

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
U.S. Patent No. 10,669,738

THIRD DECLARATION OF JEFFREY L. STEIN, PH.D.

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I, Jeffrey L. Stein, Ph.D., declare as follows:

1. I am making this declaration at the request of Global Shade Corp. (“Global Shade”).

2. I am being compensated for my work in this matter and I am being reimbursed at cost for my expenses. My compensation in no way depends upon the outcome of this proceeding. I do not own any stock in Global Shade and, to my knowledge, I have no financial interest in Global Shade.

3. In preparing this Declaration, I considered all references identified herein.

4. I understand that my first declaration in this case was submitted as Exhibit 1002 (“First Declaration”), and that my second declaration was submitted as Exhibit 1102 (“Second Declaration”) (collectively, “Prior Declarations”). I refer herein to certain portions of my Prior Declarations and the exhibits cited therein.

**I. THE REVISED SUBSTITUTE CLAIMS WOULD
HAVE BEEN OBVIOUS**

5. I understand the Patent Owner has proposed five revised substitute claims in the event claims 1, 2, 4, 13, and/or 14 are found unpatentable. The substitute claims I understand Patent Owner has proposed are listed below, with the new elements underlined:

15. (substitute for claim 1 if found unpatentable)

A collapsible canopy frame, comprising:

A. at least three supporting legs,

- B. a plurality of outer retractable units, each outer retractable unit connected between two adjacent supporting legs, each said outer retractable unit comprises a plurality of hinged X-shaped rod members, each X-shaped rod member comprises a first eave pipe and second eave pipe hinged to one another,
- C. a plurality of inner retractable units comprising inner ends, each inner retractable unit connected to a supporting leg, wherein said outer retractable units and said inner retractable units form a roof of said collapsible canopy frame, and
- D. a central lock, comprising:
 - 1. a center top cap,
 - 2. a center bottom cap,
 - 3. a center pole positioned between said center top cap and said center bottom cap, wherein said central lock is locked when said center pole is connected to both said center top cap and said center bottom cap, and wherein said center lock is unlocked when there is a disconnection between said center bottom cap and said center pole, wherein said central lock locks said collapsible canopy frame in an unfolded state when said central lock is locked and permits said collapsible canopy frame to be folded into a folded state when said central lock is unlocked, wherein said inner ends of said inner retractable units are connected through said central lock, and
 - 4. a locking piece received in said center bottom cap, wherein said 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, wherein said bottom cap seat is provided with a bottom cap seat through hole through which said center pole can enter, a receiving chamber is provided in said center bottom cap at a junction between said bottom cap seat and said bottom cap cover, and wherein said locking piece is located within said receiving chamber and between said bottom cap cover and said bottom cap seat;

wherein a first connecting rod is hinged with a connection piece of said bottom cap seat;

wherein 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.

16. (substitute for claim 2 if found unpatentable)

The collapsible canopy frame according as in claim [[1]] 15, wherein:

each said outer retractable unit comprises three hinged X-shaped rod members,

each said supporting leg comprises a sliding sleeve that is moved for moving along a length direction of said respective supporting leg by said pushing of said center bottom cap,

an upper end of each said supporting leg is fixed with a fixed joint,

each said inner retractable unit comprises a first oblique top pipe and a second oblique top pipe hinged to one another,

said first oblique top pipe is hinged with [[a]] said first connecting rod,

said second oblique top pipe is hinged with a second connecting rod,

an inner end of said first oblique top pipe is hinged with [[a]] said center top cap of said central lock,

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 hinged with a center bottom cap of said central lock, and, 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,

an outer end of a first eave pipe and an outer end of said second oblique top pipe are hinged with said fixed joint,

an outer end of said second eave pipe and an outer end of said second connecting rod are hinged with said sliding sleeve.

17. (substitute for claim 4 if found unpatentable)

The collapsible canopy frame as in claim [[1]] 15, where said central lock further comprises:

[[a]] said locking piece,

wherein said locking piece is capable of moving back and forth along a radial direction of said center pole,

wherein said locking piece is received in said center bottom cap,

a first through hole through which said center pole can pass through is provided in said locking piece, and

an end portion of said center pole is provided with a clamping groove and a clamp locking part located at the lower end of said clamping groove;

when said central lock is in a locked state,

part of an inner wall of said first through hole of said locking piece is clamped with said clamping groove of said center pole, [[and]]

an upper end surface of said clamp locking part abuts against a lower end surface of said locking piece, and

said first connecting rod is hinged with said connection piece at a location above said clamp locking part of said center pole; and

when said central lock is in said unlocked state, said inner wall of said first through hole of said locking piece is separated from said clamping groove and said clamp locking part can pass through said first through hole.

I understand that proposed substitute claims 18-19 merely change their dependency to the corresponding proposed substitute claims (e.g., from claim 4 to claim 17).

6. Patent Owner's revised substitute claims would have been obvious to a person of ordinary skill in the art. Because my Prior Declarations show how each of the limitations in the original challenged claims, and limitations that were

included in the Patent Owner's previously proposed substitute claims, are obvious over the prior art, I will address only the new and/or different limitations of the revised substitute claims.

A. Revised Substitute Claim 15 (Substitute for Claim 1 If Found Unpatentable)

7. As I discussed in my Prior Declarations, Rousselle and/or Tsai disclose each limitation of original claim 1. Ex. 1002 ¶¶60-129; Ex. 1102 ¶¶7-32. Furthermore, as I discussed in my Second Declaration, Rousselle, Tsai, and Ohnishi disclose the Locking Piece (“a locking piece received in said center bottom cap”) and Unfolded State (“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”) limitations. Ex. 1102 ¶¶41-44, 57-59. Rousselle, Tsai, Ohnishi, Hooper, and Seo disclose the remaining new limitations of revised substitute claim 15.

1. Bottom Cap Seat & Bottom Cap Cover

8. Revised substitute claim 15 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.” A person of ordinary skill combining Rousselle and Ohnishi as I discussed in my Prior Declarations would have been motivated to implement the combination in a way that meets the limitations, at least in view of Hooper.

9. As I discussed in my Prior Declarations, a person of ordinary skill would have been motivated to replace Rousselle’s locking piece with Ohnishi’s. Ex. 1002 ¶¶193-99; Ex. 1102 ¶¶41-44. In doing so, a person of ordinary skill 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. For example, for ease of manufacturing and maintenance, a skilled artisan would have recognized that it would be advantageous to have easy access to insert and remove the locking piece from the lock.

10. To solve this practical problem, a person of ordinary skill would have understood that there are a handful of known, reliable solutions. 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:

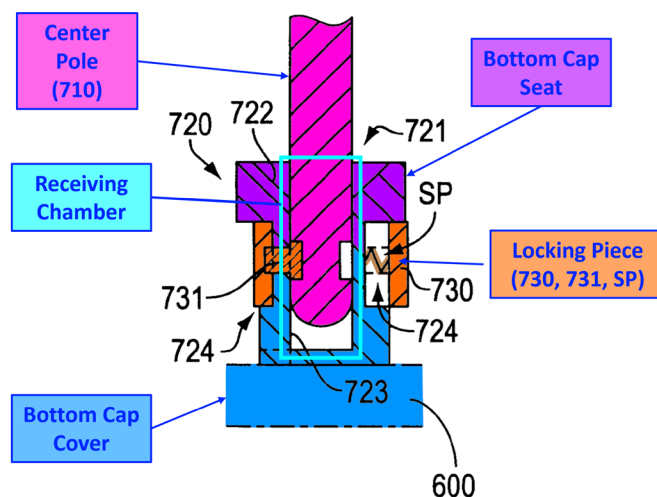


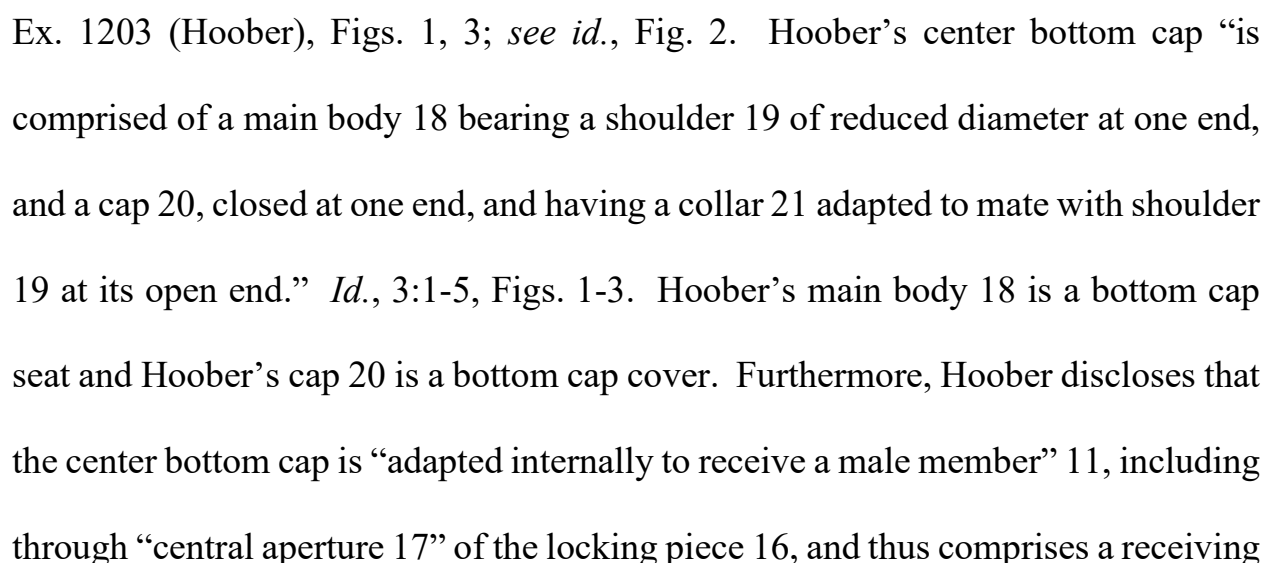
FIG. 2(A)

Ex. 1003 (Rousselle), Fig. 2(A). Because Rousselle discloses that 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. *See, e.g., id.*, Fig. 1(D).

11. A person of ordinary skill would have been motivated to manufacture the bottom cap in two pieces (a bottom cap seat and bottom cap cover) that meet at the locking piece, and would have reasonably expected success doing so, because that solution was known in the prior art. *See, e.g.*, Exs. 1103 (Khatchadourian), 1203 (Hoover). One reference that discloses this solution is Hoover (Ex. 1203).

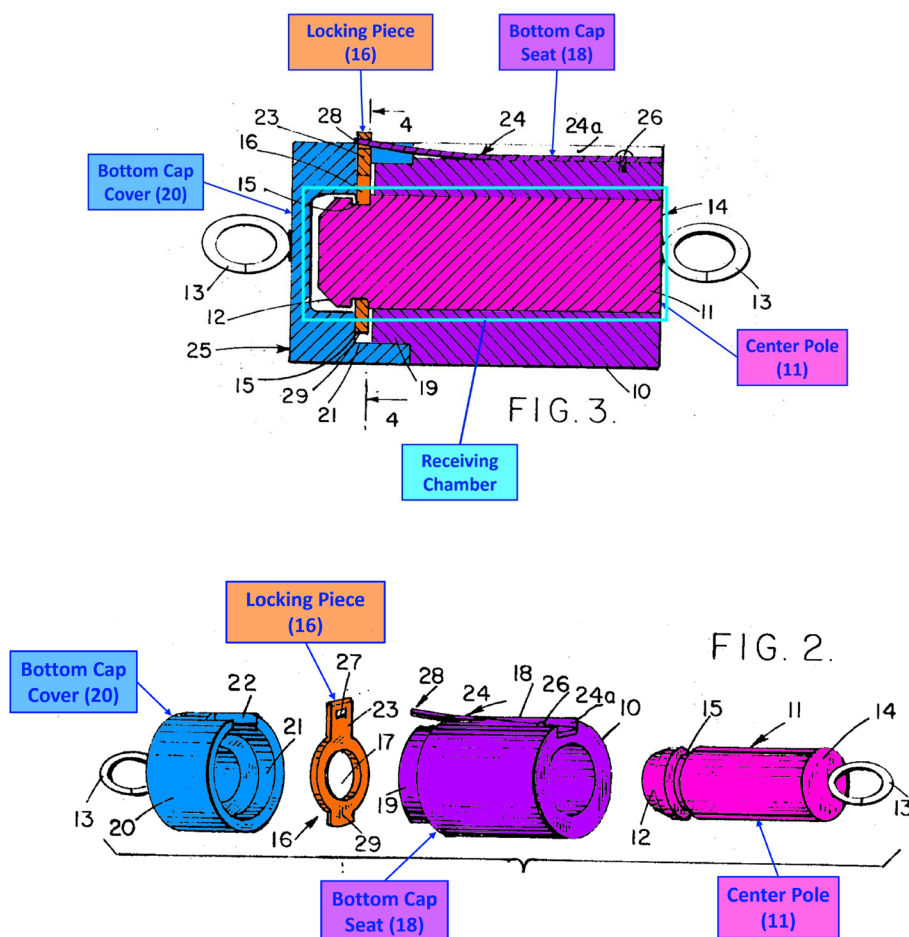
12. Hoover discloses a jewelry clasp with a locking mechanism very similar to Rousselle and Ohnishi's. *E.g.*, Ex. 1203 (Hoover), Abstract, Figs. 2-3. Thus, Hoover relates to the same type of locking mechanism discussed in the '738

13. Hooper's locking mechanism includes a center bottom cap (10) and a center pole (11) that is engaged by a locking piece (16):



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.

14. Hooper's locking piece 16 is located in the receiving chamber and between the bottom cap seat and bottom cap cover:



Id., Figs. 2-3.

15. Based on Hooper's disclosure and the benefits a skilled artisan would have understood from such an arrangement, such a person 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. As I discussed above, a person of ordinary skill would have understood that incorporating Ohnishi's locking piece into Rousselle's central lock would necessitate routine design changes. For ease of manufacturing and maintenance, a person of ordinary skill would have recognized that it would be advantageous to have easy access to insert and remove the locking piece from the lock. 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. Thus, a person of ordinary skill would have been motivated to incorporate such an arrangement in the combination of Rousselle and Ohnishi. Such an arrangement was known in the art, as evidenced by Hooper (and Khatchadourian), leading a person of ordinary skill to reasonably expect success in the combination. *See* Exs. 1103 (Khatchadourian), 1203 (Hooper).

16. 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).

17. 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.

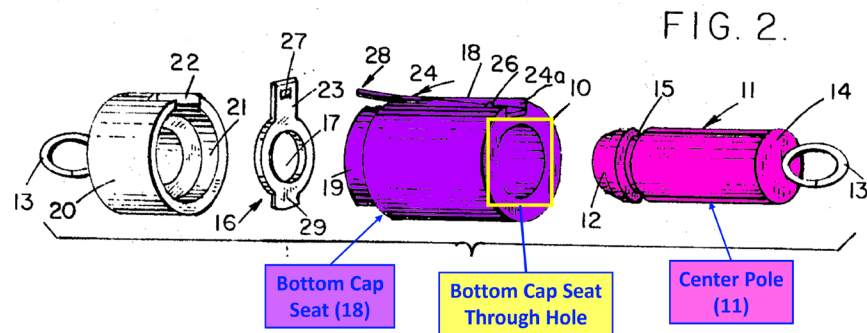
18. Finally, the combination applies a known technique (including a bottom cap seat and cover as in Hooper) to a known device and method (Rousselle's lock with Ohnishi's locking piece) that is ready for improvement and yields predictable results (a lock as in Rousselle with a locking piece as in Ohnishi,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

19. Thus, Rousselle and Ohnishi, in view of Hooper, disclose, or at least suggest, this limitation.

2. Bottom Cap Seat Through Hole

20. 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.

21. As I 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 (Hooper), 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. 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. *See, e.g.*, Ex. 1003 (Rousselle), Fig. 2(A).

22. Thus, Hooper discloses, or at least suggests, this limitation.

3. Connecting Rod

23. Revised substitute claim 15 recites that “a first connecting rod is hinged with a connection piece of said bottom cap seat.” Rousselle and Seo disclose this limitation.

24. As I discussed in my First Declaration, Rousselle discloses a first connecting rod hinged with the center bottom cap. Ex. 1002 ¶¶148-149. A person of ordinary skill in the art combining Rousselle with Ohnishi and Hooper as discussed above would have further 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).

25. Seo discloses a collapsible canopy having a central locking mechanism. *See, e.g.*, Ex. 1204 (Seo), Abstract, Figs. 1, 3, 6. 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). *Id.* ¶[0037], Fig. 7. And, like Rousselle, Seo’s center top and bottom caps are connected to inner retractable units, which include connecting rods attached to the center bottom cap. *Id.* As shown in Figure 5 of Seo, 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:

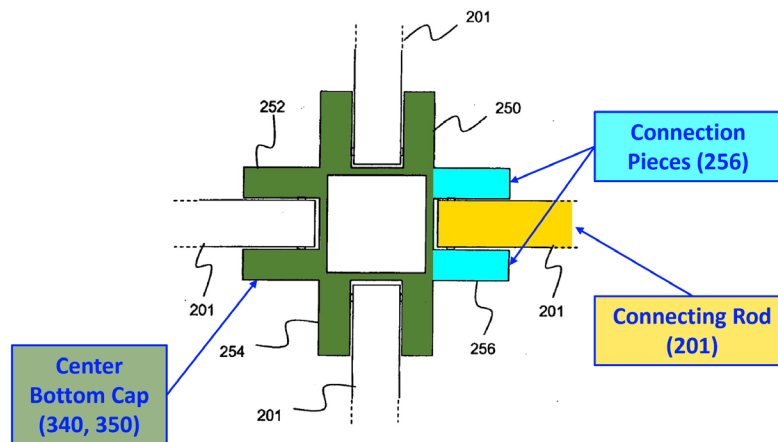


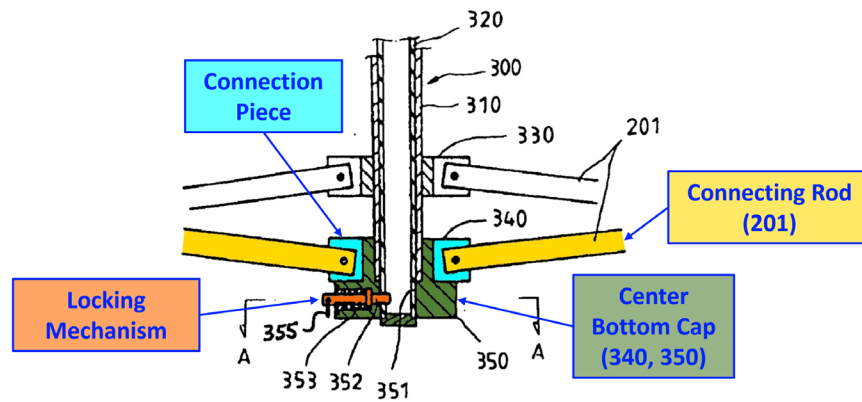
FIG. 5

Id., Fig. 5; *see id.* ¶[0037] (“FIG. 5 illustrates a central hub, which represents a cross sectional view of ... the lower central hub 340”). 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.” *Id.* ¶¶[0037]-[0038].

Furthermore, a skilled artisan would have understood that each of Seo's "connecting members" comprises two connection pieces (e.g., one on each side of the connecting rod). *Compare, e.g.,* Ex. 1001 ('738 patent), 6:26-33, Fig. 1 *with* Ex. 1204 (Seo), Fig. 5. Thus, Seo discloses a first connecting rod hinged with a connection piece of the bottom cap.

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

FIG. 7



Ex. 1204 (Seo), Fig. 7. As I 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. ¶¶8-19, above. Thus, a person of ordinary skill 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).

27. A person of ordinary skill 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.

28. First, a person of ordinary skill 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. Such hinges were well-known in the art, giving a skilled artisan a reasonable expectation of success in the combination. For example, such hinges were disclosed in Chang (*e.g.*, Ex. 1004, Fig. 10); Tsai (*e.g.*, Ex. 1005, Fig. 2); Tseng (*e.g.*, Ex. 1010, Fig. 10); Choi (*e.g.*, Ex. 1104, Fig. 4); and Lin (*e.g.*, Ex. 1105, Fig. 4). Furthermore, a person of ordinary skill 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.

29. 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.

30. 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).

31. 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.

32. 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).

33. Thus, Seo discloses, or at least suggests, this limitation.

34. For the reasons above and in my Prior Declarations, Rousselle, Tsai, and Ohnishi, in view of Hooper and Seo, disclose, or at least suggest, the limitations of revised substitute claim 15, and revised substitute claim 15 would have been obvious as a whole to a person of ordinary skill in the art.

B. Revised Substitute Claim 16 (Substitute for Claim 2 If Found Unpatentable)

35. Revised substitute claim 16 depends from revised substitute claim 15. As discussed above (¶¶7-34, above), the prior art discloses each limitation of revised substitute claim 15. Furthermore, as discussed in my First Declaration, the prior art discloses each limitation of original claim 2. Ex. 1002 ¶¶130-156. And, as discussed in my Second Declaration, the prior art discloses the X-Shaped Rod Members (“each said outer retractable unit comprises three hinged X-shaped rod members”) and Sliding Sleeve (“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”) limitations. Ex. 1102 ¶¶62-78. The prior art discloses the remaining new limitations of revised substitute claim 16.

1. Receiving Groove

36. 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.

37. As I discussed above, Seo discloses that connecting rods may be attached to a center bottom cap by attaching each connecting rod to two connection pieces. ¶¶23-33, above. Seo further discloses that the connecting rod is disposed within a receiving groove formed by the two connection pieces, as shown in Figure 5:

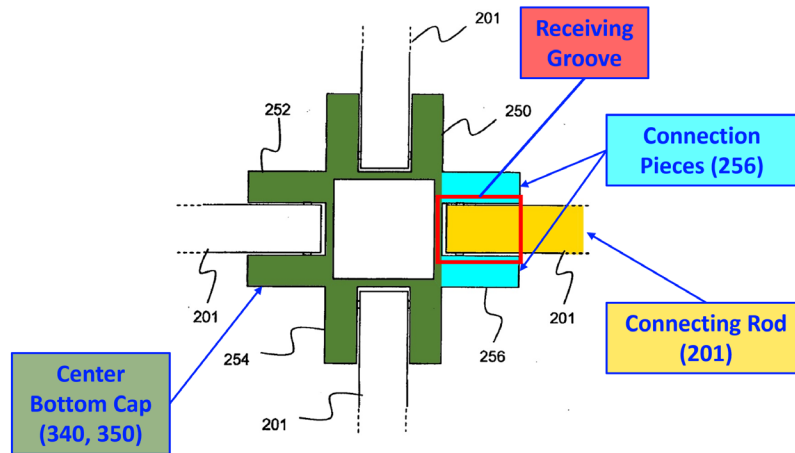


FIG. 5

Ex. 1204 (Seo), Fig. 5. Thus, Seo discloses, or at least suggests, this limitation.

2. Y-Shaped Member

38. Revised substitute claim 16 also 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.”

39. As I discussed in my First Declaration, Rousselle discloses that in the unfolded state, the first connecting rod extends from the bottom cap to the first oblique top pipe. Ex. 1002 ¶¶141-142, 148-149. Furthermore, as shown in Rousselle, these connections result in a Y-shaped member:

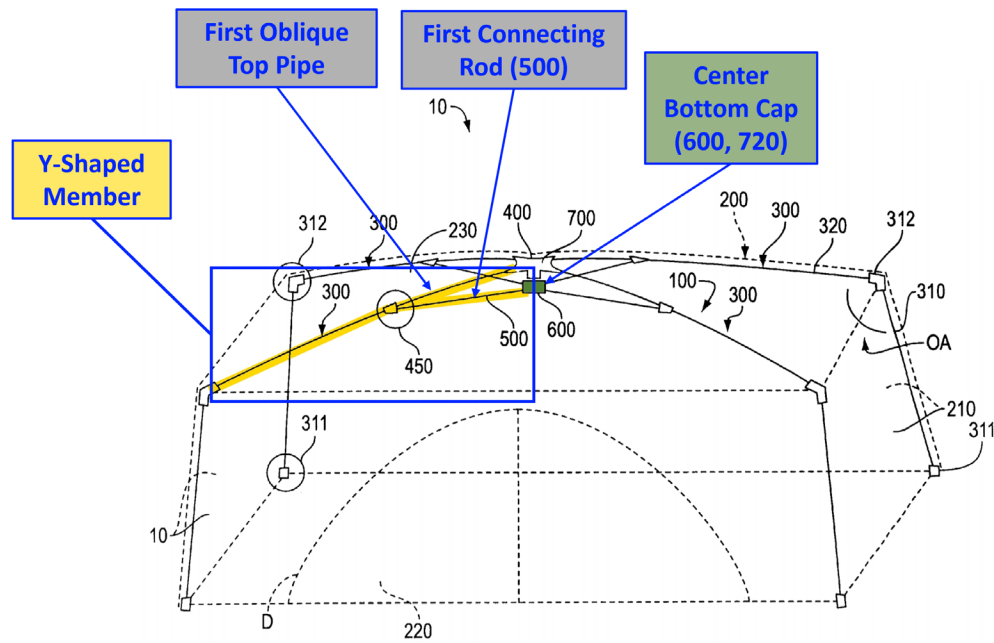


FIG. 1(A)

Ex. 1003 (Rousselle), Fig. 1(A). And, as I have discussed above, it would have been obvious for the first connecting rod to extend from the bottom cap seat in view of Hooper and Seo. ¶¶23-33, above. Accordingly, the prior art discloses, or at least suggests, this limitation.

40. For the reasons above and in my Prior Declarations, Rousselle, Tsai, and Ohnishi, in view of Hooper and Seo, disclose, or at least suggest, the limitations of revised substitute claim 16, and revised substitute claim 16 would have been obvious as a whole to a person of ordinary skill in the art.

C. Revised Substitute Claim 17 (Substitute for Claim 4 If Found Unpatentable)

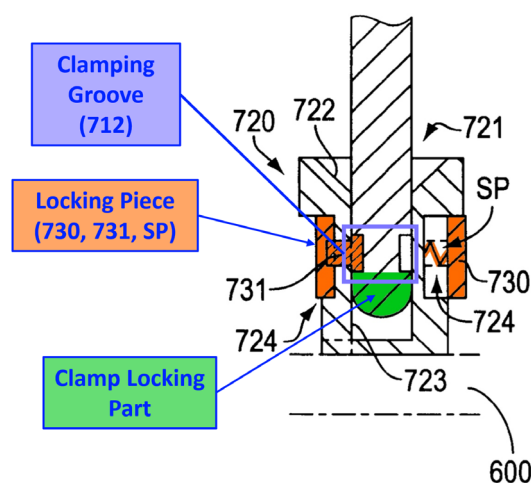
41. Revised substitute claim 17 depends from revised substitute claim 15. As discussed above (¶¶7-34, above), the prior art discloses each limitation of revised

substitute claim 15. Furthermore, as discussed in my First Declaration, the prior art discloses each limitation of original claim 4. Ex. 1002 ¶¶157-173. The prior art also discloses the new limitations of revised substitute claim 17.

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

42. 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.

43. As I have discussed above, Seo discloses that connecting rods may be attached to a center bottom cap using connection pieces located above a locking mechanism. ¶¶23-33, above. Furthermore, as I discussed in my First Declaration 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 (Rousselle), Fig.2(A); Ex. 1002 ¶¶165-170. Thus, the connection pieces as in Seo (which are located above the locking piece) would also be located above the clamp locking part. Accordingly, Seo and Rousselle disclose, or at least suggest, this limitation.

44. For the reasons above and in my Prior Declarations, Rousselle, Tsai, and Ohnishi, in view of Hooper and Seo, disclose, or at least suggest, the limitations of revised substitute claim 17, and revised substitute claim 17 would have been obvious as a whole to a person of ordinary skill in the art.

D. Revised Substitute Claims 18-19 (Substitutes for Claims 13 & 14 If Found Unpatentable)

45. Because revised substitute claims 18-19 merely change dependency to revised substitute claim 17, those claims would have been obvious for the reasons discussed above and in my Prior Declarations. Ex. 1002 ¶¶157-214; Ex. 1102 ¶¶7-60.

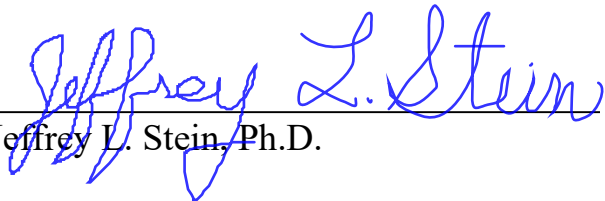
II. CONCLUSION

46. For the reasons discussed above and in my Prior Declarations, the revised substitute claims would have been obvious over the prior art.

47. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: April 18, 2024

By: _____


Jeffrey L. Stein, Ph.D.