the combination represents nothing more than the simple addition of one known element (Seo’s connecting pieces positioned above a locking mechanism) to another known element (Rousselle’s lock (as modified by Ohnishi and Hooper) and connecting rods) to obtain predictable results (a lock as in Rousselle, modified by Ohnishi and Hooper, with connecting rods attached to connection pieces of its bottom cap seat). Ex. 1202 ¶30; *see KSR*, 550 U.S. at 417.

Fourth, the combination also represents the use of a known technique (including connection pieces above a locking mechanism as in Seo) to improve a similar device and method (Rousselle’s lock as modified by Ohnishi and Hooper) in the same way. Ex. 1202 ¶31; *KSR*, 550 U.S. at 417.

Finally, the combination applies a known technique (including connection pieces above a locking mechanism as in Seo) to a known device and method

(Rousselle’s lock as modified by Ohnishi and Hooper) that is ready for improvement and yields predictable results (a lock as in Rousselle, modified by Ohnishi and Hooper, with connecting rods attached to connection pieces of its bottom cap seat). Ex. 1202 ¶32; *KSR*, 550 U.S. at 417.

Thus, Seo discloses, or at least suggests, this limitation. Ex. 1202 ¶¶23-33.

5. Unfolded State

Finally, revised substitute claim 15 recites that “said collapsible canopy frame is moved to said unfolded state by pushing said center bottom cap upwards to drive said plurality of inner retractable units outwardly, which causes said plurality of outer retractable units and said at least three supporting legs to extend outwards, until said center bottom cap is connected with said center top cap.” Rousselle discloses this limitation. Ex. 1102 ¶¶57-59.

Rousselle discloses that “[o]nce the lower clevis 600 [center bottom cap] has been moved upward a certain distance, the user can place one hand under the lower clevis 600 and the other hand above the upper clevis 400 [center top cap] and can push the [clevises] together to a point whereat the locking mechanism 700 can lock the clevises together.” Ex. 1003, 13:22-27. Because Rousselle discloses that bringing the upper and lower clevises (e.g., the center top and bottom caps) together results in the center tubes 500 (e.g., part of the inner retractable units) extending outward, a POSITA would have understood that the result of Rousselle’s disclosure

of pushing the bottom cap upwards toward the top cap would be that the inner units extend outwardly, causing the outer retractable units (from the combination with Tsai) and the supporting legs to extend outwardly.⁷ *See id.*, 13:5-29; Ex. 1102 ¶58.

PO does not dispute that Rousselle discloses this limitation. RMTA, 19-21. Instead, PO argues that Petitioner’s combinations of Rousselle and Tsai would be inoperable. As discussed in Petitioner’s Reply, this is incorrect. Reply, §§I-II.

PO first argues that Petitioner’s “primary modification,” which combines Tsai’s outer and/or inner retractable units with Rousselle’s canopy, would be inoperable because Rousselle’s legs “invert/pivot” when folding. RMTA, 19-20. PO ignores that Rousselle’s disclosure does not, in fact, require the canopy’s legs to invert. *See* Ex. 1003, 16:14-19; Ex. 1102 ¶¶8-12; Ex. 1101, 31:10-32:1. Nor do the challenged claims recite inverting legs. Ex. 1001; Ex. 1101, 32:2-4, 33:6-20. A POSITA, who is “a person of ordinary creativity,” would be able to implement a working version of the primary modification, including by simply stopping the folding before inverting the legs (e.g., without folding the legs at all) or by implementing elements of Tsai’s inner retractable units, which would allow the legs

⁷ Similarly, a POSITA would have understood that if Rousselle’s center lock were combined with Tsai’s canopy (Pet., §V.A.3.d.i), pushing Rousselle’s center bottom cap upwards would cause Tsai’s canopy to unfold in the same way. Ex. 1102 ¶58.

to fold without inverting. *KSR*, 550 U.S. at 421; Ex. 1102 ¶¶8-12; Reply, §I.A.

PO then argues that Petitioner’s “alternative modification,” which combines Tsai’s canopy with Rousselle’s center lock, would be inoperable or otherwise unpalatable to a POSITA. RMTA, 20-21. But PO is incorrect. Reply, §II. PO’s arguments improperly ignore what the combination of Tsai and Rousselle discloses and instead attack Tsai’s disclosure in a vacuum. *In re Keller*, 642 F.2d 413, 426 (C.C.P.A. 1981) (“[O]ne cannot show non-obviousness by attacking references individually where ... the rejections are based on a combination of references.”). PO fails to meet the standard to show that Tsai teaches away, at most showing that it expresses a general preference for an alternative invention. *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1327 (Fed. Cir. 2009); *UCB, Inc. v. Actavis Labs. UT, Inc.*, 65 F.4th 679, 692-93 (Fed. Cir. 2023); Reply, §I.C. And PO’s arguments fail to take into account the POSITA’s ordinary creativity, instead assuming that a POSITA would be unable to solve simple technical challenges that were well within such a person’s skill. *KSR*, 550 U.S. at 421. Accordingly, Rousselle discloses, or at least suggests, this limitation. Ex. 1102 ¶¶57-59.

Thus, as detailed in the Petition, the Reply, and above, the prior art discloses, or at least suggests, the limitations of revised substitute claim 15, and claim 15 would have been obvious as a whole to a POSITA. Ex. 1102 ¶¶40-60; Ex. 1202 ¶¶7-34.

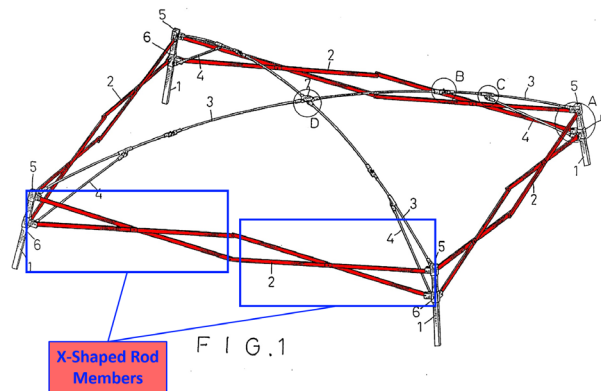
B. Revised Substitute Claim 16 Would Have Been Obvious

Revised substitute claim 16 depends from revised substitute claim 15. As discussed above and in the Petition and Reply, the prior art discloses each limitation of revised substitute claim 15. The prior art also discloses the limitations of revised substitute claim 16. Ex. 1102 ¶¶61-83; Ex. 1202 ¶¶35-40.

1. X-Shaped Rod Members

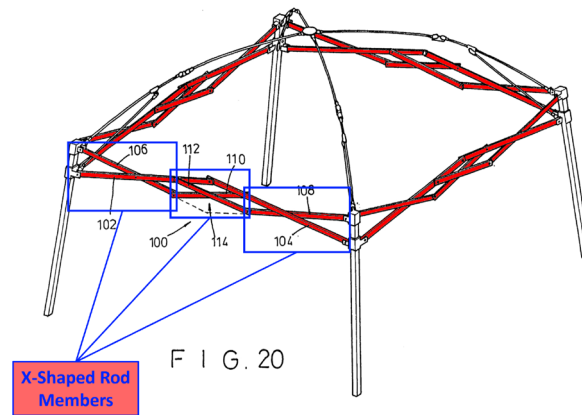
Revised substitute claim 16 recites that “each said outer retractable unit comprises three hinged X-shaped rod members.” The prior art discloses this.

As the Petition showed, and as PO acknowledges (RMTA, 22), Tsai discloses a canopy that includes outer retractable units comprising a plurality of hinged X-shaped rod members. Pet., §V.A.3.b.



Ex. 1005, Fig. 1; *id.*, 7:7-15, Fig. 20; Ex. 1002 ¶68; Ex. 1102 ¶63. As shown, each of Tsai’s outer retractable units in this embodiment comprises two hinged X-shaped rod members. *Id.*

Tsai discloses another embodiment, shown in Figure 20, that contains outer retractable units comprising three hinged X-shaped rod members:



Ex. 1005, Fig. 20; *id.*, 9:29-10:24; Ex. 1102 ¶64. Because Tsai discloses that “the scissors-type linkage pairs shown in [Figures] 1 and 10 may be replaced by” the outer retractable unit shown in Figure 20, the analysis in the Petition applies equally to Tsai’s Figure 20 as it does to Tsai’s Figure 1. Ex. 1005, 9:29-32; Ex. 1102 ¶64.

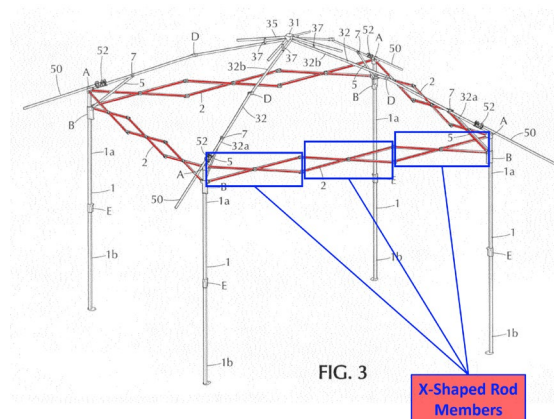
PO argues that Tsai’s Figure 20 embodiment is “significantly different and more complicated than the three hinged X-shaped rod members shown in the ’738 Patent and now recited.” RMTA, 22. PO is incorrect. While Tsai’s Figure 20 embodiment may look slightly different than the ’738 patent’s, PO notably does not dispute that Tsai’s Figure 20 discloses three hinged X-shaped rod members. *Id.* PO could have drafted the claim to recite distinguishing features that exclude an embodiment like Tsai’s Figure 20, but elected not to. Accordingly, Tsai discloses this limitation. Ex. 1102 ¶64.

Even if Tsai did not disclose this limitation, it would have been obvious to a POSITA to use three hinged X-shaped rod members instead of two in Tsai’s canopy. First, a POSITA would have used common sense to arrive at a design with three

hinged X-shaped rod members instead of two. X-shaped scissoring members such as those in Tsai's outer units are simple technology that provides a solution that has been well-known for decades. *E.g.*, Ex. 1013; Ex. 1101, 44:7-45:8; Ex. 1102 ¶65. And, outer units that comprise *two* hinged X-shaped members require only repetition of an existing element to arrive at an outer unit that comprises *three* hinged X-shaped members. Ex. 1102 ¶65. Accordingly, it would have been common sense for a POSITA to arrive at such a design. *B/E Aerospace, Inc. v. C&D Zodiac, Inc.*, 962 F.3d 1373, 1379-81 (Fed. Cir. 2020).

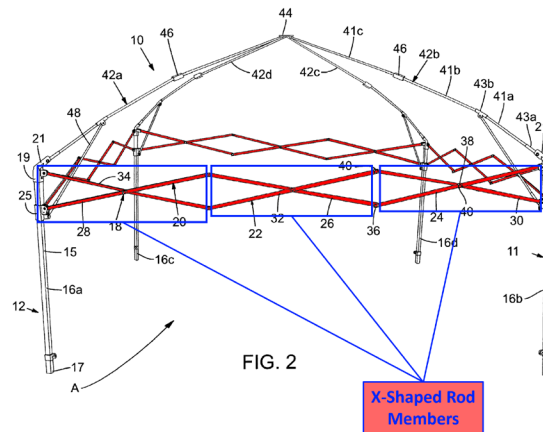
A POSITA would also have been motivated to use three hinged X-shaped rod members, and would have reasonably expected success, because outer retractable units comprising three hinged X-shaped rod members were well known in the art. Ex. 1102 ¶66. Indeed, PO's expert admitted that other designs for outer retractable units could be used with Tsai's canopy. Ex. 1101, 44:7-45:8.

For example, in 2013, Choi disclosed a "collapsible tent structure" having outer retractable units comprising three hinged X-shaped rod members:



Ex. 1104, Fig. 3; *id.*, Abstract; Ex. 1102 ¶67.

Likewise, in 2011 Lin disclosed a similar “portable shelter” having outer retractable units comprising three hinged X-shaped rod members:



Ex. 1105, Fig. 2; *id.*, Abstract; Ex. 1102 ¶68.

Thus, collapsible canopies having outer retractable units comprising three hinged X-shaped rod members were commonplace by the time of the '738 patent's priority date. It would have been obvious to a POSITA to modify Tsai's canopy design to include three X-shaped rod members instead of two for several reasons. First, because such designs were well known, a POSITA would have reasonably expected success in the combination. Ex. 1102 ¶69; *see, e.g.*, Exs. 1104, 1105.

Second, the combination represents a choice from a finite number of identified, predictable solutions. *KSR*, 550 U.S. at 421. Given the structure disclosed by the prior art, a POSITA would have had a handful of choices for how many hinged X-shaped rod members to include in each outer retractable unit. Ex. 1102 ¶70. Practically, depending on the size of the canopy, a POSITA would have

understood that fewer than two or more than five hinged X-shaped rod members would be unworkable or unwieldy and render the canopy difficult to manufacture and/or operate. *Id.* Thus, three is within a small range of options open to a POSITA and would have been obvious to try. *Id.*

Third, a POSITA would have understood that the fewer X-shaped rod members are included, the longer each member must be, which affects the size of the folded canopy. *Id.* A POSITA would have been motivated to increase the number of X-shaped rod members (e.g., from two to three) to shorten the length of each member and thus to shorten the length of the folded canopy frame. *See id.*

Fourth, the combination represents nothing more than the simple addition of one known element (three hinged X-shaped rod members as in Choi or Lin) to another known element (Tsai's outer retractable unit) to obtain predictable results (a canopy with outer retractable units comprising three hinged X-shaped rod members). Ex. 1102 ¶71; *KSR*, 550 U.S. at 417.

Fifth, the combination represents the use of a known technique (using three hinged X-shaped rod members) to improve a similar device and method (Tsai's outer retractable unit) in the same way. Ex. 1102 ¶72; *KSR*, 550 U.S. at 417.

Sixth, the combination applies a known technique (using three hinged X-shaped rod members as in Choi or Lin) to a known device and method (Tsai's outer retractable unit) that is ready for improvement and yields predictable results (a

canopy with outer retractable units comprising three hinged X-shaped rod members).

Ex. 1102 ¶73; *KSR*, 550 U.S. at 417.

Alternatively, it would have been obvious to a POSITA to combine Choi or Lin’s canopy designs, which include outer retractable units comprising three hinged X-shaped rod members, with Rousselle’s center lock, for the same reasons discussed in the Petition with respect to Tsai. Pet., §V.A.3.b.iii; Ex. 1102 ¶74.

Thus, Tsai, in view of Choi and/or Lin,⁸ disclose, or at least suggest, this limitation. Ex. 1102 ¶¶62-75.

2. Sliding Sleeve

Revised substitute claim 16 recites that “each said supporting leg comprises a sliding sleeve that is moved along a length direction of said respective supporting leg by said pushing of said center bottom cap.” Tsai and Rousselle together disclose this limitation. Ex. 1102 ¶¶76-78.

As discussed above, Rousselle discloses that pushing upward on the center bottom cap causes the canopy to unfold, including extending the inner units and the supporting legs. *Supra* §I.A.5. Furthermore, Tsai discloses that its canopy legs include “sliding connectors 6” (e.g., sliding sleeves) “which slide[] along the poles

⁸ At least in view of their publication dates and subject matter (e.g., collapsible canopies), Choi and Lin are both prior art and analogous art to the ’738 patent.

[1]” (e.g., legs) as the canopy is unfolded. Ex. 1005, 7:4-20, Fig. 2; Pet., §V.A.4.a; Ex. 1002 ¶¶131-33. Thus, when Rousselle is combined with Tsai (e.g., by combining Rousselle’s center lock with Tsai’s canopy), the resulting combination includes a sliding sleeve on each leg that is moved along the length of the leg when the center bottom cap is pushed upward to unfold the canopy. Ex. 1102 ¶77.

PO argues first that neither reference alone teaches the limitation; this is irrelevant because the combination of references teaches the limitation. RMTA, 21; *Keller*, 642 F.2d at 426. PO also repeats its argument that a POSITA would not combine Rousselle and Tsai, which is incorrect. *Supra* §I.A.5; Reply, §§I-II. Thus, Tsai and Rousselle disclose, or at least suggest, this limitation. Ex. 1102 ¶¶76-78.

3. Receiving Groove

Revised substitute claim 16 recites that “an inner end of said first connecting rod is disposed within a receiving groove formed by at least two connection pieces of said bottom cap seat.” Seo discloses this limitation. Ex. 1202 ¶¶36-37.

As discussed above, Seo discloses that connecting rods may be attached to a center bottom cap by attaching each connecting rod to two connection pieces. *Supra* §I.A.4. Seo further discloses that the connecting rod is disposed within a receiving groove formed by the two connection pieces, as shown in Figure 5:

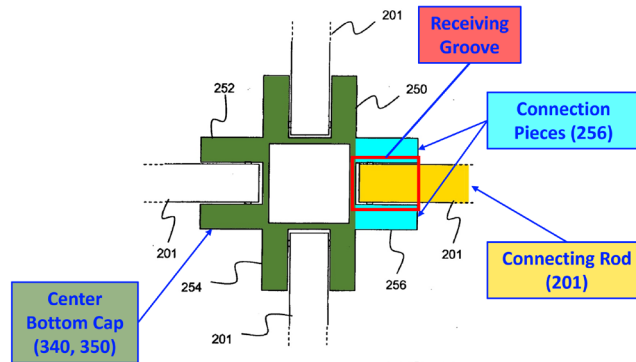


FIG. 5

Ex. 1204, Fig. 5; Ex. 1202 ¶¶37. Thus, Seo discloses, or at least suggests, this limitation. Ex. 1202 ¶¶36-37.

4. Y-Shaped Member

Revised substitute claim 16 next recites that “in said unfolded state, said first connecting rod extends from said bottom cap seat to said first oblique top pipe to form a Y-shaped member.” Rousselle discloses this limitation. *See* Pet., §§V.A.4.d, V.A.4.g. As shown in Rousselle, these connections result in a Y-shaped member:

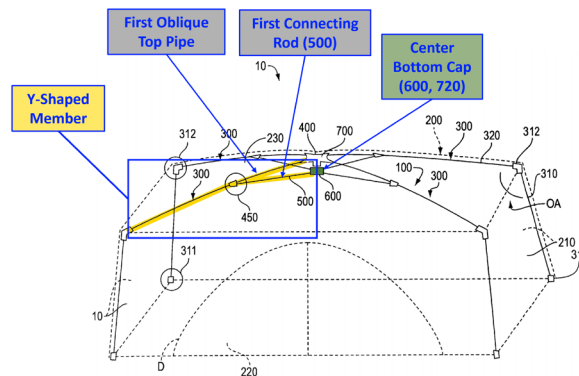


FIG. 1(A)

Ex. 1003, Fig. 1(A); Ex. 1202 ¶¶39. And, as discussed above, it would have been obvious for the first connecting rod to extend from the bottom cap seat in view of

Hoober and Seo. *Supra* §I.A.4. Accordingly, the prior art discloses, or at least suggests, this limitation. Ex. 1202 ¶¶38-39.

Thus, as detailed in the Petition, the Reply, and above, the prior art discloses, or at least suggests, the limitations of revised substitute claim 16, and claim 16 would have been obvious as a whole to a POSITA. Ex. 1102 ¶¶61-83; Ex. 1202 ¶¶35-40.

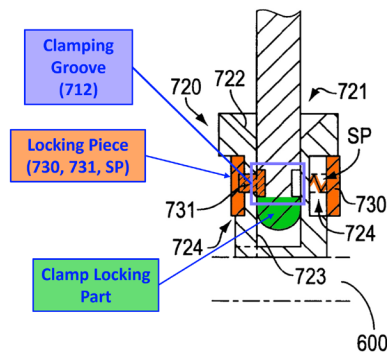
C. Revised Substitute Claim 17 Would Have Been Obvious

Revised substitute claim 17 depends from revised substitute claim 15. As discussed above and in the Petition and Reply, the prior art discloses each limitation of revised substitute claim 15. The prior art also discloses the limitations of revised substitute claim 17. Ex. 1202 ¶¶41-44.

1. Connecting Rod Hinged to Connection Piece Above Clamp Locking Part

Revised substitute claim 17 recites that “said first connecting rod is hinged with said connection piece at a location above said clamp locking part of said center pole.” Seo and Rousselle disclose this limitation. Ex. 1202 ¶¶42-44.

As discussed above, Seo discloses that connecting rods may be attached to a center bottom cap using connection pieces located above a locking mechanism. *Supra* §I.A.4. Furthermore, as discussed in the Petition and as shown, for example, in Rousselle’s Figure 2(A), in the locked position, Rousselle’s clamp locking part is located below Rousselle’s locking piece:



Ex. 1003, Fig.2(A); Pet., §§V.A.5.c.ii, V.A.5.d; Ex. 1202 ¶¶43. Thus, the connection pieces as in Seo (which are located above the locking piece) would necessarily also be located above the clamp locking part. Accordingly, Seo and Rousselle disclose, or at least suggest, this limitation. Ex. 1202 ¶¶42-43.

Thus, as detailed in the Petition, the Reply, and above, the prior art discloses, or at least suggests, the limitations of revised substitute claim 17, and claim 17 would have been obvious as a whole to a POSITA. Ex. 1202 ¶¶41-44.

D. Revised Substitute Claims 18-19 Would Have Been Obvious

Revised substitute claims 18-19 merely change dependency and are unpatentable for the reasons discussed above and in the Petition and Reply. *Supra* §I.A; Pet., §§V.A.5-6, V.B.2-4; Reply, §§I-III; Ex. 1202 ¶45.

II. CONCLUSION

For the foregoing reasons, the Board should deny PO's motion to amend.

Respectfully submitted,

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Dated: April 19, 2024

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CERTIFICATE OF SERVICE

I hereby certify that, pursuant to 37 C.F.R. §42.105, a true and correct copy of the foregoing **PETITIONER’S OPPOSITION TO PATENT OWNER’S REVISED MOTION TO AMEND** is being served on April 19, 2024, via email on the parties listed below:

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